

January 15, 2020

Jennifer Dodds
U.S. Environmental Protection Agency Region 5
Land, Chemicals & Redevelopment Division
77 West Jackson Blvd, LR-16J
Chicago, IL 60604-3590

**Subject: *Quarterly Progress Report (October through December 2019)*
Administrative Order on Consent (February 26, 2009)
Tyco Fire Products LP, Stanton Street Facility, Marinette, Wisconsin
*WID 006 125 215***

Dear Ms. Dodds:

In accordance with Section VI, 21, b (Page 10) of the Administrative Order on Consent (AOC), dated February 26, 2009, Tyco Fire Products LP (Tyco) has prepared this quarterly progress report for the U.S. Environmental Protection Agency (EPA) Region 5 and the Wisconsin Department of Natural Resources (WDNR) (collectively referred herein as the Agencies). The reports are required to document activities conducted as part of the Resource Conservation and Recovery Act (RCRA) corrective actions at the Tyco facility on Stanton Street in Marinette, Wisconsin. This report covers the period from October 1 through December 31, 2019 and presents a brief description of the work performed, data collected, problems encountered, and schedule of activities as required by the February 2009 AOC and subsequent agreements.

Work Completed During this Reporting Period

Operation of the groundwater collection and treatment system (GWCTS) continued through fourth quarter 2019. Attachment 1 summarizes the operational data, and Attachment 2 contains the Discharge Monitoring Reports.

Pump down operations with the temporary system continued into fourth quarter 2019 in the former Salt Vault and former 8th Street Slip areas under management of Endpoint Solutions of Franklin, Wisconsin. The details of the pump down operations were reported to the Agencies in biweekly summary reports until the system was shut down on November 4, 2019. Modifications are being made to the system to allow the collection and storage system to operate during the winter months in the former Salt Vault area only. Startup should occur in mid-January 2020. Monthly manual water level measurements were collected following shutdown in December 2019 from the designated monitoring wells and extraction wells (as required during temporary shutdown periods) and are included in Attachment 3. Measurements will revert to weekly once temporary operations recommence at the former Salt Vault in January 2020.

The third quarter 2019 vertical barrier wall (VBW) inspection letter report is included in Attachment 4. Based on the results, a few areas were identified that required follow-up maintenance (also discussed in the third quarter 2019 report). Tyco contracted M&M Diving from Menominee, Michigan to complete two of the repairs on December 20, 2019. One bolt area with a broken washer plate and one tieback cover plate that was cracked were covered with Splash Zone epoxy. Additional maintenance (fill/seed areas with erosion, identify potential erosion/loss of fill between the Wetlands Area and former 8th Street Slip

[between two generations of sheet pile wall], and replace missing VBW markers along the slurry wall portion) will be addressed in spring 2020.

The drilling activities portion of *Arsenic Migration Pathways Evaluation Work Plan* field activities was completed from October 15 to October 26, 2019. A status update on the work plan activities was emailed by Heather Ziegelbauer on behalf of Tyco on October 31, 2019, and the data from both the drilling and diving (completed in September 2019/third quarter) activities will be compiled and provided in a memorandum that will be submitted by the end of first quarter 2020.

The fourth quarter barrier wall groundwater monitoring and sampling event was completed the week of October 7, 2019. The 2019 barrier wall monitoring data and activities will be compiled and summarized in a 2019 annual report to be submitted by the end of first quarter 2020.

Quarterly transducer data downloads were completed on October 9 and October 10, 2019, except at MW047S and MW047D because of high river levels that have resulted in standing water within this area of the site. Manual groundwater elevation data were obtained at each transducer location where a download was completed for calibration of the data at the time of the installation/download. Two of the three transducers on the outside of the VBW (MW003S and MW102S), which were removed after the June/July 2019 transducer download to prepare for upcoming per- and polyfluoroalkyl substances sampling, were reinstalled. Because of high river levels and standing water, MW100S could not be reinstalled.

MW003S and MW102S were again removed on November 25, 2019 as the per- and polyfluoroalkyl substances sampling that had been scheduled to occur in late August 2019 had inadvertently not been completed as planned. In addition, during the November 25, 2019 event, wells MW047S and MW047D were accessible, and the transducer data were able to be downloaded. The per- and polyfluoroalkyl substances sampling occurred in mid-December 2019, and the transducers at the three wells were reinstalled on December 18, 2019. During the December 18, 2019 event, data also were downloaded at some additional SeriesSEE location transducers (MW108S, MW117S, MW118S, and the staff gauge) so data were available for comparison to the limited MW003S data that were obtained in October and November 2019.

The new equipment ordered for MW107D (a non-vented transducer and low-profile well cap) was not able to be installed, as the area was covered with thick ice and snow, and the well could not be found. MW107D is a flush-mount monitoring well in a high-traffic area that could not be converted to a stickup; the non-vented transducer will be installed without the cable to allow for the well cap to remain in place, keeping possible surface water infiltration out of the well.

Additional Activities

A meeting was held on November 6, 2019 with WDNR to discuss the Wisconsin Pollutant Discharge and Elimination System (WPDES) variance permit. The following items were discussed:

- The approach to eliminating industrial outfall OF001 by tying in the noncontact cooling water and boiler water to the sanitary lines and rerouting the facility wastewater industrial line to GWCTS outfall OF003. Industrial outfall OF001 would be abandoned and no longer be part of the WPDES variance permit.
- Converting most of the remaining underground stormwater conveyance system to overland flow, as some portions of the site flow also contributed to outfall OF001.

Documents were submitted to WDNR on November 15, 2019 outlining the details of the approach. The next step is for WDNR to review the documents. If approved, a draft WPDES variance permit is anticipated to be received in early 2020. If this approach is approved, steps to move forward with the conveyance system construction work for the permanent pump down program approach and design for the GWCTS improvements could be initiated in spring/summer 2020.

The new ChemDesign building construction and related changes to RCRA remedy components started in mid-December 2019.

Data Collected

Extraction and treatment volumes, analytical testing, and discharge data are required as part of the WPDES permits obtained from WDNR for operating the GWCTS. The GWCTS operates under WPDES Permit WI-0001040-07-0. Attachment 2 includes the GWCTS monthly WPDES Discharge Monitoring Reports for September 2019 through November 2019. Attachment 1 contains additional data on the GWCTS operations.

Groundwater elevation data were collected from monitoring wells in the former 8th Street Slip and former Salt Vault areas in accordance with the pump down program requirements and have been reported to the Agencies in biweekly summary reports during active operations and monthly data as part of these quarterly reports during temporary shutdown.

Fourth quarter 2019 barrier wall groundwater monitoring event data are being evaluated and will be included in the annual report. Groundwater elevation data recorded by installed transducers during fourth quarter 2019 are being compiled and evaluated. The transducer data will be provided in the annual report. Soil and groundwater samples were collected during the drilling portion of *Arsenic Migration Pathways Evaluation Work Plan* field activities. The data are being evaluated and will be included in a memorandum.

Problems Encountered

Menominee River water levels have remained high through fourth quarter 2019. During the reporting period, the river water elevation has remained continuously in excess of the top of the VBW in the Wetlands Area of the site. Although less frequently than last reporting period, water levels periodically exceeded the weirs in the Main Plant area, contributing to increased groundwater levels in those areas. On November 27, 2019, the river level reached a new high, with strong eastern winds, and several areas of the site were flooded. Tyco is evaluating options (including berms and a concrete cap to extend the VBW height) to help manage anticipated flooding from high river levels in the spring that have been predicted for Lake Michigan in 2020 by the U.S. Army Corps of Engineers (January 2020 Monthly Bulletin of Lakes Levels for the Great Lakes <https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/Monthly-Bulletin-of-Great-Lakes-Water-Levels/>).

During the week of October 28, 2019, Tyco had one Jacobs Engineering Group Inc. (Jacobs) staff, New Logic (vibratory shear enhanced processing [VSEP] equipment manufacturer), US Electric, and Tri City Plumbing onsite to support Tyco with installing a new metering skid (to support automatic metering of chemicals for the clean-in-place process [CIP]) and evaluating the VSEP operations. The week of November 4, 2019, one Jacobs staff was onsite, along with Tri City Plumbing to further support Tyco with finalizing VSEP updates and troubleshooting the GWCTS operations and maintenance issues that has resulted in more limited operational run times. Tyco has had US Electric and Pieper Electric (programmer) out to further troubleshoot the system. The major maintenance items are summarized below.

- Cleared blockages in both reaction vessels and piping.
- Cleared blockage in the piping going from the reaction tanks to the lamella (cleared the blockage in the lamella clarifier as well as the transfer line to the filter press). A water hose connection was added to address this and flush out this line in the future.
- Mixed citric acid cleaner for the VSEP units so they could soak during the CIP.
- Optimized antiscalant feed and application point to provide protection for the VSEP units.
- Added additional piping for feed point after the reverse osmosis reject vessel and before the VSEP units.

- Modified the VSEP skid piping to prevent backpressure from occurring during the CIP
- US Electric installed a solenoid valve to the antiscalant pump, so it will turn on when the reject pump turns on to feed the VSEP.
- The remote pumps (or spiral reverse osmosis concentrate pumps) are not running properly. The pump communications for optimal operation of the VSEP are being evaluated. The VSEP will not be operational until this pump communication is fixed.

Average monthly operational run times and overall volume extracted were similar to the previous reporting period. Reject volumes continued to be high and are anticipated to improve once the VSEP operational improvements are finalized during the next reporting period. The VSEP units will help with reducing the amount of time it takes for the reject tank to fill, which recently has limited operational run times. In addition, extraction wells EW-5 and EW-7 were not operational during the reporting period. EW-5 also was damaged during clearing activities for utilities associated with the ChemDesign building construction and the well vault, and the pump likely will need to be replaced. The damage at EW-5 has also tripped/faulted EW-6. Tyco has contracted with Coleman Engineering Company of Iron Mountain, Michigan to repair the extraction wells in January/February 2020; completion schedule is dependent upon equipment (replacement vault and pumps) and procurement (2 to 4 weeks). Additional troubleshooting of EW-6 and EW-7 also will occur during this time.

During the fourth quarter 2019 barrier wall groundwater sampling event, the following were encountered:

- MW047 and MW100 monitoring well nests were not accessible (because of flooding in the area) for water level measurements and sampling.
- MW048S was not accessible because of the dense vegetation and high water levels.
- MW009S had water to the top of casing, and the groundwater elevation may not be representative.
- MW067S did not have the groundwater elevation measured, as the well could not be located at time of the groundwater gauging event.
- MW107D is a flush-mount well and had a frac tank positioned over the well that was unable to be moved during the sampling event. The frac tank was moved after the event, and the water level and groundwater sample were collected on October 25, 2019.

Schedule of Upcoming Activities

The following is a summary of activities to be conducted during the next reporting period.

- Submit the quarterly progress report
- Continue construction of new ChemDesign building and related changes to RCRA remedy components
- Make plans for addressing remaining VBW maintenance items
- Submit summary memorandum for the *Arsenic Migration Pathways Evaluation Work Plan* field activities
- Submit 2019 barrier wall groundwater monitoring annual report
- Submit 2019 VBW inspection report
- Submit memorandum summarizing June 2019 well installation and repair field activities
- Startup winterized pump down operations in the former Salt Vault area; no winter operations are anticipated for the former 8th Street Slip area, as water levels have historically remained below target levels in the area during winter months
- Continue work to address VSEP and GWCTS maintenance items

- Complete repairs at GWCTS extraction well EW-5 and maintenance at EW-6 and EW-7 to help improve flow rates in the Main Plant
- Respond to Agency comments on the vapor intrusion work plan, conduct initial/immediate trichlorethylene indoor air sampling at Building 14 requested by the Agencies, and conduct remaining vapor intrusion assessment field activities (assuming timely approval from agencies is received on approach included in the response to comments)
- Continue WPDES variance permit options Agency review that will determine path forward on conveyance and GWCTS improvements

List of Key Correspondence and Document Submittals

Table 1. Documents Submitted

*Quarterly Progress Report (October to December 2019)
 Tyco Fire Products LP Facility, Marinette, Wisconsin*

Description of Submittal	Submitted To	Date Submitted
Email Response to EPA Comment 5 on the Arsenic Migration Pathways Evaluation Work Plan (drilling standard operating procedures)	EPA	October 2, 2019
Biweekly Summary Report for Pump Down Program	EPA	October 2, 2019
Quarterly Progress Report	EPA	October 14, 2019
Biweekly Summary Report for Pump Down Program	EPA	October 18, 2019
Email Regarding Arsenic Migrations Pathways Evaluation - Drilling Update and Proposed Changes	EPA and WDNR	October 18, 2019
Biweekly Summary Report for Pump Down Program	EPA	October 30, 2019
Email Regarding Arsenic Migrations Pathways Evaluation Field Activities- Status Update, Issues and Path Forward	EPA	October 31, 2019
Biweekly Summary Report for Pump Down Program	EPA	November 15, 2019
Revised Approach for WPDES Industrial outfall OF001	WDNR	November 15, 2019
2020-2029 Cost Estimate	EPA	December 16, 2019

Table 2. Correspondence from Agency
Quarterly Progress Report (October through December 2019)
Tyco Fire Products LP Facility, Marinette, Wisconsin

Description of Correspondence	Submitted By	Date Submitted
Change in EPA Project Manager, Administrative Order RCRA-05-2009-0007	EPA	October 3, 2019
Email Response – Comment on Tyco's Email Response to EPA Comment 5 on the Arsenic Migration Pathways Evaluation Work Plan (drilling standard operating procedures)	EPA	October 9, 2019
Email Response – Comments on October 18, 2019 Email Regarding Arsenic Migrations Pathways Evaluation - Drilling Update and Proposed Changes	EPA	October 21, 2019
Approval Letter: EPA Review of July 2019 Revised Five-Year Technical Review Report	EPA	December 2, 2019
EPA Review of the September 27, 2019 Vapor Intrusion Assessment and Work Plan	EPA	December 19, 2019

If you have any questions or require additional information, please contact me at 262-644-6167 or Jeffrey Danko at 414-524-3344.

Respectfully Yours,

Jacobs Engineering Group Inc.



Heather Ziegelbauer
Project Manager

Attachments

- 1 Groundwater Collection and Treatment System Operation Summary
- 2 Discharge Monitoring Reports for the Groundwater Collection and Treatment System
- 3 Pump Down Program Groundwater Elevation Monitoring
- 4 Letter Report *VBW Inspection – 2019*

cc: Angela Carey, WDNR
Ryan Suennen, Tyco Fire Products
Joe Janeczek, Johnson Controls
Jeff Danko, Johnson Controls
Mariel Carter, Stephenson Public Library

Document Control No.: D3235600.272

Attachment 1
Groundwater Collection and
Treatment System Operation Summary

Groundwater Collection and Treatment System Operations for Tyco Fire Products LP, Marinette, Wisconsin, October 1 through December 31, 2019

Groundwater collection and treatment system (GWCTS) operations from October 1 through December 31, 2019 at the Tyco facility on Stanton Street in Marinette, Wisconsin are summarized below.

- The GWCTS operated for 16 days in October 2019, 9 days in November 2019, and 10 days in December 2019, for a total of 34 days.
- The precipitation recorded from the weather station in Marinette, Wisconsin was 9.31 inches of rain and 16.9 inches of snow (<http://www.ncdc.noaa.gov/cdo-web/datasets/GHCND/stations/GHCND:USC00475091/detail>).
- Tyco believes the recorded extracted volumes are inaccurate, and the flow meters are not working properly. The flow meters were cleaned during the last reporting period, and Tyco plans to further evaluate the flow meters to see if they need to be calibrated or replaced. Based on the recorded data, an estimated 90,375 gallons of groundwater were extracted (not including volumes extracted as part of the pump down program) from the site during the reporting period; however, this value is likely closer to the discharged volume noted in the next bullet. Table 1 lists the water volumes extracted from each area of the site for this quarter based on the recorded data.
- An estimated 51,584 gallons of water were discharged to the Menominee River as effluent under the WPDES permit.
- Approximately 92,200 gallons of reject water were produced during system operations and subsequently disposed of offsite.

Table 2. Extraction Well Data Summary (October through December 2019)

*Groundwater Collection and Treatment System
Tyco Fire Products LP Facility, Marinette, Wisconsin*

Extraction Well	Gallons Run, Fourth Quarter 2019 (October 1 through December 31, 2019)
EW-1	19,253
EW-2	25
EW-3	15
EW-4	1,721
EW-5	0
EW-6	69,357
EW-7	4
Total	90,375*
*Extracted volume based on recorded meter readings; however, these values may be inaccurate because of inaccurate flow meters. Overall flow is anticipated to be closer to the discharged volume of 51,584 gallons.	

