



Rose & Westra
A Division of GZA

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION
MANAGEMENT

The Widdicomb Building
601 Fifth Street NW
Suite 102
Grand Rapids, MI 49504
T: 616.956.6123
F: 616.288.3327
www.rosewestra.com
www.gza.com



MEMORANDUM

To: Abby Hendershott, MDEQ

From: Leslie Nelson, Rose & Westra, a Division of GZA GeoEnvironmental, Inc.

Date: April 1, 2019

File No.: 16.0062335.02 Task 002

Re: Wolverine World Wide, Inc. (Wolverine) – Former Tannery
Monthly Progress Report

This Monthly Progress Report (MPR) is being provided at the request of the MDEQ to support the June 18, 2018 Source Investigation Task Summary (SITS) in response MDEQ's request for regular progress updates.

This MPR summarizes the progress for the period February 22, 2019 to March 22, 2019. This includes actions performed, problems encountered, analytical data received during the reporting period, and anticipated developments during the next reporting period.

ACTIONS PERFORMED

- 1) March 7 to March 22, 2019 – Data management for data from groundwater sampling event.
- 2) Planning for pump tests for the IR system.

ANALYTICAL DATA RECEIVED

The analytical data for the groundwater sampling event was received. Table 1 presents the data. Figure 1 shows the monitoring well locations along with the approximate groundwater plume greater than 70 ppt for PFOA+PFOS.

ANTICIPATED ACTIONS AND SCHEDULE FOR NEXT REPORTING PERIOD

During the next reporting period, March 25, 2019 to April 23, 2019, R&W/GZA anticipates completing and/or continuing to conduct the following tasks.

- 1) Develop the three extraction wells for the IR system.
- 2) Run pump tests on the IR system extraction wells.
- 3) Plan for a groundwater sampling event starting in late April/early May.
- 4) Continue to work on access for off-Site location.



