State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

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

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 from 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.

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.

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

The requester listed above: (select all that apply)

- [x] 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	First	MI	Organization/ Business Name		
Milionis	Peter		Arcadis		
Mailing Address			City	State	ZIP Code
126 N Jefferson Street, Suite 400			Milwaukee	WI	53202
Phone # (include area code)	Fax # (include area code)		Email		
(267) 685-1815			Peter.Milionis@arcadis.com		

Environmental Consultant (if applicable)

Contact Last Name	First	MI	Organization/ Business Name		
Milionis	Peter		Arcadis		
Mailing Address			City	State	ZIP Code
126 N Jefferson Street, Suite 400			Milwaukee	WI	53202
Phone # (include area code)	Fax # (include area code)		Email		
(267) 685-1815			Peter.Milionis@arcadis.com		

Section 2. Property Information

Property Name			FID No. (if known)		
Tyco Stanton Street Facility			438005590		
BRRTS No. (if known)			Parcel Identification Number		
0238581955					
Street Address			City	State	ZIP Code
1 Stanton Street			Marinette	WI	54143

County	Municipality where the Property is located	Property is composed of:	Property Size Acres
Marinette	(•) City ( ) Town ( ) Village of Marinette	( ) Single tax parcel ( ) Multiple tax parcels	66

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: _____

☐ 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: Additional Site Investigation Work Plan - Tyco Stanton Street Facility

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.

Section 7. Certification by the Person who completed this form

☐ I am the person submitting this request (requester)
☒ I prepared this request for: Scott Wahl
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 3/22/2022

Senior Environmental Specialist
Title

(312) 575-3732
Telephone Number (include area code)

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.

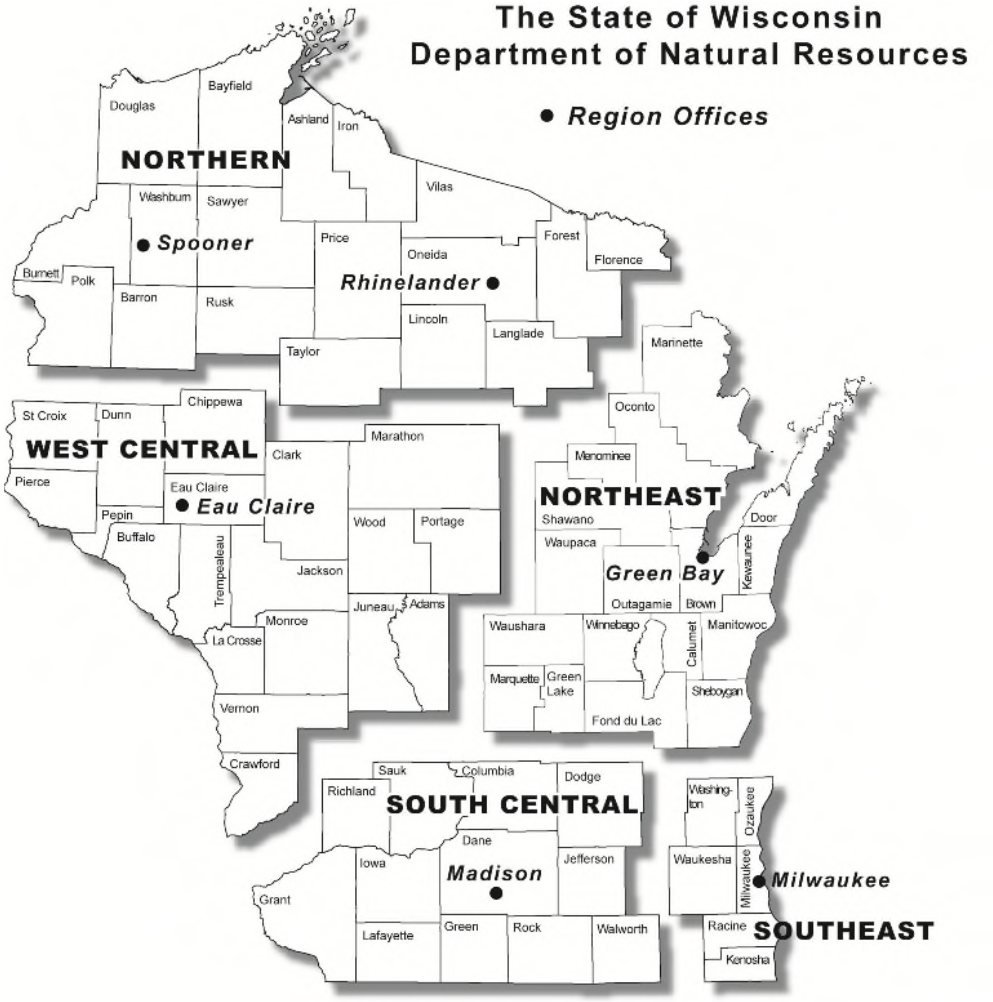
DNR NORTHERN REGION
Attn: RR Program Assistant
Department of Natural Resources
223 E Steinfest Rd Antigo, WI 54409

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? ◯ Yes ◯ No	Fee Amount $	Date Additional Information Requested	Date Requested for DNR Response Letter
Date Approved	Final Determination		

Tyco Fire Products LP

Additional Site Investigation Work Plan

Tyco Stanton Street Facility
Marinette, Wisconsin

BRRTS No. 02-38-581955 (Tyco Fire Products LP)
BRRTS No. 02-38-583852 (ChemDesign Products, Inc.)

March 2022

Additional Site Investigation Work Plan

Tyco Stanton Street Facility
Marinette, Wisconsin

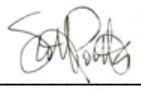
BRRTS No. 02-38-581955 (Tyco Fire Products LP)
BRRTS No. 02-38-583852 (ChemDesign Products, Inc.)

March 2022

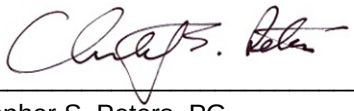
Prepared By:
Arcadis U.S., Inc.
126 North Jefferson Street, Suite 400
Milwaukee
Wisconsin 53202
Phone: 414 276 7742
Fax: 414 276 7603

Prepared For:
Tyco Fire Products LP
1 Stanton Street
Marinette
Wisconsin 54143

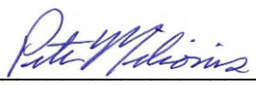
Our Ref:
30015423



Scott Potter
Project Lead/Technical Expert



Christopher S. Peters, PG
Principal Geologist



Peter Milionis
Project Manager

Contents

Tables

Figures

Acronyms and Abbreviations

AFFF	aqueous film forming foam
Arcadis	Arcadis U.S., Inc.
BRRTS	Bureau for Remediation Redevelopment Tracking System
ChemDesign	ChemDesign Products, Inc.
f_{oc}	fraction of organic carbon
ft bgs	feet below ground surface
FTC	Tyco Fire Technology Center
Marinette Marine	Fincantieri Marinette Marine
MGP	Manufactured Gas Plant
NAD 83	State Plane North American Datum of 1983
NAVD 88	North American Vertical Datum of 1988
ng/L	nanograms per liter
NR	Natural Resources
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PRG	Preliminary Remediation Goal
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
Site	Stanton Street Facility at 1 Stanton Street, Marinette, Wisconsin
Status Report	Site Investigation Status Report
TSS	total suspended solids
Tyco	Tyco Fire Products LP
USEPA	United States Environmental Protection Agency
VAP	vertical aquifer profile
WDHS	Wisconsin Department of Health Services
WDNR	Wisconsin Department of Natural Resources

Wis. Adm. Code	Wisconsin Administrative Code
work plan	Additional Site Investigation Work Plan

1 Introduction

On behalf of Tyco Fire Products LP (Tyco), Arcadis U.S., Inc. (Arcadis) prepared this Additional Site Investigation Work Plan (work plan) to continue investigation of the nature and extent of per- and polyfluoroalkyl substances (PFAS) at and near the Tyco Stanton Street Facility, located at 1 Stanton Street in Marinette, Wisconsin (the Site; **Figure 1**). Tyco is conducting site investigations relating to PFAS pursuant to the Wisconsin Department of Natural Resources (WDNR) Environmental Repair Program, in accordance with the requirements of Chapter Natural Resources (NR) 716 of the Wisconsin Administrative Code (Wis. Adm. Code). Project records are tracked under Bureau for Remediation and Redevelopment Tracking System (BRRTS) No. 02-38-581955.

Industrial operations are conducted by Tyco at 1 Stanton Street and by ChemDesign Products, Inc. (ChemDesign) at 2 Stanton Street. ChemDesign is an independent company that has leased space within the facility since 1983. PFAS-related investigations completed by ChemDesign are tracked under BRRTS No. 02-38-583852. There may be PFAS associated with Tyco and ChemDesign operations. Except where noted explicitly, the scope of this work plan relates to the entire Site and may apply to both Tyco and ChemDesign operations. The term “site-related PFAS” refers to PFAS present on, or associated with, the Site – without distinguishing the source of the material.

