

**Notice:** Use this form to request a **written response (on agency letterhead)** from the Department of Natural Resources (DNR) regarding technical assistance, a post-closure change to a site, a specialized agreement or liability clarification for Property with known or suspected environmental contamination. A fee will be required as is authorized by s. 292.55, Wis. Stats., and NR 749, Wis. Adm. Code., unless noted in the instructions below. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

## Definitions

**"Property"** refers to the subject Property that is perceived to have been or has been impacted by the discharge of hazardous substances.

**"Liability Clarification"** refers to a written determination by the Department provided in response to a request made on this form. The response clarifies whether a person is or may become liable for the environmental contamination of a Property, as provided in s. 292.55, Wis. Stats.

**"Technical Assistance"** refers to the Department's assistance or comments on the planning and implementation of an environmental investigation or environmental cleanup on a Property in response to a request made on this form as provided in s. 292.55, Wis. Stats.

**"Post-closure modification"** refers to changes to Property boundaries and/or continuing obligations for Properties or sites that received closure letters for which continuing obligations have been applied or where contamination remains. Many, but not all, of these sites are included on the GIS Registry layer of RR Sites Map to provide public notice of residual contamination and continuing obligations.

## Select the Correct Form

This form should be used to request the following from the DNR:

- Technical Assistance
- Liability Clarification
- Post-Closure Modifications
- Specialized Agreements (tax cancellation, negotiated agreements, etc.)

Do **not** use this form if one of the following applies:

- Request for an **off-site liability exemption or clarification** for Property that has been or is perceived to be contaminated by one or more hazardous substances that originated on another Property containing the source of the contamination. Use DNR's Off-Site Liability Exemption and Liability Clarification Application Form 4400-201.
- Submittal of an Environmental Assessment for the **Lender Liability Exemption**, s 292.21, Wis. Stats., **if no response or review by DNR is requested**. Use the Lender Liability Exemption Environmental Assessment Tracking Form 4400-196.
- Request for an **exemption to develop on a historic fill site** or licensed landfill. Use DNR's Form 4400-226 or 4400-226A.
- **Request for closure** for Property where the investigation and cleanup actions are completed. Use DNR's Case Closure - GIS Registry Form 4400-202.

All forms, publications and additional information are available on the internet at: [dnr.wi.gov/topic/Brownfields/Pubs.html](http://dnr.wi.gov/topic/Brownfields/Pubs.html).

## Instructions

1. Complete sections 1, 2, 6 and 7 for all requests. Be sure to provide adequate and complete information.
2. Select the type of assistance requested: Section 3 for technical assistance or post-closure modifications, Section 4 for a written determination or clarification of environmental liabilities; or Section 5 for a specialized agreement.
3. Include the fee payment that is listed in Section 3, 4, or 5, unless you are a "Voluntary Party" enrolled in the Voluntary Party Liability Exemption Program **and** the questions in Section 2 direct otherwise. Information on to whom and where to send the fee is found in Section 8 of this form.
4. Send the completed request, supporting materials and the fee to the appropriate DNR regional office where the Property is located. See the map on the last page of this form. A paper copy of the signed form and all reports and supporting materials shall be sent with an electronic copy of the form and supporting materials on a compact disk. For electronic document submittal requirements see: <http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf>

The time required for DNR's determination varies depending on the complexity of the site, and the clarity and completeness of the request and supporting documentation.

# Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

Form 4400-237 (R 12/18)

Page 2 of 5

## Section 1. Contact and Recipient Information

### Requester Information

This is the person requesting technical assistance or a post-closure modification review, that his or her liability be clarified or a specialized agreement and is identified as the requester in Section 7. DNR will address its response letter to this person.

Last Name Nelson	First Denice	MI	Organization/ Business Name Tyco Fire Products LP
Mailing Address 2700 Industrial Parkway South		City Marinette	State WI
		ZIP Code 54143	
Phone # (include area code)	Fax # (include area code)	Email	

The requester listed above: (select all that apply)

- Is currently the owner
  Is considering selling the Property  
 Is renting or leasing the Property
  Is considering acquiring the Property  
 Is a lender with a mortgagee interest in the Property  
 Other. Explain the status of the Property with respect to the applicant:

### Contact Information (to be contacted with questions about this request)

Select if same as requester

Contact Last Name Johnson	First Shauna	MI	Organization/ Business Name Arcadis
Mailing Address 126 N Jefferson Street, Suite 400		City Milwaukee	State WI
		ZIP Code 53202	
Phone # (include area code) (312) 520-0305	Fax # (include area code)	Email shauna.johnson@arcadis.com	

### Environmental Consultant (if applicable)

Contact Last Name Johnson	First Shauna	MI	Organization/ Business Name Arcadis
Mailing Address 126 N Jefferson Street, Suite 400		City Milwaukee	State WI
		ZIP Code 53202	
Phone # (include area code) (312) 520-0305	Fax # (include area code)	Email shauna.johnson@arcadis.com	

## Section 2. Property Information

Property Name Tyco Fire Technology Center - PFCs	FID No. (if known) 438005590		
BRRTS No. (if known) 0238580694, 0238581955, 0238583856	Parcel Identification Number		
Street Address 2700 Industrial Parkway South	City Marinette	State WI	ZIP Code 54143
County Marinette	Municipality where the Property is located <input checked="" type="radio"/> City <input type="radio"/> Town <input type="radio"/> Village of Marinette	Property is composed of: <input type="radio"/> Single tax parcel <input checked="" type="radio"/> Multiple tax parcels	Property Size Acres 380

# Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

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1. Is a response needed by a specific date? (e.g., Property closing date) Note: Most requests are completed within 60 days. Please plan accordingly.

- No  Yes

Date requested by: \_\_\_\_\_

Reason: \_\_\_\_\_

2. Is the "Requester" enrolled as a Voluntary Party in the Voluntary Party Liability Exemption (VPLE) program?

- No. **Include the fee that is required for your request in Section 3, 4 or 5.**  
 Yes. **Do not include a separate fee.** This request will be billed separately through the VPLE Program.

Fill out the information in Section 3, 4 or 5 which corresponds with the type of request:

**Section 3. Technical Assistance or Post-Closure Modifications;**

**Section 4. Liability Clarification; or Section 5. Specialized Agreement.**

## Section 3. Request for Technical Assistance or Post-Closure Modification

Select the type of technical assistance requested: [Numbers in brackets are for WI DNR Use]

- No Further Action Letter (NFA) (Immediate Actions) - NR 708.09, [183] - **Include a fee of \$350.** Use for a written response to an immediate action after a discharge of a hazardous substance occurs. Generally, these are for a one-time spill event.
- Review of Site Investigation Work Plan - NR 716.09, [135] - **Include a fee of \$700.**
- Review of Site Investigation Report - NR 716.15, [137] - **Include a fee of \$1050.**
- Approval of a Site-Specific Soil Cleanup Standard - NR 720.10 or 12, [67] - **Include a fee of \$1050.**
- Review of a Remedial Action Options Report - NR 722.13, [143] - **Include a fee of \$1050.**
- Review of a Remedial Action Design Report - NR 724.09, [148] - **Include a fee of \$1050.**
- Review of a Remedial Action Documentation Report - NR 724.15, [152] - **Include a fee of \$350**
- Review of a Long-term Monitoring Plan - NR 724.17, [25] - **Include a fee of \$425.**
- Review of an Operation and Maintenance Plan - NR 724.13, [192] - **Include a fee of \$425.**

Other Technical Assistance - s. 292.55, Wis. Stats. [97] (For request to build on an abandoned landfill use Form 4400-226)

- Schedule a Technical Assistance Meeting - **Include a fee of \$700.**
- Hazardous Waste Determination - **Include a fee of \$700.**
- Other Technical Assistance - **Include a fee of \$700.** Explain your request in an attachment.

Post-Closure Modifications - NR 727, [181]

- Post-Closure Modifications: Modification to Property boundaries and/or continuing obligations of a closed site or Property; sites may be on the GIS Registry. This also includes removal of a site or Property from the GIS Registry. **Include a fee of \$1050, and:**
- Include a fee of \$300 for sites with residual soil contamination; and
- Include a fee of \$350 for sites with residual groundwater contamination, monitoring wells or for vapor intrusion continuing obligations.

Attach a description of the changes you are proposing, and documentation as to why the changes are needed (if the change to a Property, site or continuing obligation will result in revised maps, maintenance plans or photographs, those documents may be submitted later in the approval process, on a case-by-case basis).

**Skip Sections 4 and 5 if the technical assistance you are requesting is listed above and complete Sections 6 and 7 of this fo**

## Section 6. Other Information Submitted

Identify all materials that are included with this request.

**Send both a paper copy of the signed form and all reports and supporting materials, and an electronic copy of the form and all reports, including Environmental Site Assessment Reports, and supporting materials on a compact disk.**

**Include one copy of any document from any state agency files that you want the Department to review as part of this request. The person submitting this request is responsible for contacting other state agencies to obtain appropriate reports or information.**

Phase I Environmental Site Assessment Report - Date: \_\_\_\_\_

Phase II Environmental Site Assessment Report - Date: \_\_\_\_\_

# Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

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Legal Description of Property (required for all liability requests and specialized agreements)

Map of the Property (required for all liability requests and specialized agreements)

Analytical results of the following sampled media: Select all that apply and include date of collection.

Groundwater     Soil     Sediment     Other medium - Describe: \_\_\_\_\_

Date of Collection: \_\_\_\_\_

A copy of the closure letter and submittal materials

Draft tax cancellation agreement

Draft agreement for assignment of tax foreclosure judgment

Other report(s) or information - Describe: Quality Assurance Project Plan Addendum

For Property with newly identified discharges of hazardous substances only: Has a notification of a discharge of a hazardous substance been sent to the DNR as required by s. NR 706.05(1)(b), Wis. Adm. Code?

Yes - Date (if known): \_\_\_\_\_

No

Note: The Notification for Hazardous Substance Discharge (non-emergency) form is available at:

[dnr.wi.gov/files/PDF/forms/4400/4400-225.pdf](http://dnr.wi.gov/files/PDF/forms/4400/4400-225.pdf).

## Section 7. Certification by the Person who completed this form

I am the person submitting this request (requester)

I prepared this request for: Denice Nelson

Requester Name

I certify that I am familiar with the information submitted on this request, and that the information on and included with this request is true, accurate and complete to the best of my knowledge. I also certify I have the legal authority and the applicant's permission to make this request.

Signature



Date Signed

3/29/2024

Senior Environmental Specialist

Title

(414) 277-6233

Telephone Number (include area code)

# Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

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## Section 8. DNR Contacts and Addresses for Request Submittals

Send or deliver one paper copy and one electronic copy on a compact disk of the completed request, supporting materials, and fee to the region where the property is located to the address below. Contact a [DNR regional brownfields specialist](#) with any questions about this form or a specific situation involving a contaminated property. For electronic document submittal requirements see: <http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf>.