Attachment 2
Discharge Monitoring Reports for
the Groundwater Collection
and Treatment System

Wastewater Discharge Monitoring Long Report

For DNR Use Only

Facility Name: TYCO FIRE PRODUCTS LP
 Contact Address: One Stanton St
 Marinette, WI 54143
 Facility Contact: Mike Elliott, EHS Manager
 Phone Number: 715-735-7411
 Reporting Period: 09/01/2019 - 09/30/2019
 Form Due Date: 10/21/2019
 Permit Number: 0001040

Date Received:
 DOC: 429802
 FIN: 7245
 FID: 438039470
 Region: Northeast Region
 Permit Drafter: Trevor J Moen
 Reviewer: Nicole E Krueger
 Office: Milwaukee

Sample Point	001	703	001	001	001	
Description	PRIOR TO MENOMINEE RIVER	Intake Water Monitoring	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	
Parameter	211	280	487	374	373	
Description	Flow Rate	Mercury, Total Recoverable	Temperature	pH (Minimum)	pH (Maximum)	
Units	MGD	ng/L	degF	su	su	
Sample Type	CONTINUOUS	GRAB	GRAB	CONTINUOUS	CONTINUOUS	
Frequency	DAILY	MONTHLY	MONTHLY	DAILY	DAILY	
Sample Results	Day 1	0.0		80	8.0	8.2
	2	0.11771		83	7.1	8.3
	3	0.10127		74	7.1	7.8
	4	0.09516		74	7.0	7.4
	5	0.11040		75	6.8	7.1
	6	0.04403		73	7.0	7.6
	7	0.0		76	7.6	7.7
	8	0.00193		75	7.5	7.7
	9	0.14348		74	7.2	7.6
	10	0.12454		76	7.0	7.2
	11	0.16278		72	6.7	7.1
	12	0.51300		75	6.2	7.1
	13	0.07107		75	6.6	7.2
	14	0.07147		80	6.2	7.2
	15	0.03356		76	6.5	7.0
	16	0.11130		76	6.8	7.0
	17	0.11096	0.35	75	6.8	7.0
	18	0.22514		80	5.9	7.1
	19	0.09466		75	6.1	7.0
	20	0.01777		79	6.9	7.2
	21	0.00354		79	7.1	7.3
	22	0.18385		73	6.4	7.2
	23	0.07919		73	6.8	7.0
	24	0.12924		75	6.6	7.1
	25	0.11940		74	6.6	6.9
	26	0.12085		76	6.9	7.0
	27	0.13360		74	6.7	7.2
	28	0.09900		72	7.1	7.5
	29	0.10883		72	7.2	7.6
	30	0.14742		75	6.8	7.2
	31					

	Sample Point	001	703	001	001	001
	Description	PRIOR TO MENOMINEE RIVER	Intake Water Monitoring	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER
	Parameter	211	280	487	374	373
	Description	Flow Rate	Mercury, Total Recoverable	Temperature	pH (Minimum)	pH (Maximum)
	Units	MGD	ng/L	degF	su	su
Summary Values	Monthly Avg	0.109171667	0.35	75.533333333	6.84	7.316666667
	Monthly Total					
	Daily Max	0.513	0.35	83	8	8.3
	Daily Min	0	0.35	72	5.9	6.9
	Rolling 12 Month Avg					
Limit(s) in Effect	Monthly Avg					
	Monthly Total					
	Daily Max					11 0
	Daily Min				4 0	
	Rolling 12 Month Avg					
QA/QC Information	LOD		0.12			
	LOQ		0.39			
	QC Exceedance	N	N	N	N	N
	Lab Certification		721026460			

	Sample Point	001	001	001	001	001
	Description	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER
	Parameter	379	376	388	231	35
	Description	pH Total Exceedance Time Minutes	pH Exceedances Greater Than 60 Minutes	Phosphorus, Total	Hardness, Total as CaCO3	Arsenic, Total Recoverable
	Units	minutes	Number	mg/L	mg/L	ug/L
	Sample Type	CONTINUOUS	CONTINUOUS	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	DAILY	DAILY	WEEKLY	MONTHLY	MONTHLY
Sample Results	Day 1					
	2					
	3			0.35	310	31
	4					
	5					
	6					
	7					
	8					
	9			0.47	240	57
	10					
	11					
	12					
	13					
	14					
	15					
	16			0.23	360	84
	17					
	18					
	19					
	20					
	21					
	22					
	23			0.74	280	160
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	001		001		001		001	
	Description	PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER	
	Parameter	379		376		388		231	
	Description	pH Total Exceedance Time Minutes		pH Exceedances Greater Than 60 Minutes		Phosphorus, Total		Hardness, Total as CaCO3	
	Units	minutes		Number		mg/L		mg/L	
Summary Values	Monthly Avg					0.4475		297.5	
	Monthly Total								
	Daily Max					0.74		360	
	Daily Min					0.23		240	
	Rolling 12 Month Avg					0.3			
Limit(s) in Effect	Monthly Avg								
	Monthly Total	446	0						
	Daily Max			0	0			680	0
	Daily Min								
	Rolling 12 Month Avg					1	0		
QA/QC Information	LOD					0.024		2.1	
	LOQ					0.05		5	
	QC Exceedance	N		N		N		N	
	Lab Certification					999580010		999580010	

	Sample Point	001	001	001	001	001
	Description	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER
	Parameter	35	147	147	87	152
	Description	Arsenic, Total Recoverable	Copper, Total Recoverable	Copper, Total Recoverable	Cadmium, Total Recoverable	Cyanide, Amenable
	Units	lbs/day	ug/L	lbs/day	ug/L	ug/L
	Sample Type	CALCULATED	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	MONTHLY	MONTHLY	MONTHLY	MONTHLY	MONTHLY
Sample Results	Day 1					
	2					
	3	0.02604	18	0.01512	0.70	<5.0
	4					
	5					
	6					
	7					
	8					
	9	0.0684	36	0.0432	<0.49	
	10					
	11					
	12					
	13					
	14					
	15					
	16	0.07812	33	0.03069	1.2	
	17					
	18					
	19					
	20					
	21					
	22					
	23	0.1056	37	0.02442	2.7	
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	001		001		001		001	
	Description	PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER	
	Parameter	35		147		147		87	
	Description	Arsenic, Total Recoverable		Copper, Total Recoverable		Copper, Total Recoverable		Cadmium, Total Recoverable	
	Units	lbs/day		ug/L		lbs/day		ug/L	
Summary Values	Monthly Avg	0.06954		31		0.0283575		1.15	
	Monthly Total								
	Daily Max	0.1056		37		0.0432		2.7	
	Daily Min	0.02604		18		0.01512		<0.49	
	Rolling 12 Month Avg								
Limit(s) in Effect	Monthly Avg								
	Monthly Total								
	Daily Max	12	0	69	0	0.98	0		
	Daily Min								
	Rolling 12 Month Avg								
QA/QC Information	LOD			1.7				0.49	
	LOQ			5				1	
	QC Exceedance	N		N		N		N	
	Lab Certification			999580010				999580010	

	Sample Point	001	001	101	101	101
	Description	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	112	280	211	457	342
	Description	Chlorine, Total Residual	Mercury, Total Recoverable	Flow Rate	Suspended Solids, Total	Oil & Grease (Freon)
	Units	ug/L	ng/L	MGD	mg/L	mg/L
	Sample Type	GRAB	GRAB	CONTINUOUS	24 HR COMP	GRAB
	Frequency	MONTHLY	MONTHLY	DAILY	DAILY	2/WEEK
Sample Results	Day 1					
	2					
	3			0.042558	7.5	2.2
	4			0.025642	3.0	1.6
	5			0.031843	<1.9	
	6			0.018342	6.0	
	7					
	8					
	9	<30		0.014310	5.0	1.6
	10			0.035960	<1.9	<1.3
	11			0.029690	<1.9	
	12			0.015952	2.0	
	13			0.007830	3.0	
	14					
	15					
	16			0.030856	2.5	1.8
	17		17	0.029202	2.0	<1.5
	18			0.024468	2.0	
	19			0.006003	4.0	
	20			0.004168	7.5	
	21					
	22					
	23			0.005843	19.0	<1.6
	24			0.028766	6.0	<1.8
	25			0.018406	2.0	
	26			0.014634	2.5	
	27			0.001336	7.5	
	28					
	29					
	30			0.021600	6.0	
	31					

	Sample Point	001	001	101	101	101		
	Description	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent		
	Parameter	112	280	211	457	342		
	Description	Chlorine, Total Residual	Mercury, Total Recoverable	Flow Rate	Suspended Solids, Total	Oil & Grease (Freon)		
	Units	ug/L	ng/L	MGD	mg/L	mg/L		
Summary Values	Monthly Avg	0	17	0.02037045	4.375	0.9		
	Monthly Total							
	Daily Max	<30	17	0.042558	19	2.2		
	Daily Min	<30	17	0.001336	<1.9	<1.3		
	Rolling 12 Month Avg							
Limit(s) in Effect	Monthly Avg				31	0	26	0
	Monthly Total							
	Daily Max				60	0	52	0
	Daily Min							
	Rolling 12 Month Avg							
QA/QC Information	LOD	30	0.12				1.3	
	LOQ	100	0.39				5.8	
	QC Exceedance	N	N	N	N	N	N	
	Lab Certification		721026460		999580010	999580010		

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	87	133	315	553	155
	Description	Cadmium, Total Recoverable	Chromium, Total Recoverable	Nickel, Total Recoverable	Zinc, Total Recoverable	Cyanide, Total
	Units	ug/L	ug/L	ug/L	ug/L	ug/L
	Sample Type	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP	GRAB
	Frequency	2/WEEK	MONTHLY	2/WEEK	2/WEEK	MONTHLY
Sample Results	Day 1					
	2					
	3	<0.49	<2.2	4.5	64	<3.0
	4	<0.49	3.4	2.7	47	
	5					
	6					
	7					
	8					
	9	<0.49	<2.2	3.7	66	
	10	<0.49	<2.2	2.9	39	
	11					
	12					
	13					
	14					
	15					
	16	<0.49	90	3.1	77	
	17	<0.49	20	2.3	56	
	18					
	19					
	20					
	21					
	22					
	23	<0.49	8.9	10	140	
	24	2.4	22	140	1300	
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101		101		101		101		101	
	Description	Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent	
	Parameter	87		133		315		553		155	
	Description	Cadmium, Total Recoverable		Chromium, Total Recoverable		Nickel, Total Recoverable		Zinc, Total Recoverable		Cyanide, Total	
	Units	ug/L		ug/L		ug/L		ug/L		ug/L	
Summary Values	Monthly Avg	0.3		18.0375		21.15		223.625		0	
	Monthly Total										
	Daily Max	2.4		90		140		1300		<3	
	Daily Min	<0.49		<2.2		2.3		39		<3	
	Rolling 12 Month Avg										
Limit(s) in Effect	Monthly Avg	260	0	1710	0	2380	0	1480	0	650	0
	Monthly Total										
	Daily Max	690	0	2770	0	3980	0	2610	0	1200	0
	Daily Min										
	Rolling 12 Month Avg										
QA/QC Information	LOD	0.49		2.2		1.5		3.6		3	
	LOQ	1		5		5		10		10	
	QC Exceedance	N		N		N		N		N	
	Lab Certification	999580010		999580010		999580010		999580010		999580010	

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	147	264	430	374	373
	Description	Copper, Total Recoverable	Lead, Total Recoverable	Silver, Total Recoverable	pH (Minimum)	pH (Maximum)
	Units	ug/L	ug/L	ug/L	su	su
	Sample Type	24 HR COMP	24 HR COMP	24 HR COMP	CONTINUOUS	CONTINUOUS
	Frequency	2/WEEK	MONTHLY	MONTHLY	DAILY	DAILY
Sample Results	Day 1					
	2					
	3	11	<1.3	<1.1	7.3	8.5
	4	4.6	<1.3	<1.1	6.7	8.2
	5				6.2	7.0
	6				6.6	8.1
	7					
	8					
	9	5.5	<1.3	<1.1	7.2	8.4
	10	3.3	<1.3	<1.1	7.1	8.1
	11				6.7	8.0
	12				6.6	7.3
	13				7.2	8.6
	14					
	15					
	16	5.2	<1.3	<1.1	6.8	7.9
	17	3.6	<1.3	<1.1	6.6	8.7
	18				6.3	8.8
	19				6.4	7.8
	20				6.6	9.0
	21					
	22					
	23	33	<1.3	<1.1	6.7	7.7
	24	29	<1.3	<1.1	6.4	8.1
	25				6.8	8.2
	26				7.2	7.9
	27				7.0	8.6
	28					
	29					
	30				7.0	8.6
	31					

	Sample Point	101		101		101		101		101	
	Description	Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent	
	Parameter	147		264		430		374		373	
	Description	Copper, Total Recoverable		Lead, Total Recoverable		Silver, Total Recoverable		pH (Minimum)		pH (Maximum)	
	Units	ug/L		ug/L		ug/L		su		su	
Summary Values	Monthly Avg	11.9		0		0		6.77		8.175	
	Monthly Total										
	Daily Max	33		<1.3		<1.1		7.3		9	
	Daily Min	3.3		<1.3		<1.1		6.2		7	
	Rolling 12 Month Avg										
Limit(s) in Effect	Monthly Avg	2070	0	430	0	240	0				
	Monthly Total										
	Daily Max	3380	0	690	0	430	0			11	0
	Daily Min							4	0		
	Rolling 12 Month Avg										
QA/QC Information	LOD	1.7		1.3		1.1					
	LOQ	5		2.5		2.5					
	QC Exceedance	N		N		N		N		N	
	Lab Certification	999580010		999580010		999580010					

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	379	376	507	40	490
	Description	pH Total Exceedance Time Minutes	pH Exceedances Greater Than 60 Minutes	Total Toxic Organics	Benzene	Tetrachloroethylene
	Units	minutes	Number	ug/L	ug/L	ug/L
	Sample Type	CALCULATED	CALCULATED	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	DAILY	DAILY	MONTHLY	MONTHLY	MONTHLY
Sample Results	Day 1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101		101		101		101		101	
	Description	Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent	
	Parameter	379		376		507		40		490	
	Description	pH Total Exceedance Time Minutes		pH Exceedances Greater Than 60 Minutes		Total Toxic Organics		Benzene		Tetrachloroethylene	
	Units	minutes		Number		ug/L		ug/L		ug/L	
Summary Values	Monthly Avg										
	Monthly Total										
	Daily Max										
	Daily Min										
	Rolling 12 Month Avg										
Limit(s) in Effect	Monthly Avg										
	Monthly Total	446	0	0	0						
	Daily Max					2130					
	Daily Min										
	Rolling 12 Month Avg										
QA/QC Information	LOD										
	LOQ										
	QC Exceedance	N		N		N		N		N	
	Lab Certification										

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	500	561	200	508	285
	Description	Toluene	1,1,1-Trichloro- ethane	Ethylbenzene	Trichloro- ethylene	Methylene chloride
	Units	ug/L	ug/L	ug/L	ug/L	ug/L
	Sample Type	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	MONTHLY	MONTHLY	MONTHLY	MONTHLY	MONTHLY
Sample Results	Day 1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	500	561	200	508	285
	Description	Toluene	1,1,1-Trichloro- ethane	Ethylbenzene	Trichloro- ethylene	Methylene chloride
	Units	ug/L	ug/L	ug/L	ug/L	ug/L
Summary Values	Monthly Avg					
	Monthly Total					
	Daily Max					
	Daily Min					
	Rolling 12 Month Avg					
Limit(s) in Effect	Monthly Avg					
	Monthly Total					
	Daily Max					
	Daily Min					
	Rolling 12 Month Avg					
QA/QC Information	LOD					
	LOQ					
	QC Exceedance					
	Lab Certification					

	Sample Point	101	106	106	106	107
	Description	Metal Finishing Effluent	Future remedial action ww	Future remedial action ww	Future remedial action ww	Mercury Field Blank Results
	Parameter	167	211	35	457	280
	Description	Di-n-butyl phthalate (dibutyl phthalate)	Flow Rate	Arsenic, Total Recoverable	Suspended Solids, Total	Mercury, Total Recoverable
	Units	ug/L	gpd	ug/L	mg/L	ng/L
	Sample Type	24 HR COMP	CONTINUOUS	24 HR COMP	24 HR COMP	GRAB
	Frequency	MONTHLY	DAILY	WEEKLY	WEEKLY	MONTHLY
Sample Results	Day 1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					0.12
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101	106	106	106	107
	Description	Metal Finishing Effluent	Future remedial action ww	Future remedial action ww	Future remedial action ww	Mercury Field Blank Results
	Parameter	167	211	35	457	280
	Description	Di-n-butyl phthalate (dibutyl phthalate)	Flow Rate	Arsenic, Total Recoverable	Suspended Solids, Total	Mercury, Total Recoverable
	Units	ug/L	gpd	ug/L	mg/L	ng/L
Summary Values	Monthly Avg					0.12
	Monthly Total					
	Daily Max					0.12
	Daily Min					0.12
	Rolling 12 Month Avg					
Limit(s) in Effect	Monthly Avg					
	Monthly Total					
	Daily Max					
	Daily Min					
	Rolling 12 Month Avg					
QA/QC Information	LOD					0.12
	LOQ					0.39
	QC Exceedance	N	N	N	N	N
	Lab Certification					721026460