This work plan is being submitted concurrently with the Site Investigation Status Report (Status Report; Arcadis 2022c), which describes the findings of PFAS investigations completed in 2021 and provides the basis for the scope of this work plan. The scope of this work plan also reflects, where applicable, responses to the comments provided by WDNR in two letters:

1. *Response to Site Investigation Work Plan, Interim Site Investigation Report, Conceptual Site Model, and Aerial Deposition Evaluation Report,* dated August 31, 2021 (WDNR 2021a).
2. *Response to Near-Term Bedrock Groundwater Evaluation Work Plan,* dated August 31, 2021 (WDNR 2021b).

Tyco provided direct responses to the first WDNR comment letter on February 7, 2022 (Arcadis 2022a). Requests for additional investigation relating to bedrock, made in the second letter, are also reflected in the scope of the recently submitted Additional Site Investigation Work Plan associated with the Fire Technology Center (FTC; BRRTS No. 02-38-580694) (Arcadis 2022b).

The goal of this work plan is to complete site characterization to the extent required by NR 716 Wis. Adm. Code. Significant work has already been completed at the Site and is reported in interim reports (i.e., Arcadis 2020b and 2022c). This work plan is focused on completing five specific site characterization objectives:

- Confirm that a former Tyco fire training area located immediately south of the Site that operated in the 1950s and early 1960s has not been impacted by PFAS.
- Refine the delineation of the upgradient extent of site-related PFAS impacts in shallow groundwater immediately south of the Site’s hydraulic barrier wall.
- Evaluate whether surface water quality in the Menominee River is affected above proposed surface water criteria by the potential discharge of site-related PFAS in groundwater.
- Determine the extent of site-related PFAS in shallow bedrock beneath the Site.
- Evaluate groundwater flow patterns northwest of the Site.

To meet these objectives, the scope of this work plan includes the following major tasks:

- Completion of 10 vertical aquifer profile (VAP) borings to assess overburden groundwater quality south of the hydraulic barrier including the former Tyco fire training area.
- Collection of soil samples at five of the VAP boring locations, focused near the former Tyco fire training area.
- Installation of two monitoring well clusters at locations south of the wall to establish NR 141 Wis. Adm. Code compliant wells for delineation of site-related PFAS in groundwater.
- Completion of two rounds of surface water sampling at five locations in the Menominee River upstream, adjacent, and downstream of the Site.
- Completion of one groundwater sampling round, that will comprise 9 bedrock monitoring wells and 14 overburden monitoring wells located outside the hydraulic barrier, including all newly installed wells.
- Completion of a groundwater gauging event including new and existing wells, and incorporating existing wells at the Former Marinette Manufactured Gas Plant (MGP) Site, located at the current Marinette Wastewater Treatment Plant (**Figure 2**).

The details of these scope elements are provided in **Sections 5** and **6**.

In addition to the investigation activities overseen by WDNR, Tyco is also addressing arsenic impacts at the Site, under the jurisdiction of the Resource Conservation and Recovery Act (RCRA) program and overseen by the United States Environmental Protection Agency (USEPA). As described in the Status Report (Arcadis 2022c), many investigation findings and remedial actions completed for the RCRA program to address arsenic are also relevant to the PFAS investigations.

Proposed PFAS standards for regulated media continue to evolve. In May 2016, USEPA issued a drinking water Lifetime Health Advisory Level for two PFAS compounds, specifically the individual and combined values of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), of 70 nanograms per liter (ng/L, or parts per trillion). In June 2019, the Wisconsin Department of Health Services (WDHS) issued a recommended groundwater standard of 20 ng/L for PFOA and PFOS, individually and combined referred to as Cycle 10. In December 2019, USEPA provided interim recommendations to address groundwater contaminated with PFOA and PFOS by publishing preliminary remediation goals (PRGs) at 70 ng/L. USEPA recommends using a risk-based screening level of 40 ng/L to determine if PFOA and/or PFOS is present in groundwater and may warrant more attention. In November 2020, the list of PFAS compounds was expanded and WDHS recommended groundwater standards for 18 PFAS compounds including a combined standard of 20 ng/L for six of these compounds (FOSA [perfluorooctanesulfonamide], NEtFOSE [N-ethylperfluorooctanesulfonamidoethanol], NEtFOSA [N-ethylperfluorooctanesulfonamide], NetFOSAA [N-ethylperfluorooctanesulfonamidoacetic acid], PFOS, and PFOA) referred to as Cycle 11. The Wisconsin Natural Resource Board rejected the WDHS Cycle 10 recommended groundwater standards in February 2022, which included standards for PFOS and PFOA at 20 ng/L. That decision may affect the proposed Cycle 11 groundwater standards as well because this combined groundwater standard of 20 ng/L includes PFOS and PFOA. As such, the USEPA risk-based screening level of 40 ng/L and PRGs of 70 ng/L individually or combined for PFOA and PFOS will be used for comparison purposes when evaluating the groundwater data that will be collected during the execution of the work.

2 Site Background

This section provides a brief overview of the Site based on previously completed work. More detailed information is available in the Status Report (Arcadis 2022c) and the July 2020 Conceptual Site Model (Arcadis 2020c). Additional background information was also recently provided in the February 7, 2022 response to comment letter (Arcadis 2022a), regarding WDNR comments dated August 31, 2021 (WDNR 2021a).

2.1 Site Description

The Site is an active facility in the northeastern portion of the City of Marinette, adjacent to the Menominee River (**Figure 1**). The Site comprises approximately 50 acres of riverfront land. The Site is divided into the following areas, identified on **Figure 2**:

- The Main Plant Area, which is contained within the barrier wall and occupies roughly the western half of the Site. All site buildings and active operations areas are within this area. Most of the Main Plant Area is covered by impermeable surfaces (buildings, asphalt, concrete, and engineered covers). The grass- and tree-covered portions of the Main Plant Area are maintained as phyto-pumping tracts as a component of the RCRA remediation program.
- The former Salt Vault and former 8th Street Slip, which are historical plant features that are now covered with impermeable caps and contained within the hydraulic barrier.
- The Wetlands Area, which is an undeveloped area of wetlands east of the former 8th Street Slip contained within the hydraulic barrier.
- Additional undeveloped wetlands east of the Wetlands Area, extending to the 6th Street Slip.

Prior to 2020, the Site included a 15-acre parcel located south of the railroad tracks. The parcel is now owned by KKIL Stanton LLC and contains an office building and a parking lot. Construction of a new parking lot is ongoing. The area surrounding the Site consists of a mix of industrial and residential properties:

- To the west, the Site borders the Fincantieri Marinette Marine (Marinette Marine) complex. The shipyard includes facilities for construction of large commercial and military ships.
- To the east, the Site borders the 6th Street Slip, an inlet to the Menominee River with a City of Marinette boat ramp on the opposite bank.
- To the south, the Site is bounded by KKIL Stanton LLC, undeveloped parcels belonging to the City of Marinette and Marinette School District, and a privately owned field. Residential properties lie south of the Wetlands Area at the eastern end of the Site.

Industrial operations in the Main Plant Area are conducted by both Tyco and ChemDesign. ChemDesign currently leases 12 buildings and two tank farms on approximately 7.4 acres. Areas leased and operated by ChemDesign are shown on **Figure 2**.

2.2 Site History

The Stanton Street facility was initially used for lumber mill operations and related activities. In 1915, manufacturing operations began. The Site was used to manufacture arsenic-based agricultural herbicide between 1957 and 1977. Investigations and remedial actions to address impacts of arsenic on soil and groundwater began

in 1974. Tyco implemented several corrective measures through the RCRA program to address arsenic in soil and groundwater, including construction of a hydraulic barrier wall system that completely encloses the facility with a combination of slurry and sheet pile walls that extend throughout the thickness of the overburden (**Figure 2**).

Starting in or before 1950, fire-fighting training was conducted in a field located approximately where the parking lot on the KKIL Stanton LLC property is currently located (**Figure 2**). The training activity ceased when the FTC on Industrial Parkway South began operations in or around 1961. Tyco has not located any information to date indicating that foam testing was conducted at the fire training field at the Stanton Street facility (Tyco 2018). At the Stanton Street Site, distribution of fire-fighting foam may have begun in approximately 1964, and onsite foam-blending operations are believed to have begun in the early 1970s (Tyco 2018).

Tyco's current operations at the Site include dry chemical fire extinguisher and fire suppression system manufacturing, and foam blending. There are also locations where various quality control activities are conducted, and where foam surfactants and products may be stored. No PFAS is manufactured at the Site by any party. Additional information regarding the site history and operations is provided in the Status Report (Arcadis 2022c) being submitted concurrently with this work plan.