### DNR NORTHERN REGION

Attn: RR Program Assistant  
Department of Natural Resources  
223 E Steinfest Rd Antigo, WI 54409

### DNR NORTHEAST REGION

Attn: RR Program Assistant  
Department of Natural Resources  
2984 Shawano Avenue  
Green Bay WI 54313

### DNR SOUTH CENTRAL REGION

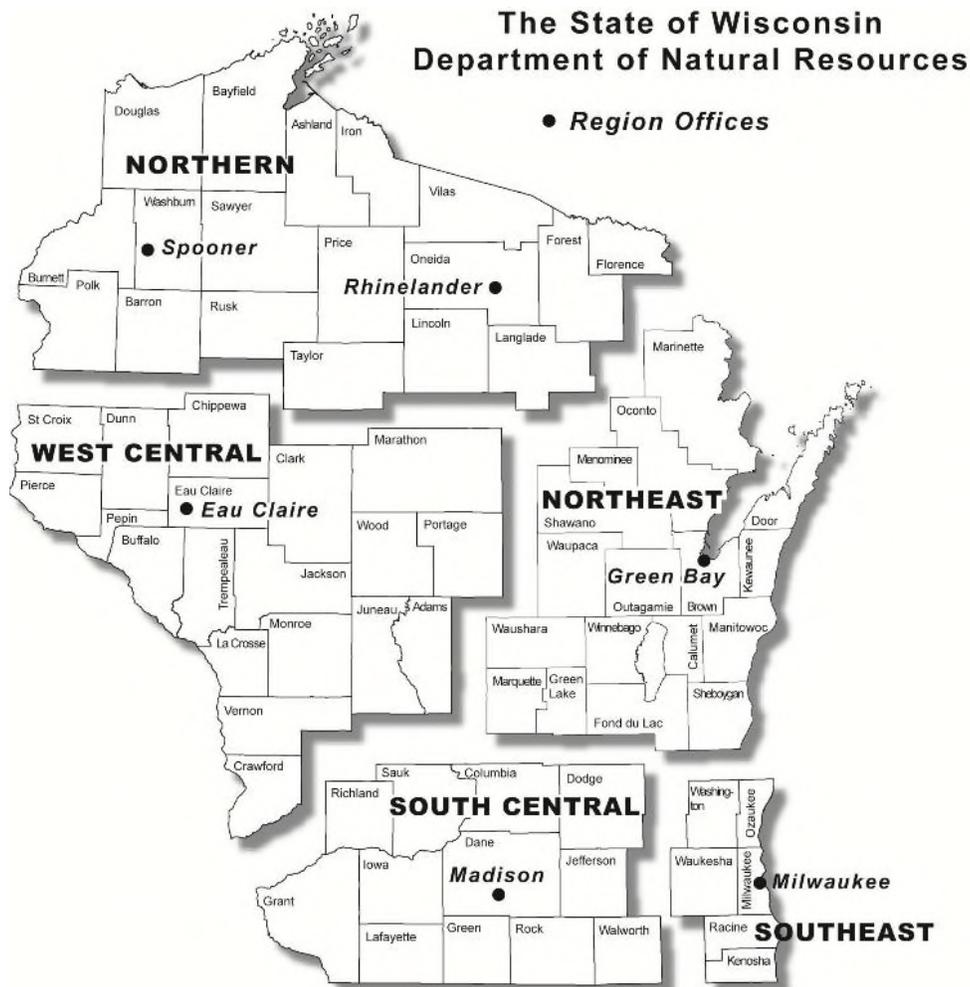
Attn: RR Program Assistant  
Department of Natural Resources  
3911 Fish Hatchery Road  
Fitchburg WI 53711

### DNR SOUTHEAST REGION

Attn: RR Program Assistant  
Department of Natural Resources  
2300 North Martin Luther King Drive  
Milwaukee WI 53212

### DNR WEST CENTRAL REGION

Attn: RR Program Assistant  
Department of Natural Resources  
1300 Clairemont Ave.  
Eau Claire WI 54702



Note: These are the Remediation and Redevelopment Program's designated regions. Other DNR program regional boundaries may be different.

DNR Use Only			
Date Received	Date Assigned	BRRTS Activity Code	BRRTS No. (if used)
DNR Reviewer		Comments	
Fee Enclosed? <input type="radio"/> Yes <input type="radio"/> No	Fee Amount \$	Date Additional Information Requested	Date Requested for DNR Response Letter
Date Approved	Final Determination		

Title: Quality Assurance Project Plan Addendum

Revision Number: 3

Revision Date: March 2024

## **Tyco Fire Products LP**

### **Final**

# **Quality Assurance Project Plan Addendum**

## **Tyco Per- and Polyfluoroalkyl Substances (PFAS) Site Investigation and Private Well Sampling Activities Marinette, Wisconsin**

March 2024

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[www.arcadis.com](http://www.arcadis.com)

Title: Quality Assurance Project Plan Addendum  
Revision Number: 3  
Revision Date: March 2024

## Quality Assurance Project Plan Addendum

**Tyco Fire Products LP**  
**Marinette, Wisconsin**

March 29, 2024

**Prepared by**

Arcadis U.S., Inc.  
126 North Jefferson Street, Suite 400  
Milwaukee  
Wisconsin 53202  
Phone: 414 276 7742  
Fax: 414 276 7603

**Prepared for:**

Tyco Fire Products LP  
2700 Industrial Parkway South  
Marinette, Wisconsin 54143



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Todd Church  
Program QA/QC Manager



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Shauna M. Johnson  
Senior Environmental Specialist



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Scott T. Potter, PhD  
Program Strategic Lead  
Chief Hydrogeologist/Sr. Vice President

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## Version Control

Revision No.	Date Issued	Worksheet Number (and/or Page Number)	Description
1	06/13/22	Page 2	Replace Erika Houtz
1	06/13/22	Page 3-5	Table of Contents
1	06/13/22	WS 1 and 2	Tyco PM/Plans Reports
1	06/13/22	WS 3 and 5	Org Chart/Table 1
1	06/13/22	WS 4, 7 and 8	Personnel Qualifications
1	06/13/22	WS 6	Communication Pathways
1	06/13/22	WS 9	Project Planning
1	06/13/22	26	Added Table 2
1	06/13/22	WS 11	Data Quality Objectives
1	06/13/22	WS 12-2	PFAS Table
1	06/13/22	WS 14 and 16	Tasks and Schedules
1	06/13/22	WS 15-1	Reference Limits/Evaluation - Aqueous
1	06/13/22	WS 15-2	Reference Limits/Evaluation – Soils/Sediments
1	06/13/22	WS 15-3	Reference Limits/Evaluation – Fish Tissue
1	06/13/22	WS 15-4	Reference Limits/Evaluation – Fish Tissue
1	06/13/22	WS 19 and 30	Hold times, Accreditations/Certifications/PFAS Method
1	06/13/22	WS 20	Field QC summary PFAS method Residential Well
1	06/13/22	WS 28-2	PFAS Potable and Non-Potable Water
1	06/13/22	WS 36	Data Validation
1	06/13/22	Page 146	References
1	06/13/22	References	Organic and Inorganic NFG
1	06/13/22	Appendix A	Field SOPs
1	06/13/22	Appendix B	Lab Certification
2	05/01/23	WS 1 and 2	Update Reports
2	05/01/23	WS 12-15 through WS 12-18	

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2	05/01/23	WS 15-1, 15-2 and 15-3	Reference limits an evaluation (Chemical analysis - aqueous)
2	05/01/23	WS 19 and 30	Sample containers, preservation, and hold times
2	05/01/23	WS 19 and 30	Sample containers, preservation, and hold times
2	05/01/23	WS 19 and 30	Sample containers, preservation, and hold times
2	05/01/23	WS 20	Field QC summary
2	05/01/23	WS 23	Analytical SOPs
2	05/01/23	WS 24	Calibration update
2	05/01/23	WS 26 and 27	Sample handling, custody, and disposal
2	05/01/23	WS 28-13 through 28-15	Include Rad Chem
2	05/01/23	WS 31, 32 and 33	Assessments and Corrective Actions
2	05/01/23	WS 36	Data Validation Procedures
2	05/01/23	WS 35	Data verification procedures
2	05/01/23	P 142	Commercial Subcontractor Laboratory Data
2	05/01/23		Add radiological to groundwater analysis list
2	05/01/23	WS27 and 27	Add DMW nomenclature to Sample IDs
2	05/01/23	All	Updates to reflect DMP
3	03/29/24		Updated Lab Certifications
3	03/29/24	Introduction	Updates to reflect project progress
3	03/29/24	WS 3 and 5	Updates to organization chart
3	03/29/24	Table 1	Updates to personnel and contact information
3	03/29/24	WS 4, 7 & 8	Updates to personnel information

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## Appendices

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<b>Appendix C</b>	<b>Non-Conformance Report</b>

## Acronyms and Abbreviations

%D	percent difference
%R	percent recovery
°C	degrees Celsius
µg/L	micrograms per liter
AFFF	Aqueous Film Forming Foam
ASTM	ASTM International
Arcadis	Arcadis U.S., Inc.
BOD	Biochemical Oxygen Demand
CAS	Chemical Abstracts Service Registry
cBOD	Carbonaceous Biochemical Oxygen Demand
CCB	continuing calibration blank
CCV	continuing calibration verification
COC	chain-of-custody
COD	Chemical Oxygen Demand
CSM	Conceptual Site Model
CV	calibration verification
CVAA	cold vapor atomic absorption
DFW	Definable Feature of Work
DQI	data quality indicator
DQO	data quality objective
EDD	electronic data deliverable
ES	Enforcement Standard
FTC	Fire Technology Center
FTL	Field Team Leader
FOSA	perfluorooctanesulfonamide
GC/MS	gas chromatography/mass spectrometry
GC-FID	gas chromatography - flame ionization detector
GETS	Groundwater extraction and treatment system
GIS	Geographic Information System
HAL	Health Advisory Limit
HASP	Health and Safety Plan
HEM	n-Hexane Extractable Material
HSO	Health and Safety Officer
IC	ion chromatography

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ICAL	initial calibration
ICB	initial calibration blank
ICP-MS	inductively coupled plasma-mass spectrometry
ICS	interference check solution
ISC	instrument sensitivity check
ICV	initial calibration verification
IDW	investigation-derived waste
LC/MS/MS	liquid chromatography tandem mass spectrometry
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LIMS	laboratory information management system
LOQ	Limit of Quantitation
MCL	Maximum Contaminant Level
MDL	method detection limit
mL	milliliter
mg/kg	milligrams per kilogram
MS	matrix spike
MSD	matrix spike duplicate
NA	not applicable/not available
NELAP	National Environmental Laboratory Accreditation Program
NEtFOSA	N-ethylperfluorooctanesulfonamide
NEtFOSAA	N-ethylperfluorooctanesulfonamidoacetic acid
NEtFOSE	N-ethylperfluorooctanesulfonamidoethanol
ng/g	nanograms per gram
ng/L	nanograms per liter
NOAA	National Oceanic and Atmospheric Administration
OTA	Outdoor Testing/Training Area
PAH	polyaromatic hydrocarbon
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid/ perfluorooctanoate
PFOS	perfluorooctane sulfonic acid/ perfluorooctane sulfonate
PM	Project Manager
POET	point-of-entry treatment
ppt	parts per trillion
ppm	parts per million
PSL	Project Screening Level

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QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
QM	Quality Manager
QP	Quality Procedure
R&D	Research and Development
RCL	Residual Contaminant Level
RF	response factor
RL	reporting limit
RPD	relative percent difference
RRF	relative response factor
RSD	relative standard deviation
RT	retention time
SDG	sample delivery group
SOP	standard operating procedure
SPLP	Synthetic Precipitation Leaching Procedure
SVOC	semi-volatile organic compound
TBD	to be determined
TGI	technical guidance instruction
TKN	Total Kjeldahl Nitrogen
Tyco	Tyco Fire Products LP
UPLC	Ultra-Performance Liquid Chromatography
USEPA	United States Environmental Protection Agency
VOA	volatile organic analysis
VOC	volatile organic compound
WDHS	Wisconsin Department of Health Services
WDNR	Wisconsin Department of Natural Resources
WPDES	Wisconsin Pollutant Discharge Elimination System
WWTP	Wastewater Treatment Plant

## Introduction

On behalf of Tyco Fire Products LP (Tyco), Arcadis U.S., Inc. (Arcadis) has prepared this Quality Assurance Project Plan (QAPP) in support of additional site investigation and off-site private well sampling related to the potential presence of per- and polyfluoroalkyl substances (PFAS). These investigations are occurring in the City of Marinette and Town of Peshtigo, Wisconsin.

Tyco owns and operates two facilities in Marinette. The Fire Technology Center (FTC), located at 2700 Industrial Parkway South, Marinette, Wisconsin, is a fire suppressant training, testing, research, and development facility that was constructed in the early 1960s. The FTC facility encompasses approximately 380 acres used for Research and Development (R&D) and Quality Testing activities, with approximately 9 acres previously used as an Outdoor Testing/Training Area (OTA). Tyco also operates a 66-acre fire extinguisher and fire suppression system manufacturing facility at 1 Stanton Street, Marinette, Wisconsin.

Aqueous film-forming foams (AFFF) sold by Tyco and/or others have been used at the FTC as part of R&D, quality control, and firefighting training activities. PFAS such as perfluorooctanoic acid (PFOA) have been present in various formulations of these foams. PFAS have been detected in groundwater at the FTC and in off-site potable wells. The PFAS present in AFFF are non-volatile. No manufacturing stack emissions have occurred at either Tyco facility. Outdoor releases of AFFF occurred at the FTC as part of OTA testing and training activities; however, AFFF has not been used outdoors at the OTA since November 2017. Firefighter training and foam testing did not occur at the Stanton Street facility. At the Stanton Street facility, where PFAS have been detected in on-site groundwater, potential PFAS releases are suspected to have been incidental occurrences related to normal facility handling of foams. In the past, both facilities discharged permitted industrial and laboratory wastes to the City of Marinette Wastewater Treatment Plant (WWTP), but that practice has ceased. Foam-containing wastewater from the FTC is currently treated by an onsite wastewater treatment system before being discharged under a permit to the Marinette WWTP.

