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Date: May 8, 2024
Subject: Proposed Groundwater Monitoring Plan; JCI/Tyco FTC (VOCs) at
2700 Industrial Parkway South, Marinette, Wisconsin
BRRTS Activity#: 03-38-001345

Dear Ms. Sellwood,

On behalf of Tyco Fire Products LP (Tyco), Arcadis has prepared this letter to summarize proposed groundwater monitoring activities for volatile organic compounds (VOCs) in groundwater at the Tyco Fire Technology Center (FTC) located at 2700 Industrial Parkway South in Marinette, Wisconsin (the Site). The additional data will be used to evaluate the nature and extent of VOCs in groundwater at the Site and confirm groundwater capture of any VOCs that may have migrated off site through the existing Groundwater Extraction and Treatment System (GETS). The proposed groundwater monitoring activities will support future case closure of the Bureau for Remediation and Redevelopment Tracking System (BRRTS) #03-38-001345.

SITE HISTORY

The FTC is a fire suppressant training, testing, research, and development facility built in the early 1960s. The FTC encompasses approximately 380 acres used for Research and Development and Quality Testing activities, including approximately 9 acres previously used as an Outdoor Testing/Training Area (OTA). Petroleum and petroleum-related products were used as fire accelerants as part of the firefighting training and product testing activities conducted at the OTA. The OTA contains various “props” where a contained fire would be started and extinguished to test the performance of fire suppression products and to train firefighters. In 1992, the WDNR was notified of a release during removal of a 564-gallon gasoline underground storage tank (UST). Several site investigations, interim remediation, and monitoring activities related to VOCs have been ongoing since 1993, including submittal of a 2012 Comprehensive Site Investigation Report (AECOM, 2012) and subsequent groundwater remediation of chlorinated VOCs through in situ bioremediation and in situ chemical oxidation injections (O&M, 2016).

Additional analytical data collected from vertical aquifer profile (VAP) borings in 2016 indicated the presence of benzene, chloroform, 1,2-dichloroethane, methyl tert-butyl ether, trichloroethene, and vinyl chloride above the Wisconsin Department of Natural Resources (WDNR) Natural Resources (NR) 140 Enforcement Standard (ES) and/or Preventive Action Limit (PAL). The 2016 analytical results indicated groundwater concentrations exceeded regulatory criteria near the Site property boundary to the east-northeast at depths typically between 30 and 50 feet below ground surface. A clean zone of groundwater was present at the VAP borings overlying the intervals that exhibited groundwater exceedances. In 2018, documentation of site investigation activities transitioned to BRRTS #02-38-580694 with focus on per- and polyfluoroalkyl substances (PFAS).

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As a result of extensive investigation and pre-design activities documented under the PFAS BRRTS #02-38-580694, a Groundwater Extraction and Treatment System (GETS) began operating in November 2022. The primary objective of the GETS is to reduce PFAS in groundwater, treat PFAS mass in the recovered groundwater, and significantly reduce PFAS mass flux throughout the groundwater plume. However, the granular activated carbon used in the GETS also reduces and treats any VOCs recovered in groundwater.

PROPOSED SAMPLING PLAN

The proposed sampling is being conducted to evaluate potential case closure of the VOC BRRTS #03-38-001345 case number.

Groundwater sampling will be conducted at the 20 existing monitoring wells shown on Figure 1 and detailed in Table 1. The data collected from the existing monitoring wells will be compared to historical concentrations to understand current concentrations of VOCs present in groundwater at the Site boundary and to evaluate the current lateral and vertical extent of VOCs downgradient of the OTA. The data from the extraction wells will be used to confirm capture of VOCs within the recovered groundwater at the GETS.

Groundwater samples will be collected via standard low-flow sampling techniques using a peristaltic pump and dedicated down-well disposal tubing. Analytical samples will be collected after groundwater parameters measured with a field probe, including dissolved oxygen, pH, specific conductivity, and oxidation-reduction potential, are shown to have stabilized at each well in accordance with the Quality Assurance Project Plan (QAPP).