2.3 Geology and Physical Setting

The Site is located on generally level ground adjacent to the Menominee River. The manufacturing area of the Site is nearly flat at an elevation of approximately 585 feet above mean sea level, about 5 feet above the normal stage of the adjacent Menominee River. The undeveloped eastern portion of the Site is about 2 feet lower in elevation and is mostly wetlands.

The Site overlies approximately 40 feet of fill, alluvium, and glacial deposits above Ordovician dolomite bedrock. The sequence of geologic units observed at the Site includes:

- Fill, present to depths of 5 to 10 feet below ground surface (ft bgs), generally comprising sandy soil, with sawdust, bricks, and other debris.
- Alluvium, present beneath the fill to approximately 20 ft bgs, typically comprising fine-to-medium grained sand, with localized areas of peat.
- Glacial lake sediments, present beneath the alluvium to approximately 35 ft bgs, primarily comprising silt, but interbedded with sand and clay.
- Till, typically present 5 to 10 feet above the bedrock surface, comprising a poorly sorted mixture of clay, silt, sand, and gravel.
- Shaley-dolomite of the Sinnipee Group (Galena or Platteville Formations).

The Site's existing monitoring well network (**Figure 3**) is organized into three zones: shallow (S-zone) wells, generally screened near the water table in the fill and sandy alluvium; intermediate (M-zone) wells, typically screened in the silt-to-clay glacial lake sediments; and bedrock wells (D-zone), typically screened in the upper 15 to 20 feet of bedrock.

The water table in the vicinity of the Site is typically less than 5 ft bgs, generally occurring within the shallow fill materials. Groundwater flow in both the overburden and shallow bedrock trends generally northeast toward the Menominee River. The Site's hydraulic barrier wall contains overburden groundwater movement within the

manufacturing areas of the Site, and forces groundwater from upgradient to divide east and west to flow around the barrier to the river. Bedrock groundwater flow is not influenced by the barrier wall, and trends northeast to discharge into the Menominee River.

2.4 Natural and Cultural Resources

A natural and cultural resources desktop review was conducted for the Tyco FTC site investigation as part of the 2018 Revised Site Investigation Work Plan (Arcadis 2018) and covered the investigation area of the Stanton Street facility. Because the work proposed herein is within the same investigation area, the natural and cultural resources review information presented in the 2018 Revised Site Investigation Work Plan, along with relevant updates listed in the March 2021 Site Investigation Work Plan (Arcadis 2021b), is relevant for this work plan.

2.5 Findings of Previous PFAS Site Investigations

Prior site investigations relating to PFAS are summarized in the Status Report (Arcadis 2022c), which is being submitted concurrently with this work plan. That report shows that PFAS impacts associated with site operations are limited to the area within the hydraulic barrier wall, and potentially a zone immediately outside of the barrier. Multiple upgradient and offsite sources of PFAS exist, with mixtures or other characteristics that distinguish them from site-related sources. These include:

- The FTC, located approximately 1.5 miles southwest of the Site. PFAS detected in some bedrock wells at and near the Site may have migrated from the FTC. For this reason, Tyco is conducting additional investigations of bedrock groundwater quality related to the FTC under a separate work plan (Arcadis 2022b).
- Marinette Marine, located adjacent to the Site to the west. Based on information provided by Marinette Marine to the City of Marinette wastewater treatment plant, the company used and discharged aqueous film-forming foam (AFFF) fire-fighting foam. Investigations completed in the southern portion of that facility found PFAS in shallow groundwater from unknown sources. Marinette Marine did not perform any soil sampling for PFAS (Foth 2020). The locations of the PFAS detections in groundwater reported to date by Marinette Marine are upgradient of the Site. While Marinette Marine has not delineated the extent of PFAS on the Marinette Marine property, patterns of groundwater flow indicate that the plume identified on the Marinette Marine property would migrate from the northeast to the Menominee River, passing directly west of the Tyco facility.

Based on the assessment of groundwater flow in the Status Report (Arcadis 2022c), PFAS impacts present in overburden groundwater within the Site's hydraulic barrier wall are contained and captured by the Site's groundwater extraction and treatment system. Any contaminants present in the overburden groundwater outside of the hydraulic barrier wall migrate around the hydraulic barrier wall to the Menominee River. Impacts present in bedrock groundwater are a mixture of PFAS migrating vertically through preferential pathways in local till deposits and PFAS migrating from upgradient areas. The PFAS plume migrating from upgradient areas may be a component of a plume associated with the FTC, which is being investigated separately. Bedrock groundwater, like overburden groundwater outside of the wall, is discharging to the Menominee River.

3 Areas Identified for Further Data Collection

As noted in **Section 1**, the scope of this work plan is designed to meet specific data objectives based on agency comments (WDNR 2021a and 2021b) and previously completed work (Arcadis 2022c). The understanding of site conditions also draws on investigation findings and the Conceptual Site Model for the FTC (Arcadis 2020a), and work completed for the Site's RCRA program (e.g., Jacobs 2021).

The following table identifies data objectives being addressed by this work plan and briefly notes the planned scope of work to meet each objective. Greater detail on the scope of work is presented in **Sections 5** and **6**.

Data Objective	General Scope to Meet Objective
Confirm that a former fire training area located immediately south of the Site that operated in the 1950s and early 1960s has not been impacted by PFAS.	Collect soil samples and overburden groundwater samples at five VAP borings located within the approximate footprint of the former fire training area.
Refine the delineation of the upgradient extent of site-related PFAS impacts in shallow groundwater south of the Site's hydraulic barrier wall.	Collect overburden groundwater samples at 10 VAP boring locations within approximately 500 feet upgradient of the hydraulic barrier (including the five borings in the former fire training area). Install and sample two new overburden monitoring well nests upgradient of the Site to verify VAP delineation.
Evaluate whether surface water quality in the Menominee River is affected above proposed surface water criteria by the potential discharge of site-related PFAS in groundwater.	Complete surface water sampling from five locations within the navigation channel of the Menominee River under seasonally wet and dry conditions (total of two events).
Determine the extent of site-related PFAS in shallow bedrock beneath the Site.	Complete groundwater sampling at nine existing onsite bedrock monitoring wells, including five locations not previously sampled.
Verify groundwater flow patterns northwest of the Site.	Conduct a groundwater gauging event that incorporates existing wells at the Former Marinette MGP Site and the Marinette Marine Site, and/or install and gauge an additional shallow monitoring well on or near Ely Street northwest of the Marinette Marine facility.

4 General Site Investigation Activities

The following activities apply to the investigation events described in this work plan.

4.1 Wetland Permits

Prior to mobilization, Tyco will evaluate whether proposed investigation locations are within wetlands and acquire wetland disturbance permits through WDNR and the United States Army Corps of Engineers where needed.

4.2 Access Agreements

Investigations are planned on Tyco property, private properties, and public rights-of-way. Prior to mobilization, permission for access to investigation locations will be obtained from the appropriate jurisdictional authorities (i.e., City of Marinette and additional property owners).

4.3 Right-of-Way and Street Opening Permits

Prior to completing any intrusive work in City of Marinette rights-of-way, street opening permits will be obtained for each applicable location.

4.4 Utility Clearance

Utility clearance will be performed in accordance with the procedure described in the Final Quality Assurance Project Plan (QAPP; Arcadis 2021a). Prior to mobilization, Wisconsin One Call (i.e., Diggers Hotline) will be contacted. In accordance with Arcadis standard policies, at a minimum, three lines of evidence will be utilized for locating subsurface utilities. The anticipated lines of evidence include (1) contracting a private utility locating service, (2) conducting an inspection of each location, and (3) reviewing available utility drawings and/or interviewing knowledgeable personnel. An air knife or hand auger may also be used to clear boring areas, if needed.

4.5 Surveying

Investigation locations will be surveyed. Surveyed elevations (ground surface, top of sediment surface, surface water, top of well casing, etc.) will be referenced to the North American Vertical Datum of 1988 (NAVD 88), and surveyed horizontal coordinates will be referenced to the State Plane North American Datum of 1983 (NAD 83) – Wisconsin Central (4802) Zone. Locations will be surveyed to the nearest 0.01 foot (horizontal and vertical).

4.6 Investigation-Derived Waste Management

Purge water, soil, and drilling fluid generated during investigation activities will be containerized (in 55-gallon steel drums, poly tanks, and/or lined roll-off boxes) and staged in a centralized and secured location on Tyco property, pending characterization and disposal at approved facilities.