The U.S. Environmental Protection Agency (USEPA) classifies PFAS as a category of "emerging contaminants". Proposed PFAS standards for regulated media continue to evolve<sup>1</sup>. Humans who may be exposed to PFAS via ingestion of groundwater are the major receptors of concern in the investigation to date and for future planned investigation activities. Human exposure may also occur via direct contact exposure of PFAS-containing media such as soil and via ingestion of PFAS-containing tissue. PFAS transport through surface water and groundwater are the primary transport pathways relevant to the design of site investigation and private well sampling. The aerial transport pathway was further evaluated in 2021 finding low levels of onsite PFAS. This study concluded

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<sup>1</sup> United States Environmental Protection Agency (USEPA) Combined Recommended Interim Preliminary Remediation Goal (PRG) for groundwater for PFOS and PFOA is 70 ng/L. In June 2019, WDHS recommended individual groundwater standards of 20 ng/L for PFOA and PFOS. The WDNR proposed those standards through the state rulemaking process. In February 2022, the Wisconsin Natural Resource Board did not approve the proposed rulemaking for groundwater. In August 2022, WDNR promulgated a drinking water standard of 70 ng/L for PFOA and PFOS, individually and combined, for public water systems. This standard does not apply to private drinking water wells. In November 2020 the Wisconsin DHS recommended a combined groundwater standard of 20 ng/L for: FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFOS and PFOA. DHS also recommended individual standards for FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFBS, PFHxS, PFNA, PFDA, PFDoA, PFHxA, PFTeA, PFUnA, PFBA, PFODA, DONA, and GenX. The agency's authority under the scope statement expired in September 2023. In September 2022, the Governor approved a Statement of Scope to establish groundwater standards for PFOA, PFOS, PFBS and GenX (referred to as the "Four PFAS"). The Statement of Scope was approved by the Natural Resources Board in December 2022. Pursuant to state law, the WDNR has stopped work on the proposed rule and notified the state legislature that, following economic analysis, the proposed costs would exceed statutory thresholds. As a result, the WDNR cannot continue the rulemaking without authorization from the state legislature.

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that the low levels of onsite PFAS concentrations, together with the results of statistical and spatial analyses, demonstrate that there is not a plausible offsite aerial transport and deposition pathway associated with AFFF uses at the Site. The April 2023 Site Investigation Status Report (Arcadis) confirmed the horizontal and vertical extents of the groundwater plume and further defined the concentrations of PFAS within the plume. Additional surface water sampling activities are ongoing.

This QAPP details the planning processes for collecting investigation sampling data and describes the implementation of quality assurance (QA) and quality control (QC) activities developed for this program. The objectives of this QAPP are to generate project data that are technically defensible and useful in meeting the project goals. The project goals are to define the nature and extent of PFAS during the site investigation and private well sampling activities that Tyco is conducting in the City of Marinette and Town of Peshtigo, Wisconsin. This QAPP is supplemented by individual Site Investigation Work Plans, which identify specific sampling locations. The QAPP consists of four main components:

1. Project Management
2. Measurement and Data Acquisition
3. Assessment and Oversight
4. Data Validation and Usability

The above components incorporate QA/QC requirements cited within the following documents:

- USEPA Requirements for Quality Assurance Project Plans, USEPA QA/R-5, March 2001.
- USEPA Uniform Federal Policy for Quality Assurance Project Plans, Final Version, March 2005.
- USEPA Guidance on Systematic Planning Using the Data Quality Objectives Process, USEPA QA/G-4, EPA/240/B-06/001, February 2006.
- USEPA Guidance on Quality Assurance Project Plans, CIO-2106-G-05, January 2012.
- Wisconsin PFAS Aqueous (Non-Potable Water) and Non-Aqueous Matrices Method Expectations (EA-19-0001), Version 12, December 2019.

The Wisconsin Department of Natural Resources (WDNR) has been overseeing PFAS investigations in groundwater, soil, surface water, and sediment at the Tyco facilities since 2016. These investigation activities have provided a detailed understanding of the nature and extent of PFAS originating from the FTC.

Tyco is in the process of installing private deep replacement wells in the Town of Peshtigo as a long-term drinking water solution for residents. Tyco also began operating a groundwater extraction and treatment system (GETS) to remove PFAS from groundwater in 2022. Two PFAS treatment plants were designed to remediate surface water at 125 gallons per minute and 700 gallons per minute in Ditch A and Ditch B, respectively. These systems were installed and began operating in 2018 and 2019.

## QAPP Worksheet #1 & 2 – Title and Approval Page

1. Project Identifying Information

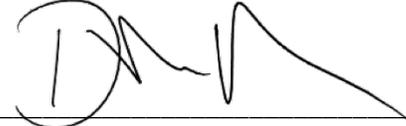
- a. Site name/project name: Tyco PFAS Investigations in Marinette and Peshtigo, Wisconsin
- b. Site location/number: Marinette and Peshtigo, Wisconsin
- c. Contract/Work assignment number: BRRTS No. 02-38-580694, BRRTS No. 02-38-581955, and BRRTS No. 02-38-583856.

2. Lead Organization: Tyco

- a. Tyco Project Manager (PM) (name/title/signature/date)

Tyco PM:  \_\_\_\_\_  
Printed Name/Organization: Denice Nelson, Senior Director, Remediation & Strategy

- b. Tyco Quality Manager (QM) (name/title/signature/date)

Tyco QM:  \_\_\_\_\_  
Printed Name/Organization: Denice Nelson, Senior Director, Remediation & Strategy

3. List plans and reports from previous investigations relevant to this project

Title	Date
2016 Investigation Report (Tyco Fire Technology Center)	November 2016
Revised Long-Term Potable Well Sampling Plan (Tyco Fire Technology Center)	April 2018
Revised Site Investigation Work Plan (Tyco Fire Technology Center)	April 2018
Site Investigation Report (Tyco Fire Technology Center – PFCs)	September 2018
Site Investigation Workplan (Tyco Fire Products PFAS – Stanton Street Facility)	October 2018
Summary of Groundwater Sampling (Tyco Stanton Street Facility)	June 2018
Site Investigation Work Plan – Soil (Tyco Stanton Street Facility)	August 2018
Supplemental Site Investigation Work Plan (Tyco Fire Technology Center)	February 2019
Data Summary Report (Tyco Fire Technology Center)	March 2019

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Title	Date
Groundwater Sampling Work Plan (Tyco Stanton Street Facility)	March 2019
Heath Lane Area Site Investigation Work Plan	May 2019
Green Bay Surface Water Investigation Work Plan (Tyco Fire Technology Center)	October 2019
Biosolids Landspreading – Phase I Investigation Work Plan (Land Applied Biosolids Area)	November 2019
Wetland and Waterbody Delineation Report (Tyco Fire Technology Center)	November 2019
Stormwater Modelling and Diversion Evaluation (Tyco Stanton Street Facility)	November 2019
Data Summary Report – Supplemental Site Investigation (Tyco Fire Technology Center)	December 2019
Fish Tissue Sampling Work Plan (Tyco Fire Technology Center)	December 2019
Data Summary Report – Heath Lane Area Site Investigation	January 2020
Summary of Soil and Groundwater Sampling (Tyco Stanton Street Facility)	February 2020
Private Well Sampling Work Plan – Land Applied Biosolids (Marinette and Oconto Counties, Wisconsin)	March 2020
Comprehensive Alternative Water Management Plan (Tyco Fire Technology Center)	March 2020
Southern Area Groundwater Evaluation Report	March 2020
Well Survey Report (Tyco Fire Technology Center)	March 2020
Q1 2020 Draft Project Schedule	March 2020
Proposed Excavation Dewatering Management Plan	March 2020
Revised Long-Term Potable Well Sampling Plan (Tyco Fire Technology Center)	April 2020
Draft QAPP	April 2020
Revised Long-Term Potable Well Sampling Plan (Tyco Fire Technology Center)	April 2020
Q1 2020 Project Status Report	April 2020
Wetland and Waterbody Delineation Report (Tyco Fire Technology Center)	April 2020
Conceptual Site Model (Tyco Fire Technology Center)	May 2020
Waste Disposal Practices Summary Report (Tyco Fire Technology Center)	May 2020
Waste Disposal Practices Summary Report (Tyco Stanton Street Facility)	May 2020
Materials Management Plan	May 2020
Near-Term Bedrock Groundwater Evaluation Work Plan (Tyco Stanton Street Facility)	May 2020
Interim Site Investigation Report (Tyco Fire Technology Center)	May 2020
Aerial Deposition Evaluation Report (Tyco Fire Technology Center)	June 2020
Potable Well Sampling Program Summary Report – FTC Sampling Area	June 2020
Interim Site Investigation Report (Tyco Stanton Street Facility)	June 2020
Q2 2020 Draft Project Schedule	July 2020
Conceptual Site Model (Tyco Stanton Street Facility)	July 2020

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Title	Date
Ditch A/B Surface Water Sampling Work Plan Letter	July 2020
Aerial Deposition Evaluation Report (Tyco Stanton Street Facility)	July 2020
Foam Monitoring Immediate Actions Report	July 2020
Q2 2020 Project Status Report	July 2020
Supplemental Site Investigation Work Plan (Tyco Fire Technology Center)	August 2020
Ditch A/B Surface Water Data Submittal Letter	August 2020
Site Investigation Work Plan (Tyco Stanton Street Facility)	September 2020
Land-Applied Biosolids Drinking Water – Data Summary Report	September 2020
Q3 2020 Draft Project Schedule	September 2020
Ditch B Pre-Design Investigation Work Plan	October 2020
Q3 2020 Project Status Report	October 2020
Bay of Green Bay Surface Water Sampling Plan – Response to Comments (Tyco Fire Technology Center)	October 2020
Fish Tissue and Surface Water Sampling – Response to Comments (Tyco Fire Technology Center)	October 2020
Fish Tissue and Surface Water Sampling Work Plan (Tyco Fire Technology Center)	November 2020
Groundwater Flow and Solute Transport Model Report (Tyco Fire Technology Center)	November 2020
Wetland and Waterbody Delineation Report (Tyco Fire Technology Center)	November 2020
Notice of Termination – B105 Construction Dewatering (Tyco Fire Technology Center)	December 2020
Q4 2020 Draft Project Schedule	December 2020
Q4 2020 Project Status Report	January 2021
Fish Tissue Scientific Collector Permit Annual Report	January 2021
Conceptual Site Model – Response to Comments (Tyco Fire Technology Center)	January 2021
Interim Site Investigation Report – Response to Comments (Tyco Fire Technology Center)	January 2021
Q4 2020 Foam Monitoring Interim Action Report and Work Plan for Future Foam Monitoring (Tyco Fire Technology Center)	February 2021
Groundwater Extraction and Treatment System (GETS) Interim Remedial Action Design Report (Tyco Fire Technology Center)	February 2021
Ditch A/B Semi-Annual Monitoring Report (7/1/2020 – 12/31/2020) (Tyco Fire Technology Center)	February 2021
Q1 2021 Draft Project Schedule	March 2021
Soil Interim Remedial Action Design Report (Tyco Fire Technology Center)	March 2021
Revised QAPP	March 2021
Revised Long-Term Potable Well Sampling Plan (Tyco Fire Technology Center)	March 2021

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Title	Date
Ditch B Wisconsin Pollutant Discharge Elimination System (WPDES) Permit Modification Request (Tyco Fire Technology Center)	March 2021
Revised Site Investigation Work Plan (Tyco Stanton Street Facility)	March 2021
Revised Foam Monitoring Work Plan (Tyco Fire Technology Center)	April 2021
Q1 2021 Project Status Report	April 2021
Ditch B GETS – Wetland/Waterway Individual Permit Application (Tyco Fire Technology Center)	April 2021
Planned Changes at Tyco Fire Technology Center – Ditch B Interim Action Site (Tyco Fire Technology Center)	April 2021
Air Pathway Site Investigation Work Plan (Tyco Fire Technology Center)	April 2021
Ditch B GETS – High-Capacity Well Permit Application (Tyco Fire Technology Center)	April 2021
FTC Soil Removal – Wetland Permit Application (Tyco Fire Technology Center)	May 2021
Q2 2021 Draft Project Schedule	June 2021
Ditch B GETS – Phase 2 Parcels Wetland Delineation Report (Tyco Fire Technology Center)	June 2021
Foam Waste Characterization and Disposal Notification (Tyco Fire Technology Center)	June 2021
Figure and Cross Section Updates Related to Groundwater Flow and Solute Transport Model Report (Tyco Fire Technology Center)	June 2021
Foam Cause and Significance Letter Report (Tyco Fire Technology Center)	June 2021
Groundwater Flow and Solute Transport Model – Cross Sections/Figures (Tyco Fire Technology Center)	June 2021
Q2 2021 Project Status Report	July 2021
Revised Long-Term Monitoring Plan for the GETS and Response to Comments (Tyco Fire Technology Center)	July 2021
Ditch A Operations, Maintenance, and Long-Term Monitoring Plan (Tyco Fire Technology Center)	July 2021
Ditch B Operations, Maintenance, and Long-Term Monitoring Plan (Tyco Fire Technology Center)	July 2021
Revised Long Term Potable Well Sampling Plan Response to Comments (Tyco Fire Technology Center)	July 2021
Private Drinking Water Well Sampling Program Annual Summary Report – FTC Sampling Area (Tyco Fire Technology Center)	August 2021
Q3 2021 Draft Project Schedule	September 2021
Semi-Annual Operation, Maintenance and Optimization Progress Report #5, Ditch A (Tyco Fire Technology Center)	September 2021
Semi-Annual Operation, Maintenance and Optimization Progress Report #4, Ditch B (Tyco Fire Technology Center)	September 2021
Ditch A Semi-Annual Monitoring Report (1/1/2021 - 6/30/2021) (Tyco Fire Technology Center)	September 2021