	Sample Point	003	003	003	003	003
	Description	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg
	Parameter	211	457	35	374	373
	Description	Flow Rate	Suspended Solids, Total	Arsenic, Total Recoverable	pH (Minimum)	pH (Maximum)
	Units	MGD	mg/L	ug/L	su	su
	Sample Type	CONTINUOUS	24 HR COMP	24 HR COMP	CONTINUOUS	CONTINUOUS
	Frequency	DAILY	WEEKLY	WEEKLY	DAILY	DAILY
Sample Results	Day 1					
	2					
	3	0.001007	<1.9	<2.1	6.4	6.6
	4	0.001437			6.8	6.8
	5	0.000727			6.8	6.8
	6					
	7					
	8					
	9	0.002040	2.5	<2.1	6.3	6.7
	10					
	11	0.001022			6.3	6.6
	12	0.002010			6.6	6.7
	13					
	14					
	15					
	16	0.002166	<1.9	<2.1	6.2	6.4
	17	0.002001			6.5	6.8
	18	0.001837			6.3	6.5
	19	0.001778			6.2	6.4
	20					
	21					
	22					
	23	0.002781			6.0	6.3
	24	0.001417	2.0	<2.1	6.2	6.4
	25	0.000804			6.1	6.4
	26					
	27					
	28					
	29					
	30	0.003622			6.2	6.4
	31					

	Sample Point	003	003	003	003	003	
	Description	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	
	Parameter	211	457	35	374	373	
	Description	Flow Rate	Suspended Solids, Total	Arsenic, Total Recoverable	pH (Minimum)	pH (Maximum)	
	Units	MGD	mg/L	ug/L	su	su	
Summary Values	Monthly Avg	0.001760643	1.125	0	6.35	6.557142857	
	Monthly Total						
	Daily Max	0.003622	2.5	<2.1	6.8	6.8	
	Daily Min	0.000727	<1.9	<2.1	6	6.3	
	Rolling 12 Month Avg						
Limit(s) in Effect	Monthly Avg						
	Monthly Total						
	Daily Max			680	0	11	0
	Daily Min				4	0	
	Rolling 12 Month Avg						
QA/QC Information	LOD			2.1			
	LOQ			5			
	QC Exceedance	N	N	N	N	N	
	Lab Certification		999580010	999580010			

	Sample Point	003	003
	Description	Future remedial action dischg	Future remedial action dischg
	Parameter	379	376
	Description	pH Total Exceedance Time Minutes	pH Exceedances Greater Than 60 Minutes
	Units	minutes	Number
	Sample Type	CONTINUOUS	CONTINUOUS
	Frequency	DAILY	DAILY
Sample Results	Day 1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		

	Sample Point	003		003	
	Description	Future remedial action dischg		Future remedial action dischg	
	Parameter	379		376	
	Description	pH Total Exceedance Time Minutes		pH Exceedances Greater Than 60 Minutes	
	Units	minutes		Number	
Summary Values	Monthly Avg				
	Monthly Total				
	Daily Max				
	Daily Min				
	Rolling 12 Month Avg				
Limit(s) in Effect	Monthly Avg				
	Monthly Total	446	0		
	Daily Max			0	0
	Daily Min				
	Rolling 12 Month Avg				
QA/QC Information	LOD				
	LOQ				
	QC Exceedance	N		N	
	Lab Certification				

Footnotes (DNR Use Only; Instructions for completing this form that are unique for your facility may be displayed here.)

1. Based on my inquiry of the person or persons directly responsible for managing compliance with the permit limitation for TTO I certify that to the best of my knowledge and belief no dumping of concentrated toxic organics into the wastewaters has
2. occurred since filing of the last discharge monitoring report. I further certify that this facility is implementing the solvent management plan submitted to the department.

General Remarks

Laboratory Quality Control Comments

Wastewater Discharge Monitoring Long Report

For DNR Use Only

Facility Name: TYCO FIRE PRODUCTS LP
 Contact Address: One Stanton St
 Marinette, WI 54143
 Facility Contact: Mike Elliott, EHS Manager
 Phone Number: 715-735-7411
 Reporting Period: 10/01/2019 - 10/31/2019
 Form Due Date: 11/21/2019
 Permit Number: 0001040

Date Received:
 DOC: 435995
 FIN: 7245
 FID: 438039470
 Region: Northeast Region
 Permit Drafter: Trevor J Moen
 Reviewer: Nicole E Krueger
 Office: Milwaukee

Sample Point	001	703	001	001	001	
Description	PRIOR TO MENOMINEE RIVER	Intake Water Monitoring	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	
Parameter	211	280	487	374	373	
Description	Flow Rate	Mercury, Total Recoverable	Temperature	pH (Minimum)	pH (Maximum)	
Units	MGD	ng/L	degF	su	su	
Sample Type	CONTINUOUS	GRAB	GRAB	CONTINUOUS	CONTINUOUS	
Frequency	DAILY	MONTHLY	MONTHLY	DAILY	DAILY	
Sample Results	Day 1	0.29134		75	6.6	7.3
	2	0.16194		74	6.9	7.1
	3	0.12705		72	6.9	7.2
	4	0.08932		74	7.0	7.8
	5	0.07458		76	7.0	7.9
	6	0.06456		73	7.1	7.4
	7	0.12775		73	6.9	7.4
	8	0.13635		75	7.3	7.8
	9	0.13525		73	7.3	7.6
	10	0.16978		76	6.8	7.9
	11	0.23523		72	6.7	7.8
	12	0.04819		81	7.4	7.6
	13	0.05578		77	7.2	7.6
	14	0.13260		71	7.1	7.4
	15	0.18401		72	6.9	7.6
	16	0.13679		73	7.2	8.2
	17	0.15345	0.29	73	5.8	7.6
	18	0.08876		73	6.2	7.6
	19	0.03299		78	7.4	7.7
	20	0.06324		74	7.0	7.6
	21	0.22894		68	6.9	7.2
	22	0.16976		75	7.1	7.6
	23	0.13507		73	7.2	7.8
	24	0.14924		75	7.1	7.6
	25	0.12745		73	7.1	7.3
	26	0.14145		72	7.1	7.4
	27	0.12138		73	7.2	7.7
	28	0.15113		75	7.2	8.6
	29	0.13411		74	7.1	7.9
	30	0.15647		74	7.4	7.8
	31	0.15756		73	7.1	7.6

	Sample Point	001		703		001		001		001	
	Description	PRIOR TO MENOMINEE RIVER		Intake Water Monitoring		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER	
	Parameter	211		280		487		374		373	
	Description	Flow Rate		Mercury, Total Recoverable		Temperature		pH (Minimum)		pH (Maximum)	
	Units	MGD		ng/L		degF		su		su	
Summary Values	Monthly Avg	0.134887742		0.29		73.870967742		7.006451613		7.632258065	
	Monthly Total										
	Daily Max	0.29134		0.29		81		7.4		8.6	
	Daily Min	0.03299		0.29		68		5.8		7.1	
	Rolling 12 Month Avg										
Limit(s) in Effect	Monthly Avg										
	Monthly Total										
	Daily Max									11	0
	Daily Min							4	0		
	Rolling 12 Month Avg										
QA/QC Information	LOD			0.12							
	LOQ			0.39							
	QC Exceedance	N		N		N		N		N	
	Lab Certification			721026460							

	Sample Point	001	001	001	001	001
	Description	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER
	Parameter	379	376	388	231	35
	Description	pH Total Exceedance Time Minutes	pH Exceedances Greater Than 60 Minutes	Phosphorus, Total	Hardness, Total as CaCO3	Arsenic, Total Recoverable
	Units	minutes	Number	mg/L	mg/L	ug/L
	Sample Type	CONTINUOUS	CONTINUOUS	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	DAILY	DAILY	WEEKLY	MONTHLY	MONTHLY
Sample Results	Day 1			0.55	150	95
	2					
	3					
	4					
	5					
	6					
	7					
	8			0.24	340	98
	9					
	10					
	11					
	12					
	13					
	14					
	15			0.41	520	110
	16					
	17					
	18					
	19					
	20					
	21					
	22			0.23	880	94
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	001		001		001		001	
	Description	PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER	
	Parameter	379		376		388		231	
	Description	pH Total Exceedance Time Minutes		pH Exceedances Greater Than 60 Minutes		Phosphorus, Total		Hardness, Total as CaCO3	
	Units	minutes		Number		mg/L		mg/L	
Summary Values	Monthly Avg					0.3575		472.5	
	Monthly Total								
	Daily Max					0.55		880	
	Daily Min					0.23		150	
	Rolling 12 Month Avg					0.3			
Limit(s) in Effect	Monthly Avg								
	Monthly Total	446	0						
	Daily Max			0	0			680	0
	Daily Min								
	Rolling 12 Month Avg					1	0		
QA/QC Information	LOD					0.024		2.1	
	LOQ					0.05		5	
	QC Exceedance	N		N		N		N	
	Lab Certification					999580010		999580010	

	Sample Point	001	001	001	001	001
	Description	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER
	Parameter	35	147	147	87	152
	Description	Arsenic, Total Recoverable	Copper, Total Recoverable	Copper, Total Recoverable	Cadmium, Total Recoverable	Cyanide, Amenable
	Units	lbs/day	ug/L	lbs/day	ug/L	ug/L
	Sample Type	CALCULATED	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	MONTHLY	MONTHLY	MONTHLY	MONTHLY	MONTHLY
Sample Results	Day 1	0.23085	51	0.12393	1.6	<5.0
	2					
	3					
	4					
	5					
	6					
	7					
	8	0.11172	43	0.04902	1.4	
	9					
	10					
	11					
	12					
	13					
	14					
	15	1.683	25	0.03825	1.7	
	16					
	17					
	18					
	19					
	20					
	21					
	22	0.13348	39	0.05538	0.58	
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	001		001		001		001	
	Description	PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER	
	Parameter	35		147		147		87	
	Description	Arsenic, Total Recoverable		Copper, Total Recoverable		Copper, Total Recoverable		Cadmium, Total Recoverable	
	Units	lbs/day		ug/L		lbs/day		ug/L	
Summary Values	Monthly Avg	0.5397625		39.5		0.066645		1.32	
	Monthly Total								
	Daily Max	1.683		51		0.12393		1.7	
	Daily Min	0.11172		25		0.03825		0.58	
	Rolling 12 Month Avg								
Limit(s) in Effect	Monthly Avg								
	Monthly Total								
	Daily Max	12	0	69	0	0.98	0		
	Daily Min								
	Rolling 12 Month Avg								
QA/QC Information	LOD			1.7				0.49	
	LOQ			5				1	
	QC Exceedance	N		N		N		N	
	Lab Certification			999580010				999580010	

	Sample Point	001	001	101	101	101
	Description	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	112	280	211	457	342
	Description	Chlorine, Total Residual	Mercury, Total Recoverable	Flow Rate	Suspended Solids, Total	Oil & Grease (Freon)
	Units	ug/L	ng/L	MGD	mg/L	mg/L
	Sample Type	GRAB	GRAB	CONTINUOUS	24 HR COMP	GRAB
	Frequency	MONTHLY	MONTHLY	DAILY	DAILY	2/WEEK
Sample Results	Day 1			0.020761	3.5	<1.4
	2			0.020637	3.0	<1.4
	3			0.008225	4.0	
	4			0.013913	4.5	
	5					
	6					
	7			0.027301	3.0	
	8			0.021826	6.0	<1.4
	9			0.013488	3.0	<1.4
	10			0.027236	3.0	
	11			0.007474	4.0	
	12					
	13					
	14	50		0.031170		
	15			0.026037	4.5	6.6
	16			0.019791	5.0	1.7
	17		17	0.038135	3.0	
	18			0.021398	7.5	
	19					
	20					
	21			0.025152	4.5	
	22			0.040064	3.0	
	23			0.026703	6.0	<1.5
	24			0.023123	2.0	1.8
	25			0.023751	3.5	
	26			0.018515		
	27			0.003942		
	28			0.029111	4.0	
	29			0.028221	3.5	
	30			0.031887	2.5	
	31			0.043705	2.5	

	Sample Point	001		001		101		101		
	Description	PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		Metal Finishing Effluent		Metal Finishing Effluent		
	Parameter	112		280		211		457		
	Description	Chlorine, Total Residual		Mercury, Total Recoverable		Flow Rate		Suspended Solids, Total		
	Units	ug/L		ng/L		MGD		mg/L		
Summary Values	Monthly Avg	50		17		0.02366264		3.886363636		
	Monthly Total									
	Daily Max	50		17		0.043705		7.5		
	Daily Min	50		17		0.003942		2		
	Rolling 12 Month Avg									
Limit(s) in Effect	Monthly Avg						31	0	26	0
	Monthly Total									
	Daily Max						60	0	52	0
	Daily Min									
	Rolling 12 Month Avg									
QA/QC Information	LOD	30		0.12				1.4		
	LOQ	100		0.39				5.6		
	QC Exceedance	N		N		N		N		
	Lab Certification			721026460				999580010		

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	87	133	315	553	155
	Description	Cadmium, Total Recoverable	Chromium, Total Recoverable	Nickel, Total Recoverable	Zinc, Total Recoverable	Cyanide, Total
	Units	ug/L	ug/L	ug/L	ug/L	ug/L
	Sample Type	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP	GRAB
	Frequency	2/WEEK	MONTHLY	2/WEEK	2/WEEK	MONTHLY
Sample Results	Day 1	<0.49	<2.2	10	63	<3.0
	2	<0.49	<2.2	4.1	56	
	3					
	4					
	5					
	6					
	7					
	8	<0.49	<2.2	2.1	44	
	9	<0.49	<2.2	8.3	73	
	10					
	11					
	12					
	13					
	14					
	15	<0.49	28	<1.5	31	
	16	<0.49	6.4	2.1	63	
	17					
	18					
	19					
	20					
	21					
	22	<0.49	<2.2	<1.5	62	
	23	<0.49	2.7	<1.5	73	
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101		101		101		101		101	
	Description	Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent	
	Parameter	87		133		315		553		155	
	Description	Cadmium, Total Recoverable		Chromium, Total Recoverable		Nickel, Total Recoverable		Zinc, Total Recoverable		Cyanide, Total	
	Units	ug/L		ug/L		ug/L		ug/L		ug/L	
Summary Values	Monthly Avg	0		4.6375		3.325		58.125		0	
	Monthly Total										
	Daily Max	<0.49		28		10		73		<3	
	Daily Min	<0.49		<2.2		<1.5		31		<3	
	Rolling 12 Month Avg										
Limit(s) in Effect	Monthly Avg	260	0	1710	0	2380	0	1480	0	650	0
	Monthly Total										
	Daily Max	690	0	2770	0	3980	0	2610	0	1200	0
	Daily Min										
	Rolling 12 Month Avg										
QA/QC Information	LOD	0.49		2.2		1.5		3.6		3	
	LOQ	1		5		5		10		10	
	QC Exceedance	N		N		N		N		N	
	Lab Certification	999580010		999580010		999580010		999580010		999580010	

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	147	264	430	374	373
	Description	Copper, Total Recoverable	Lead, Total Recoverable	Silver, Total Recoverable	pH (Minimum)	pH (Maximum)
	Units	ug/L	ug/L	ug/L	su	su
	Sample Type	24 HR COMP	24 HR COMP	24 HR COMP	CONTINUOUS	CONTINUOUS
	Frequency	2/WEEK	MONTHLY	MONTHLY	DAILY	DAILY
Sample Results	Day 1	20	<1.3	1.5	6.7	7.8
	2	13	<1.3	2.4	6.6	7.3
	3				6.6	7.3
	4				6.0	8.2
	5					
	6					
	7				6.6	8.8
	8	11	<1.3	<1.1	7.2	8.8
	9	12	<1.3	<1.1	7.0	8.3
	10				6.8	7.8
	11				7.8	9.0
	12					
	13					
	14				7.0	8.1
	15	5.1	2.4	2.0	6.4	8.4
	16	6.3	2.7	1.4	6.3	8.9
	17				7.3	8.8
	18				7.6	8.8
	19					
	20					
	21				7.3	8.6
	22	<1.7	6.5	1.2	7.2	8.5
	23	<1.7	4.3	<1.1	6.8	8.0
	24				6.8	9.0
	25				7.1	7.9
	26				6.2	8.6
	27				7.2	8.6
	28				7.4	8.4
	29				6.6	7.9
	30				6.2	7.5
	31				6.4	8.3

	Sample Point	101		101		101		101		101	
	Description	Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent	
	Parameter	147		264		430		374		373	
	Description	Copper, Total Recoverable		Lead, Total Recoverable		Silver, Total Recoverable		pH (Minimum)		pH (Maximum)	
	Units	ug/L		ug/L		ug/L		su		su	
Summary Values	Monthly Avg	8.425		1.9875		1.0625		6.844		8.304	
	Monthly Total										
	Daily Max	20		6.5		2.4		7.8		9	
	Daily Min	<1.7		<1.3		<1.1		6		7.3	
	Rolling 12 Month Avg										
Limit(s) in Effect	Monthly Avg	2070	0	430	0	240	0				
	Monthly Total										
	Daily Max	3380	0	690	0	430	0			11	0
	Daily Min							4	0		
	Rolling 12 Month Avg										
QA/QC Information	LOD	1.7		1.3		1.1					
	LOQ	5		2.5		2.5					
	QC Exceedance	N		N		N		N		N	
	Lab Certification	999580010		999580010		999580010					