5 Groundwater and Soil Investigations

The major components of the groundwater and soil investigations are as follows:

- Completion of VAP borings at 10 locations to refine delineation of the distribution of site-related PFAS in overburden groundwater south of the hydraulic barrier wall and to verify that the former fire training area is not impacted by PFAS.
- Collection of soil samples for PFAS analysis at five of the VAP borings located in the former fire training area to confirm the absence of a residual PFAS source.
- Installation of two overburden monitoring well clusters to facilitate the interpretation of groundwater flow and to refine the boundary between offsite sources and Stanton Street PFAS impacts.
- Completion of one groundwater monitoring event in coordination with the FTC program that will include all newly constructed wells and a targeted set of existing bedrock and overburden wells to confirm the mapped plume extent, interpret groundwater flow patterns, and provide a basis for selecting wells for future monitoring of plume stability and attenuation.

The details of these investigations are described in the subsections below.

5.1 Vertical Aquifer Profile Borings

VAP borings are proposed at the 10 locations shown on **Figure 4**. The locations and objectives of each boring are described in **Table 1**. At each VAP sampling location, two direct-push technology borings will be drilled:

- The first boring will be used to assess the geology at the location and to collect soil samples (for the five locations in the former fire training area only).
- The second boring will be advanced to conduct VAP groundwater sampling at intervals based on the observed geology.

The first boring completed at a location will be advanced to the top of the till unit overlying bedrock (if till is present) or the bedrock surface (if till is not present). Continuous soil cores will be collected and logged by an Arcadis field geologist. Soil descriptions will include soil type, grain size, moisture content, and color. Fine-grained soil descriptions will also include plasticity and consistency. Coarse-grained soil descriptions will include angularity and sorting.

At the five locations in the former fire training area, up to two discrete unsaturated soil samples will be collected. At unpaved locations, soil samples will be collected from approximately 0 to 1 ft bgs and from the 1-foot interval above the saturated zone. At paved locations, or locations where a surface layer of imported gravel or rock is present, a sample will be collected below the paved material. If saturated soils are encountered shallower than 2 feet, only one sample will be collected.

All soil samples will be collected for PFAS analysis and fraction of organic carbon (f_{oc}) analysis. Sample handling and analysis will be performed in accordance with the QAPP (Arcadis 2021a) and the quality assurance/quality control (QA/QC) process described in **Section 7**.

Groundwater samples will be collected starting at the top of the saturated zone and continuing downward at a vertical spacing no closer than every 10 feet. Sampling will extend downward to refusal or until low-permeability,

fine-grained soils are encountered. Sampling intervals will be selected to target permeable zones identified based on observations from the adjacent geology boring. Samples will not be attempted in zones identified as silt or clay.

Sampling will be completed using drill rods with a well screen covered by a retractable sheath fixed at the base. Once the target sampling depth is reached, the sheath will be pulled up with a string to expose the well screen to the subsurface formation. This “temporary well” will then be purged using a peristaltic pump for a maximum of 20 minutes. A sample will be collected only if a minimum of 2 gallons of water can be purged. If a sample cannot be collected from an interval (i.e., 2 gallons of water cannot be purged within 20 minutes), the drill rod will be pushed 5 feet deeper and another attempt to collect a sample will be conducted. After sample collection, drill rods will be removed from the subsurface and decontaminated before being advanced to the next sample interval.

Samples will be collected for PFAS analysis following the handling procedures described in the QAPP (Arcadis 2021a) and the QA/QC process described in **Section 7**. After completion, boreholes not being converted to monitoring wells will be backfilled with bentonite pellets and covered with clean topsoil.

5.2 Overburden Monitoring Well Installation

Overburden monitoring wells are proposed to be installed at two locations as shown on **Figure 4**. The locations may be adjusted based on access constraints, or if boreholes already drilled provide a basis for a change. Installation of the overburden monitoring wells will enable confirmation of groundwater flow patterns, and the wells will be added to the existing monitoring well network for potential future monitoring.

Each well location may include up to two wells:

- A shallow overburden (S-zone) well screened near the water table.
- A deep overburden (intermediate or M-zone) well screened above the till unit.

M-zone wells will be installed only if the observed geology is at least moderately permeable (e.g., silty sand or better). If the M-zone is predominantly silt or clay, no well will be installed.

The monitoring wells will be constructed with 5- or 10-foot-long by 2-inch-diameter schedule 40 polyvinyl chloride (PVC) 0.010-inch slotted screen and a 2-inch schedule 40 PVC riser to the surface. Filter pack sand will be emplaced to 2 feet above the screen, with a filter pack seal (clean fine sand and bentonite or bentonite only based on the depth of the screened interval) to at least 2 feet above the filter pack. Once the bentonite has set (approximately 1 hour), the well will be grouted to the surface.

After completion, monitoring wells will be developed using methods described in the QAPP (Arcadis 2021a). Development will consist of a combination of surging and pumping to remove fine sediment from the well and filter pack and improve hydraulic communication between the well and the formation. Static and pumping water-level measurements, purge rates, and purge volumes will be recorded. Groundwater field parameters (pH, specific conductivity, temperature, and turbidity) will be measured periodically. Well development will continue until up to 10 well volumes have been purged or the turbidity has stabilized below 50 nephelometric turbidity units.

5.3 Groundwater Gauging

After completion and development of all new wells proposed in this work plan, a groundwater gauging event will be conducted to support evaluation of groundwater flow patterns. The gauging event will include the following:

- Nine existing bedrock monitoring wells located both inside and outside the hydraulic barrier wall.
- All newly constructed and 14 existing overburden monitoring wells located outside of the hydraulic barrier wall.
- All accessible monitoring wells located at the Former Marinette MGP Site (the current Marinette Wastewater Treatment Plant).
- All accessible monitoring wells at the Marinette Marine facility.

Monitoring well locations are shown on **Figure 4**. If feasible, the gauging event will be completed in coordination with the FTC monitoring program (Arcadis 2022b), which will include additional wells upgradient of the Site to the southwest.

Wells located at the Former Marinette MGP Site and the Marinette Marine facility will be included to improve the interpretation of groundwater flow patterns upgradient and cross-gradient of the Site to better assess likely transport patterns for PFAS detected in the southern portion of the Marinette Marine facility (Foth 2020). If access to gauge the wells at the Former Marinette MGP Site or the Marinette Marine facility cannot be obtained, Tyco may install one or more shallow piezometers on or near Ely Street to be incorporated into the gauging event. These piezometers, if constructed, will be installed as described in **Section 5.2**.

The groundwater gauging event will be conducted prior to the groundwater monitoring event, described in **Section 5.4**. Measurements will be collected using a water-level meter referenced to a surveyed measuring point. The data collected will be used to create potentiometric surface maps, calculate horizontal and vertical gradients, and assess groundwater and surface water interactions.

5.4 Groundwater Monitoring

Groundwater sampling for PFAS analysis will be conducted after completion of the groundwater gauging event. The monitoring event will include the following wells:

- Nine existing bedrock monitoring wells located both inside and outside the hydraulic barrier wall.
- All newly constructed and 14 existing overburden monitoring wells located outside of the hydraulic barrier wall.

The proposed monitoring wells to be sampled are identified in **Table 2** and on **Figures 3** and **4.** If feasible, the monitoring event will be completed in coordination with the FTC monitoring program (Arcadis 2022b), which consists of approximately 127 monitoring wells, including several well clusters previously sampled for the Stanton Street project (i.e., MW013, MW125, MW126, MW127, and PZ-28). Data from the FTC groundwater monitoring event will be used to interpret groundwater flow patterns and verify background PFAS groundwater concentrations and distributions in areas upgradient of the Site.

Sampling will be conducted following low-flow sampling procedures in accordance with the QAPP (Arcadis 2021a). Sampling will be performed using a peristaltic pump with dedicated down-well disposable tubing, and a flow-through multi-parameter field meter to monitor temperature, dissolved oxygen, pH, specific conductivity, oxidation-reduction potential, and turbidity. Water levels will be recorded with an electronic water-level meter, and purge rate will be estimated using a graduated vessel.

Samples will be collected for PFAS analysis following the procedures described in the QAPP (Arcadis 2021a) and the QA/QC process described in **Section 7**.

6 Surface Water Investigation

Surface water investigations will be performed from a boat, south of the Wisconsin state boundary, within the Menominee River. The planned surface water investigation events described in this section will not be conducted if active dredging or blasting projects in the river are underway (e.g., for facility expansion projects at Marinette Marine) to avoid influence from upstream activities during data collection.

6.1 Surface Water Sampling

Two seasonal surface water sampling events will be conducted in 2022, during spring and fall, to evaluate the extent and variability of PFAS and the potential impact of bedrock groundwater discharge within the Menominee River. The proposed locations are shown on **Figure 5**. During each event, samples will be collected from five locations within the central area of the Menominee River channel as summarized below:

- Two samples will be collected from one location upstream of the Site.
- Four samples will be collected from two locations adjacent to the Site.
- Four samples will be collected from two locations downstream of the Site.