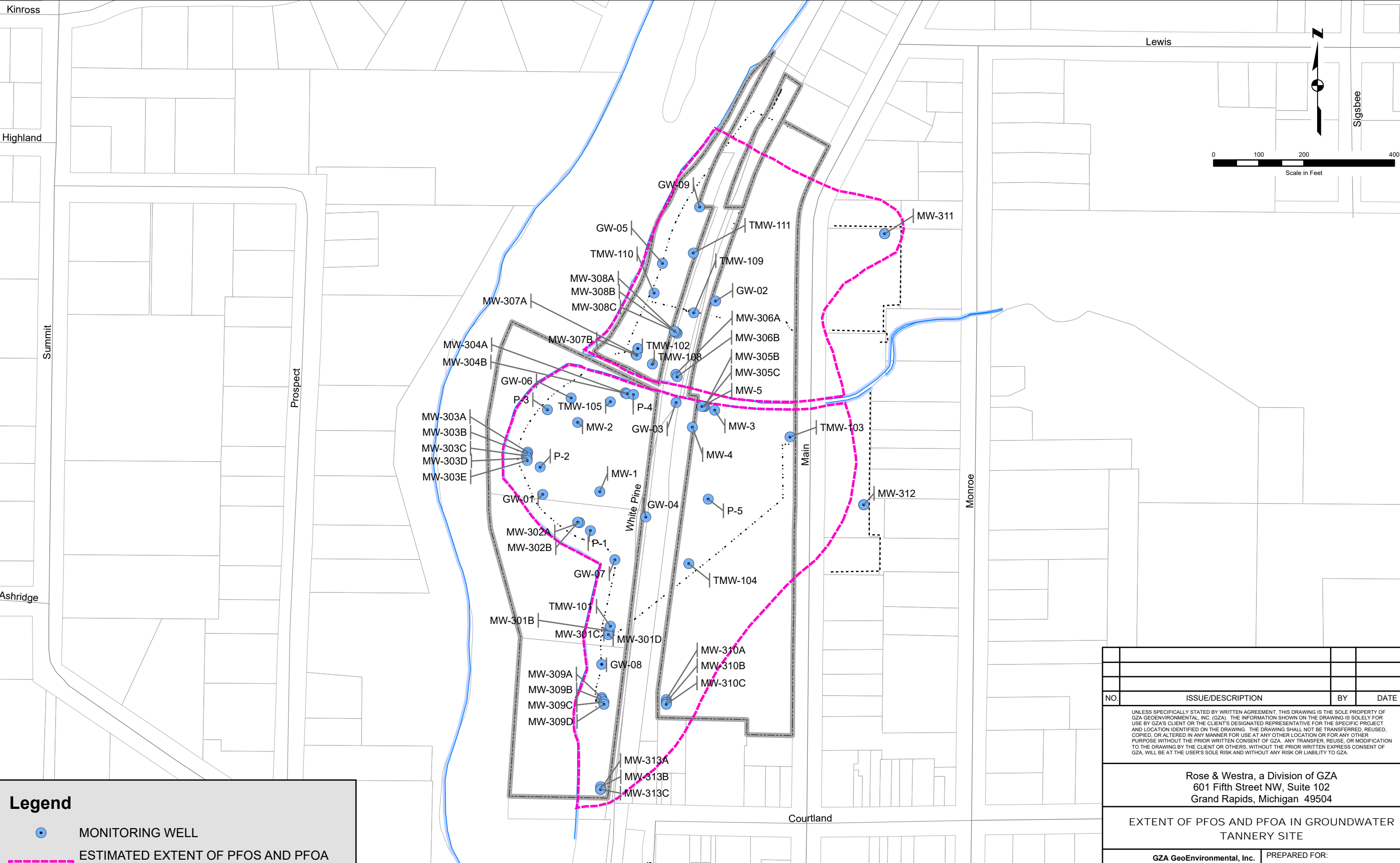
IDENTIFIED PROBLEMS AND RESOLUTIONS

None.

APPROVED SCOPE MODIFICATIONS

None.

J:\62000\623xx\62335.02 - WWW Tannery 2017_2018 Work\002 - Implementation of 2018 Work Plan\MDEQ Monthly Progress Reports\April 1, 2019 Report\Tannery-DEQ-MonthlyUpdate-040119.DOCX



Legend

- MONITORING WELL
- ▭ ESTIMATED EXTENT OF PFOS AND PFOA CONCENTRATIONS >70 NG/L (BASED ON PERMANENT MONITORING WELL DATA)
- ▭ APPROXIMATE TANNERY SITE BOUNDARY

NOTE:
 1. THE EXTENT OF PFOS AND PFOA CONCENTRATIONS GREATER THAN 70 NG/L WAS ESTIMATED FROM ANALYTICAL DATA FOR PERMANENT GROUNDWATER MONITORING WELL SAMPLES RECEIVED ON AND BEFORE 3/27/2019.

NO.	ISSUE/DESCRIPTION	BY	DATE
UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.			
Rose & Westra, a Division of GZA 601 Fifth Street NW, Suite 102 Grand Rapids, Michigan 49504			
EXTENT OF PFOS AND PFOA IN GROUNDWATER TANNERY SITE			
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: WOLVERINE WORLD WIDE, INC.	
PROJ MGR: LMN	REVIEWED BY: LMN	CHECKED BY: LMN	FIGURE 1
DESIGNED BY: JC	DRAWN BY: JC	SCALE: 1"=200'	
DATE: 03-28-19	PROJECT NO: 16.0062355.02	REVISION NO.	