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	379	376	507	40	490
	Description	pH Total Exceedance Time Minutes	pH Exceedances Greater Than 60 Minutes	Total Toxic Organics	Benzene	Tetrachloroethylene
	Units	minutes	Number	ug/L	ug/L	ug/L
	Sample Type	CALCULATED	CALCULATED	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	DAILY	DAILY	MONTHLY	MONTHLY	MONTHLY
Sample Results	Day 1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101		101		101		101		101	
	Description	Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent	
	Parameter	379		376		507		40		490	
	Description	pH Total Exceedance Time Minutes		pH Exceedances Greater Than 60 Minutes		Total Toxic Organics		Benzene		Tetrachloroethylene	
	Units	minutes		Number		ug/L		ug/L		ug/L	
Summary Values	Monthly Avg										
	Monthly Total										
	Daily Max										
	Daily Min										
	Rolling 12 Month Avg										
Limit(s) in Effect	Monthly Avg										
	Monthly Total	446	0	0	0						
	Daily Max					2130					
	Daily Min										
	Rolling 12 Month Avg										
QA/QC Information	LOD										
	LOQ										
	QC Exceedance	N		N		N		N		N	
	Lab Certification										

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	500	561	200	508	285
	Description	Toluene	1,1,1-Trichloro- ethane	Ethylbenzene	Trichloro- ethylene	Methylene chloride
	Units	ug/L	ug/L	ug/L	ug/L	ug/L
	Sample Type	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	MONTHLY	MONTHLY	MONTHLY	MONTHLY	MONTHLY
Sample Results	Day 1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	500	561	200	508	285
	Description	Toluene	1,1,1-Trichloro- ethane	Ethylbenzene	Trichloro- ethylene	Methylene chloride
	Units	ug/L	ug/L	ug/L	ug/L	ug/L
Summary Values	Monthly Avg					
	Monthly Total					
	Daily Max					
	Daily Min					
	Rolling 12 Month Avg					
Limit(s) in Effect	Monthly Avg					
	Monthly Total					
	Daily Max					
	Daily Min					
	Rolling 12 Month Avg					
QA/QC Information	LOD					
	LOQ					
	QC Exceedance					
	Lab Certification					

	Sample Point	101	106	106	106	107
	Description	Metal Finishing Effluent	Future remedial action ww	Future remedial action ww	Future remedial action ww	Mercury Field Blank Results
	Parameter	167	211	35	457	280
	Description	Di-n-butyl phthalate (dibutyl phthalate)	Flow Rate	Arsenic, Total Recoverable	Suspended Solids, Total	Mercury, Total Recoverable
	Units	ug/L	gpd	ug/L	mg/L	ng/L
	Sample Type	24 HR COMP	CONTINUOUS	24 HR COMP	24 HR COMP	GRAB
	Frequency	MONTHLY	DAILY	WEEKLY	WEEKLY	MONTHLY
Sample Results	Day 1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					<0.12
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101	106	106	106	107
	Description	Metal Finishing Effluent	Future remedial action ww	Future remedial action ww	Future remedial action ww	Mercury Field Blank Results
	Parameter	167	211	35	457	280
	Description	Di-n-butyl phthalate (dibutyl phthalate)	Flow Rate	Arsenic, Total Recoverable	Suspended Solids, Total	Mercury, Total Recoverable
	Units	ug/L	gpd	ug/L	mg/L	ng/L
Summary Values	Monthly Avg					0
	Monthly Total					
	Daily Max					<0.12
	Daily Min					<0.12
	Rolling 12 Month Avg					
Limit(s) in Effect	Monthly Avg					
	Monthly Total					
	Daily Max					
	Daily Min					
	Rolling 12 Month Avg					
QA/QC Information	LOD					0.12
	LOQ					0.39
	QC Exceedance	N	N	N	N	N
	Lab Certification					721026460

	Sample Point	003	003	003	003	003
	Description	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg
	Parameter	211	457	35	374	373
	Description	Flow Rate	Suspended Solids, Total	Arsenic, Total Recoverable	pH (Minimum)	pH (Maximum)
	Units	MGD	mg/L	ug/L	su	su
	Sample Type	CONTINUOUS	24 HR COMP	24 HR COMP	CONTINUOUS	CONTINUOUS
	Frequency	DAILY	WEEKLY	WEEKLY	DAILY	DAILY
Sample Results	Day 1	0.001324	2.0	<2.1	6.3	6.4
	2	0.001081			6.3	6.4
	3					
	4	0.001575			6.2	6.5
	5					
	6					
	7	0.001279			6.0	8.6
	8	0.000938	<1.9	2.2	6.8	7.8
	9	0.001768			6.0	8.2
	10	0.001355			6.0	7.2
	11	0.000710			6.0	7.5
	12					
	13					
	14	0.000801			6.3	6.5
	15	0.001810	2.5	23	7.3	8.7
	16	0.001493			7.4	8.5
	17	0.001645			6.0	7.9
	18					
	19					
	20					
	21	0.001870			7.2	7.6
	22	0.000518	2.0	<2.1	7.1	7.5
	23	0.003489			6.8	7.7
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31	0.000675			7.8	8.5

	Sample Point	003	003	003	003	003	
	Description	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	
	Parameter	211	457	35	374	373	
	Description	Flow Rate	Suspended Solids, Total	Arsenic, Total Recoverable	pH (Minimum)	pH (Maximum)	
	Units	MGD	mg/L	ug/L	su	su	
Summary Values	Monthly Avg	0.001395688	1.625	6.3	6.59375	7.59375	
	Monthly Total						
	Daily Max	0.003489	2.5	23	7.8	8.7	
	Daily Min	0.000518	<1.9	<2.1	6	6.4	
	Rolling 12 Month Avg						
Limit(s) in Effect	Monthly Avg						
	Monthly Total						
	Daily Max			680	0	11	0
	Daily Min				4	0	
	Rolling 12 Month Avg						
QA/QC Information	LOD			2.1			
	LOQ			5			
	QC Exceedance	N	N	N	N	N	
	Lab Certification		999580010	999580010			

	Sample Point	003	003
	Description	Future remedial action dischg	Future remedial action dischg
	Parameter	379	376
	Description	pH Total Exceedance Time Minutes	pH Exceedances Greater Than 60 Minutes
	Units	minutes	Number
	Sample Type	CONTINUOUS	CONTINUOUS
	Frequency	DAILY	DAILY
Sample Results	Day 1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		

	Sample Point	003		003	
	Description	Future remedial action dischg		Future remedial action dischg	
	Parameter	379		376	
	Description	pH Total Exceedance Time Minutes		pH Exceedances Greater Than 60 Minutes	
	Units	minutes		Number	
Summary Values	Monthly Avg				
	Monthly Total				
	Daily Max				
	Daily Min				
	Rolling 12 Month Avg				
Limit(s) in Effect	Monthly Avg				
	Monthly Total	446	0		
	Daily Max			0	0
	Daily Min				
	Rolling 12 Month Avg				
QA/QC Information	LOD				
	LOQ				
	QC Exceedance	N		N	
	Lab Certification				

Footnotes (DNR Use Only; Instructions for completing this form that are unique for your facility may be displayed here.)

1. Based on my inquiry of the person or persons directly responsible for managing compliance with the permit limitation for TTO I certify that to the best of my knowledge and belief no dumping of concentrated toxic organics into the wastewaters has
2. occurred since filing of the last discharge monitoring report. I further certify that this facility is implementing the solvent management plan submitted to the department.

General Remarks

On 10-14-19 the sampler at SP101 was running all day but the sampler wasn't working properly so there was no sample for that day and no TSS results. The problem was fixed right away and was working again. Ryan Suennen, my boss did notify our DNR contact.

Laboratory Quality Control Comments

Submitted by Anne Fleury(afleury16) on 11/15/2019 10:29:44 AM

Wastewater Discharge Monitoring Long Report

For DNR Use Only

Facility Name: TYCO FIRE PRODUCTS LP
 Contact Address: One Stanton St
 Marinette, WI 54143
 Facility Contact: Mike Elliott, EHS Manager
 Phone Number: 715-735-7411
 Reporting Period: 11/01/2019 - 11/30/2019
 Form Due Date: 12/21/2019
 Permit Number: 0001040

Date Received:
 DOC: 435996
 FIN: 7245
 FID: 438039470
 Region: Northeast Region
 Permit Drafter: Trevor J Moen
 Reviewer: Nicole E Krueger
 Office: Milwaukee

Sample Point	001	703	001	001	001	
Description	PRIOR TO MENOMINEE RIVER	Intake Water Monitoring	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	
Parameter	211	280	487	374	373	
Description	Flow Rate	Mercury, Total Recoverable	Temperature	pH (Minimum)	pH (Maximum)	
Units	MGD	ng/L	degF	su	su	
Sample Type	CONTINUOUS	GRAB	GRAB	CONTINUOUS	CONTINUOUS	
Frequency	DAILY	MONTHLY	MONTHLY	DAILY	DAILY	
Sample Results	Day 1	0.08535		88	7.2	8.5
	2	0.04313		76	8.0	8.7
	3	0.05946		74	7.1	8.1
	4	0.13797		72	7.0	8.0
	5	0.14239		71	7.0	8.3
	6	0.15031		72	7.9	8.2
	7	0.13292		74	7.9	8.4
	8	0.12165		73	7.7	8.4
	9	0.09368		75	7.7	8.6
	10	0.07254		77	7.9	8.7
	11	0.13669		72	8.2	8.5
	12	0.13494		73	8.1	8.6
	13	0.14973		72	8.0	8.8
	14	0.14449		73	8.1	8.6
	15	0.10387		85	6.7	9.0
	16	0.04381		89	6.1	8.8
	17	0.07355		89	6.7	8.6
	18	0.15349		78	7.7	8.3
	19	0.13880		73	7.8	8.3
	20	0.21441		71	7.8	8.1
	21	0.14473		70	7.7	8.3
	22	0.09608		82	8.0	8.4
	23	0.05079		84	6.4	8.7
	24	0.09147		89	6.7	8.6
	25	0.13416	0.20	70	7.2	8.1
	26	0.29383		68	6.9	8.0
	27	0.24528		56	7.0	7.6
	28	0.03952		72	7.5	7.9
	29	0.04228		81	7.6	8.2
	30	0.19395		79	7.4	8.3
	31					

	Sample Point	001	703	001	001	001
	Description	PRIOR TO MENOMINEE RIVER	Intake Water Monitoring	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER
	Parameter	211	280	487	374	373
	Description	Flow Rate	Mercury, Total Recoverable	Temperature	pH (Minimum)	pH (Maximum)
	Units	MGD	ng/L	degF	su	su
Summary Values	Monthly Avg	0.122175667	0.2	75.933333333	7.433333333	8.386666667
	Monthly Total					
	Daily Max	0.29383	0.2	89	8.2	9
	Daily Min	0.03952	0.2	56	6.1	7.6
	Rolling 12 Month Avg					
Limit(s) in Effect	Monthly Avg					
	Monthly Total					
	Daily Max					11 0
	Daily Min				4 0	
	Rolling 12 Month Avg					
QA/QC Information	LOD		0.12			
	LOQ		0.39			
	QC Exceedance	N	N	N	N	N
	Lab Certification		721026460			

	Sample Point	001	001	001	001	001
	Description	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER
	Parameter	379	376	388	231	35
	Description	pH Total Exceedance Time Minutes	pH Exceedances Greater Than 60 Minutes	Phosphorus, Total	Hardness, Total as CaCO3	Arsenic, Total Recoverable
	Units	minutes	Number	mg/L	mg/L	ug/L
	Sample Type	CONTINUOUS	CONTINUOUS	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	DAILY	DAILY	WEEKLY	MONTHLY	MONTHLY
Sample Results	Day 1					
	2					
	3					
	4			0.22	330	69
	5					
	6					
	7					
	8					
	9					
	10					
	11			0.19	300	51
	12					
	13					
	14					
	15					
	16					
	17					
	18			0.25	510	51
	19					
	20					
	21					
	22					
	23					
	24					
	25			0.27	300	49
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	001		001		001		001	
	Description	PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER	
	Parameter	379		376		388		231	
	Description	pH Total Exceedance Time Minutes		pH Exceedances Greater Than 60 Minutes		Phosphorus, Total		Hardness, Total as CaCO3	
	Units	minutes		Number		mg/L		mg/L	
Summary Values	Monthly Avg					0.2325		360	
	Monthly Total								
	Daily Max					0.27		510	
	Daily Min					0.19		300	
	Rolling 12 Month Avg					0.3			
Limit(s) in Effect	Monthly Avg								
	Monthly Total	446	0						
	Daily Max			0	0			680	0
	Daily Min								
	Rolling 12 Month Avg					1	0		
QA/QC Information	LOD					0.024		2.1	
	LOQ					0.05		5	
	QC Exceedance	N		N		N		N	
	Lab Certification					999580010		999580010	

	Sample Point	001	001	001	001	001
	Description	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER
	Parameter	35	147	147	87	152
	Description	Arsenic, Total Recoverable	Copper, Total Recoverable	Copper, Total Recoverable	Cadmium, Total Recoverable	Cyanide, Amenable
	Units	lbs/day	ug/L	lbs/day	ug/L	ug/L
	Sample Type	CALCULATED	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	MONTHLY	MONTHLY	MONTHLY	MONTHLY	MONTHLY
Sample Results	Day 1					
	2					
	3					
	4	0.07935	49	0.05635	1.3	<5.0
	5					
	6					
	7					
	8					
	9					
	10					
	11	0.05814	39	0.04446	<0.49	
	12					
	13					
	14					
	15					
	16					
	17					
	18	0.06528	29	0.03712	0.54	
	19					
	20					
	21					
	22					
	23					
	24					
	25	0.05488	40	0.0448	0.62	
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	001		001		001		001	
	Description	PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER	
	Parameter	35		147		147		87	
	Description	Arsenic, Total Recoverable		Copper, Total Recoverable		Copper, Total Recoverable		Cadmium, Total Recoverable	
	Units	lbs/day		ug/L		lbs/day		ug/L	
Summary Values	Monthly Avg	0.0644125		39.25		0.0456825		0.615	
	Monthly Total								
	Daily Max	0.07935		49		0.05635		1.3	
	Daily Min	0.05488		29		0.03712		<0.49	
	Rolling 12 Month Avg								
Limit(s) in Effect	Monthly Avg								
	Monthly Total								
	Daily Max	12	0	69	0	0.98	0		
	Daily Min								
	Rolling 12 Month Avg								
QA/QC Information	LOD			1.7				0.49	
	LOQ			5				1	
	QC Exceedance	N		N		N		N	
	Lab Certification			999580010				999580010	

	Sample Point	001	001	101	101	101
	Description	PRIOR TO MENOMINEE RIVER	PRIOR TO MENOMINEE RIVER	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	112	280	211	457	342
	Description	Chlorine, Total Residual	Mercury, Total Recoverable	Flow Rate	Suspended Solids, Total	Oil & Grease (Freon)
	Units	ug/L	ng/L	MGD	mg/L	mg/L
	Sample Type	GRAB	GRAB	CONTINUOUS	24 HR COMP	GRAB
	Frequency	MONTHLY	MONTHLY	DAILY	DAILY	2/WEEK
Sample Results	Day 1			0.018564	3.0	
	2					
	3					
	4			0.020985	2.5	2.4
	5			0.040058	<1.9	2.1
	6			0.023838	3.0	
	7			0.026741	2.5	
	8			0.039899	2.0	<1.5
	9			0.008562	2.5	
	10					
	11			0.024660	2.5	2.4
	12			0.021006	2.5	
	13			0.025503	2.5	
	14	50		0.018436	3.0	
	15			0.000462	6.5	
	16					
	17					
	18			0.031371	6.5	2.4
	19			0.016569	6.5	<1.4
	20			0.032869	2.5	
	21			0.024837	4.5	
	22			0.011684	2.0	1.4
	23					
	24					
	25		3.8	0.020932	3.0	<1.4
	26			0.026703	2.5	
	27			0.017430	3.0	
	28					
	29					
	30					
	31					

	Sample Point	001		001		101		101		101	
	Description	PRIOR TO MENOMINEE RIVER		PRIOR TO MENOMINEE RIVER		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent	
	Parameter	112		280		211		457		342	
	Description	Chlorine, Total Residual		Mercury, Total Recoverable		Flow Rate		Suspended Solids, Total		Oil & Grease (Freon)	
	Units	ug/L		ng/L		MGD		mg/L		mg/L	
Summary Values	Monthly Avg	50		3.8		0.02255545		3.15		1.3375	
	Monthly Total										
	Daily Max	50		3.8		0.040058		6.5		2.4	
	Daily Min	50		3.8		0.000462		<1.9		<1.4	
	Rolling 12 Month Avg										
Limit(s) in Effect	Monthly Avg							31	0	26	0
	Monthly Total										
	Daily Max							60	0	52	0
	Daily Min										
	Rolling 12 Month Avg										
QA/QC Information	LOD	30		0.12						1.4	
	LOQ	100		0.39						5.9	
	QC Exceedance	N		N		N		N		N	
	Lab Certification			721026460				999580010		999580010	