At each sampling location, two surface water samples will be collected at depths based on the water column. One shallow sample will be collected at 0.2 (20 percent) of the water depth, and a second deeper sample will be collected at 0.8 (80 percent) of the water depth (e.g., if the depth is 10 feet, the shallow sample will be collected at 2 feet below the water surface and the deeper sample will be collected at 8 feet below the water surface). If the water depth is less than 10 feet, only one sample will be collected at 0.5 (50 percent) of the water depth. At each sampling location, samples will be collected at the bow or side of the boat using a stainless-steel Kemmerer water sampler; the sample will then be poured into appropriate laboratory-supplied containers. All surface water samples will be analyzed for PFAS and total suspended solids (TSS) following the QAPP (Arcadis 2021a) and QA/QC procedures described in **Section 7**.

At each sample depth, surface water quality field parameters, including pH, specific conductivity, and temperature, will be measured. These data will be used to assess surface water conditions at the time of sampling. At each sample location, additional sample volume will be collected, a multi-parameter water quality meter will be allowed to stabilize, and the parameter results will be recorded.

6.2 Menominee River Flow Gauging

During each surface water sampling event, velocity measurements will be collected at each sample location to evaluate the Menominee River flow at the time of sampling. Data collected will be used to support the understanding of the fate and transport of PFAS and the potential impacts of groundwater discharge within the Menominee River. The method for collecting velocity measurements will be as follows:

- At each proposed location, the water depth will be gauged.
- The velocity will be measured at each sample depth in the water column.
- Measurements will be collected using a portable electromagnetic flowmeter (i.e., Hach handheld flow or similar) mounted on a graduated pole or measuring rod.

7 Quality Assurance and Quality Control

The detection of PFAS compounds at very low concentrations can be influenced by common PFAS-containing materials that may be present at the sampling site. Therefore, to minimize the potential for cross-contamination, special attention is given to sampling materials (i.e., tubing), decontamination procedures, and clothing and personal care products used by sampling personnel. Detailed standard operating procedures followed during investigation activities are provided in the QAPP (Arcadis 2021a).

Details regarding the analytical methods to be used for each media are also provided in the QAPP. Groundwater and surface water samples submitted for analysis of PFAS will be analyzed for the 36 PFAS compounds required by WDNR per correspondence dated May 27, 2020, and listed in the QAPP. Surface water samples will also be analyzed for TSS. QA/QC samples will include matrix spike/matrix spike duplicates, field duplicates, field reagent blanks, and equipment rinsate blanks, as indicated in the QAPP and listed below.

Laboratory Methods and QA/QC Frequency

Matrix	Parameter	Laboratory Method	Matrix Spike/ Matrix Spike Duplicate Frequency	Field Duplicate Frequency	Field Reagent Blank Frequency	Equipment Rinsate Blank Frequency
Water	PFAS	Modified USEPA 537 (36 compounds)	1/20	1/10	1/day	1/20
Water	TSS	USEPA 160.2	None	1/10	None	None
Soil	PFAS	Modified USEPA 537 (36 compounds)	1/20	1/10	1/day	1/20
Soil	f_{oc}	Lloyd Kahn	1/20	1/10	None	1/20

Sampling for PFAS compounds includes the submission of one laboratory-supplied field reagent blank per day to detect the presence of ambient PFAS that may influence sampling results. PFAS-free water used for the field reagent blank sample will be brought to the Site in a laboratory-supplied bottle. Field staff will transfer the laboratory-supplied PFAS-free water into an empty sample bottle. This field reagent blank will be placed in the same cooler as other samples intended for PFAS analyses.

All equipment will be decontaminated with PFAS-free water between use at each sampling location. Only Alconox, Liquinox, or methanol will be used for decontamination. To assess the adequacy of the decontamination process, an equipment rinsate blank will be collected every 20 samples or per day, whichever is more frequent. To prepare a rinsate blank, a sample of PFAS-free water will be poured over or through decontaminated field equipment before collection of environmental samples.

8 Reporting

Sample analytical results associated with offsite locations will continue to be submitted to WDNR and applicable property owners per NR 716.14 Wis. Adm. Code after completion of each sampling event. Notification letters will not be submitted for analytical results of samples collected from Tyco property; these results will be provided with the biweekly database updates. An investigation status report or a supplemental site investigation report will be provided to WDNR following completion of the activities defined in this work plan. A status report will be submitted if further characterization or monitoring work is needed. A supplemental site investigation report will be submitted after the delineation of impacts in all media of concern are sufficient to meet the requirements detailed in Chapter NR 716 of the Wis. Adm. Code.

9 Anticipated Schedule

The anticipated schedule for field investigation and reporting is as follows:

- Field sampling:
  - Groundwater
    - VAP sampling – June/July 2022
    - Overburden monitoring well installations – August 2022
    - Groundwater monitoring – November 2022
  - Soil
    - Sampling concurrent with VAP sampling – June/July 2022
  - Surface Water
    - Seasonal sampling – July and November 2022 (note that the schedule for these events is contingent on active dredging or blasting projects in the river and may also shift based on 2022 weather patterns)
- Reporting:
  - An investigation status report or supplemental site investigation report will be provided to WDNR following the completion of field activities.

The above schedule is contingent on WDNR approval of this work plan. In the event the schedule is affected by weather, access, or other factors, WDNR will be provided with an updated schedule for activities.

10 References

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Arcadis. 2021a. Final Quality Assurance Project Plan. Tyco Per- and Polyfluoroalkyl Substances (PFAS) Site Investigation and Private Well Sampling Activities, Marinette, Wisconsin. March 16.

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Arcadis. 2022a. Response to Comments – Response to Site Investigation Work Plan, Interim Site Investigation Report, Conceptual Site Model, and Aerial Deposition Evaluation Report. Tyco Stanton (PFAS), 1 Stanton Street, Marinette, Wisconsin, BRRTS No. 02-38-581955. February 7.

Arcadis. 2022b. Additional Site Investigation Work Plan. Tyco Fire Products, Fire Technology Center, Marinette, Wisconsin, BRRTS No. 02-38-580694. February 11.

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Natural Resources Technology, Inc. (NRT). 2015. Remedial Investigation Report. Wisconsin Public Service Corporation Former Marinette MGP Site, Marinette, Wisconsin, WIN000509952. February 2.

Tyco. 2018. Letter from Richard Mator of Tyco Fire Protection Products to David Neste of WDNR Regarding Request for Site Information. October 18.

WDNR. 2021a. Response to Site Investigation Work Plan, Interim Site Investigation Report, Conceptual Site Model, and Aerial Deposition Evaluation Report. Tyco Stanton (PFAS), 1 Stanton Street, Marinette, Wisconsin, BRRTS No. 02-38-581955. August 31.

WDNR. 2021b. Response to Near-Term Bedrock Groundwater Evaluation Work Plan. Tyco Stanton (PFAS), 1 Stanton Street, Marinette, Wisconsin, BRRTS No. 02-38-581955. August 31.

Tables

Table 1
Proposed Groundwater and Soil Investigation Locations
Additional Site Investigation Work Plan
Tyco Stanton Street Facility
Marinette, Wisconsin

Proposed Location	Area	Description	Investigation Objectives
KKIL Stanton LLC parking area	Upgradient	VAP, Soil Sampling	Refine the southern extent of site related PFAS impacts in groundwater; evaluate the former fire training area as a potential source area
KKIL Stanton LLC parking area	Upgradient	VAP, Soil Sampling	
KKIL Stanton LLC parking area	Upgradient	VAP, Soil Sampling	
KKIL Stanton LLC parking area	Upgradient	VAP, Soil Sampling	
KKIL Stanton LLC parking area	Upgradient	VAP, Soil Sampling	
Undeveloped field south of the Site and east of KKIL Stanton LLC parking area	Upgradient	VAP	Refine the southern extent of site related PFAS impacts in groundwater
Undeveloped field south of the Site and east of KKIL Stanton LLC parking area	Upgradient	VAP	
Corner of Water Street and 8th Street	Upgradient	VAP	
Corner of Water Street and 9th Street	Upgradient	VAP, Overburden Well(s)	Refine the southern extent of site related PFAS impacts in groundwater; establish monitoring well network
Corner of Water Street and 6th Street	Upgradient/Sidegradient	VAP, Overburden Well(s)	

Notes:
PFAS = per- and polyfluoroalkyl substances
VAP = vertical aquifer profiling

Table 2
Monitoring Well Construction and Proposed Sampling Plan
Additional Site Investigation Work Plan
Tyco Stanton Street Facility
Marinette, Wisconsin