Groundwater samples and quality assurance samples (e.g., matrix spike/matrix spike duplicate, field duplicates) will be analyzed for VOCs via United States Environmental Protection Agency Method 8260 and in accordance with the QAPP.

SCHEDULE AND CLOSING

The proposed groundwater monitoring activities described above will be implemented in Spring 2024. Based on the results of the groundwater monitoring, a request for site closure of BRRTS #03-38-001345, if appropriate, will be prepared and submitted to the WDNR. Ongoing investigation, remediation and monitoring activities for PFAS will continue to be documented under BRRTS #02-38-580694.

Should you have any questions, please reach out to the contact listed below.

Sincerely,
Arcadis U.S., Inc.



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Scott T. Potter, PhD
Project Lead/Technical Expert

CC. Denice Nelson

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Wisconsin Department of Natural Resources
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Attachments

Table 1 Proposed Monitoring Well Construction
Figure 1 Proposed Groundwater Monitoring Locations

References

AECOM. 2012. Comprehensive Site Investigation Report, Ansul Fire Technology Center, 2700 Industrial Parkway South, Marinette, Wisconsin, WDNR BRRTS No. 03-38-001345. May 1.

Arcadis. 2016. 2016 Investigation Report, Ansul Fire Technology Center Site, 2700 Industrial Parkway, Marinette, Wisconsin, BRRTS No. 03-38-001345. November 22.

O&M, Inc. 2016. Tyco FTC – Marinette, Wisconsin BRRTS Number: 03-38-0001345, Groundwater Sampling -1st Quarter 2016. July 5.