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	87	133	315	553	155
	Description	Cadmium, Total Recoverable	Chromium, Total Recoverable	Nickel, Total Recoverable	Zinc, Total Recoverable	Cyanide, Total
	Units	ug/L	ug/L	ug/L	ug/L	ug/L
	Sample Type	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP	GRAB
	Frequency	2/WEEK	MONTHLY	2/WEEK	2/WEEK	MONTHLY
Sample Results	Day 1	<0.49	<2.2	1.6	57	<3.0
	2					
	3					
	4	<0.49	<2.2	2.7	56	
	5					
	6					
	7					
	8	<0.49	<2.2	4.1	31	
	9					
	10					
	11	<0.49	<2.2	2.5	82	
	12					
	13					
	14					
	15					
	16					
	17					
	18	0.57	2.4	75	800	
	19	<0.49	<2.2	12	140	
	20					
	21					
	22	<0.49	<2.2	22	68	
	23					
	24					
	25	<0.49	<2.2	19	120	
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101		101		101		101		101	
	Description	Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent	
	Parameter	87		133		315		553		155	
	Description	Cadmium, Total Recoverable		Chromium, Total Recoverable		Nickel, Total Recoverable		Zinc, Total Recoverable		Cyanide, Total	
	Units	ug/L		ug/L		ug/L		ug/L		ug/L	
Summary Values	Monthly Avg	0.07125		0.3		17.3625		169.25		0	
	Monthly Total										
	Daily Max	0.57		2.4		75		800		<3	
	Daily Min	<0.49		<2.2		1.6		31		<3	
	Rolling 12 Month Avg										
Limit(s) in Effect	Monthly Avg	260	0	1710	0	2380	0	1480	0	650	0
	Monthly Total										
	Daily Max	690	0	2770	0	3980	0	2610	0	1200	0
	Daily Min										
	Rolling 12 Month Avg										
QA/QC Information	LOD	0.49		2.2		1.5		3.6		3	
	LOQ	1		5		5		10		10	
	QC Exceedance	N		N		N		N		N	
	Lab Certification	999580010		999580010		999580010		999580010		999580010	

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	147	264	430	374	373
	Description	Copper, Total Recoverable	Lead, Total Recoverable	Silver, Total Recoverable	pH (Minimum)	pH (Maximum)
	Units	ug/L	ug/L	ug/L	su	su
	Sample Type	24 HR COMP	24 HR COMP	24 HR COMP	CONTINUOUS	CONTINUOUS
	Frequency	2/WEEK	MONTHLY	MONTHLY	DAILY	DAILY
Sample Results	Day 1	6.0	1.5	<1.1	6.4	6.8
	2					
	3					
	4	5.0	<1.3	<1.1	7.6	8.5
	5				6.6	8.7
	6				6.1	8.9
	7				6.7	8.4
	8	2.7	<1.3	<1.1	7.2	8.0
	9				6.8	8.4
	10					
	11	5.4	<1.3	<1.1	7.0	8.0
	12				6.8	7.7
	13				6.7	7.9
	14				7.0	7.6
	15				6.8	7.4
	16					
	17					
	18	5.4	<1.3	<1.1	6.8	9.1
	19	7.4	1.4	1.1	7.2	8.4
	20				7.0	7.8
	21				7.0	7.6
	22	4.7	<1.3	<1.1	7.0	8.4
	23					
	24					
	25	7.4	<1.3	<1.1	7.4	8.2
	26				6.8	7.8
	27				7.0	7.6
	28					
	29					
	30					
	31					

	Sample Point	101		101		101		101		101	
	Description	Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent	
	Parameter	147		264		430		374		373	
	Description	Copper, Total Recoverable		Lead, Total Recoverable		Silver, Total Recoverable		pH (Minimum)		pH (Maximum)	
	Units	ug/L		ug/L		ug/L		su		su	
Summary Values	Monthly Avg	5.5		0.3625		0.1375		6.895		8.06	
	Monthly Total										
	Daily Max	7.4		1.5		1.1		7.6		9.1	
	Daily Min	2.7		<1.3		<1.1		6.1		6.8	
	Rolling 12 Month Avg										
Limit(s) in Effect	Monthly Avg	2070	0	430	0	240	0				
	Monthly Total										
	Daily Max	3380	0	690	0	430	0			11	0
	Daily Min							4	0		
	Rolling 12 Month Avg										
QA/QC Information	LOD	1.7		1.3		1.1					
	LOQ	5		2.5		2.5					
	QC Exceedance	N		N		N		N		N	
	Lab Certification	999580010		999580010		999580010					

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	379	376	507	40	490
	Description	pH Total Exceedance Time Minutes	pH Exceedances Greater Than 60 Minutes	Total Toxic Organics	Benzene	Tetrachloroethylene
	Units	minutes	Number	ug/L	ug/L	ug/L
	Sample Type	CALCULATED	CALCULATED	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	DAILY	DAILY	MONTHLY	MONTHLY	MONTHLY
Sample Results	Day 1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101		101		101		101		101	
	Description	Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent		Metal Finishing Effluent	
	Parameter	379		376		507		40		490	
	Description	pH Total Exceedance Time Minutes		pH Exceedances Greater Than 60 Minutes		Total Toxic Organics		Benzene		Tetrachloroethylene	
	Units	minutes		Number		ug/L		ug/L		ug/L	
Summary Values	Monthly Avg										
	Monthly Total										
	Daily Max										
	Daily Min										
	Rolling 12 Month Avg										
Limit(s) in Effect	Monthly Avg										
	Monthly Total	446	0	0	0						
	Daily Max					2130					
	Daily Min										
	Rolling 12 Month Avg										
QA/QC Information	LOD										
	LOQ										
	QC Exceedance	N		N		N		N		N	
	Lab Certification										

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	500	561	200	508	285
	Description	Toluene	1,1,1-Trichloro- ethane	Ethylbenzene	Trichloro- ethylene	Methylene chloride
	Units	ug/L	ug/L	ug/L	ug/L	ug/L
	Sample Type	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP	24 HR COMP
	Frequency	MONTHLY	MONTHLY	MONTHLY	MONTHLY	MONTHLY
Sample Results	Day 1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101	101	101	101	101
	Description	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent	Metal Finishing Effluent
	Parameter	500	561	200	508	285
	Description	Toluene	1,1,1-Trichloro- ethane	Ethylbenzene	Trichloro- ethylene	Methylene chloride
	Units	ug/L	ug/L	ug/L	ug/L	ug/L
Summary Values	Monthly Avg					
	Monthly Total					
	Daily Max					
	Daily Min					
	Rolling 12 Month Avg					
Limit(s) in Effect	Monthly Avg					
	Monthly Total					
	Daily Max					
	Daily Min					
	Rolling 12 Month Avg					
QA/QC Information	LOD					
	LOQ					
	QC Exceedance					
	Lab Certification					

	Sample Point	101	106	106	106	107
	Description	Metal Finishing Effluent	Future remedial action ww	Future remedial action ww	Future remedial action ww	Mercury Field Blank Results
	Parameter	167	211	35	457	280
	Description	Di-n-butyl phthalate (dibutyl phthalate)	Flow Rate	Arsenic, Total Recoverable	Suspended Solids, Total	Mercury, Total Recoverable
	Units	ug/L	gpd	ug/L	mg/L	ng/L
	Sample Type	24 HR COMP	CONTINUOUS	24 HR COMP	24 HR COMP	GRAB
	Frequency	MONTHLY	DAILY	WEEKLY	WEEKLY	MONTHLY
Sample Results	Day 1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					<0.12
	26					
	27					
	28					
	29					
	30					
	31					

	Sample Point	101	106	106	106	107
	Description	Metal Finishing Effluent	Future remedial action ww	Future remedial action ww	Future remedial action ww	Mercury Field Blank Results
	Parameter	167	211	35	457	280
	Description	Di-n-butyl phthalate (dibutyl phthalate)	Flow Rate	Arsenic, Total Recoverable	Suspended Solids, Total	Mercury, Total Recoverable
	Units	ug/L	gpd	ug/L	mg/L	ng/L
Summary Values	Monthly Avg					0
	Monthly Total					
	Daily Max					<0.12
	Daily Min					<0.12
	Rolling 12 Month Avg					
Limit(s) in Effect	Monthly Avg					
	Monthly Total					
	Daily Max					
	Daily Min					
	Rolling 12 Month Avg					
QA/QC Information	LOD					0.12
	LOQ					0.39
	QC Exceedance	N	N	N	N	N
	Lab Certification					721026460

	Sample Point	003	003	003	003	003
	Description	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg
	Parameter	211	457	35	374	373
	Description	Flow Rate	Suspended Solids, Total	Arsenic, Total Recoverable	pH (Minimum)	pH (Maximum)
	Units	MGD	mg/L	ug/L	su	su
	Sample Type	CONTINUOUS	24 HR COMP	24 HR COMP	CONTINUOUS	CONTINUOUS
	Frequency	DAILY	WEEKLY	WEEKLY	DAILY	DAILY
Sample Results	Day 1					
	2					
	3					
	4	0.001431	<1.9	<2.1	6.6	6.7
	5	0.000412			6.6	7.0
	6	0.002049			6.0	7.9
	7					
	8					
	9					
	10					
	11	0.004607	<1.9	<2.1	6.2	6.6
	12					
	13	0.002351			7.3	7.9
	14					
	15					
	16					
	17					
	18	0.001387			6.3	7.0
	19	0.002819	<1.9	<2.1	6.1	7.3
	20	0.002162			6.2	7.0
	21					
	22					
	23					
	24					
	25	0.003426	2.0	<2.1	6.0	8.5
	26	0.002851			6.1	6.8
	27					
	28					
	29					
	30					
	31					

	Sample Point	003	003	003	003	003	
	Description	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	Future remedial action dischg	
	Parameter	211	457	35	374	373	
	Description	Flow Rate	Suspended Solids, Total	Arsenic, Total Recoverable	pH (Minimum)	pH (Maximum)	
	Units	MGD	mg/L	ug/L	su	su	
Summary Values	Monthly Avg	0.0023495	0.5	0	6.34	7.27	
	Monthly Total						
	Daily Max	0.004607	2	<2.1	7.3	8.5	
	Daily Min	0.000412	<1.9	<2.1	6	6.6	
	Rolling 12 Month Avg						
Limit(s) in Effect	Monthly Avg						
	Monthly Total						
	Daily Max			680	0	11	0
	Daily Min				4	0	
	Rolling 12 Month Avg						
QA/QC Information	LOD			2.1			
	LOQ			5			
	QC Exceedance	N	N	N	N	N	
	Lab Certification		999580010	999580010			

	Sample Point	003	003
	Description	Future remedial action dischg	Future remedial action dischg
	Parameter	379	376
	Description	pH Total Exceedance Time Minutes	pH Exceedances Greater Than 60 Minutes
	Units	minutes	Number
	Sample Type	CONTINUOUS	CONTINUOUS
	Frequency	DAILY	DAILY
Sample Results	Day 1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		

	Sample Point	003		003	
	Description	Future remedial action dischg		Future remedial action dischg	
	Parameter	379		376	
	Description	pH Total Exceedance Time Minutes		pH Exceedances Greater Than 60 Minutes	
	Units	minutes		Number	
Summary Values	Monthly Avg				
	Monthly Total				
	Daily Max				
	Daily Min				
	Rolling 12 Month Avg				
Limit(s) in Effect	Monthly Avg				
	Monthly Total	446	0		
	Daily Max			0	0
	Daily Min				
	Rolling 12 Month Avg				
QA/QC Information	LOD				
	LOQ				
	QC Exceedance	N		N	
	Lab Certification				

Footnotes (DNR Use Only; Instructions for completing this form that are unique for your facility may be displayed here.)

1. Based on my inquiry of the person or persons directly responsible for managing compliance with the permit limitation for TTO I certify that to the best of my knowledge and belief no dumping of concentrated toxic organics into the wastewaters has
2. occurred since filing of the last discharge monitoring report. I further certify that this facility is implementing the solvent management plan submitted to the department.

General Remarks

Laboratory Quality Control Comments

Submitted by Anne Fleury(afleury16) on 12/19/2019 10:28:40 AM

Attachment 3
Pump Down Program Groundwater
Elevation Monitoring

Table 1. 2019 Pump Down Program Groundwater Elevation Monitoring
 Tyco Fire Products LP, Marinette, Wisconsin