Well ID	Area	Northing	Easting	Top of Casing Elevation (feet amsl)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Stanton St Additional SIWP Proposed PFAS Sampling Plan	FTC SIWP Expanded Groundwater Monitoring Event
MW001S	SV	469520.20	2585017.04	587.19	5.5	15.5		
MW001M	SV	469506.81	2585016.33	587.09	25.0	30.0		
MW002S-R	SV	469546.27	2585234.66	590.27	5.0	15.0		
MW002M-R	SV	469540.82	2585231.20	590.26	25.0	30.0		
MW003S	Outside - West	470584.24	2584070.46	586.60	10.0	20.0	X	
MW003M	Outside - West	470588.48	2584074.12	587.44	30.0	35.0	X	
MW003D	Outside - West	470591.90	2584078.40	587.50	45.0	50.0	X	
MW004S	MP	469258.85	2585159.14	588.73	3.7	13.7		
MW004M	MP	469250.31	2585153.31	587.15	22.6	27.6		
MW008M	MP	470173.57	2584677.82	583.12	25.0	30.0		
MW009S	MP	470254.66	2583951.90	583.11	5.0	15.0		
MW009M	MP	470256.24	2583952.05	583.06	25.0	30.0		
MW011S	MP	469678.42	2584472.60	586.59	10.0	20.0		
MW011M	MP	469673.62	2584471.65	586.94	30.0	35.0		
MW012S	MP	469555.59	2584859.68	588.05	10.0	20.0		
MW012M	MP	469555.48	2584859.42	587.55	30.0	35.0		
MW013S	Outside - Upgradient	469109.21	2583241.36	588.33	5.0	15.0		X
MW013M	Outside - Upgradient	469106.15	2583245.55	588.03	30.0	35.0		X
MW013D	Outside - Upgradient	469103.72	2583250.15	588.81	45.0	50.0		X
MW019S	Outside - Wetlands	469195.56	2585718.10	584.47	NA	NA		
MW021S-R	Outside - Wetlands	469057.15	2585288.15	586.37	6.0	16.0	X	
MW021M	Outside - Wetlands	469059.16	2585281.14	587.06	30.0	35.0	X	
MW022S	Outside - Wetlands	468779.28	2585881.62	584.59	10.0	20.0	X	
MW022M	Outside - Wetlands	468780.34	2585875.25	584.53	30.0	35.0	X	
MW031S	SV	469713.26	2584980.38	588.87	4.0	14.0		
MW031M	SV	469708.48	2584978.06	587.86	25.0	30.0		
MW032S	MP	469719.86	2584967.17	588.47	7.0	17.0		
MW032M	MP	469717.16	2584963.75	588.22	28.0	33.0		
MW033S	MP	469484.40	2585029.17	587.31	7.3	17.3		
MW033M	MP	469486.84	2585023.06	587.25	27.8	32.8		
MW034S	8SS	469532.38	2585381.33	588.17	5.0	15.0		
MW034M	8SS	469536.92	2585383.12	588.21	26.0	31.0		
MW035S	WA	469531.61	2585384.97	587.64	5.0	15.0		
MW035M	WA	469535.36	2585386.78	587.70	26.0	31.0		
MW036S	8SS	469295.47	2585307.11	588.25	4.0	14.0		
MW036M	8SS	469299.81	2585308.13	588.18	25.0	30.0		
MW037S	WA	469289.83	2585312.19	587.06	4.0	14.0		
MW037M	WA	469296.12	2585314.11	587.03	25.0	30.0		
MW038S	8SS	469136.67	2585178.34	587.82	4.0	14.0		
MW038M	8SS	469132.30	2585177.01	586.14	25.0	30.0		
MW039S	MP	469137.67	2585172.21	586.19	7.0	17.0		
MW039M	MP	469131.80	2585171.45	586.16	28.0	33.0		
MW040S	Outside - West	470087.19	2583738.89	582.58	5.0	15.0	X	
MW040M-R	Outside - West	470097.58	2583744.46	582.57	20.0	25.0	X	
MW040D	Outside - West	470107.78	2583749.69	582.71	38.0	43.0		
MW041S	MP	470428.42	2584572.83	583.11	5.0	15.0		
MW041M	MP	470423.84	2584570.41	583.12	25.0	30.0		
MW042S	MP	469837.55	2584158.55	587.06	10.0	20.0		
MW042M	MP	469841.97	2584160.73	587.17	30.0	35.0		
MW042D	MP	469846.56	2584162.15	587.24	50.0	55.0	X	
MW044S-R	MP	469797.75	2584645.82	584.08	5.0	15.0		
MW044M-R	MP	469803.70	2584648.37	583.85	15.0	20.0		

Table 2
Monitoring Well Construction and Proposed Sampling Plan
Additional Site Investigation Work Plan
Tyco Stanton Street Facility
Marinette, Wisconsin

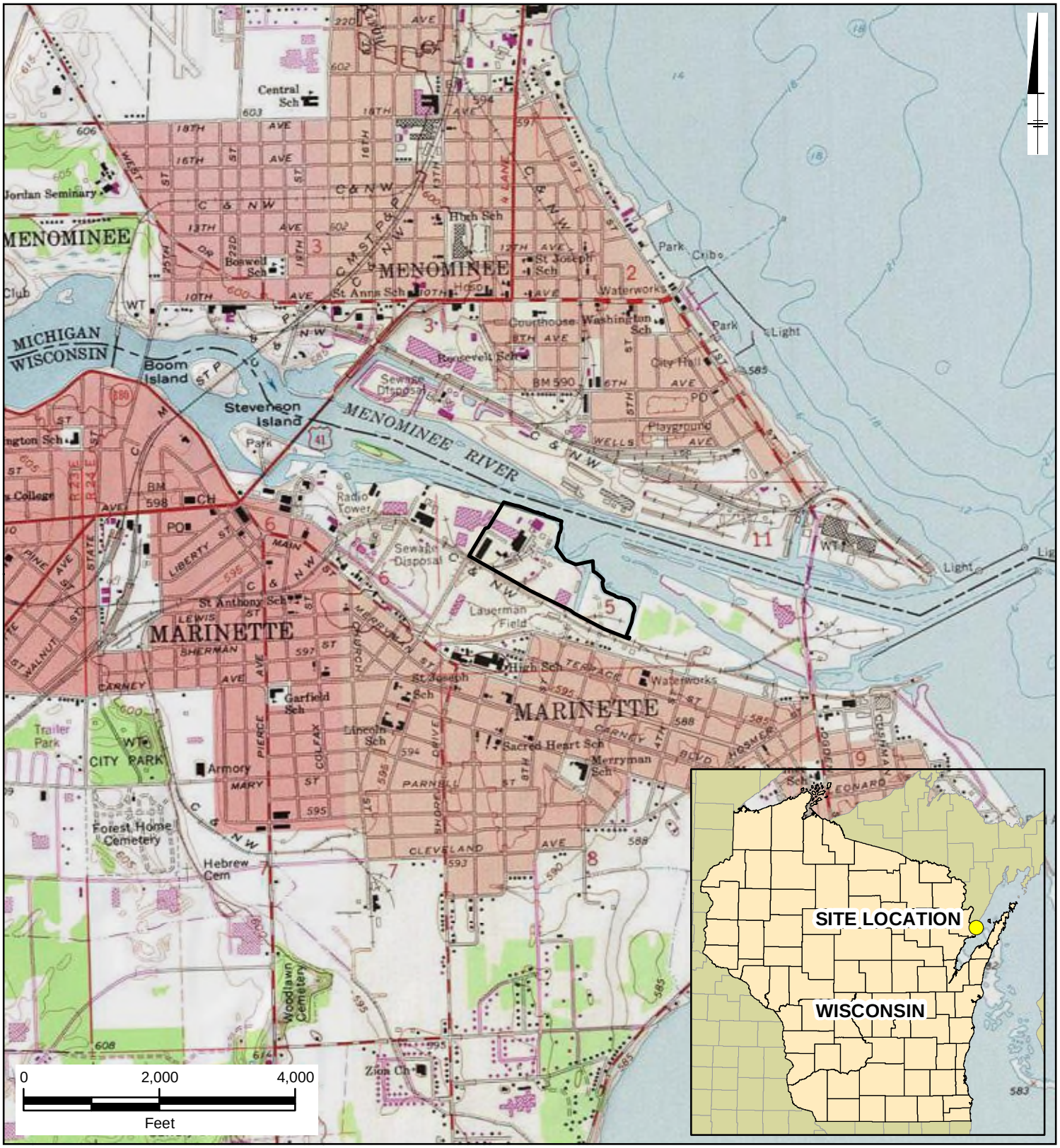
Well ID	Area	Northing	Easting	Top of Casing Elevation (feet amsl)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Stanton St Additional SIWP Proposed PFAS Sampling Plan	FTC SIWP Expanded Groundwater Monitoring Event
MW045S	MP	470508.99	2584498.46	582.84	5.0	15.0		
MW045M	MP	470510.85	2584493.61	582.86	25.0	30.0		
MW046S	WA	469475.71	2585477.85	584.17	7.0	17.0		
MW046M	WA	469470.90	2585485.99	584.78	27.6	32.6		
MW046D	WA	469473.31	2585481.92	584.96	53.5	58.5	X	
MW047S	WA	469327.11	2585657.95	583.97	10.0	20.0		
MW047M	WA	469325.03	2585649.50	584.19	30.0	35.0		
MW047D	WA	469320.91	2585655.22	584.38	53.0	58.0		
MW048S	Outside - Wetlands	469177.00	2586030.00	584.20	10.0	20.0		
MW048M	Outside - Wetlands	469173.03	2586035.75	584.47	30.0	35.0		
MW049S	Outside - Wetlands	468897.80	2585623.98	584.51	10.0	20.0		
MW049M	Outside - Wetlands	468895.32	2585632.22	584.13	30.0	35.0		
MW050S	MP	469359.20	2584808.00	588.86	5.0	15.0		
MW050M	MP	469359.20	2584808.00	589.10	25.0	30.0		
MW052S	MP	469604.11	2584819.43	584.90	5.0	15.0		
MW053S	MP	469644.65	2584752.42	584.54	10.0	20.0		
MW054S	MP	469613.34	2584617.41	587.66	10.0	20.0		
MW059S	MP	469575.77	2584607.88	588.35	5.0	15.0		
MW059M	MP	469578.79	2584609.65	587.96	20.0	25.0		
MW060S	MP	469528.87	2584638.90	587.51	5.0	15.0		
MW060M	MP	469528.13	2584636.73	587.62	20.0	25.0		
MW061S	MP	469508.80	2584683.92	587.17	5.0	15.0		
MW061M	MP	469510.24	2584681.15	587.31	20.0	25.0		
MW062S	MP	469546.87	2584516.03	589.54	5.0	15.0		
MW062M	MP	469544.45	2584517.88	589.36	25.0	30.0		
MW063S	MP	469494.61	2584570.01	589.47	5.0	15.0		
MW063M	MP	469497.59	2584568.34	589.46	25.0	30.0		
MW064S	MP	469426.82	2584603.93	588.59	7.7	12.7		
MW064M	MP	469429.19	2584605.81	588.07	17.4	22.4		
MW064D	MP	469426.29	2584598.38	588.83	51.7	56.7	X	
MW066S	MP	469468.31	2584719.26	584.50	5.0	15.0		
MW066M	MP	469469.60	2584717.46	587.12	20.0	25.0		
MW067S	MP	470569.49	2584274.15	585.50	NA	NA		
MW068S	MP	470207.53	2584825.76	586.34	NA	NA		
MW100S	Outside - Wetlands	469234.06	2585775.46	584.52	8.0	18.0	X	
MW100M	Outside - Wetlands	469235.15	2585781.17	584.19	28.0	33.0	X	
MW100D	Outside - Wetlands	469232.12	2585769.83	584.12	52.0	57.0	X	
MW101S	WA	469110.49	2585320.46	585.45	8.1	18.1		
MW101M	WA	469113.60	2585320.48	585.40	28.1	33.1		
MW102S	Outside - South	469386.04	2584523.00	588.80	7.7	17.7	X	
MW102M	Outside - South	469384.95	2584528.43	588.52	27.7	32.7	X	
MW102D	Outside - South	469381.82	2584532.14	588.58	49.8	54.8	X	
MW103S	MP	469694.25	2584054.18	588.82	8.0	18.0		
MW103M	MP	469697.72	2584050.12	589.00	28.0	33.0		
MW104S	Outside - South	469663.22	2584030.25	589.27	8.0	18.0	X	
MW104M	Outside - South	469660.78	2584034.50	589.39	28.0	33.0	X	
MW105S	MP	470089.63	2583766.48	586.11	5.0	15.0		
MW105M	MP	470092.00	2583767.63	585.90	25.0	30.0		
MW105D	MP	470094.80	2583768.71	585.46	37.0	42.0	X	
MW106S	MP	470522.78	2584071.55	585.72	7.0	17.0		
MW106M	MP	470519.31	2584073.66	585.75	27.0	32.0		
MW106D	MP	470524.15	2584075.11	585.70	42.0	47.0		