© 2019 - GZA GeoEnvironmental, Inc. J:\16.xx Grand Rapids\16.0062355.02\16.0062355.02\Data_GIS\GIS_CADITanner_2\pfaa-pfos.mxd, 3/28/2019, 5:43:36 PM, Jim Cai

TABLE 1
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS
Former Tannery
Rockford, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation	Residential Recommended Interim Action Screening Level - Shallow Groundwater	U.S. EPA Residential Tap Water Regional Removal Management Levels	TA-GW-01	TA-GW-02	TA-GW-03	TA-GW-04	TA-GW-05	TA-GW-06	TA-GW-07	TA-GW-07	TA-GW-08	TA-GW-09	TA-TMW-103	TA-MW-303A	TA-MW-303B	TA-MW-303C
Sample Name						TA-GW-01	TA-GW-02	TA-GW-03	TA-GW-04	TA-GW-05	TA-GW-06	TA-GW-07	TA-GW-07 DUP	TA-GW-08	TA-GW-09	TA-MW-103	TA-MW-303A	TA-MW-303B	TA-MW-303C
Laboratory Sample ID(s)						UB07090-023	UA26009-004	UB07090-017	UB07090-022	UA26009-014	UB07090-020	UB07090-009	UB07090-014	UB07090-013	UB07090-008	UB07090-007	UB07090-021	UB07090-019	UB07090-016
Sample Date						02/07/2019	01/24/2019	02/07/2019	02/07/2019	01/25/2019	02/07/2019	02/06/2019	02/06/2019	02/06/2019	02/06/2019	02/05/2019	02/07/2019	02/07/2019	02/07/2019
Parameter (µg/L)																			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.0037	<0.036	<0.07	<0.004	<0.037	<0.0037	<0.0036	<0.019	<0.018	<0.0038	<0.0038	<0.036	<0.037
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.0037	<0.036	0.49	<0.004	<0.037	<0.0037	<0.0036	<0.019	<0.018	<0.0038	<0.0038	<0.036	0.095
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.0037	<0.036	<0.07	<0.004	<0.037	<0.0037	<0.0036	<0.019	<0.018	<0.0038	0.0065	<0.036	<0.037
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.16	<0.0075	<0.072	<0.14	<0.0079	<0.075	<0.0074	<0.0073	<0.038	<0.036	<0.0076	<0.0075	<0.072	<0.073
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200.00	3	0.82	2.4	11	0.3	2.2	0.13	0.14	0.049	4.6	0.3	2.6	18	12
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.0037	<0.036	<0.07	<0.004	<0.037	<0.0037	<0.0036	<0.019	<0.018	<0.0038	0.0045	<0.036	<0.037
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	0.5	0.025	0.24	1	0.11	0.28	0.041	0.048	0.044	0.59	0.11	0.091	0.53	0.51
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.16	<0.0075	<0.072	<0.14	<0.0079	<0.075	<0.0074	<0.0073	<0.038	<0.036	<0.0076	<0.0075	<0.072	<0.073
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	1	<0.0037	0.26	<0.07	0.007	0.34	<0.0037	0.0036	<0.019	<0.018	0.22	0.13	0.16	0.36
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	0.33	0.31	0.27	3.6	0.072	0.51	0.026	0.026	<0.019	0.2	0.14	0.091	0.77	0.77
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	1.1	1.1	1	10	0.39	1.7	0.13	0.13	0.039	1.2	0.6	0.27	2.6	2.5
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	0.19	0.17	0.42	3.1	0.038	0.45	0.029	0.028	<0.019	0.16	0.04	0.095	0.79	1.7
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.0037	0.3	<0.07	0.019	0.21	<0.0037	<0.0036	<0.019	<0.018	0.015	0.063	<0.036	<0.037
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.0037	<0.036	<0.07	<0.004	<0.037	<0.0037	<0.0036	<0.019	<0.018	<0.0038	<0.0038	<0.036	<0.037
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	0.39	0.95	0.81	8.2	0.1	0.99	0.07	0.067	<0.019	0.45	0.19	0.094	1	1.8
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	0.28	0.96	1	14	0.067	1.4	0.063	0.062	<0.019	0.33	0.17	0.1	1.2	3.2
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	0.13	<0.0037	0.11	0.23	0.026	0.31	0.015	0.014	<0.019	0.12	0.029	0.046	0.083	0.18
Perfluorooctanoic acid (PFOA)	0.07	0.42 (X)	NCL	NCL	NCL	4.5	4.5	6.9	59	1	7.2	0.74	0.85	0.21	5.9	2	0.99	6.9	13
Perfluorooctane sulfonic acid (PFOS)	0.07	0.011 (X)	NCL	NCL	NCL	57	0.55	15	56	4.5	27	3.7	4.5	8.9	14	6	7.5	33	33
PFOA + PFOS (Calculated)	0.07 (JJ)	NCL	NCL	NCL	NCL	62	5.1	22	120	5.5	34	4.4	5.4	9.1	20	8.0	8.5	40	46
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	0.18	0.2	0.4	4	0.027	0.59	0.026	0.024	<0.019	0.18	0.057	0.074	0.54	1.1
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.0037	<0.036	<0.07	<0.004	<0.037	<0.0037	<0.0036	<0.019	<0.018	<0.0038	<0.0038	<0.036	<0.037
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.0037	<0.036	<0.07	<0.004	<0.037	<0.0037	<0.0036	<0.019	<0.018	<0.0038	<0.0038	<0.036	<0.037
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.078	<0.0037	<0.036	<0.07	<0.004	<0.037	<0.0037	<0.0036	<0.019	<0.018	<0.0038	<0.0038	<0.036	<0.037
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	69	9.6	29	170	6.7	43	5.0	5.9	9.2	28	9.9	12	66	70