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Title	Date
Ditch B Semi-Annual Monitoring Report (1/1/2021 - 6/30/2021) (Tyco Fire Technology Center)	September 2021
Proposed Modification to Foam Management Plan (Tyco Fire Technology Center)	September 2021
Revised Long-Term Potable Well Sampling Plan (Tyco Fire Technology Center)	October 2021
Q3 2021 Project Status Report	October 2021
Ditch A Operations, Maintenance, and Long-Term Monitoring Plan Amendment (Tyco Fire Technology Center)	November 2021
Ditch B Operations, Maintenance, and Long-Term Monitoring Plan Amendment (Tyco Fire Technology Center)	November 2021
Revised Air Pathway Site Investigation Work Plan and Response to Comments (Tyco Fire Technology Center)	November 2021
Q4 2021 Draft Project Schedule	December 2021
Sanitary Sewer Rehabilitation Completion Report (Tyco Fire Technology Center; Tyco Stanton Street Facility)	December 2021
Land Applied Biosolids Preliminary Assessment/Site Investigation Work Plan (Land Applied Biosolids Area)	December 2021
Q4 2021 Project Status Report	January 2022
Response to Comments – Response to Site Investigation Work Plan, Interim Site Investigation Report, Conceptual Site Model, and Aerial Deposition Evaluation Report (Tyco Stanton Street Facility)	February 2022
Additional Site Investigation Work Plan (Tyco Fire Technology Center)	February 2022
Expanded Site Investigation Area Letter Response to Comments (Tyco Fire Technology Center)	February 2022
2021 Foam Monitoring Interim Action Report and Foam Monitoring Work Plan Modifications (Tyco Fire Technology Center)	February 2022
Q1 2022 Draft Project Schedule	March 2022
Site Investigation Status Report (Tyco Stanton Street Facility)	March 2022
Additional Site Investigation Work Plan (Tyco Stanton Street Facility)	March 2022
Ditch A Interim Action Treatment System Semi-Annual Operation, Maintenance, and Optimization Progress Report #6 (Tyco Fire Technology Center)	March 2022
Q1 2022 Project Status Report	April 2022
Ditch B Semi-Annual Operation, Maintenance, and Optimization Progress Report #5 (Tyco Fire Technology Center)	May 2022
Revised Long-Term Potable Well Sampling Plan, v.5 (Tyco Fire Technology Center)	May 2022
Q2 2022 Draft Project Schedule	June 2022
QAPP Addendum	June 2022
Q2 2022 Project Status Report	July 2022

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Title	Date
GETS Pre-Startup Monitoring Data Package (Tyco Fire Technology Center)	July 2022
Potable Well Sampling Program Annual Summary Report – FTC Sampling Area (Tyco Fire Technology Center)	August 2022
Q3 2022 Draft Project Schedule	September 2022
GETS Pre-Startup Addendum to Monitoring Package (Tyco Fire Technology Center)	September 2022
Deep Aquifer Bedrock Well Design and Long-Term Monitoring Work Plan (Tyco Fire Technology Center)	September 2022
Potable Well Sampling Area Drinking Water Update (Tyco Fire Technology Center)	September 2022
Revised Long-Term Potable Well Sampling Plan, v.6 (Tyco Fire Technology Center)	October 2022
Q3 2022 Project Status Report	October 2022
Response to Comments on 2022 Potable Well Sampling Annual Summary Report (Tyco Fire Technology Center)	October 2022
Marinette High School Irrigation Well Profiling Results (Tyco Fire Technology Center)	October 2022
Interim Site Status Update on Land-Applied Biosolids (Land Applied Biosolids Area)	October 2022
Ditch B Semi-Annual Operation, Maintenance, and Optimization Progress Report #6 (Tyco Fire Technology Center)	October 2022
Q4 2022 Draft Project Schedule	November 2022
GETS Startup Monitoring – Report 1, Week 1 (Tyco Fire Technology Center)	December 2022
GETS Startup Monitoring – Report 2, Week 2 (Tyco Fire Technology Center)	December 2022
GETS Startup Monitoring – Report 3, Week 3 (Tyco Fire Technology Center)	December 2022
GETS Startup Monitoring – Report 4, Week 4 (Tyco Fire Technology Center)	December 2022
GETS Startup Monitoring – Report 5, Week 5 (Tyco Fire Technology Center)	January 2023
GETS Startup Monitoring – Report 6, Week 6 (Tyco Fire Technology Center)	January 2023
Q4 2022 Project Status Report	January 2023
GETS Startup Monitoring – Report 7, Week 7 (Tyco Fire Technology Center)	January 2023
Response to Potable Well Sampling Area Deep Well Design Plan and Deep Aquifer Long-Term Monitoring Plan (Tyco Fire Technology Center)	January 2023
GETS Startup Monitoring – Report 8, Week 8 (Tyco Fire Technology Center)	January 2023
2022 Foam Monitoring Interim Action Report (Tyco Fire Technology Center)	February 2023
Fish Tissue Sampling Summary Letter (Tyco Fire Technology Center)	February 2023
GETS Startup Monitoring – Report 9, Week 9 (Tyco Fire Technology Center)	February 2023
GETS Startup Monitoring – Report 10, Week 13 through Week 16 (Tyco Fire Technology Center)	March 2023
Site Investigation Status Report (Tyco Fire Technology Center)	April 2023
Revised Long-Term Potable Well Sampling Plan, v.7 (Tyco Fire Technology Center)	April 2023

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Title	Date
GETS Startup Monitoring – Report 11, Week 17 through Week 20 (Tyco Fire Technology Center)	April 2023
Q1 2023 Project Status Report	April 2023
Ditch A Semi-Annual Operation, Maintenance, and Optimization Progress Report #8 (Tyco Fire Technology Center)	April 2023
Ditch B Semi-Annual Operation, Maintenance, and Optimization Progress Report #7 (Tyco Fire Technology Center)	April 2023
QAPP Addendum	May 2023
GETS Startup Monitoring – Report 12, Week 21 through Week 24 (Tyco Fire Technology Center)	May 2023
GETS Short Term Monitoring – Report 1, November 14, 2022 (Tyco Fire Technology Center)	June 2023
Q2 2023 Project Status Report	July 2023
Ditch A Semi-Annual Operation, Maintenance, and Optimization Progress Report #8 – Response to Comments (Tyco Fire Technology Center)	July 2023
Ditch B Semi-Annual Operation, Maintenance, and Optimization Progress Report #7 – Response to Comments (Tyco Fire Technology Center)	July 2023
Marinette High School Irrigation IRR-02R Installation Technical Memo (Tyco Fire Technology Center)	July 2023
Potable Well Sampling Program Annual Summary Report – FTC Sampling Area (Tyco Fire Technology Center)	July 2023
FTC Materials Management Plan (Tyco Fire Technology Center)	August 2023
Deep Aquifer Bedrock Well Design and Long-Term Monitoring – Interim Response Status Update (Tyco Fire Technology Center)	August 2023
Additional Site Investigation Work Plan (Tyco Fire Technology Center)	August 2023
Revised Long-Term Potable Well Sampling Plan (Tyco Fire Technology Center)	October 2023
Q3 2023 Project Status Report	October 2023
Ditch A Semi-Annual Operation, Maintenance, and Optimization Progress Report #9 (Tyco Fire Technology Center)	October 2023
Ditch B Semi-Annual Operation, Maintenance, and Optimization Progress Report #8 (Tyco Fire Technology Center)	November 2023
GETS Short-Term Monitoring – May 15, 2023 through November 12, 2023 (Tyco Fire Technology Center)	November 2023
Soil Interim Remedial Action and Removal Report (Tyco Fire Technology Center)	December 2023
Q4 2023 Project Status Report	January 2024
GETS Lab Report Appendix (Tyco Fire Technology Center)	February 2024
2023 Foam Monitoring Interim Action Report (Tyco Fire Technology Center)	February 2024
Deep Private Well Quarterly Update – Q1 2024 (Tyco Fire Technology Center)	February 2024

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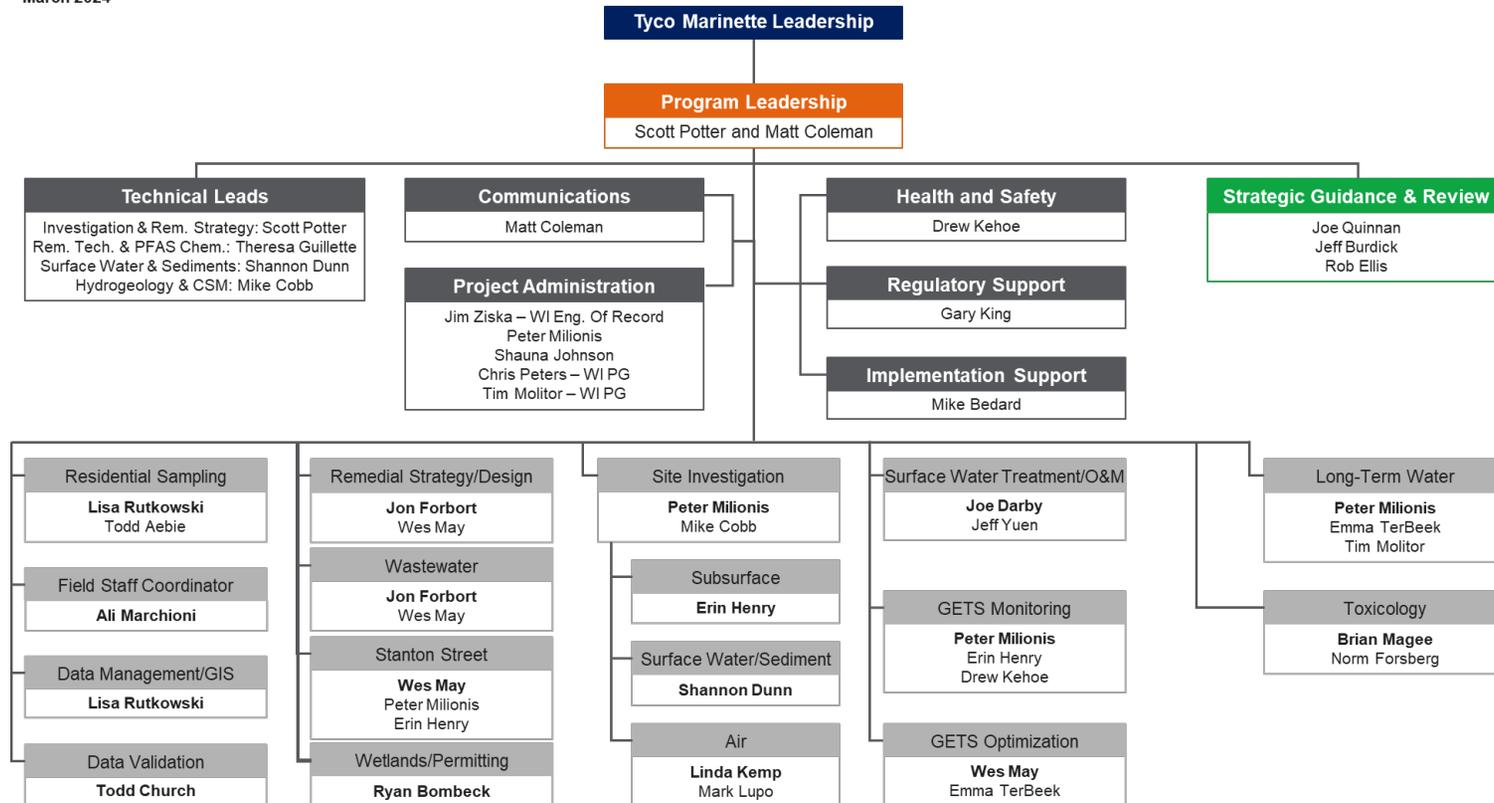
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Title	Date
Site Investigation Status Report (Tyco Stanton Street Facility)	February 2024
Surface Water Advisory Sign Installation Memo (Tyco Fire Technology Center)	February 2024
Deep Private Well Quarterly Update – Q1 2024 (Tyco Fire Technology Center)	March 2024
GETS Lab Report Appendix (Tyco Fire Technology Center)	March 2024
Revised Materials Management Plan (Tyco Fire Technology Center)	March 2024
Interim Long Term Groundwater Monitoring Plan (Tyco Fire Technology Center)	March 2024