Table 2
Monitoring Well Construction and Proposed Sampling Plan
Additional Site Investigation Work Plan
Tyco Stanton Street Facility
Marinette, Wisconsin

Well ID	Area	Northing	Easting	Top of Casing Elevation (feet amsl)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Stanton St Additional SIWP Proposed PFAS Sampling Plan	FTC SIWP Expanded Groundwater Monitoring Event
MW107S	MP	470360.25	2584936.34	585.54	5.0	15.0		
MW107M	MP	470341.78	2584884.23	582.47	15.0	20.0		
MW107D	MP	470337.84	2584881.83	582.65	46.0	51.0	X	
MW108S	MP	470007.10	2584862.10	586.65	8.0	18.0		
MW108M	MP	470009.34	2584865.73	586.50	28.0	33.0		
MW108D	MP	470011.85	2584869.08	586.43	48.0	53.0		
MW109S	WA	469547.30	2585556.76	584.15	7.6	17.6		
MW109M	WA	469542.17	2585558.29	584.32	27.1	32.1		
MW109D	WA	469536.91	2585559.08	584.73	48.3	53.3		
MW113S	SV	469400.29	2585228.67	590.26	14.0	19.0		
MW113M	SV	469402.47	2585224.84	590.22	32.0	43.0		
MW114S	MP	469752.83	2584601.13	583.90	12.5	17.5		
MW114M	MP	469751.24	2584603.88	583.89	30.0	35.0		
MW115S	SV	469762.47	2585109.44	588.94	13.0	23.0		
MW116S	SV	469707.72	2585234.55	589.82	13.0	18.0		
MW117S	MP	470633.97	2584304.02	585.17	5.0	15.0		
MW117M	MP	470635.40	2584299.89	584.93	19.0	24.0		
MW117D	MP	470636.55	2584295.56	585.16	45.0	50.0		
MW118S	MP	470465.39	2584808.38	586.06	4.0	14.0		
MW118M	MP	470466.94	2584803.95	585.80	17.0	22.0		
MW118D-R	MP	470462.07	2584806.98	585.62	47.0	52.0	X	
MW119D	SV	469760.82	2585114.10	588.72	50.0	60.0		
MW120S	8SS	469737.87	2585389.29	588.51	5.0	15.0		
MW120M	8SS	469736.92	2585384.59	588.57	25.0	30.0		
MW120D	8SS	469735.92	2585379.62	588.50	51.0	56.0		
MW121S	MP	470581.86	2584464.30	585.68	5.0	15.0		
MW122S	MP	470515.59	2584652.53	585.59	5.0	15.0		
MW123S	MP	470172.39	2584921.81	586.11	5.0	15.0		
MW124S	MP	469893.61	2584986.20	585.52	5.0	15.0		
MW125S-20	Outside - Upgradient	468124.88	2582657.99	596.16	10.0	20.0		X
MW125M-35	Outside - Upgradient	468123.80	2582646.78	596.26	30.0	35.0		X
MW125D-60	Outside - Upgradient	468123.10	2582651.96	596.03	50.0	60.0		X
MW126S-20	Outside - Sidegradient	469387.07	2581781.29	598.06	10.0	20.0		X
MW126D-40	Outside - Sidegradient	469386.52	2581775.53	597.79	30.0	40.0		X
MW127D-85	Outside - Upgradient	467074.25	2584595.44	595.83	75.0	85.0		X
PZ-28-14	Outside - Upgradient	467125.0	2583162.7	594.76	9.0	14.0		X
PZ-28-54	Outside - Upgradient	467123.2	2583168.6	594.81	49.0	54.0		X
PZ-28-75	Outside - Upgradient	467127.73	2583152.31	594.29	65.0	75.0		X

Notes:
1. Bolded monitoring wells (also identified as being located "Outside") are outside of the hydraulic barrier wall surrounding the Stanton Street Facility.
2. Vertical Datum: North American Vertical Datum (NAVD) 1988
3. Acronyms and Abbreviations:
   8SS = former 8th Street Slip
   amsl = above mean sea level
   bgs = below ground surface
   FTC = Fire Technology Center
   MP = Main Plant
   SIWP = Site Investigation Work Plan
   SV = former Salt Vault
   PFAS = per-and polyfluoroalkyl substances
   WA = Wetlands Area

Figures



LEGEND:

APPROXIMATE SITE PROPERTY BOUNDARY

NOTES:

1. TOPOGRAPHIC MAP SOURCE: COPYRIGHT:© 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED, ACCESSED MARCH 2022.

TYCO STANTON STREET FACILITY
MARINETTE, WISCONSIN

ADDITIONAL SITE INVESTIGATION WORK PLAN

SITE LOCATION

ARCADIS

FIGURE 1

T:_ENVTYCOMXD\Stanton\Additional_SIWP\Fig1_SiteLocation.mxd 3/8/2022 8:27:29 AM Last Saved By: MEstifanos

LEGEND:

- APPROXIMATE STANTON STREET FACILITY PROPERTY BOUNDARY
- FORMER FIRE TRAINING AREA
- BUILDING
- PROPERTY LEASED BY CHEMDESIGN
- PROPERTY BOUNDARIES
- STANTON STREET HYDRAULIC BARRIER WALL
- ROAD

NOTES:

1. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
2. AERIAL IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY.