TABLE 1
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS
Former Tannery
Rockford, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation	Residential Recommended Interim Action Screening Level - Shallow Groundwater	U.S. EPA Residential Tap Water Regional Removal Management Levels	TA-MW-303D	TA-MW-303E	TA-MW-308A	TA-MW-308B	TA-MW-308C	TA-MW-309A	TA-MW-309B	TA-MW-309C	TA-MW-309D	TA-MW-310A	TA-MW-310B	TA-MW-310C	TA-MW-311	TA-MW-312
Sample Name						TA-MW-303D	TA-MW-303E	TA-MW-308A	TA-MW-308B	TA-MW-308C	TA-MW-309A	TA-MW-309B	TA-MW-309C	TA-MW-309D	TA-MW-310A	TA-MW-310B	TA-MW-310C	TA-MW-311	TA-MW-312
Laboratory Sample ID(s)						UB07090-002	UB07090-001	UA26009-001	UA26009-002	UA26009-003	UB07090-012	UB07090-010	UB07090-011	UB07090-024	UB07090-004	UB07090-005	UB07090-006	UA26009-007	UA26009-008
Sample Date						02/04/2019	02/04/2019	01/24/2019	01/24/2019	01/24/2019	02/06/2019	02/06/2019	02/06/2019	02/07/2019	02/05/2019	02/05/2019	02/05/2019	01/22/2019	01/22/2019
Parameter (µg/L)																			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.02	<0.0038	<0.0038	<0.0039	<0.036	<0.019	<0.037	<0.0039	<0.0039	<0.0039	<0.0038	<0.004
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.02	<0.0038	<0.0038	<0.0039	<0.036	<0.019	<0.037	<0.0039	<0.0039	<0.0039	<0.0038	<0.004
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.02	<0.0038	<0.0038	<0.0039	<0.036	<0.019	<0.037	<0.0039	<0.0039	<0.0039	<0.0038	<0.004
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0071	<0.007	<0.039	<0.0077	<0.0076	<0.0079	<0.073	<0.038	<0.074	<0.0078	<0.0078	<0.0078	<0.0077	<0.0079
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200.00	0.022	<0.0035	0.54	<0.0038	<0.0038	0.3	0.35	0.4	0.65	0.18	0.22	0.15	0.035	<0.004
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.02	<0.0038	<0.0038	<0.0039	<0.036	<0.019	<0.037	<0.0039	<0.0039	<0.0039	<0.0038	<0.004
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	0.25	<0.0038	<0.0038	0.18	0.25	0.36	0.28	0.029	0.048	<0.0039	0.02	<0.004
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0071	<0.007	<0.039	<0.0077	<0.0076	<0.0079	<0.073	<0.038	<0.074	<0.0078	<0.0078	<0.0078	<0.0077	<0.0079
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	0.004	<0.0035	<0.02	<0.0038	<0.0038	0.15	<0.036	<0.019	<0.037	0.51	0.84	<0.0039	<0.0038	<0.004
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	0.12	<0.0038	<0.0038	0.074	0.13	0.14	0.21	0.055	0.067	0.055	0.0059	<0.004
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	0.0035	<0.0035	0.75	<0.0038	<0.0038	0.34	0.66	0.81	1.1	0.18	0.26	0.026	0.035	<0.004
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	0.0042	<0.0035	0.28	<0.0038	<0.0038	0.047	0.072	0.084	0.16	0.037	0.045	0.14	0.01	<0.004
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.02	<0.0038	<0.0038	<0.0039	<0.036	<0.019	<0.037	0.021	0.043	<0.0039	<0.0038	<0.004
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.02	<0.0038	<0.0038	<0.0039	<0.036	<0.019	<0.037	<0.0039	<0.0039	<0.0039	<0.0038	<0.004
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	0.86	<0.0038	<0.0038	0.13	0.24	0.29	0.82	0.084	0.1	0.13	0.014	<0.004
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	0.0058	<0.0035	0.87	<0.0038	<0.0038	0.12	0.19	0.28	0.85	0.084	0.095	0.28	0.02	<0.004
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	0.09	<0.0038	<0.0038	0.04	0.073	0.065	0.062	0.0065	0.012	<0.0039	<0.0038	<0.004
Perfluorooctanoic acid (PFOA)	0.07	0.42 (X)	NCL	NCL	NCL	0.011	<0.0018	7.8	<0.0019	0.0041	2.3	3.6	5.6	13	0.68	0.96	0.12	0.12	0.0023
Perfluorooctane sulfonic acid (PFOS)	0.07	0.011 (X)	NCL	NCL	NCL	0.023	<0.0035	11	<0.0038	0.0064	9	26	21	34	1.1	2.5	0.0058	0.64	0.0093
PFOA + PFOS (Calculated)	0.07 (JJ)	NCL	NCL	NCL	NCL	0.034	ND	19	ND	0.011	11	30	27	47	1.8	3.5	0.13	0.76	0.012
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	0.8	<0.0038	<0.0038	0.062	0.084	0.11	0.21	0.075	0.09	0.16	0.012	<0.004
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.02	<0.0038	<0.0038	<0.0039	<0.036	<0.019	<0.037	<0.0039	<0.0039	<0.0039	<0.0038	<0.004
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.02	<0.0038	<0.0038	0.017	<0.036	<0.019	<0.037	<0.0039	<0.0039	<0.0039	<0.0038	<0.004
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0035	<0.0035	<0.02	<0.0038	<0.0038	<0.0039	<0.036	<0.019	<0.037	<0.0039	<0.0039	<0.0039	<0.0038	<0.004
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	0.074	ND	23	ND	0.011	13	32	29	51	3.0	5.3	1.1	0.91	0.012