Target Elevation	577.9
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Well ID	January 16, 2019		February 14, 2019		March 26, 2019		April 10, 2019		April 16, 2019		April 18, 2019		April 23, 2019		April 25, 2019		April 30, 2019		May 2, 2019		May 7, 2019		May 10, 2019		May 14, 2019		May 16, 2019					
	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)				
MW001M	6.87	580.30	NM	-	6.29	580.88	5.55	581.62	8.25	578.92	8.53	578.64	7.31	579.86	7.48	579.69	8.20	578.97	7.42	579.75	8.63	578.54	7.85	579.32	8.69	578.48	8.33	578.84				
MW001S	6.95	580.31	NM	-	NM	-	6.54	580.72	10.14	577.12	7.54	579.72	7.30	579.96	7.45	579.81	7.05	580.21	6.63	580.63	7.55	579.71	7.78	579.48	7.71	579.55	7.24	580.02				
MW002M-R	10.09	580.65	10.22	580.51	9.61	581.14	8.78	581.98	10.23	580.50	10.56	580.17	10.39	580.34	10.48	580.25	10.04	580.70	9.68	581.06	10.56	580.17	11.06	579.66	10.74	579.98	10.27	580.46				
MW002S-R	10.02	580.30	10.14	580.18	9.5	580.82	8.68	581.64	10.15	580.17	10.49	579.83	10.30	580.02	10.44	579.88	9.55	580.77	9.58	580.74	10.47	579.85	11	579.32	10.62	579.70	10.16	580.16				
MW031M	7.49	580.54	7.77	580.26	7.05	580.99	6.29	581.75	7.36	580.67	7.92	580.11	7.61	580.42	7.73	580.30	7.25	580.78	6.97	581.07	6.73	581.31	8.59	579.44	9.97	578.05	7.7	580.33				
MW031S	8.47	580.43	8.80	580.10	7.97	580.93	7.24	581.66	8.48	580.42	8.66	580.24	8.57	580.33	8.69	580.21	8.16	580.74	7.77	581.13	8.13	580.77	8.36	580.54	9.02	579.88	8.56	580.34				
MW113S	9.97	580.32	10.04	580.25	9.43	580.86	8.62	581.67	10.15	580.14	10.51	579.78	10.28	580.01	10.73	579.56	9.56	580.73	9.53	580.76	10.48	579.81	10.95	579.34	10.63	579.66	10.16	580.13				
MW113M	9.11	581.19	9.25	581.05	8.58	581.72	7.96	582.34	9.73	580.57	9.80	580.50	9.56	580.74	9.88	580.42	9.51	580.79	8.58	581.72	9.51	580.79	9.89	580.41	9.87	580.43	9.45	580.85				
MW115P	8.49	580.60	9.66	579.43	8.12	580.97	6.12	582.98	6.23	582.87	6.09	583.01	6.16	582.94	6.28	582.82	6.26	582.84	6.09	583.01	6.37	582.73	6.46	582.64	6.49	582.61	6.43	582.67				
MW115S	8.68	580.32	8.78	580.22	8.15	580.85	7.32	581.68	9.10	579.90	9.47	579.53	9.40	579.60	9.50	579.50	9.10	579.90	8.81	580.19	9.62	579.38	9.73	579.27	9.81	579.19	9.36	579.64				
MW116P	10.17	579.74	10.36	579.55	9.30	580.62	8.22	581.70	7.84	582.08	7.73	582.19	7.70	582.22	7.79	582.13	8.21	581.71	7.76	582.16	8.19	581.73	7.93	581.99	8.17	581.75	8.17	581.75				
MW116S	9.56	580.35	9.64	580.27	9.02	580.90	8.17	581.75	9.66	580.25	10.00	579.91	9.94	579.97	9.99	579.92	9.70	580.21	9.3	580.61	10.61	579.30	10.44	579.47	10.38	579.53	9.96	579.95				
MW119D	10.53	578.21	9.36	579.38	8.54	580.20	8.32	580.42	8.20	580.54	8.15	580.59	8.09	580.65	8.22	580.52	8.00	580.74	7.94	580.80	7.89	580.85	7.81	580.93	7.76	580.98	7.76	581.01				
EW-3	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM			
EW-10	NM	-	NM	-	NM	-	5.45	582.34	21.28	566.48	21.50	566.26	21.44	566.32	21.73	566.03	21.45	566.31	11.95	575.83	11.7	576.08	11.88	575.90	21.89	565.87	23.04	564.72				
EW-11	6.06	581.28	NM	-	5.57	581.77	4.7	582.64	21.53	565.78	22.39	564.92	21.88	565.43	22.51	564.80	23.35	563.96	10.15	577.18	13.2	574.12	13.58	573.74	22.86	564.45	23.16	564.15				
EW-13	4.75	581.06	NM	-	4.28	581.53	3.35	582.47	20.76	564.99	20.95	564.80	21.01	564.74	21.13	564.62	20.68	565.07	7.2	578.60	9.11	576.69	9.36	576.43	20.38	565.37	20.04	565.72				
EW-14	5.8	580.98	NM	-	5.16	581.62	3.96	582.83	20.50	566.21	20.03	566.68	20.98	565.73	21.21	565.50	20.11	566.60	10.62	576.14	11.03	575.72	12.1	574.65	21.64	565.06	20.28	566.43				
MW034M	12.76	575.49	12.52	575.73	12.16	576.09	11.69	576.56	13.10	575.15	12.16	576.09	12.65	575.60	12.65	575.60	12.65	575.60	12.77	575.48	12.78	575.47	12.05	576.20	11.26	576.99	11.79	576.46	12.42	575.83	10.28	577.97
MW034S	13.07	575.15	12.85	575.37	12.57	575.65	12.00	576.22	13.30	574.92	12.66	575.56	12.93	575.29	13.14	575.08	12.99	575.23	12.43	575.79	11.57	576.65	12.32	575.90	12.63	575.59	11.75	576.47				
MW036M	13.72	574.85	13.41	575.16	13.21	575.36	12.76	575.82	12.53	576.06	12.84	575.74	12.86	575.72	13.12	575.46	12.96	575.62	12.6	575.99	11.92	576.68	12.38	576.21	12.44	576.15	11.92	576.68				
MW036S	13.19	575.08	12.91	575.36	12.68	575.59	12.24	576.03	13.12	575.15	12.30	575.97	12.26	576.01	12.53	575.74	12.39	575.88	12.05	576.22	11.38	576.89	11.76	576.51	11.81	576.46	11.35	576.92				
MW038M	12.69	575.00	12.43	575.26	12.13	575.56	11.58	576.11	12.09	575.60	11.49	576.20	11.60	576.09	11.89	575.80	11.76	575.93	11.26	576.43	10.43	577.26	10.85	576.84	11.06	576.63	10.38	577.31				
MW038S	12.74	574.96	12.36	575.34	12.19	575.51	11.60	576.11	12.16	575.54	11.45	576.26	11.65	576.06	11.96	575.75	11.81	575.90	11.23	576.48	10.39	577.32	10.79	576.92	11.08	576.63	10.33	577.38				
MW120D	7.99	580.84	7.61	581.22	7.50	581.34	7.41	581.43	7.41	581.43	6.98	581.86	6.78	582.06	6.90	581.94	6.55	582.29	6.7	582.14	6.78	582.06	6.54	582.30	6.73	582.11	6.52	582.32				
MW120M	13.56	575.37	13.39	575.54	13.16	575.77	12.49	576.46	12.58	576.36	12.51	576.44	12.45	576.50	12.59	576.35	12.53	576.42	12.33	576.62	12.05	576.90	12.26	576.69	12.29	576.66	11.99	576.96				
MW120S	13.33	575.26	13.16	575.43	13.08	575.51	12.00	576.59	11.60	576.99	11.54	577.05	11.60	576.99	11.73	576.86	11.80	576.79	11.65	576.94	11.77	576.82	11.61	576.98	11.49	577.11	11.38	577.22				
EW-2	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM			
EW-8	NM	-	NM	-	10.09	576.69	9.55	577.23	14.64	572.13	9.55	577.23	10.58	576.20	13.56	573.21	13.70	573.07	9.37	577.41	9.78	577.00	9.96	576.82	12.96	573.81	18.43	568.33				
EW-9	9.91	575.79	NM	-	9.39	576.31	8.85	576.85	15.57	570.12	10.47	575.23	11.03	574.67	11.16	574.54	17.48	568.20	9	576.70	10.06	575.64	10.16	575.54	16.58	569.11	8.62	577.08				
MW004M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM			
MW004S	5.77	582.81	6.44	582.14	5.22	583.36	4.41	584.17	4.02	584.56	3.83	584.75	3.81	584.77	3.92	584.66	4.00	584.58	3.83	584.75	1.51	587.07	3.83	584.75	4.02	584.56	4.07	584.51				
MW032M	6.44	581.78	6.59	581.63	5.64	582.59	5.38	582.85	5.10	583.13	4.79	583.44	4.94	583.29	5.03	583.20	5.02	583.21	4.8	583.43	5.21	583.02	4.82	583.41	5.05	583.18	5.01	583.22				
MW032S	5.62	582.74	6.24	582.12	4.91	583.45	4.60	583.76	4.42	583.94	4.32	584.04	4.27	584.09	4.37	583.99	4.32	584.04	4.29	584.07	4.39	583.97	4.26	584.10	4.22	584.14	4.02	584.04				
MW033M	4.73	584.07	5.34	583.45	4.06	584.75	3.35	585.47	3.04	585.79	2.86	585.97	2.87	585.96	2.96	585.87	3.08	585.75	2.88	585.95	3.22	585.61	2.85	585.98	3.06	585.77	3.11	585.72				
MW033S	4.36	582.81	5.11	582.06	3.78	583.39	3.11	584.06	2.89	584.28	2.50	584.67	2.52	584.65	2.65	584.52	2.73	584.44	2.54	584.63	2.85	584.32	2.44	584.73	2.69	584.48	2.81	584.36				
MW039M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM			
MW039S	2.57	583.52	NM	-	2.63	583.46	1.85	584.24	1.49	584.60	1.29	584.80	1.25	584.84	1.37	584.72	1.46	584.63	1.3	584.79	1.21	584.88	1.28	584.81	1.51	584.58	1.54	584.55				
MW035M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM			
MW035S	6.20	581.47	6.73	580.94	5.45	582.22	5.58	582.09	5.61	582.06	5.42	582.25	NM	-	5.58	582.09	5.49	582.18	5.4	582.27	5.58	582.09	5.45	582.22	5.54	582.13	5.46	582.21				
MW037M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM			
MW037S	5.53	581.55	6.14	580.94	4.43	582.65	5.50	581.58	5.51																							

Table 1. 2019 Pump Down Program Groundwater Elevation Monitoring
 Tyco Fire Products LP, Marinette, Wisconsin

Target Elevation	577.9
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Well ID	May 21, 2019		May 23, 2019		May 28, 2019		May 30, 2019		June 4, 2019		June 6, 2019		June 11, 2019		June 13, 2019		June 18, 2019		June 20, 2019		June 24, 2019		June 27, 2019		July 2, 2019		July 9, 2019	
	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)
MW001M	8.64	578.53	8.72	578.45	6.79	580.38	8.56	578.61	8.39	578.78	8.87	578.30	5.45	581.72	8.56	578.61	8.8	578.37	8.76	578.41	8.63	578.54	9.01	578.16	8.70	578.47	8.39	578.78
MW001S	7.56	579.70	7.63	579.63	5.7	581.56	7.56	579.70	7.31	579.95	7.83	579.43	5.51	581.75	7.52	579.74	7.81	579.45	7.88	579.38	7.64	579.62	8.01	579.25	7.75	579.51	7.41	579.85
MW002M-R	10.6	580.13	10.64	580.09	8.5	582.27	10.66	580.07	10.38	580.35	10.94	579.78	8.68	582.08	10.55	580.18	10.89	579.83	10.85	579.87	10.72	579.84	11.23	579.32	10.89	579.66	10.46	580.10
MW002S-R	10.53	579.79	10.56	579.76	8.4	581.92	10.49	579.83	10.33	579.99	10.86	579.46	8.55	581.77	10.46	579.86	10.8	579.52	10.71	579.61	10.62	579.70	11.01	579.31	10.72	579.60	10.39	579.93
MW031M	7.69	580.34	8.17	579.86	5.78	582.26	8.01	580.02	7.73	580.30	8.33	579.70	6.25	581.79	7.93	580.10	8.38	579.65	8.3	579.73	8.23	579.81	8.58	579.46	8.29	579.75	7.75	580.29
MW031S	8.88	580.02	9.04	579.86	6.65	582.25	9	579.90	8.82	580.08	9.35	579.55	7.19	581.71	8.95	579.95	9.22	579.68	9.33	579.57	9.32	579.58	9.59	579.31	9.38	579.52	8.78	580.12
MW113S	10.53	579.76	10.57	579.72	8.42	581.87	10.53	579.76	10.25	580.04	10.82	579.47	8.56	581.73	10.41	579.88	10.75	579.54	10.75	579.54	10.58	579.71	11.02	579.27	10.74	579.55	10.31	579.98
MW113M	9.69	580.61	9.39	580.91	7.55	582.75	9.72	580.58	9.69	580.61	9.99	580.31	7.8	582.50	9.76	580.54	9.92	580.38	9.91	580.39	9.87	580.43	10.11	580.19	9.96	580.34	9.82	580.48
MW115P	6.53	582.57	6.55	582.55	6.23	582.87	6.79	582.31	7.45	581.65	7.67	581.42	7.17	581.93	7.7	581.39	8.11	580.98	8.15	580.94	8.00	581.09	8.51	580.58	8.25	580.84	8.14	580.95
MW115S	9.71	579.29	9.68	579.32	7.97	581.03	9.64	579.36	9.44	579.56	9.95	579.05	7.23	581.77	9.56	579.44	9.84	579.16	9.77	579.23	9.63	579.37	9.99	579.01	9.65	579.35	9.31	579.69
MW116P	8.33	581.59	8.39	581.53	8.01	581.91	8.2	581.72	8.21	581.71	8.51	581.41	8.3	581.62	8.32	581.60	8.77	581.15	8.8	581.12	8.78	581.14	9.15	580.77	9.06	580.86	8.96	580.96
MW116S	10.3	579.61	10.31	579.60	8.4	581.52	10.26	579.65	10.04	579.87	10.54	579.37	7.82	582.10	10.15	579.76	10.46	579.45	10.42	579.49	10.24	579.67	10.68	579.23	10.36	579.55	9.99	579.92
MW119D	7.64	581.10	7.59	581.15	7.49	581.25	7.45	581.29	7.41	581.33	7.39	581.35	7.33	581.41	7.29	581.45	7.23	581.51	7.19	581.55	7.18	581.56	7.14	581.60	7.07	581.67	7.01	581.73
EW-3	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
EW-10	22.56	565.20	22.93	564.83	21.35	566.41	23.6	564.15	23.42	564.33	23.38	564.37	3.38	584.42	14.63	573.14	14.93	572.84	23.8	563.95	25.12	562.63	25.56	562.19	21.34	566.42	16.22	571.55
EW-11	21.89	565.42	22.03	565.28	24.49	562.82	23.93	563.38	23.37	563.94	22.91	564.40	4.65	582.69	25.24	562.07	25.41	561.90	25.21	562.10	23.71	563.60	23.56	563.75	25.21	562.10	25.10	562.21
EW-13	20.21	565.54	20.41	565.34	18.45	567.31	20.56	565.19	21.01	564.74	22.18	563.57	3.3	582.52	21.49	564.26	21.37	564.38	19.09	566.67	16.98	568.79	19.69	566.07	17.56	568.20	17.88	567.88
EW-14	20.1	566.61	20.23	566.48	20.15	566.56	20.66	566.05	20.26	566.45	21.15	565.56	4.37	582.42	20.94	565.77	21.1	565.61	19.86	566.85	20.87	565.84	21.26	565.45	20.02	566.69	14.55	572.19
MW034M	12.22	576.03	12.26	575.99	11.66	576.59	11.23	577.02	12.3	575.95	12.49	575.76	11.16	577.09	12.19	576.06	12.24	576.01	12.53	575.72	12.55	575.70	12.84	575.41	12.93	575.32	12.83	575.42
MW034S	12.41	575.81	12.52	575.70	11.76	576.46	11.65	576.57	12.44	575.78	12.77	575.45	11.56	576.66	12.4	575.82	12.49	575.73	12.75	575.47	12.83	575.39	13.10	575.12	13.20	575.02	13.00	575.22
MW036M	12.25	576.34	12.44	576.15	11.75	576.85	11.95	576.65	12.34	576.25	12.74	575.84	11.95	576.65	12.45	576.14	12.57	576.02	12.93	575.65	12.67	575.91	13.32	575.25	13.42	575.15	13.20	575.37
MW036S	11.61	576.66	11.84	576.43	11.14	577.13	NM	-	11.74	576.53	12.15	576.12	11.4	576.87	11.81	576.46	11.93	576.34	12.3	575.97	12.09	576.18	12.73	575.54	12.85	575.42	12.65	575.62
MW038M	10.85	576.84	11.05	576.64	10.38	577.31	10.42	577.27	11.09	576.60	11.6	576.09	10.58	577.11	11.31	576.38	11.41	576.28	11.89	575.80	11.40	576.29	12.36	575.33	12.44	575.25	12.19	575.50
MW038S	10.81	576.90	11.08	576.63	10.4	577.31	10.38	577.33	11.13	576.58	11.68	576.03	10.57	577.14	11.38	576.33	11.49	576.22	12	575.71	11.49	576.22	12.48	575.22	12.56	575.14	12.30	575.40
MW120D	6.49	582.35	6.09	582.75	6.09	582.75	6.42	582.42	6.27	582.57	6.32	582.52	6.34	582.50	6.24	582.60	6	582.84	6.01	582.83	5.83	582.82	6.13	582.52	6.09	582.56	6.01	582.64
MW120M	12.11	576.84	12.16	576.79	11.79	577.17	11.9	577.06	12.19	576.76	12.42	576.53	12.08	576.87	12.16	576.79	12.22	576.73	12.4	576.55	12.48	576.51	12.88	576.10	12.99	575.99	12.94	576.04
MW120S	11.44	577.16	11.41	577.19	11.3	577.30	11.35	577.25	11.41	577.19	11.71	576.88	11.71	576.88	11.5	577.10	11.45	577.15	11.56	577.03	11.70	576.89	12.06	576.53	12.10	576.49	12.17	576.42
EW-2	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
EW-8	18.16	568.60	18.65	568.11	12.2	574.57	8.44	578.34	10.78	576.00	10.82	575.96	8.59	578.19	13.17	573.60	13.21	573.56	13.81	572.96	12.83	573.94	14.24	572.53	14.12	572.65	13.72	573.05
EW-9	18.33	567.35	18.28	567.40	15.7	569.99	8.61	577.09	17.91	567.77	18.22	567.46	8.47	577.23	16.72	568.97	16.43	569.26	18.88	566.80	20.20	565.48	19.92	565.76	19.93	565.75	19.91	565.77
MW004M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW004S	3.94	584.64	3.79	584.79	3.69	584.89	3.84	584.74	4.23	584.35	4.42	584.16	4.64	583.94	4.26	584.32	4.24	584.34	4.41	584.17	4.67	583.91	4.76	583.82	4.62	583.96	4.94	583.64
MW032M	4.93	583.30	4.62	583.61	4.55	583.68	4.74	583.49	5.05	583.18	5.18	583.05	5.28	582.95	5.03	583.20	4.95	583.28	5.04	583.19	5.11	583.12	5.29	582.94	5.57	582.66	5.35	582.88
MW032S	4.34	584.02	4.17	584.19	4.19	584.17	4.05	584.31	4.4	583.96	4.6	583.76	4.86	583.50	4.69	583.67	4.48	583.88	4.5	583.86	4.81	583.55	4.87	583.49	5.90	582.46	5.00	583.36
MW033M	2.97	585.86	2.73	586.11	2.79	586.04	2.57	586.27	3.31	585.52	3.45	585.37	3.7	585.12	3.38	585.44	3.27	585.56	3.44	585.38	3.69	585.13	3.82	585.00	3.70	585.12	3.97	584.84
MW033S	2.6	584.57	2.38	584.79	2.47	584.70	2.49	584.68	3.2	583.97	3.1	584.07	3.39	583.78	3.02	584.15	3.08	584.09	3.1	584.07	3.38	583.79	3.47	583.70	3.46	583.71	3.65	583.52
MW039M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW039S	1.39	584.70	1.24	584.85	1.11	584.98	1.3	584.79	1.69	584.40	1.84	584.25	2.08	584.01	1.69	584.40	1.69	584.40	1.87	584.22	2.11	583.98	2.24	583.85	2.03	584.06	2.37	583.72
MW035M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW035S	5.45	582.22	5.21	582.46	5.55	582.12	5.36	582.31	5.27	582.40	5.28	582.39	5.26	582.41	5.11	582.56	4.99	582.68	5.1	582.57	4.91	582.76	5.12	582.55	4.96	582.71	5.06	582.61
MW037M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW037S	4.8	582.28	4.62	582.46	4.5																							

Table 1. 2019 Pump Down Program Groundwater Elevation Monitoring
Tyco Fire Products LP, Marinette, Wisconsin