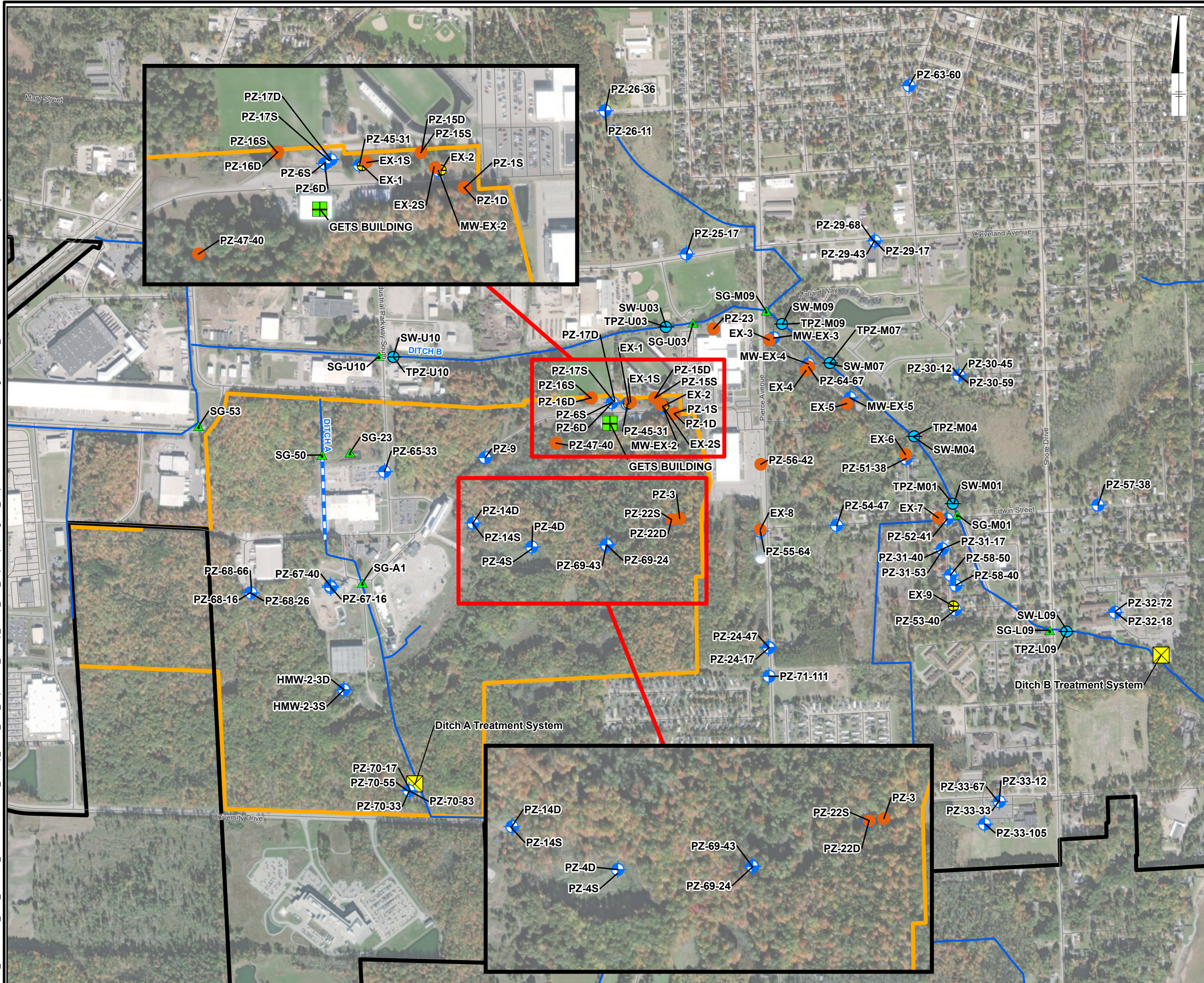
Attachments

Table 1
Proposed Monitoring Well Construction
Proposed Groundwater Monitoring Plan
Tyco Fire Technology Center
Marinette, Wisconsin













Well ID	Year Installed	Zone Screened	Depth to Top of Screen (feet bgs)	Depth to Bottom of Screen (feet bgs)
Locations on Tyco FTC				
PZ-1S	2010	D	36	41
PZ-1D	2010	BR	63.5	68.5
PZ-3	2010	OB	38	43
PZ-15S	NA	OB	4	19
PZ-15D	NA	OB	22	32
PZ-16S	NA	OB	4	19
PZ-16D	NA	OB	28	38
PZ-22S	NA	OB	10	20
PZ-47-40	2021	OB	35	40
Locations on Tyco (Former Barley)				
PZ-64-67	2022	BR	58	67
Location on School Property				
PZ-23	2017	OB	35	40
Location in City of Marinette Rights-of-Way				
PZ-56-42	2021	OB	37.2	42.2
GETS Extraction Wells and Paired Piezometers				
EX-1S	2023	D	22	35
EX-2S	2023	D	22	35
EX-3	2021	S	7	22
EX-4	2021	D	12	27
EX-5	2021	D	35	50
EX-6	2021	D	25	42
EX-7	2021	S	10	25
EX-8	2021	D	54	69

Acronyms and Abbreviations:

- bgs = below ground surface
- BR = bedrock
- D = deep overburden > 25 feet deep
- EX = extraction well
- FTC = Fire Technology Center
- GETS = groundwater extraction and treatment system
- MW = monitoring well (sampling and gauging)
- PZ = Piezometer
- S = shallow overburden < 25 feet deep
- WL = water level (depth to bottom and depth to water) only

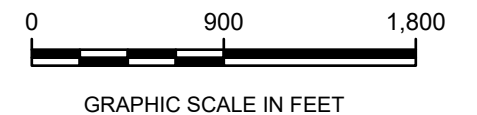


LEGEND:

-  EXTRACTION WELL
-  MONITORING WELL
-  PIEZOMETER
-  STAFF GAUGE
-  APPROXIMATE MARINETTE CITY BOUNDARY
-  APPROXIMATE SITE PROPERTY BOUNDARY
-  ROAD
-  CULVERT
-  DITCH OR STREAM
-  SURFACE WATER TREATMENT SYSTEM
-  GETS BUILDING
-  PROPOSED VOC SAMPLING LOCATION

NOTES:

1. GETS = GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
2. AERIAL IMAGERY SOURCE: ESRI, MAXAR, EARTHSTAR, GEOGRAPHICS, AND THE GIS USER COMMUNITY



TYCO FIRE TECHNOLOGY CENTER
MARINETTE, WISCONSIN

**PROPOSED GROUNDWATER
MONITORING LOCATIONS**

 | **FIGURE
1**