TABLE 1
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS
Former Tannery
Rockford, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation	Residential Recommended Interim Action Screening Level - Shallow Groundwater	U.S. EPA Residential Tap Water Regional Removal Management Levels	TA-MW-313A	TA-MW-313B	TA-MW-313C
Sample Name						TA-MW-313A	TA-MW-313B	TA-MW-313C
Laboratory Sample ID(s)						UB07090-003	UA26009-009	UA26009-010
Sample Date						02/05/2019	01/22/2019	01/22/2019
Parameter (µg/L)								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0039	<0.004
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0039	<0.004
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0039	<0.004
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0072	<0.0078	<0.0081
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200.00	0.14	0.069	0.024
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0039	<0.004
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	0.038	0.0048	0.007
Perfluorononane sulfonic acid (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0072	<0.0078	<0.0081
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0039	<0.004
Perfluoropentane sulfonic acid (PFPeS)	NCL	NCL	NCL	NCL	NCL	0.091	0.029	0.011
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	0.34	0.12	0.03
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	0.043	0.02	0.0087
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0039	<0.004
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0039	<0.004
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	0.14	0.034	0.019
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	0.13	0.037	0.022
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0039	<0.004
Perfluorooctanoic acid (PFOA)	0.07	0.42 (X)	NCL	NCL	NCL	1.4	0.31	0.092
Perfluorooctane sulfonic acid (PFOS)	0.07	0.011 (X)	NCL	NCL	NCL	0.23	0.019	0.082
PFOA + PFOS (Calculated)	0.07 (JJ)	NCL	NCL	NCL	NCL	1.6	0.33	0.17
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	0.07	0.027	0.011
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0039	<0.004
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0039	<0.004
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0036	<0.0039	<0.004
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	2.6	0.67	0.31