## QAPP Worksheet #3 & 5 – Project Organization and QAPP Distribution

Figure 1: Project Organization

Organization Chart  
 March 2024



Primary Analytical Lab: Eurofins

**Table 1: Contact Information for WDNR, Tyco, and Arcadis Team Members**

Team Member (Affiliation)	Contact Information	Roles and Responsibilities
Alyssa Sellwood (WDNR)	PH: (608) 266-3084 Email: alyssa.sellwood@wisconsin.gov	WDNR <b>Project Manager</b> Review and approve documents submitted by Tyco. Provide oversight on project direction. Attend project meetings as needed.
Denice Nelson (Tyco)	PH: (651) 280-7359 Email: Denice.Karen.Nelson@jci.com	Tyco <b>Project Manager</b> Review all site work plans and reports. Provide technical and management oversight on project related activities. Attend project meetings as needed.
Scott Potter (Arcadis)	PH: (267) 685-1805 Email: scott.potter@arcadis.com	Arcadis <b>Program Strategic Lead</b> Maintain communication with Tyco on project performance and decision-making. Lead Arcadis contact with WDNR. Review reports sent to WDNR. Attend project meetings. Identify project resources. Address overall management issues. Provide programmatic support and reporting to WDNR.
Jim Ziska, PE (Arcadis)  Delegate: Shauna Johnson (Arcadis)	PH: (612) 339-9434 Email: jim.ziska@arcadis.com  PH: (312) 575-3732 Email: shauna.johnson@arcadis.com	Arcadis <b>Professional Engineer of Record</b> Perform day-to-day project communication tasks. Lead day to day coordination of tasks, field work, and deliverables.  Prepare/submit progress reports to Tyco. Assist the Program Strategic Lead with client meetings and submittals.
Chris Peters, PG (Arcadis)	PH: (414) 277-6231 Email: chris.peters@arcadis.com	Arcadis <b>Senior Advisor, Professional Geologist</b> Review and certify investigation reports and provide project document quality control.
Matt Coleman (Arcadis)	PH: (315) 671-9641 Email: matthew.coleman@arcadis.com	<b>Program Lead/Project Communications Manager</b> Maintain communication with Tyco on project performance and decision-making. Oversee management and staffing of toll-free phone line including residential sampling scheduling and question response. Coordinate results letters consistent with NR700 notification requirements. Assist in development of public outreach materials including fact sheets, presentations, posters, and letters.

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Team Member (Affiliation)	Contact Information	Roles and Responsibilities
Shannon Dunn (Arcadis)  Delegate: Mike Cobb (Arcadis)	PH: (206) 399 5307 Email: shannon.dunn@arcadis.com  PH: (207) 613-8351 Email: michael.cobb@arcadis.com	<b>Technical Lead, Site Investigations</b> Overall technical oversight of development and execution of work plans. Lead development of site conceptual models. Perform technical review of project deliverables. Lead project technical meetings. Participate in project meetings as needed.
Mike Cobb, (Arcadis)	PH: (207) 613-8351 Email: michael.cobb@arcadis.com	<b>Technical Lead, Data Evaluation</b> Overall review of meaning and interpretation of data. Provide input to technical design of work plans. Perform technical review of all project deliverables. Participate in project meetings as needed.
Todd Church (Arcadis)  Delegate: Jennifer Singer (Arcadis)	PH: 315 671 9627 Email: todd.church@arcadis.com  PH: (716) 667-6664 Email: jennifer.singer@arcadis.com	<b>QA Manager</b> Lead preparer of QAPP. Manage data validation for chemical data received from the subcontract laboratory. Provide oversight to laboratory. Participate in project meetings as needed.

## QAPP Worksheet #4, 7 & 8 – Personnel Qualifications and Sign-Off Sheet

### ORGANIZATION: Tyco

Name	Project Title/Role	Education/Experience & Specialized Training and Certifications	Signature/Date
Denice Nelson	Tyco PM	B.S. Civil Engineering, M.S. and Ph.D. Civil/Environmental Engineering. 22years of experience in site investigation, remediation strategy and design and installation of remedial systems. PE Civil Engineering, MN	<input checked="" type="checkbox"/>

### ORGANIZATION: Arcadis U.S., Inc. (Arcadis)

Name	Project Title/Role	Education/Experience & Specialized Training and Certifications	Signature/Date
Scott Potter, PhD, PE	Program Strategic Lead	B.S. and M.S. Environmental Engineering, Ph.D. Civil Engineering. 37 years of hydrogeology, hydrogeology and groundwater modelling, design, consulting, and related experience, including technical project/program management for investigation. PE Civil Engineering, PA.	<input checked="" type="checkbox"/>
Jim Ziska, PE	Wisconsin Engineer of Record	B.S. Mechanical Engineering. 18 years of experience in engineering, environmental site assessment, and project management. PE Wisconsin #47358.	<input checked="" type="checkbox"/>
Matt Coleman	Communications Manager	B.A. Media Communication. 16 years of experience in environmental communications including public outreach, training program development, technical writing and editing, corporate communications, and event planning.	<input checked="" type="checkbox"/>
Chris Peters, PG	Senior Advisor, Registered Professional Geologist in Wisconsin	B.S. and M.S. Geology and M.S., Water Resources Management. 40 years of experience in solid waste management, RCRA and state-led (Part 201) remedial investigations, including significant experience with PFAS groundwater and soil investigations, hydrogeologic investigations, surface water management and permitting, expert testimony, and regulatory liaison services. PG Wisconsin.	<input checked="" type="checkbox"/>
Shannon Dunn	Technical Lead, Site Investigations	B.S. Geology. M.S. Oceanography. 22 years of experience. Leads Arcadis' sediment national technical group. Works on sediment and aquatic sites across the country and internationally.	<input checked="" type="checkbox"/>
Mike Cobb	Technical Lead, Geology and	B.A. and M.S. in Geology. 20 years of experience. Leads Arcadis's bedrock hydrogeology national technical practice area. Experience includes a wide range of Federal and state-lead projects across U.S. with focus on fractured rock	<input checked="" type="checkbox"/>

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Name	Project Title/Role	Education/Experience & Specialized Training and Certifications	Signature*/Date
	Hydrogeology, Data Evaluation	hydrogeology, and conceptual site model development. PG, Minnesota and Pennsylvania.	
Drew Kehoe	Program Health and Safety Manager	B.S. Geology. 8 years of experience water sampling, core logging, construction oversight and reporting.	<input type="checkbox"/>
Todd Church	QA Manager	B.S. Environmental Management. 36 years of environmental chemistry experience.	<input checked="" type="checkbox"/>

**ORGANIZATION: Eurofins<sup>1</sup>**

Name	Project Title/Role	Education/Experience	Signature*/Date
Sandie Fredrick	PM	B.S. Cellular Biology, Minor Microbiology UW Wisconsin 1997; 14 years of experience as a project manager. 24 years of experience in a commercial laboratory.	<input checked="" type="checkbox"/>

**ORGANIZATION: SGS AXYS<sup>2</sup>**

Name	Project Title/Role	Education/Experience	Signature*/Date
Ivona Zysk Ivona.zysk@sgs.com 250-655-5838	PM	B.S. Biochemistry Minor Business; M.S. Environment and Resource Management; 5 years as project manager at SGS AXYS with experience in both commercial and academic laboratories prior.	<input checked="" type="checkbox"/>

**Footnotes:**

\* = Signatures indicate personnel have read and agree to implement this QAPP as written.

<sup>1</sup> = Eurofins Chicago will serve as the primary laboratory. Eurofins Chicago will subcontract work to Eurofins Sacramento for PFAS analysis; Eurofins Eaton for pesticides and metals (lead) analysis of drinking water; Eurofins Burlington for 1,4-Dioxane analysis in drinking water; Eurofins Denver for perchlorate analysis in waste characterization samples; Eurofins Savannah for chlorine analysis in waste characterization samples, Eurofins St Louis for radionuclide analysis, and Eurofins Pittsburgh for total organic carbon in soils analysis.

<sup>2</sup> = SGS AXYS is the secondary laboratory utilized on this project for fish tissue analysis only.

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## QAPP Worksheet #6 – Communications Pathways

Communication Driver	Organization	Name	Contact Information	Procedure (e.g., timing, pathway, documentation)
Regulatory Agency Interface	WDNR	Alyssa Sellwood, WDNR PM	PH: (608) 266-3084 Email: alyssa.sellwood@wisconsin.gov	Review and approve (as appropriate) site investigation work plans, reports and data submissions.
Review of WDNR Deliverables and Authorization to Complete Work	Tyco	Denice Nelson, Tyco PM	PH: (651) 280-7259 Email: Denice.Karen.Nelson@jci.com	Review site investigation work plans, reports, and data submissions prior to WDNR submission. Provide approval before completing work.
EQulS and Geographic Information System (GIS) Updates	Arcadis	Lisa Rutkowski, Data Manager	PH: (414) 277-6233 Email: lisa.rutkowski@arcadis.com	Biweekly electronic submission to WDNR.
Receipt of New Data	Arcadis	Lisa Rutkowski, Data Manager	PH: (414) 277-6233 Email: lisa.rutkowski@arcadis.com	Provide final data reports to WDNR and, if applicable, private property owners, within 10 business days of receipt.
Quarterly Progress Reports	Arcadis	Shauna Johnson, Arcadis PM	PH: (312) 575-3732 Email: shauna.johnson@arcadis.com	Provide summary of past quarter field work, deliverables, issues identified, corrective actions, WDNR/Tyco correspondence, and upcoming planned activities on April 15 (Q1), July 15 (Q2), October 15 (Q3), and January 15 (Q4).
Revised Long Term Potable Well Sampling Plan Update	Arcadis	Lisa Rutkowski, Data Manager	PH: (414) 277-6233 Email: lisa.rutkowski@arcadis.com	Provide update to long term potable well sampling plan and point of entry treatment system management plan every 6 months in April and October.
Minor field modifications not affecting data usability or quality	Arcadis	Task Managers	Various	Relevant Arcadis project team member will contact Task Manager to resolve sampling and analytical issues and secure verbal approval. Task Manager will evaluate modifications and discuss with Technical Lead Site Investigations and/or Technical Lead Geology and Hydrogeology, if necessary.

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Communication Driver	Organization	Name	Contact Information	Procedure (e.g., timing, pathway, documentation)
Field modifications affecting data usability or quality	Arcadis	Trey Fortner	PH: (614) 954-0736 Email: trey.fortner@arcadis.com	Relevant Arcadis project team member will contact Task Manager. Task Manager will notify Technical Lead Site Investigations. Technical Lead will evaluate modifications and discuss with Technical Lead Geology and Hydrogeology, as appropriate, and notify the Arcadis PM, Project Lead, Tyco, and WDNR PMs as necessary before providing verbal approval.
Field progress reports	Arcadis	Task Managers	Various	Arcadis field staff will send completed field notes to the Task Managers and supervising staff after the daily completion of work. Task Managers will review field progress reports, follow up with field staff on corrective actions, and notify Technical Lead Site Investigations of field modifications affecting data usability or quality.
Stop work due to safety issues	Arcadis	Drew Kehoe, Project Health and Safety Officer (HSO)	PH: (414) 277-6229 Email: drew.kehoe@arcadis.com	Work may be stopped at any time for any safety concern. Persons other than the responsible entity may also stop work for safety concerns. The Tyco PM will be notified within one hour of any significant safety-related work stoppages and will be consulted prior to re-starting work.
QAPP changes prior to field work	Arcadis	Trey Fortner, Technical Lead Data Evaluation	PH: (614) 954-0736 Email: Trey.Fortner@arcadis.com	Evaluate proposed QAPP modifications. Technical Lead Data Evaluation or Technical Lead Site Investigations submit documented amendments within 10 working days to WDNR for approval.
QAPP changes during project execution	Arcadis	Trey Fortner, Technical Lead Data Evaluation	PH: (614) 954-0736 Email: Trey.Fortner@arcadis.com	Evaluate proposed QAPP modifications. Secure same-day approval from the Technical Lead. Technical Lead Data Evaluation or Technical Lead Site Investigations will secure approval for modifications to the QAPP addendum as necessary from WDNR. All approved modifications will be included in the amendments to the QAPP and approved within seven working days.