0 450 900

GRAPHIC SCALE IN FEET

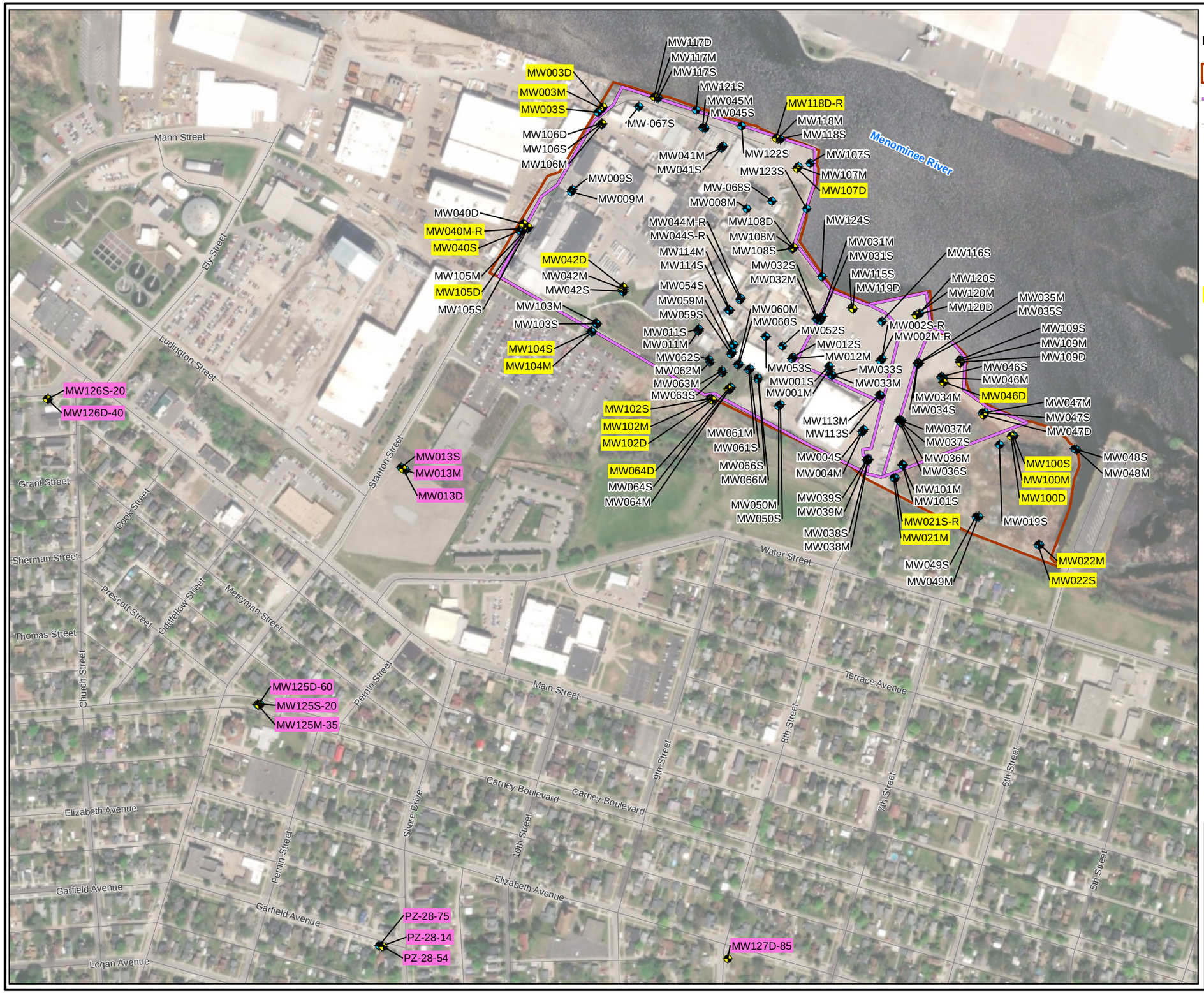
TYCO STANTON STREET FACILITY
MARINETTE, WISCONSIN
SITE INVESTIGATION STATUS REPORT

SITE LAYOUT

ARCADIS

FIGURE 2

T:_ENVT\TYCO\MXD\StantonAdditional_SIWPFig2_SiteLayout.mxd 3/16/2022 1:58:08 PM Last Saved By: MEstifanos



LEGEND:

- APPROXIMATE STANTON STREET FACILITY PROPERTY BOUNDARY
- STANTON STREET HYDRAULIC BARRIER WALL
- ROAD
- OVERBURDEN MONITORING WELL
- BEDROCK MONITORING WELL

MW106M — STANTON STREET SIWP GROUNDWATER SAMPLING EVENT

MW013S — FTC SIWP GROUNDWATER MONITORING EVENT

NOTES:

1. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
2. AERIAL IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY.

0 400 800

GRAPHIC SCALE IN FEET

TYCO STANTON STREET FACILITY
MARINETTE, WISCONSIN
ADDITIONAL SITE INVESTIGATION WORK PLAN

MONITORING WELL NETWORK

ARCADIS

FIGURE 3

T:_ENV\TYCO\MXD\StantonAdditional_SIWP\Fig3_Groundwater_SamplingLocs.mxd 3/15/2022 3:24:00 PM Last Saved By: MEstifanos

LEGEND:

- APPROXIMATE STANTON STREET FACILITY PROPERTY BOUNDARY
- FORMER FIRE TRAINING AREA
- STANTON STREET HYDRAULIC BARRIER WALL
- ROAD
- OVERBURDEN MONITORING WELL
- BEDROCK MONITORING WELL
- FORMER MARINETTE MGP SITE MONITORING WELL
- FORMER MARINETTE MGP SITE PIEZOMETER
- 2020 MARINETTE MARINE MONITORING WELL
- PROPOSED VERTICAL AQUIFER PROFILING LOCATIONS
- PROPOSED OVERBURDEN WELL CLUSTER
- PROPOSED SOIL INVESTIGATION LOCATION

NOTES:

1. DURING THE GROUNDWATER GAUGING EVENT, WATER LEVELS ARE PROPOSED TO BE COLLECTED AT EXISTING MONITORING WELLS AND/OR PIEZOMETERS LOCATED ON THE FORMER MARINETTE MGP SITE AND THE MARINETTE MARINE PROPERTY.
2.MONITORING WELL AND PIEZOMETER LOCATIONS ASSOCIATED WITH THE FORMER MARINETTE MGP SITE WERE OBTAINED FROM THE 2015 NATURAL RESOURCES TECHNOLOGY, INC. REMEDIAL INVESTIGATION REPORT, WIN000509952.
3. MONITORING WELL LOCATIONS ASSOCIATED WITH MARINETTE MARINE WERE OBTAINED FROM THE 2020 FOTH INVESTIGATION TO FACILITATE SOIL AND GROUNDWATER MANAGEMENT DURING THE CONSTRUCTION OF THE PROPOSED FINCANTIERI MARINETTE MARINE HULL ERECTION BUILDING (B34/35).
4. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
5. AERIAL IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY.

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GRAPHIC SCALE IN FEET

TYCO STANTON STREET FACILITY
MARINETTE, WISCONSIN
ADDITIONAL SITE INVESTIGATION WORK PLAN

GROUNDWATER AND SOIL INVESTIGATION LOCATIONS

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FIGURE 4

T:_ENV\TYCO\MXD\Stanton\Additional_SI\WP\Fig4_GW_Soil_InvestigationLocations.mxd 3/16/2022 2:03:53 PM Last Saved By: MEstifanos

LEGEND:

- APPROXIMATE STANTON STREET FACILITY PROPERTY BOUNDARY
- STANTON STREET HYDRAULIC BARRIER WALL
- ROAD
- OVERBURDEN MONITORING WELL
- BEDROCK MONITORING WELL
- WET-DRY SEASON SURFACE WATER SAMPLE LOCATION

NOTES:

1. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.
2. AERIAL IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY.

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GRAPHIC SCALE IN FEET

TYCO STANTON STREET FACILITY
MARINETTE, WISCONSIN
ADDITIONAL SITE INVESTIGATION WORK PLAN

SURFACE WATER SAMPLING LOCATIONS

ARCADIS

FIGURE 5

T:_ENVT\TYCO\MXD\Stanton\Additional_SIWP\Fig5_Surfacewater_SamplingLocs.mxd 3/10/2022 10:10:05 AM Last Saved By: MEstifanos

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