Target Elevation	577.9
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Well ID	October 17, 2019		October 22, 2019		October 24, 2019		October 29, 2019		October 31, 2019		November 6, 2019		December 23, 2019	
	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)	DTW	Corrected Groundwater Elevation (for equivalent fresh water)
MW001M	8.80	578.37	8.46	578.71	8.75	578.42	9.02	578.15	8.82	578.35	7.48	579.69	5.74	581.43
MW001S	7.94	579.32	7.55	579.71	7.79	579.47	8.17	579.09	7.88	579.38	7.61	579.65	NM	-
MW002M-R	11.11	579.44	10.69	579.87	11.40	579.15	11.34	579.21	11.07	579.48	10.68	579.88	8.99	581.59
MW002S-R	10.93	579.39	9.18	581.14	11.36	578.96	11.19	579.13	10.91	579.41	10.54	579.78	8.85	581.47
MW031M	8.40	579.64	8.02	580.02	8.34	579.70	8.63	579.41	8.51	579.53	8.18	579.86	6.35	581.70
MW031S	9.48	579.42	9.11	579.79	9.45	579.45	9.69	579.21	9.63	579.27	9.21	579.69	7.37	581.53
MW113S	10.91	579.38	10.53	579.76	11.28	579.01	11.18	579.11	10.87	579.42	10.58	579.71	8.78	581.51
MW113M	10.09	580.21	9.76	580.54	10.33	579.97	10.27	580.03	10.18	580.12	9.05	581.25	8.15	582.15
MW115P	8.84	580.25	8.58	580.51	9.43	579.66	9.05	580.04	8.93	580.16	9.22	579.87	7.78	581.31
MW115S	9.88	579.12	9.51	579.49	9.38	579.62	10.07	578.93	9.85	579.15	9.29	579.71	7.47	581.53
MW116P	10.54	579.37	9.64	580.28	9.73	580.19	10.02	579.89	9.81	580.10	10.10	579.81	8.82	581.10
MW116S	9.87	580.04	10.18	579.73	9.91	580.00	10.76	579.15	10.49	579.42	10.11	579.80	8.38	581.54
MW119D	6.83	581.91	6.78	581.96	6.82	581.92	6.82	581.92	6.83	581.91	6.75	581.99	6.75	581.99
EW-3	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
EW-10	23.92	563.83	22.06	565.70	21.83	565.93	22.52	565.24	18.74	569.02	7.40	580.39	5.66	582.13
EW-11	26.91	560.39	25.69	561.61	26.19	561.11	25.49	561.82	23.89	563.42	5.50	581.84	5.81	581.53
EW-13	19.24	566.52	20.27	565.48	20.91	564.84	18.61	567.15	19.32	566.44	5.44	580.37	3.71	582.11
EW-14	20.82	565.89	21.02	565.69	21.25	565.46	20.89	565.82	19.12	567.60	6.45	580.33	4.65	582.13
MW034M	13.54	574.71	13.44	574.81	13.38	574.87	13.59	574.66	13.63	574.62	13.10	575.15	12.04	576.21
MW034S	13.83	574.39	13.76	574.46	13.73	574.49	13.96	574.26	13.99	574.23	13.68	574.54	12.41	575.81
MW036M	14.09	574.47	13.61	574.96	13.90	574.66	14.02	574.54	14.22	574.34	13.26	575.31	12.91	575.67
MW036S	13.52	574.75	13.18	575.09	13.45	574.82	13.49	574.78	13.66	574.61	13.80	574.47	12.4	575.87
MW038M	13.04	574.65	12.30	575.39	12.74	574.95	12.92	574.77	13.24	574.45	13.31	574.38	11.78	575.91
MW038S	13.16	574.54	12.33	575.37	12.82	574.88	13.02	574.68	13.37	574.33	13.41	574.29	11.81	575.90
MW120D	6.19	582.46	6.20	582.45	6.19	582.46	6.27	582.38	6.24	582.41	6.44	582.21	6.59	582.06
MW120M	13.83	575.13	13.81	575.15	13.76	575.21	13.96	575.00	14.02	574.94	14.05	574.91	13.12	575.86
MW120S	13.18	575.41	13.19	575.40	13.03	575.56	13.43	575.16	13.35	575.24	13.51	575.08	12.79	575.80
EW-2	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
EW-8	11.58	575.19	14.53	572.24	14.86	571.91	14.66	572.11	15.42	571.35	11.25	575.52	9.66	577.12
EW-9	22.05	563.62	20.87	564.81	20.65	565.03	20.86	564.82	20.51	565.17	10.44	575.26	9.7	576.00
MW004M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW004S	4.24	584.34	4.22	584.36	4.52	584.06	4.64	583.94	4.66	583.92	4.98	583.60	5.34	583.24
MW032M	4.98	583.25	4.75	583.48	5.12	583.11	5.04	583.19	5.21	583.02	5.55	582.68	5.51	582.72
MW032S	4.50	583.86	4.49	583.87	4.60	583.76	4.78	583.58	4.82	583.54	5.12	583.24	5.24	583.12
MW033M	3.33	585.49	3.26	585.57	3.47	585.35	3.71	585.11	3.64	585.18	3.97	584.84	4.28	584.53
MW033S	2.96	584.21	2.93	584.24	3.12	584.05	3.39	583.78	3.38	583.79	3.69	583.48	3.95	583.22
MW039M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW039S	1.68	584.41	1.64	584.45	1.95	584.14	2.10	583.99	2.08	584.01	2.40	583.69	2.71	583.38
MW035M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW035S	5.23	582.44	5.05	582.62	5.11	582.56	5.22	582.45	5.19	582.48	5.44	582.23	5.35	582.32
MW037M	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-	NM	-
MW037S	4.63	582.45	4.59	582.49	4.60	582.48	4.59	582.49	4.63	582.45	4.76	582.32	4.75	582.33
SG4	6.52	582.33	6.51	582.34	6.89	581.96	6.62	582.23	6.55	582.30	6.74	582.11	NM	NM
Rough Target Elevation Calc SV*		579.43		579.88		579.37		579.14		579.35		579.90		581.61
Rough Target Elevation Calc 8SS*		574.76		575.08		574.93		574.73		574.60		574.77		575.88
Target Elevation (NAVD88)		577.90		577.90		577.90		577.90		577.90		577.90		577.90
SV Variance		1.53		1.98		1.47		1.24		1.45		2.00		3.71
8SS Variance		-3.14		-2.82		-2.97		-3.17		-3.30		-3.13		-2.02

Notes:

Measurements were collected from top of casing (TOC). All depth measurements are in feet.
Elevations are reported in feet above mean sea level (AMSL) relative to the North American Vertical Datum 1988 (NAVD88)

Shaded = Well part of evaluation during Drawdown and Interim Phases

Bold = Well part of Target Elevation calculation

- = Information not applicable or not collected

Area Definitions - SV - Salt Vault, 8SS - 8th Street Slip

*Wells identified for target elevation calculation are for during the drawdown and interim phases. Only wells outside the steepest portion of the cone of depression will be included in the calculation of the average elevations. The average elevation of all suitable measured wells will be considered the calculated elevation to compare against the target elevation. The number of post-drawdown phase wells used for this calculation may be reduced and will be determined based on results observed during the drawdown phase.

**Staff gauge damaged; Re-installed and elevations updated from July 2, 2019 and forward after re-surveyed in August 22, 2019

Elevations for MW004S, MW032S, MW032M, MW038S and MW038M were corrected from 4/16/2019 to present - the temporary well extensions were inadvertently removed from the database and needed to be added back in

ID = identification; DTW = depth to water

NM = Not Measured; MW = Monitoring Well

Attachment 4
Letter Report *VBW Inspection – 2019*

Mr. Jeffrey Danko
EHS Manager – Environmental Remediation
Johnson Controls
5757 N. Green Bay Ave.
Milwaukee, WI 53209

November 7, 2019

Subject: Vertical Barrier Wall Inspection – 2019
Project Name: Tyco Fire Products LP, Marinette, Wisconsin
Project Number: D3235600

Dear Mr. Danko,

Jacobs Engineering Group Inc. (Jacobs) was contracted by Tyco Fire Products LP (Tyco) to inspect the land side and water side of the vertical barrier containment wall (VBW) at the facility located at 1 Stanton Street, Marinette, Wisconsin. This work was performed on behalf of Tyco in partial fulfillment of the 2009 Administrative Order on Consent (AOC) between Tyco and the U.S. Environmental Protection Agency (USEPA) and *Agreement on Resolution of 2013 Five-Year Technical Review Issues* (USEPA 2014), in accordance with the 2015 Barrier Wall Groundwater Monitoring Plan Update (BWGMPU [CH2M HILL, Inc. 2015]), and the Addendum to 2015 Barrier Wall Groundwater Monitoring Plan Update (Addendum [Jacobs 2019]).

Jacobs performed an initial land side visual inspection, with a survey performed by McMahon and Associates on August 22, 2019, and followed up with the water side inspection on September 24 and September 25, 2019. The water side inspection included an above water and underwater¹ visual inspection of the structural elements associated with the VBW. The inspection was performed by a three-person team of commercial divers certified by the Association of Diving Contractors International consisting of an Engineer-Diver, Dive Supervisor, and Technician Diver. The inspection was conducted to assess the long-term effectiveness of the VBW in containing onsite groundwater, assess the current condition of the VBW, and identify any visible leaks or structural deficiencies that would affect the onsite groundwater management required by the AOC.

Scope

On the land side, the full length of the sheet pile and slurry VBW portions were visually inspected. Visible portions of the wall and surrounding area were inspected to identify:

- Excessive corrosion
- Ice damage
- Tilting or misalignment
- Settlement of the backfill immediately adjacent to the barrier wall

¹ Note that the underwater visual inspection was only required in the Main Plant area per the Addendum. Tyco decided to include the full length of the visible portions of the sheet pile VBW since water levels have been high, which has limited the length of VBW exposed on the water side.

- Visible water leakage
- Missing vertical barrier wall markers
- Modifications, welding, or cutting done by others

On the water side, exposed surfaces of the steel sheet pile VBW were visually inspected from the waterline to the mudline with attention given to any observed areas of deterioration or damage. A visual and tactile inspection was performed along 100% of the exposed structural elements of the full length of the VBW. Additionally, the conditions of bolts, tieback rods, and other exposed barrier wall elements were recorded. The bulkhead also was visually inspected above water from the waterline to the top of bulkhead. Cleanings and ultrasonic thickness readings were taken intermittently throughout the structure as well as at any location of unexpected corrosion. Photographs (Attachment 1) were taken above and below water to document general conditions and observed deficiencies (such as areas of corrosion, holes, gaps in the barrier wall, or other apparent leakage). Video (Attachment 2) was taken of:

- Five representative sections of the wall
- Gaps at the tieback system washer plates
- Broken washer plate

For the sheet pile inspection, standardized condition assessment criteria were used to document deficiencies, evaluate the severity of defects, and assess the sheet pile VBW condition. This standardized approach, which can be recreated during future sheet pile VBW inspections, allows for a current comparison between similar structures, and allows for future comparisons against the current inspection data to develop an accurate rate of deterioration for this sheet pile VBW. The general condition assessment ratings for an inspected structure and its element groups are based on a six-point assessment scale recognized by the American Society of Civil Engineers, and as indicated in the New York City Economic Development Corporation *Waterfront Facilities Maintenance Management System Inspection Guidelines Manual*. The six terms used to describe the conditions are described below.

- **6 “Good”** No problems or only minor problems noted. Structural elements may show some very minor deterioration, but no overstressing observed.
- **5 “Satisfactory”** Minor to moderate defects and deterioration observed, but no overstressing observed.
- **4 “Fair”** All primary structural elements are sound; but minor to moderate defects and deterioration observed. Localized areas of moderate to advanced deterioration may be present but do not significantly reduce the load bearing capacity of the structure.
- **3 “Poor”** Advanced deterioration or overstressing observed on widespread portions of the structure but does not significantly reduce the load carrying capacity of the structure.
- **2 “Serious”** Advanced deterioration, overstressing, or breakage may have significantly affected the load bearing capacity of primary structural elements. Local failures are possible and loading restrictions may be necessary.
- **1 “Critical”** Very advanced deterioration, overstressing, or breakage has resulted in localized failure(s) of primary structural elements. More widespread failures are possible or likely to occur and load restrictions should be implemented as necessary.

Description of Site and Structure

The Tyco facility is located along the southern shoreline of the Menominee River off Green Bay in Marinette, Wisconsin. The facility is an active manufacturing facility covering approximately 62 acres including a manufacturing area on the western part of the property and an undeveloped “Wetlands Area” to the east. A fence surrounds both parts of the facility and access is restricted.

From 1957 to 1977, the facility manufactured arsenic-based agricultural herbicides and stored the salt byproduct onsite. Under State of Wisconsin remedial action programs and the U.S. Resource Conservation and Recovery Act program, Tyco has implemented several corrective measures to contain

contaminated material, including constructing a sealed sheet pile wall around the former Salt Vault and former 8th Street Slip in 1999-2000. The containment barrier wall was extended to surround the remainder of the site and waterfront border of the property in 2009-2010 as part of onsite groundwater management required by the 2009 AOC and consists of a vibrated beam slurry wall (VBSW), thin diaphragm wall, sheet pile wall, and their connections as shown in plan view on Figure 1. The total length of the water side sheet pile VBW is approximately 2,700 linear feet and the VBSW is approximately 3,233 linear feet of wall.

At the western end of the sheet pile VBW structure, a return section of the barrier wall extends approximately 50 feet south from reference point PT "A". Typical construction of the 2010 sheet pile VBW wall consists of AZ-39-700 steel sheet piles (factory-welded in pairs with a water-activated sealant applied to the joints) with a 0.5-inch steel bent plate cap welded to the top of the sheet piles and a deadman tieback system (Photo 1). From the western extent of the structure to PT "E," the steel sheet piles are connected to a 2-C12x25 steel sheet pile waler located directly inshore of the wall approximately 30 inches down from the top of the steel sheet piles. At each internal flange, there is a 1.5-inch-diameter bolt and a 6-inch by 6-inch by 1-inch steel washer plate connecting the steel sheet pile to the waler (Photo 2). The waler is connected by 1.375-inch-diameter tieback rods to the buried deadman system, which is composed of HP14x73 and HP 14x117 piles and a 2-C12x25 deadman waler.

An additional support system was added to the barrier wall past reference point PT "C" in 2012, consisting of HP14x117 piles driven just offshore of the barrier wall at approximately every other internal flange and an external sheet pile waler that begins at approximately 10 feet past survey dimple point D-23 (Photo 3). The external waler is connected by 1-inch-diameter tieback rods to an additional deadman system composed of HP14x73 piles and a deadman waler. The offshore ends of the tiebacks on the offshore side of the waler are covered with a steel cap, which is welded to the waler and filled with grout. The holes where the tiebacks penetrate the VBW are plugged with cylindrical steel caps welded to the steel sheet piles and filled with sealant. The detail for the exterior waler connection is shown in Exhibit 1.

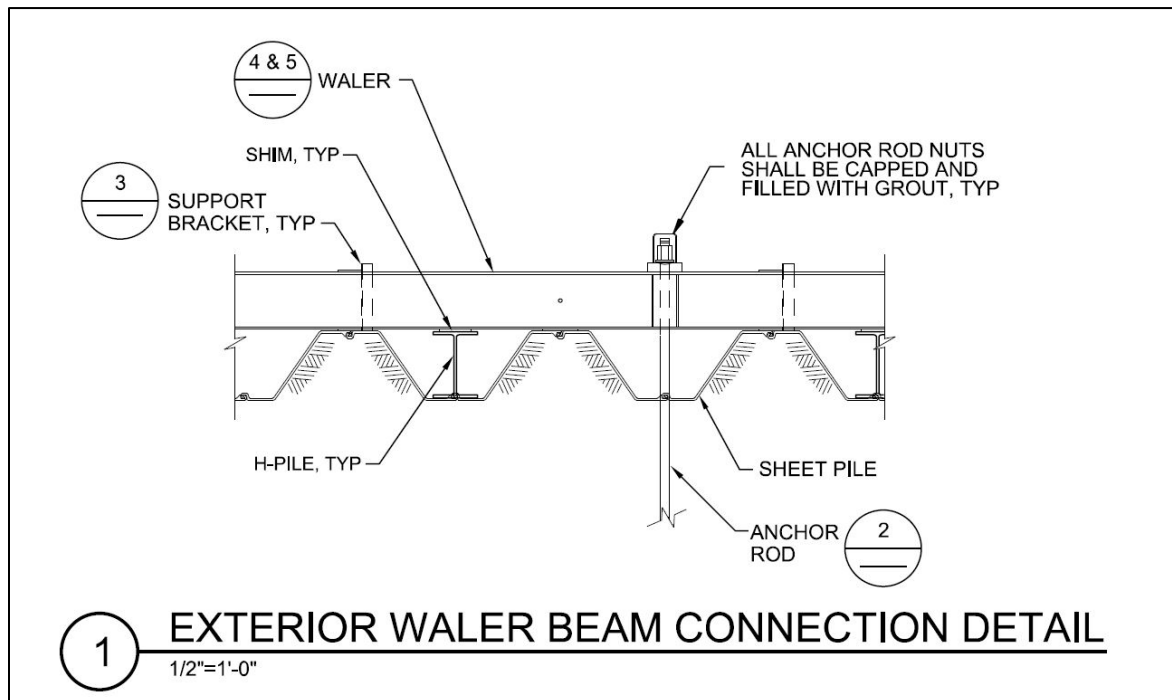


Exhibit 1. Exterior Waler Beam Connection Detail from the 2012 Sheet Pile Stability Design Documents

The 1999-2000 generation of AZ26 sheet pile VBW extends between reference points PT "E" and PT "F". There is no steel cap in this section, and the top elevation of the wall varies to be approximately flush with

the asphalt-paved upland former Salt Vault area (Photo 4). Past PT "F" the barrier wall is of typical 2010 construction with a top elevation approximately 2 feet lower than between PT "A" and PT "E". Grout plugs were installed at the transitions between generations of containment barrier wall at PT "E" and PT "F" to prevent loss of fill at these locations.