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Communication Driver	Organization	Name	Contact Information	Procedure (e.g., timing, pathway, documentation)
Sample receipt variances	Eurofins or SGS AXYS	Sandie Fredrick  Ivona Zysk	PH: (920) 261-1660 Email: Sandra.Fredrick@testamericainc.com  Email: Ivona.zysk@sgs.com	All project field sample variance issues will be reported by the laboratory to the QA Manager within two business days of identification of the technical concern.
Laboratory QC variances	Eurofins or SGS AXYS	Sandie Fredrick  Ivona Zysk	PH: (920) 261-1660 Email: Sandra.Fredrick@testamericainc.com  Email: Ivona.zysk@sgs.com	All QA/QC issues with project field samples will be reported by the laboratory to the QA Manager within two business days of identification of the technical concern.
Analytical corrective actions	Eurofins or SGS AXYS	Sandie Fredrick  Ivona Zysk	PH: (920) 261-1660 Email: Sandra.Fredrick@testamericainc.com  Email: Ivona.zysk@sgs.com	The need for laboratory corrective actions will be determined by the QA Manager and/or Laboratory PM, as appropriate, and will be documented in a memorandum to the Arcadis Technical Lead and PM. The Arcadis PM will notify WDNR if the changes to the data impact reports/data that have already been submitted. Otherwise, the memorandum will be included with the validated data.
Data verification issues, e.g., incomplete records	Eurofins or SGS AXYS	Sandie Fredrick  Ivona Zysk	PH: (920) 261-1660 Email: Sandra.Fredrick@testamericainc.com  Email: Ivona.zysk@sgs.com	Report all QA/QC issues with project field samples to QA Manager within two business days.
Data validation issues, e.g., non-compliance with procedures	Arcadis	Todd Church, QA Manager	PH: (315) 671-9627 Email: todd.church@arcadis.com	Review data validation reports. Evaluate validation issues and take appropriate action, if necessary. Notify Technical Lead Site Investigations and Technical Lead Data Evaluation of significant deviations.
Data review corrective actions	Arcadis	Todd Church, QA Manager  Additional Data Validators may be used.	PH: (315) 671-9627 Email: todd.church@arcadis.com	Verify/validate the analytical chemistry of field sample results from analytical laboratories and report findings to the QA Manager. Notify QA Manager via email of validation issues within 24 hours of identification of the technical concern.

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## QAPP Worksheet #9 – Project Planning Session Summary

This is an ongoing project, with many elements already fully completed or underway. For additional project planning information, refer to the work plans, data summaries, and reports listed in **Worksheet #1 & 2**, Item 3.

## QAPP Worksheet #10 – Conceptual Site Model

### FTC CSM

A detailed report describing the FTC Conceptual Site Model (CSM) was submitted to WDNR in May 2020. Tyco responded to WDNR comments on the FTC CSM in January 2021. The FTC CSM is summarized here, and more detailed information is provided in the full CSM document.

### History and Background

The FTC is located at 2700 Industrial Parkway, Marinette, Wisconsin. It is a fire suppressant training, testing, research, and development facility that was constructed in the early 1960s. The FTC facility encompasses approximately 380 acres used for Research and Development (R&D) and Quality Testing activities, with approximately 9 acres previously used as an Outdoor Testing/Training Area (OTA). The OTA contains various concrete and clay pads and steel pans, some with “props” where a contained fire was started and then extinguished with various products to test the performance of the fire suppression products and to train firefighters. Up to approximately 24 AFFF demonstrations occurred per year sometime prior to the 1980s until 2017 as part of the training schools (Tyco 2018). In the northeast part of the OTA, the Hydraulics Laboratory was constructed in approximately 1985 with various tanks, pumps, and nozzles where foam concentrate was mixed with water and used to conduct performance testing of foam systems (Tyco 2018). A sloped outdoor foam monitor pad at the Hydraulics Laboratory drained the water/foam mixture back into the building into a collection system (Tyco 2018). Since 2017, AFFF has not been used outdoors at the FTC. There are various buildings at the FTC where other R&D, Quality, and fire training activities are conducted. The remaining area of the site is used for manufacturing, warehousing, office or classroom activities, parking, or is undeveloped. Figure 2 depicts an overall site diagram showing the location of the OTA and buildings.

Historically, Tyco discharged foam-containing wastewater produced at the FTC to the facility sanitary sewer system. Due to foaming issues at the City of Marinette’s WWTP, Tyco limited its output to approximately 2 gallons per minute. In March 2019, Tyco ceased discharging foam-containing wastewater into the sanitary sewer system. Foam-containing wastewater is currently collected, pre-treated on-site, and disposed off-site.

### Key Physical Aspects of the Site

The surficial geology in the Marinette area is mapped by the United States Geological Survey as Quaternary glacial lake deposits, consisting of mainly clay, silt, and sand, overlying Ordovician dolomite bedrock of the Sinipee Group (Oakes and Hamilton 1973). Borings completed in the FTC investigation area have shown that the unconsolidated deposits can vary in thickness and composition throughout. Near the FTC, the thickness of unconsolidated deposits can be as little as 14 feet while the thickness near the shore of Green Bay can be upwards of 100 feet. The unconsolidated deposits are comprised of a surficial sand unit, a deeper sand unit, and

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one or more distinct and discontinuous beds of silt or clay. The surficial sand is described as a well sorted, fine to medium grained, brown sand, while the deeper sand is a poorly sorted, fine to coarse grained greyish brown sand. The silt-clay unit generally consists of a dense, greyish brown, clayey silt with some fine sand and becomes more predominantly clay toward the Green Bay shoreline. These silt-clay beds act as aquitards and are located both within the sand stratigraphy as well as at the base of the unconsolidated sediment. The silt clay beds are laterally discontinuous throughout the FTC investigation area.

Surface water runoff in the area of the site is drained by ditches that flow to Green Bay (Figure 3). These ditches are not formally named but are referred to in this QAPP by letter (A, B, C, and D). Ditch A is present primarily on the west side of the OTA and is oriented generally north to south through the FTC (Figure 3). This ditch has intermittent flows and connects to an unnamed tributary to the Little River, and ultimately to Green Bay. Ditches B through D flow generally northwest to southeast and ultimately drain to Green Bay.

The ditches gain or lose water to groundwater depending on location and season. The upstream portion of Ditch A is frequently under losing conditions. Downstream of the site, the ditches are normally under gaining conditions. Short duration reversals can occur during wet periods.

Groundwater flows predominantly to the east towards Green Bay; however, there is a secondary component that flows to the Northeast towards the Menominee River. Local groundwater levels are also influenced by the streams and ditches within the investigation area.

## Sources of PFAS and Transport Mechanisms

The predominant release mechanism of PFAS at the site was via the testing and training of firefighting foams within the OTA. PFAS migrated along surface flow pathways away from the site and downwards to soil and groundwater via infiltration. Surface water and groundwater are the major routes of transport of PFAS away from the FTC. There is not a plausible aerial deposition pathway at the FTC (Arcadis 2022).

## Receptors of Concern

In the area surrounding the FTC, humans who may be exposed to PFAS via ingestion of PFAS-containing groundwater are the major receptors of concern in this investigation. Private drinking water wells have been sampled for PFAS throughout the study area. Bottled drinking water is provided to residents and POET systems have been installed at 40 residences to treat PFAS. Tyco continues to conduct potable water sampling near the FTC.

Human exposure may also occur via direct contact exposure of PFAS-containing media and via ingestion of PFAS-containing tissue. There have been no on-site soil PFOS or PFOA detections that have exceeded the WDNR industrial direct contact residual contamination levels applicable to the FTC. Due to poor absorption of PFAS at typical groundwater and surface water pH levels, the potential for exposure to PFAS in groundwater and surface water via direct dermal contact is negligible (Health Canada 2019). WDNR analyzed deer tissue for PFAS during 2020 and subsequently issued a recommendation to avoid deer liver consumption from deer harvested within 5 miles of the FTC.

Ecological receptors may be exposed to PFAS via ingestion of PFAS-containing media. Fish tissue in ponds south of the FTC were analyzed for PFAS in the fall of 2020.

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## Data Gaps

Data gaps are identified in the **Site Investigation Work Plans**.

## Stanton Street Facility CSM

A detailed report on the Stanton Street facility CSM was submitted to WDNR in July 2020. The Stanton Street facility CSM is summarized here, and more detailed information is provided in the full CSM document.

## History and Background

At the Stanton Street facility, Tyco operates a fire extinguisher and fire suppression system manufacturing facility. Other historical operations have taken place at the facility, including lumber mill operations and agricultural manufacturing that included herbicides (CH2M Hill 2015).

The Stanton Street facility consists of multiple tax parcels, totaling approximately 66 acres. It is located in the north-northeastern portion of the City of Marinette, directly south of the Menominee River (Figure 4). The land surface within the site is generally flat, much of it paved or covered by industrial buildings.

## Key Physical Aspects of the Site

Shallow soils beneath the site, extending to at least the 4-foot depth range, consist of fill and/or sandy alluvium. The water table is approximately 1 to 5 feet below ground surface. Bedrock occurs approximately 35 feet below ground surface. Groundwater naturally flows towards the Menominee River. However, a barrier system was built on-site and groundwater pumps are operated within the barrier system to contain on-site shallow groundwater.

## Sources of PFAS and Transport Mechanisms

PFAS-containing foams are blended at the Stanton Street facility; however, the raw PFAS ingredients are not produced at the facility and there are no stack emissions associated with this facility. No fire training exercises or demonstrations of Class B firefighting foam (such as AFFF) have occurred at the Stanton Street facility. Potential PFAS releases are suspected to have been incidental occurrences related to normal facility handling of foams. There are no known aerial releases of PFAS at the Stanton Street facility. Transport of PFAS is thought to occur via infiltration of PFAS through soil and overburden groundwater.

## Receptors of Concern

There are no potable wells in the vicinity of the Stanton Street facility. A deed restriction at the site prohibits the use of groundwater as a drinking water source. Therefore, human exposure to PFAS in groundwater via ingestion is not a significant pathway. In 2019, WDNR collected surface water samples in the Menominee River upgradient and downgradient of the Stanton Street site; PFOS and PFOA were not detected above 1 ng/L in any sample, which is below the WDNR surface water quality guidelines for bodies of water that are used for drinking water purposes.

Human exposure may also occur via direct contact exposure of PFAS-containing media and via ingestion of PFAS-containing tissue. There have been no on-site soil PFOS or PFOA detections that have exceeded the WDNR industrial direct contact residual contamination levels applicable to the Stanton Street facility. Due to poor absorption of PFAS at typical groundwater and surface water pH levels, the potential for exposure to PFAS in

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groundwater and surface water via direct dermal contact is negligible (Health Canada 2019). Consequently, dermal contact exposure to PFAS during excavation work when groundwater is encountered and during operation of the groundwater extraction system at the site is expected to be negligible. In addition, health and safety procedures are in place to protect workers from potential exposure to arsenic during on-site excavation activities. These procedures also protect workers from potential exposure to PFAS.

PFOS concentrations in fish tissue samples collected in 2012 in the Menominee River were below the “do not eat” threshold of the Great Lakes Consortium for Fish Consumption Advisories, of which Wisconsin is a member, of 200 nanograms per gram (ng/g).

## Data Gaps

Data gaps will be identified in the **Site Investigation Work Plans**.

# CSM for City of Marinette Biosolids Application Fields

## History and Background

Tyco sampled private drinking water wells in the vicinity of property (fields) where biosolids were land-applied by the City of Marinette under oversight by the WDNR.

The City of Marinette WWTP has historically land-applied biosolids on privately owned farm fields. Biosolids land application activities conducted by the City of Marinette are permitted by the WDNR in accordance with Wisconsin Administrative Code Chapter NR 214.

In June 2018, the City of Marinette notified the WDNR of elevated PFAS concentrations present in influent wastewater received by the WWTP. In July 2018, the City of Marinette identified elevated PFAS concentrations in biosolids generated by the WWTP from 2017 and 2018. In July 2018, the City of Marinette tested lines from five wastewater zones that discharge into its WWTP and identified levels of PFAS in all five lines. Several farm fields have received biosolids from the City of Marinette and Town of Peshtigo WWTPs. The Marinette area contains numerous different industrial sites that are likely contributing sources of PFAS to the WWTP. As a result, there are multiple potential sources of PFAS that may have been present in the biosolids historically applied by the City of Marinette WWTP.

In September 2018, WDNR requested that the City of Marinette stop land application of biosolids. The WDNR identified 61 fields that received the City of Marinette biosolids land application from 1996 to 2018.

## Current Understanding of PFAS Impacts

It is currently not well understood whether the land-applied biosolids historically applied to these fields have resulted in measurable PFAS impacts to those fields and, if present, whether those PFAS have migrated to groundwater. Tyco sampled private drinking water wells in the vicinity of fields where biosolids were land-applied by the City of Marinette under WDNR oversight and the results of those analyses were inconclusive in identifying biosolids as a source of PFAS in groundwater.

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### **Receptors of Concern**

Humans who may be exposed to PFAS via ingestion of PFAS-containing groundwater are the major receptors of concern in this investigation. Human exposure may also occur via direct contact exposure of PFAS-containing media.

### **Data Gaps**

Potential PFAS sources to the biosolids are not currently understood or characterized. Other potential PFAS sources that may impact individual wells are not currently understood or characterized.

## QAPP Worksheet #11 – Project/Data Quality Objectives

**Worksheet #11** describes Data Quality Objectives (DQOs) using the USEPA seven-step DQO process (*Guidance on Systematic Planning Using the Data Quality Objectives Process*, USEPA QA/G-4, EPA/240/B-06/001, February 2006). The selected investigation design is presented within the **Site Investigation Work Plans** submitted to WDNR under separate cover.

### Step 1: State the Problem

Tyco sells a variety of firefighting materials, including Class B foams such as AFFF that contain PFAS. Tyco has historically blended PFAS-containing foams at the Stanton Street facility and tested the foam at the FTC, as described in **Worksheet #10**. These activities have led to aqueous releases of PFAS to the ground and to the sanitary systems at these facilities. As discussed in **Worksheet #10**, in the past, both facilities discharged permitted industrial and laboratory wastes to the City of Marinette Wastewater Treatment Plant (WWTP), but that practice has ceased. Foam-containing wastewater from the FTC is currently treated by an onsite wastewater treatment system before being discharged under a permit to the Marinette WWTP. Previous site investigation activities and private well sampling related to the FTC (**Worksheet #1 & 2**) have established that PFAS, including PFOS and PFOA, have migrated in groundwater and via surface water ditches outside of the FTC property, towards the southern and eastern directions.

The USEPA classifies PFAS as a category of "emerging contaminants" and proposed PFAS standards for regulated media continue to evolve<sup>2</sup>.

### Step 2: Identify the Goal of the Study

The overarching goal of the sampling activities is to protect human health and the environment by determining the nature and extent of PFAS impacts related to Tyco's activities in Marinette. Each sampling activity has specific goals, including delineating PFAS concentrations in groundwater, surface water, soil, sediment, and fish tissue; measuring PFAS concentrations in potable groundwater; evaluating the soil leaching to groundwater pathway; and evaluating performance of water treatment systems.

<sup>2</sup> United States Environmental Protection Agency (USEPA) Combined Recommended Interim Preliminary Remediation Goal (PRG) for groundwater for PFOS and PFOA is 70 ng/L. In June 2019, WDHS recommended individual groundwater standards of 20 ng/L for PFOA and PFOS. The WDNR proposed those standards through the state rulemaking process. In February 2022, the Wisconsin Natural Resource Board did not approve the proposed rulemaking for groundwater. In August 2022, WDNR promulgated a drinking water standard of 70 ng/L for PFOA and PFOS, individually and combined, for public water systems. This standard does not apply to private drinking water wells. In November 2020 the Wisconsin DHS recommended a combined groundwater standard of 20 ng/L for: FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFOS and PFOA. DHS also recommended individual standards for FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFBS, PFHxS, PFNA, PFDA, PFDaA, PFHxA, PFTeA, PFUnA, PFBA, PFODA, DONA, and GenX. The agency's authority under the scope statement expired in September 2023. In September 2022, the Governor approved a Statement of Scope to establish groundwater standards for PFOA, PFOS, PFBS and GenX (referred to as the "Four PFAS"). The Statement of Scope was approved by the Natural Resources Board in December 2022. Pursuant to state law, the WDNR has stopped work on the proposed rule and notified the state legislature that, following economic analysis, the proposed costs would exceed statutory thresholds. As a result, the WDNR cannot continue the rulemaking without authorization from the state legislature.

### Step 3: Identify Information Inputs

The information needed to accomplish the goals of the sampling activities for this project are:

- Site investigation data collected to date, including analytical data and data related to the assessment of hydrogeologic conditions.
- Publicly available data on surface water and fish tissue PFAS concentrations.
- New analytical data obtained from sampling media as described in the **Site Investigation Work Plans** submitted under separate cover. Parameters and analytical methods are identified in **Worksheets #19 and 30**. Field sample collection methods are summarized in **Worksheets #17 and 21**.
- Observations made during the investigation.
- Regional information on geology and hydrogeology.
- Information on other potential sources of PFAS in the investigation areas.

### Step 4: Define the Boundaries of the Sampling

The boundaries for sampling will be discussed in the **Site Investigation Work Plans** submitted under separate cover to WDNR. Previously submitted work plans are summarized in **Worksheet #1 & 2**. The media to be potentially sampled include surface water, groundwater, soil, sediment, wastewater, fish tissue, and potable groundwater. Laboratory methods are not yet widely available to analyze air for PFAS. Until such time as laboratory methods are well developed, sampling of air for PFAS is not being considered.

### Step 5: Develop the Analytic Approach

The samples will be submitted for analysis to Eurofins, or SGS AXYS in the case of fish tissue samples. Analytical methods are described in **Worksheet #23**. **Worksheet #15-1 through #15-3** identify the laboratory's reporting limits (RLs) for PFAS.

This QAPP governs the collection of several different types of media for analysis of PFAS and other analytes for several different purposes:

- PFAS analytical data collected from private wells will be used to evaluate the need for drinking water treatment or an alternate water supply. If any of the **Table 2** values are exceeded in the potable water samples, drinking water treatment or an alternate water supply will be provided. The wells will be monitored thereafter, and the data will be used to assess the effectiveness of treatment, if relevant, and changing conditions in PFAS concentrations in the untreated water.
- PFAS analytical data in groundwater, soil, sediment, surface water, and fish tissue will be used to refine the CSMs and define the needs of future investigation activities. If applicable, PFAS analytical data collected from air also would be used to refine the CSM. Laboratory methods are not yet widely available to analyze air for PFAS. Until such time as laboratory methods are well developed, sampling of air for PFAS is not being considered.

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- PFAS analytical data from treatment systems, including the Ditch A and Ditch B treatment systems and on-site wastewater treatment system, will be used to operate, monitor, and maintain those treatment systems.
- Non-PFAS analytical data will be used to refine the CSMs and operate, monitor, and maintain treatment systems, as relevant.

#### Step 6: Specify Performance or Acceptance Criteria

Controls on precision, reporting, and accuracy are provided in **Worksheets #12 and 28**. Field monitoring and detection equipment will be routinely calibrated, detailed in **Worksheet #22**, which confirms that equipment used is of the proper type, range, accuracy, and precision to provide data compatible with the specified requirements and desired results. The Data Usability Assessment process is described in **Worksheet #37**.

#### Step 7: Develop the Plan for Obtaining Data

The sampling designs are or will be specified within **the Site Investigations Work Plans** submitted under separate cover. Samples will be collected in accordance with the technical guidance instruction (TGI) and the standard operating procedure (SOP) documents included as **Appendix A** and listed in **Worksheet #21**.

**Table 2: List of Compounds**

Analyte	June 2019 WDHS (Not Adopted by WDNR Board) <sup>(1)</sup>	November 2020 WDHS (Not Yet Proposed for Rulemaking by WDNR) <sup>(2)</sup>	Units
PFOA	20	--	ng/L
PFOS	20	--	ng/L
PFBS	--	450,000	ng/L
PFHxS	--	40	ng/L
PFNA	--	30	ng/L
PFDA	--	300	ng/L
PFDoA	--	500	ng/L
PFHxA	--	150,000	ng/L
PFTeA	--	10,000	ng/L
PFUnA	--	3,000	ng/L
NEtFOSAA	--	20	ng/L
PFBA	--	10,000	ng/L
PFODA	--	400,000	ng/L
FOSA	--	20	ng/L
NEtFOSA	--	20	ng/L
NEtFOSE	--	20	ng/L
DONA	--	3,000	ng/L
GenX	--	300	ng/L

**Notes:**

- <sup>1</sup> In June 2019, WDHS recommended individual groundwater standards of 20 ng/L for PFOA and PFOS. The WDNR proposed those standards through the state rulemaking process. In February 2022, the Wisconsin Natural Resource Board did not approve the proposed rulemaking for groundwater. In August 2022, WDNR promulgated a drinking water standard of 70 ng/L for PFOA and PFOS, individually and combined, for public water systems. This standard does not apply to private drinking water wells.
- <sup>2</sup> In November 2020 the Wisconsin DHS recommended a combined groundwater standard of 20 ng/L for: FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFOS and PFOA. DHS also recommended individual standards for FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFBS, PFHxS, PFNA, PFDA, PFDoA, PFHxA, PFTeA, PFUnA, PFBA, PFODA, DONA, and GenX. The agency's authority under the scope statement expired in September 2023. In September 2022, the Governor approved a Statement of Scope to establish groundwater standards for PFOA, PFOS, PFBS and GenX (referred to as the "Four PFAS"). The Statement of Scope was approved by the Natural Resources Board in December 2022. Pursuant to state law, the WDNR has stopped work on the proposed rule and notified the state legislature that, following economic analysis, the proposed costs would exceed statutory thresholds. As a result, the WDNR cannot continue the rulemaking without authorization from the state legislature.

# Appendices

# The State of Wisconsin Department of Natural Resources

has granted

**Accreditation under NR 149**

to

***Eurofins Chicago***

***FID: 999580010***

The laboratory is accredited to perform environmental sample analysis in support of covered environmental programs per matrix for the combination of analyte and technology or analyte and method as specified in the attached Scopes of Accreditation.

**Printed on: August 15, 2023**

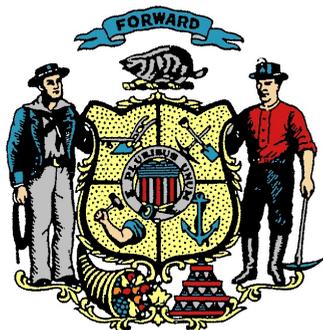
**Expires on: August 31, 2024**



Steven Geis, Chief  
Certification Services



Adam N. Payne  
Department of Natural Resources



This certificate does not guarantee validity of data generated, but indicates the methodology, equipment, quality control practices, records, and proficiency of the laboratory have been reviewed and found to satisfy the requirements of chapter NR 149, Wisconsin Administrative Code.



# Wisconsin Scope of Accreditation

Laboratory FID: 999580010  
 CERTIFICATION  
 Aqueous (Non-potable Water)

**Eurofins Chicago**  
**2417 Bond Street**  
**University Park, IL 60484**

**Printed on: 8/15/2023**  
**Expires on: 8/31/2024**

<b>Oxygen Demand Assays (BOD or cBOD)</b>	<b>Biochemical Oxygen Demand (BOD)</b>
	<b>Carbonaceous Biochemical Oxygen Demand (cBOD)</b>
<b>Colorimetric or Turbidimetric</b>	<b>Ammonia as N</b>
	<b>Chloride</b>
	<b>Chromium, Hexavalent</b>
	<b>Cyanide, Available</b>
	<b>Cyanide, Total</b>
	<b>Kjeldahl Nitrogen, Total</b>
	<b>Nitrate</b>
	<b>Nitrate + Nitrite</b>
	<b>Nitrite</b>
	<b>Orthophosphate</b>
	<b>Phenolics, Total</b>
	<b>Phosphorus, Total</b>
	<b>Sulfate</b>
<b>Nondispersive Infrared (NDIR) or Microcoulometry</b>	<b>Organic Carbon, Total (TOC)</b>
<b>Electrometric Assays (ISE)</b>	<b>Fluoride</b>
	<b>Oxygen, Dissolved</b>
	<b>pH</b>
	<b>Specific Conductance</b>
<b>Gravimetric Assays - Residue (solids)</b>	<b>Residue, Filterable (TDS)</b>

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# Wisconsin Scope of Accreditation

Laboratory FID: 999580010  
**CERTIFICATION**  
 Aqueous (Non-potable Water)

<b>Gravimetric Assays - Residue (solids)</b>	<b>Residue, Nonfilterable (TSS)</b>
	<b>Residue, Settleable</b>
	<b>Residue, Total (Total Solids)</b>
	<b>Residue, Volatile (TVS)</b>
	<b>Residue, Volatile, Nonfilterable (TVSS)</b>
<b>Extraction/Gravimetric Assays - Oil &amp; Grease as HEM</b>	<b>Oil &amp; Grease as HEM</b>
	<b>Oil &amp; Grease as HEM, Silica Gel Treated (SGT)</b>
<b>Ion Chromatography (IC)</b>	<b>Bromide</b>
	<b>Chloride</b>
	<b>Chromium, Hexavalent</b>
	<b>Fluoride</b>
	<b>Nitrate</b>
	<b>Nitrite</b>
	<b>Orthophosphate</b>
	<b>Sulfate</b>
<b>Titrimetric or Potentiometric Titration Assays</b>	<b>Alkalinity</b>
	<b>Chemical Oxygen Demand (COD)</b>
	<b>Chlorine, Total Residual (TRC)</b>
	<b>Sulfide</b>
	<b>Sulfides, Acid-Soluble and Acid-Insoluble</b>
<b>Cold Vapor Atomic Absorption Spectrophotometry (CVAA)</b>	<b>Mercury</b>
<b>Inductively Coupled Plasma Emission Spectrophotometry (ICP)</b>	<b>Aluminum</b>