Weirs were installed at four locations along the barrier wall to allow surface water runoff to discharge into the river. At these locations the top 1.4 feet of steel sheet pile was cut for a length of between 13 feet to 13.5 feet long with a 0.5-inch steel bent plate cap welded to the top of the sheet piles and a 6-inch steel pipe spanning the length of the weir (Photo 5).

The VBSW and thin diaphragm walls (jet grouting) were installed in 2009 and form the eastern, southern, and western boundaries of the containment structure. A mixture of blast furnace slag, Attapulgitic clay and water made up the grout slurry.

Inspection Findings

The sheet pile VBW is in satisfactory condition overall; the structural integrity remains intact, it operates as intended, and with a few exceptions retains installation characteristics as design/installed. The interlocks of the steel sheet pile wall are tight with no bulging or openings. Attachment 2 includes videos of five representative sections/seams. Several areas were identified that require some follow-up maintenance or continued monitoring: gaps at the tieback system washer plates, one broken washer plate, one cracked tieback cover, one location of potential fill loss at the transition between generations of barrier wall construction, cracked welds and minor deflections in steel bent plate cap, and erosion on the land side. Attachment 2 also includes videos of the gaps at the tieback system washer plates and the broken washer plate. Figure 1 includes the survey dimple points and construction reference points used to indicate the wall location and provides locations that require follow-up.

Between reference points PT "A" and PT "C," the steel waler connection washer plates do not appear to be flush with the steel sheet pile wall at 62 locations, creating a gap measuring 1/8-inch to 1/4-inch wide between the steel washer plate and the steel sheet pile (Photo 6). The gaps typically occur at locations where the washer plate is crooked and bearing on the interlock of the sheet pile. The construction documents indicate a 1/8-inch neoprene donut washer was to be installed between the steel washer plate and the steel sheet pile at all waler connection bolt holes. However, because of the small size of the gaps, the diver was unable to confirm the presence of the neoprene washers. No visible flow into or out of the wall was observed at these locations.

At approximately 35 feet past dimple point D-12, the washer plate is broken and missing below the waler connection bolt (Photo 7). The neoprene washer is missing, and active flow out to the river was observed through the bolt hole at this location.

An external waler tieback cap at the end of the tieback was cracked at approximately 42 feet past D-30 (no photo was taken of this cap). The cap is there to protect the end of the tieback that penetrates the wall. It is not intended to provide structural support or hydraulic containment for the VBW. Minor impact damage also is present on the steel sheet pile at the same location (Photo 8). No flow into or out of the wall was observed at this location, as it is external to the VBW.

At the transition between generations of containment barrier wall at PT "F," there is a gap between steel sheet piles measuring between 1 and 2 inches wide. Approximately the top 3 feet of the gap is filled with grout plug material installed during construction of the 2010 barrier wall, which was submerged at the time of inspection (Photo 9). Below the grout, soft fill material is accessible between the steel sheet piles to the mudline. No active flow or loss of fill was observed. It is possible that the grout plug is in place behind the soft fill, although the diver could not access that area to confirm. The diver was unable to obtain a clear video of the gap because of the configuration of the intersecting sections of VBW and poor visibility.

There are four cracked welds and multiple minor deflections from impact on the steel bent plate cap between PT "A" and PT "D" (Photo 10). The cap is there to protect the top of the steel sheet piles from weathering and impact damage. It is not intended to provide structural support to the containment barrier wall.

At PT "E," the steel sheets overlap at the transition between generations of barrier wall (Photo 11). A grout plug was installed at the time of construction in 2010 and reinstalled in 2015 after sediment dredging activities removed some of the plug material. No visible flow into or out of the wall was observed at this location.

The area immediately upland of the wall exhibited multiple localized areas of erosion exposing up to 3 inches of the steel sheet pile (Photo 12 and 13). These areas could not be consistently correlated to any water side feature or deficiency and are likely the result of high river levels and heavy rainfall experienced since spring 2019.

In general, the sheet pile VBW exhibits minor active corrosion affecting approximately 20% of the surface area within the top 5 feet of the wall on the steel sheet piles, steel cap, waler connection bolts and washer plates, steel walers, tieback rods and steel hardware, and the steel H-piles. Below the top 5 feet of the wall, minor corrosion affects approximately 75% of the surface area on the steel sheet piles and the H-piles with pitting up to 1/16-inch deep. This minor corrosion is expected for a structure of this age.

Ultrasonic thickness measurements were taken at multiple elevations at seven locations throughout the structure. The results of the ultrasonic thickness testing indicate that no significant section loss has taken place. Ultrasonic thickness testing results are detailed in Table 1.

Table 1. Ultrasonic Thickness Testing Results

Ultrasonic Thickness Reading Location	Nominal Thickness (inches)	Minimum Reading (inches)	Maximum Reading (inches)	Average (inches)
Outer Flange	0.709	0.693	0.729	0.709
Web	0.520	0.503	0.541	0.528
Inner Flange	0.709	0.693	0.723	0.707

During both the August and September 2019 land side inspections, portions of the sheet pile VBW and VBSW were inaccessible in the Wetlands Area (from reference point "F" to the east) because of high river levels and dense vegetation; therefore, those portions of the sheet pile VBW and VBSW were unable to be inspected from the land side. Along the remaining length of the VBSW, some VBW markers were missing that will need to be replaced. No other deficiencies were observed along the VBSW.

Conclusions and Recommendations

The VBW at the Tyco facility is in satisfactory condition overall; the structural integrity remains intact, it operates as intended, and with a few exceptions retains installation characteristics as design/installed. Jacobs recommends that the following maintenance items be addressed to support the continued structural integrity of the VBW and its effectiveness as a containment barrier for site groundwater in accordance with the 2009 AOC. Proper implementation of the following recommended actions also would serve to upgrade the condition assessment rating of the VBW to "good", the highest rating achievable.

- The broken steel waler connection washer plate and missing neoprene washer located 35 feet east of dimple point D-12 should be replaced in-kind to arrest flow from the waler connection bolt hole. This likely will require excavation to provide access to the land side of the waler connection bolt. Alternatively, placement of SplashZone or similar marine-grade epoxy to fill the gap could be considered to prevent flow through the gap.

- The broken steel tieback cap (that is external to the VBW and protects the end of the tieback that penetrates the wall) should have SplashZone or similar marine-grade epoxy applied to fill the crack, or the cap could be replaced if the crack worsens.
- The transition between generations of barrier wall at PT "F" repair would consist of installing a new grout plug on the land side of the wall.
- Erosional areas should be backfilled and seeded, if necessary, in spring 2020 after the spring snow melt.
- Replace missing VBW markers along the slurry wall portion. Replacement of markers should be reassessed and addressed in spring 2020 after the spring snow melt.

The remaining findings should continue to be monitored during the annual inspections and periodic underwater inspections.

In accordance with the American Society of Civil Engineers *Waterfront Facilities Inspection and Assessment Manual*, the next underwater inspection of the barrier wall should be performed within 5 years, which is the maximum recommended interval for unprotected steel structures in an aggressive environment. If the barrier wall incurs impact damage or damage from an extreme weather event, an interim inspection may be warranted. Routine inspections of the land side and above-waterline side should continue to be performed annually as agreed to in the Addendum.

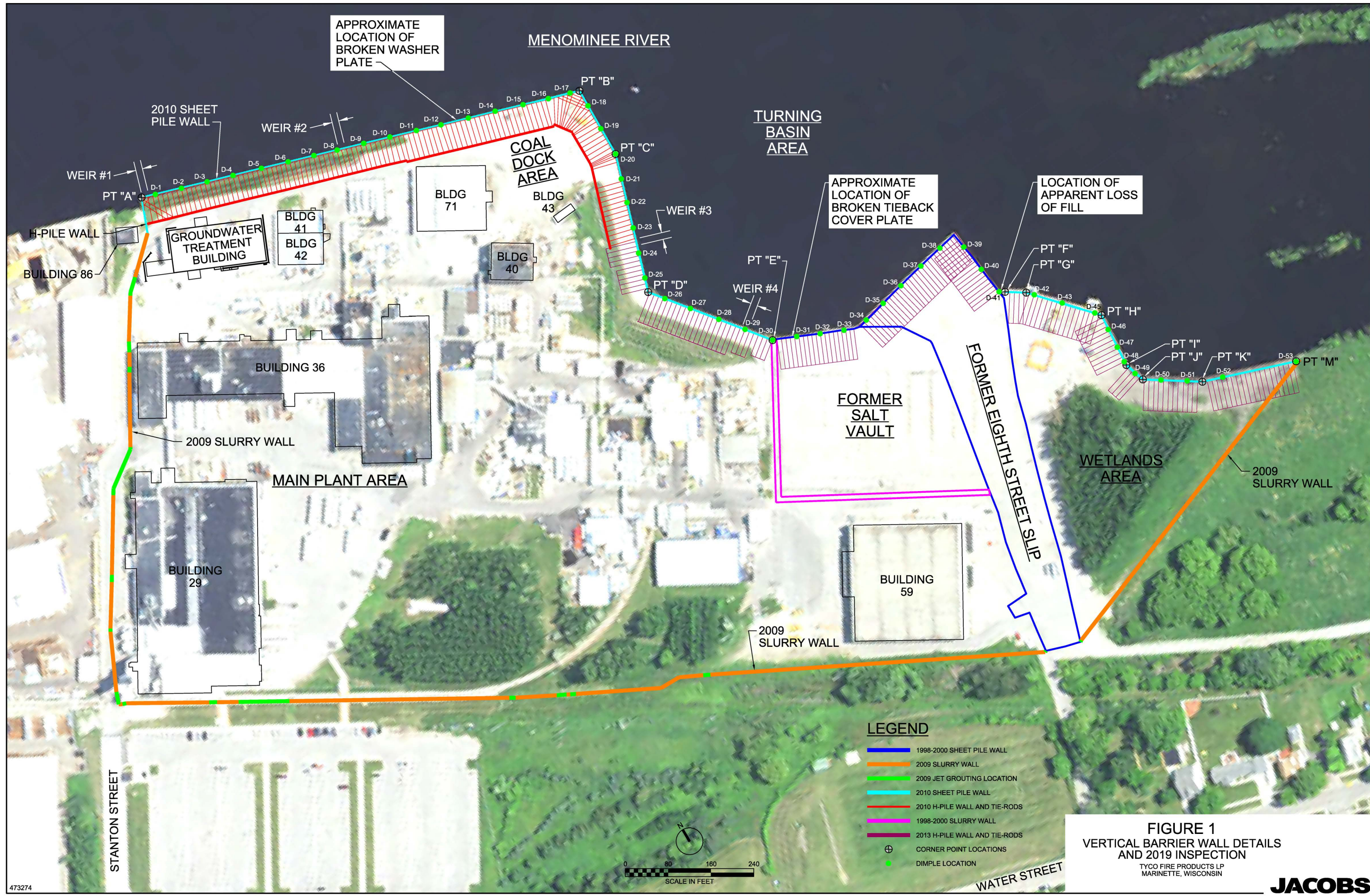
The Jacobs Engineering Divers Group thanks you for the opportunity to perform the 2019 routine inspection of the VBW at the Tyco site in Marinette, Wisconsin. Should you have any questions or require additional information, please contact Heather Ziegelbauer at +1.262.644.6167 or heather.ziegelbauer@jacobs.com.

Sincerely,



Heather Ziegelbauer, PE
Project Manager

Figure



APPROXIMATE LOCATION OF BROKEN WASHER PLATE

TURNING BASIN AREA

APPROXIMATE LOCATION OF BROKEN TIEBACK COVER PLATE

LOCATION OF APPARENT LOSS OF FILL

LEGEND

- 1998-2000 SHEET PILE WALL
- 2009 SLURRY WALL
- 2009 JET GROUTING LOCATION
- 2010 SHEET PILE WALL
- 2010 H-PILE WALL AND TIE-RODS
- 1998-2000 SLURRY WALL
- 2013 H-PILE WALL AND TIE-RODS
- ⊕ CORNER POINT LOCATIONS
- DIMPLE LOCATION

FIGURE 1
VERTICAL BARRIER WALL DETAILS
AND 2019 INSPECTION
 TYCO FIRE PRODUCTS LP
 MARINETTE, WISCONSIN



Attachment 1
Photographs



PHOTO 1. Overall view of the typical 2010 containment barrier wall, looking northwest.

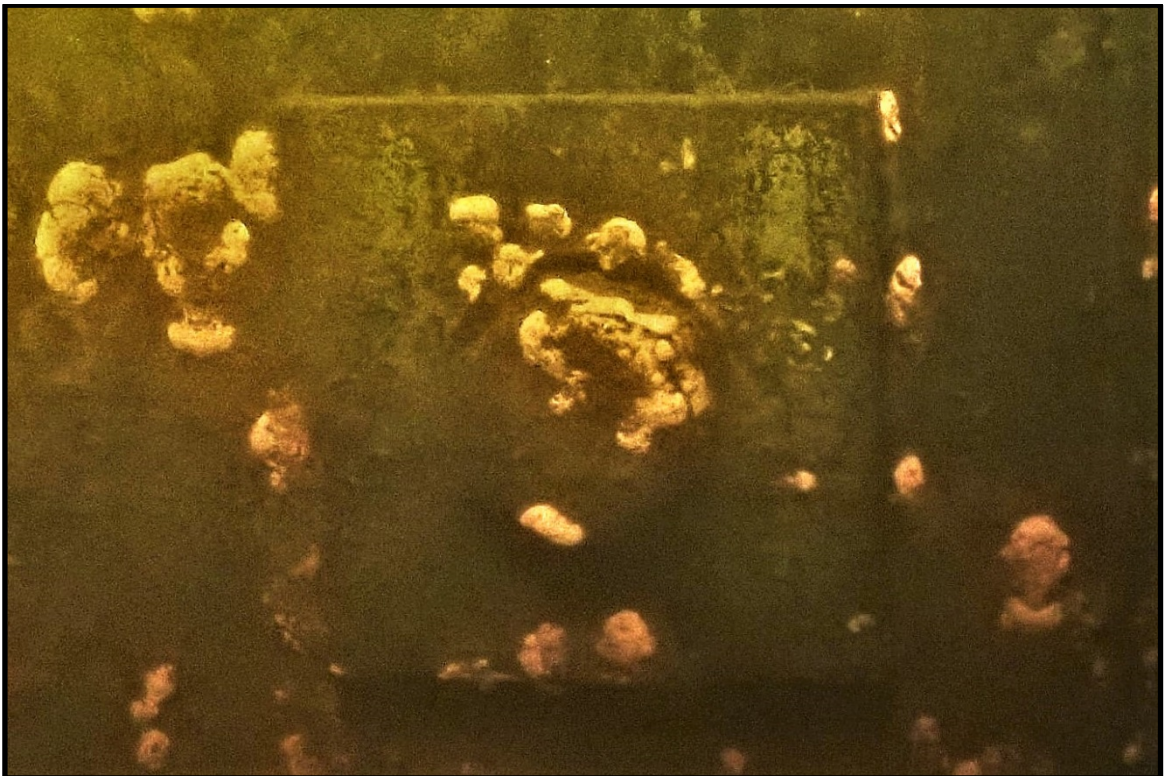


PHOTO 2. Underwater view of typical water connection bolts and washer plate.



PHOTO 3. View of barrier wall at Dimple Point D-30 with offshore H-piles, looking northwest.



PHOTO 4. Overall view of the typical 1999/2000 containment barrier wall, looking southwest.



PHOTO 5. View of a typical weir cut in the barrier wall at approximately 10 ft past D-23, looking south.



PHOTO 6. Underwater view of a ruler penetrating 2.75 inches into the gap between the washer plate and steel sheet pile.



PHOTO 7. Underwater view of the broken washer plate at approximately 35 ft past D-12, looking south.



PHOTO 8. View of minor impact damage on the steel sheet pile at approximately 42 ft past D-30, looking southeast.



PHOTO 9. Above water view of the transition between generations of VBW at PT “F”, looking south. The chain link fence follows the submerged 2010 barrier wall.



PHOTO 10. View of the cracked weld in the steel bent plate cap at approximately 12 ft past D-6, looking south.



PHOTO 11. View of overlapping steel sheet piles at PT “E”.



PHOTO 12. View of typical localized erosion on the land side of the barrier wall, looking north.



PHOTO 13. View of localized erosion at the weir at the western extent of the structure, looking north.

Attachment 2 Videos

Attachment 2 Videos -See
enclosed CD for Videos