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# Wisconsin Scope of Accreditation

Laboratory FID: 999580010  
CERTIFICATION  
Aqueous (Non-potable Water)

<b>Inductively Coupled Plasma Emission Spectrophotometry (ICP)</b>	<b>Antimony</b>
	<b>Arsenic</b>
	<b>Barium</b>
	<b>Beryllium</b>
	<b>Boron</b>
	<b>Cadmium</b>
	<b>Calcium</b>
	<b>Chromium, Total</b>
	<b>Cobalt</b>
	<b>Copper</b>
	<b>Hardness, Total as CaCO<sub>3</sub></b>
	<b>Iron</b>
	<b>Lead</b>
	<b>Magnesium</b>
	<b>Manganese</b>
	<b>Molybdenum</b>
	<b>Nickel</b>
	<b>Potassium</b>
	<b>Selenium</b>
	<b>Silica</b>
<b>Silver</b>	
<b>Sodium</b>	

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# Wisconsin Scope of Accreditation

Laboratory FID: 999580010  
 CERTIFICATION  
 Aqueous (Non-potable Water)

<b>Inductively Coupled Plasma Emission Spectrophotometry (ICP)</b>	<b>Strontium</b>
	<b>Thallium</b>
	<b>Tin</b>
	<b>Titanium</b>
	<b>Vanadium</b>
	<b>Zinc</b>
<b>Inductively Coupled Plasma-Mass Spectrometry (ICP/MS)</b>	<b>Aluminum</b>
	<b>Antimony</b>
	<b>Arsenic</b>
	<b>Barium</b>
	<b>Beryllium</b>
	<b>Boron</b>
	<b>Cadmium</b>
	<b>Calcium</b>
	<b>Chromium, Total</b>
	<b>Cobalt</b>
	<b>Copper</b>
	<b>Iron</b>
	<b>Lead</b>
	<b>Magnesium</b>
	<b>Manganese</b>
	<b>Molybdenum</b>

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# Wisconsin Scope of Accreditation

Laboratory FID: 999580010  
 CERTIFICATION  
 Aqueous (Non-potable Water)

<b>Inductively Coupled Plasma-Mass Spectrometry (ICP/MS)</b>	<b>Nickel</b>
	<b>Potassium</b>
	<b>Selenium</b>
	<b>Silver</b>
	<b>Sodium</b>
	<b>Strontium</b>
	<b>Thallium</b>
	<b>Tin</b>
	<b>Titanium</b>
	<b>Vanadium</b>
	<b>Zinc</b>
	<b>Gas Chromatography (GC)</b>
<b>## PESTICIDES, ORGANOCHLORINE (group)</b>	
<b>2,4,5-T</b>	
<b>2,4-D</b>	
<b>2,4-DB</b>	
<b>Dalapon</b>	
<b>Dicamba</b>	
<b>Dichlorprop (2,4-DP)</b>	
<b>Diesel Range Organics (DRO)</b>	
<b>Dinoseb (2-sec-butyl-4,6-Dinitrophenol)</b>	
<b>Gasoline Range Organics (GRO)</b>	

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# Wisconsin Scope of Accreditation

Laboratory FID: 999580010  
CERTIFICATION  
Aqueous (Non-potable Water)

<b>Gas Chromatography (GC)</b>	<b>Pentachlorophenol</b>
	<b>Picloram</b>
	<b>Silvex (2,4,5-TP)</b>
<b>Gas Chromatography-Mass Spectrometry (GC/MS)</b>	<b>## BNA - SEMIVOLATILE ORGANICS (group)</b>
	<b>## VOC - VOLATILE ORGANICS (group)</b>
	<b>Diallate (cis and trans)</b>
	<b>Kepone</b>
	<b>Pentachloronitrobenzene (PCNB)</b>
	<b>Pronamide</b>

This laboratory is accredited under NR 149 to perform environmental sample analysis in support of covered environmental programs for the combination of analyte or analyte group and technology in the aqueous and non-aqueous matrices and analyte or analyte group and method in the drinking water matrix as specified in this Scope of Accreditation.



# Wisconsin Scope of Accreditation

Laboratory FID: 999580010  
 CERTIFICATION

Non-Aqueous (Biosolids, Leachates, Soils, Tissues, & Wastes)

**Eurofins Chicago**  
 2417 Bond Street  
 University Park, IL 60484

**Printed on: 8/15/2023**  
**Expires on: 8/31/2024**

Colorimetric or Turbidimetric	Ammonia as N
	Chloride
	Chromium, Hexavalent
	Cyanide, Available
	Cyanide, Total
	Kjeldahl Nitrogen, Total
	Nitrate
	Nitrate + Nitrite
	Nitrite
	Orthophosphate
	Phenolics, Total
	Phosphorus, Total
	Sulfate
Nondispersive Infrared (NDIR) or Microcoulometry	Organic Carbon, Total (TOC)
Electrometric Assays (ISE)	Fluoride
	pH
	Specific Conductance
Gravimetric Assays - Residue (solids)	Residue, Total
	Residue, Volatile (TVS)
Ion Chromatography (IC)	Bromide
	Chloride

This laboratory is accredited under NR 149 to perform environmental sample analysis in support of covered environmental programs for the combination of analyte or analyte group and technology in the aqueous and non-aqueous matrices and analyte or analyte group and method in the drinking water matrix as specified in this Scope of Accreditation.



# Wisconsin Scope of Accreditation

Laboratory FID: 999580010  
 CERTIFICATION

Non-Aqueous (Biosolids, Leachates, Soils, Tissues, & Wastes)

<b>Ion Chromatography (IC)</b>	<b>Fluoride</b>
	<b>Nitrate</b>
	<b>Nitrite</b>
	<b>Orthophosphate</b>
	<b>Sulfate</b>
<b>Titrimetric or Potentiometric Titration Assays</b>	<b>Chemical Oxygen Demand (COD)</b>
	<b>Sulfide</b>
	<b>Sulfides, Acid-Soluble and Acid-Insoluble</b>
<b>Cold Vapor Atomic Absorption Spectrophotometry (CVAA)</b>	<b>Mercury</b>
<b>Inductively Coupled Plasma Emission Spectrophotometry (ICP)</b>	<b>Aluminum</b>
	<b>Antimony</b>
	<b>Arsenic</b>
	<b>Barium</b>
	<b>Beryllium</b>
	<b>Boron</b>
	<b>Cadmium</b>
	<b>Calcium</b>
	<b>Chromium, Total</b>
	<b>Cobalt</b>
	<b>Copper</b>
	<b>Iron</b>
	<b>Lead</b>

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# Wisconsin Scope of Accreditation

Laboratory FID: 999580010  
CERTIFICATION

Non-Aqueous (Biosolids, Leachates, Soils, Tissues, & Wastes)

<b>Inductively Coupled Plasma Emission Spectrophotometry (ICP)</b>	<b>Magnesium</b>
	<b>Manganese</b>
	<b>Molybdenum</b>
	<b>Nickel</b>
	<b>Potassium</b>
	<b>Selenium</b>
	<b>Silver</b>
	<b>Sodium</b>
	<b>Strontium</b>
	<b>Thallium</b>
	<b>Tin</b>
	<b>Titanium</b>
	<b>Vanadium</b>
	<b>Zinc</b>
<b>Inductively Coupled Plasma-Mass Spectrometry (ICP/MS)</b>	<b>Aluminum</b>
	<b>Antimony</b>
	<b>Arsenic</b>
	<b>Barium</b>
	<b>Beryllium</b>
	<b>Boron</b>
	<b>Cadmium</b>
	<b>Calcium</b>

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# Wisconsin Scope of Accreditation

Laboratory FID: 999580010  
CERTIFICATION

Non-Aqueous (Biosolids, Leachates, Soils, Tissues, & Wastes)

<b>Inductively Coupled Plasma-Mass Spectrometry (ICP/MS)</b>	<b>Chromium, Total</b>
	<b>Cobalt</b>
	<b>Copper</b>
	<b>Iron</b>
	<b>Lead</b>
	<b>Magnesium</b>
	<b>Manganese</b>
	<b>Molybdenum</b>
	<b>Nickel</b>
	<b>Potassium</b>
	<b>Selenium</b>
	<b>Silver</b>
	<b>Sodium</b>
	<b>Strontium</b>
	<b>Thallium</b>
	<b>Tin</b>
	<b>Titanium</b>
<b>Vanadium</b>	
<b>Zinc</b>	
<b>Gas Chromatography (GC)</b>	<b>## PCB as AROCLORS (group)</b>
	<b>## PESTICIDES, ORGANOCHLORINE (group)</b>
	<b>2,4,5-T</b>

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# Wisconsin Scope of Accreditation

Laboratory FID: 999580010  
 CERTIFICATION

Non-Aqueous (Biosolids, Leachates, Soils, Tissues, & Wastes)

<b>Gas Chromatography (GC)</b>	<b>2,4-D</b>
	<b>2,4-DB</b>
	<b>Dalapon</b>
	<b>Dicamba</b>
	<b>Dichlorprop (2,4-DP)</b>
	<b>Diesel Range Organics (DRO)</b>
	<b>Dinoseb (2-sec-butyl-4,6-Dinitrophenol)</b>
	<b>Gasoline Range Organics (GRO)</b>
	<b>Pentachlorophenol</b>
	<b>Picloram</b>
	<b>Silvex (2,4,5-TP)</b>
	<b>Gas Chromatography-Mass Spectrometry (GC/MS)</b>
<b>## VOC - VOLATILE ORGANICS (group)</b>	
<b>Diallate (cis and trans)</b>	
<b>Solid Waste Leaching Procedures</b>	<b>Reagent Water Shake Extraction (ASTM Leach)</b>
	<b>SPLP Extraction</b>
<b>Hazardous Waste Characteristics</b>	<b>Corrosivity, Liquids</b>
	<b>Ignitability (Flashpoint), Pensky-Martens Closed Cup</b>
	<b>Paint Filter Liquids Test</b>
	<b>TCLP Extraction</b>

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# The State of Wisconsin Department of Natural Resources

has granted

**Accreditation under NR 149**

to

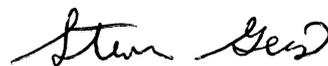
***Eurofins Sacramento***

***FID: 998204680***

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**Printed on: August 15, 2023**

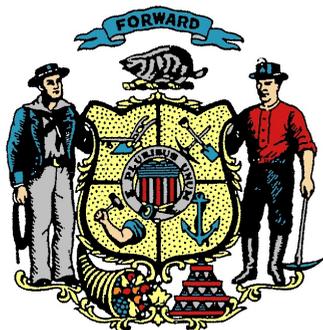
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# Wisconsin Scope of Accreditation

Laboratory FID: 998204680  
CERTIFICATION  
Aqueous (Non-potable Water)

Page 1 of 1

**Eurofins Sacramento**  
**880 Riverside Parkway**  
**West Sacramento, CA 95605**

**Printed on: 8/15/2023**  
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Liquid Chromatography-Mass Spectrometry (LC/MS)	## PFAS (group)
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This laboratory is accredited under NR 149 to perform environmental sample analysis in support of covered environmental programs for the combination of analyte or analyte group and technology in the aqueous and non-aqueous matrices and analyte or analyte group and method in the drinking water matrix as specified in this Scope of Accreditation.



# Wisconsin Scope of Accreditation

Laboratory FID: 998204680  
CERTIFICATION  
Drinking Water (Potable Water)

Page 1 of 1

**Eurofins Sacramento**  
**880 Riverside Parkway**  
**West Sacramento, CA 95605**

**Printed on: 8/15/2023**  
**Expires on: 8/31/2024**

SOC - Miscellaneous	## PFAS (group) – EPA 537.1 (18)
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# Wisconsin Scope of Accreditation

Laboratory FID: 998204680  
CERTIFICATION

Page 1 of 1

Non-Aqueous (Biosolids, Leachates, Soils, Tissues, & Wastes)

**Eurofins Sacramento**  
**880 Riverside Parkway**  
**West Sacramento, CA 95605**

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**Expires on: 8/31/2024**

Liquid Chromatography-Mass Spectrometry (LC/MS)	## PFAS (group)
---	-----------------

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