TABLE 1
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS
Former Tannery
Rockford, Kent County, MI

NOTES:

1. Concentration and criteria units are micrograms per Liter ($\mu\text{g/L}$) or parts per billion (ppb). Calculated criteria and concentrations are rounded to two significant digits. "ND" indicates the parameters used in the calculation were not detected. "NC" indicates not calculated
2. Michigan Part 201 Groundwater Cleanup Criteria are based on "Table 1, Groundwater: Residential and Nonresidential Part 201 Generic Cleanup Criteria and Screening Levels/Part 213 Tier I Risk Based Screening Levels, Michigan Administrative Code, Cleanup Criteria Requirements for Response Activity, Rules 299.44 and 299.49, effective December 30, 2013; updated June 25, 2018.
Abbreviations Include:
"NCL" indicates no criterion listed in MDEQ Table 1.
"NLV" indicates the substance is not likely to volatilize under most conditions.
Footnotes Include:
(X) - For groundwater discharge to the Great Lakes and their connecting waters or discharge in close proximity to a water supply intake in inland surface waters, the generic GSI criterion shall be the surface water human drinking water value (HDV) listed in the table of this footnote except for those HDV indicated with an asterisk. For HDV with an asterisk, the generic GSI criterion shall be the lowest of the HDV, the wildlife value (WV), and the calculated final chronic value (FCV). Criterion listed have been updated to the HDV, WV, or FCV.
(JJ) - Compliance with the drinking water criteria shall require comparing the sum of the PFOA and PFOS groundwater concentrations to the drinking water criterion of 0.07 $\mu\text{g/L}$.
3. MDEQ Residential Groundwater Recommended Volatilization to Indoor Air Interim Action Screening Levels (RIASLs) for were based on MDEQ's Toxics Steering Group's "Media-Specific Interim Action Screening Levels," published in August 2017. The MDEQ published the RIASLs in August 2017, and recently removed the RIASLs from the MDEQ website. The MDEQ is reportedly evaluating the RIASLs for appropriate use and applicability. These are included for reference.
Abbreviations Include:
"NCL" indicates no value listed in the Media-Specific Interim Action Screening Levels table.
4. U.S. EPA Residential Tap Water Regional Removal Management Levels (RMLs) were based on "Generic RML Tables," updated November 2018.
5. Bold, italic number with thick line border or italic parameter name indicates that parameter was detected above the Michigan Part 201 Groundwater Cleanup Criteria or Media-Specific Interim Action Screening Levels. U.S. EPA RMLs are provided for reference only and results detected above the EPA RMLs are not bolded or italicized.
6. Abbreviations include:
"< RL" indicates the parameter was analyzed for but not detected above the method detection limit; RL = Reporting Limit.
"DUP" indicates a duplicate sample.
Laboratory Qualifiers
"B" indicates the parameter was also detected in the method blank.
"J" indicates the parameter was detected at a concentration greater than the limit of quantitation (LOQ) but less than the detection limit (DL) and the result is estimated.
"H" indicates the sample was analyzed outside of holding time.
7. Sample names presented are from Shealy Environmental Services, Inc. laboratory reports. Sample names presented in ALS Environmental lab reports may have minor differences based on laboratory interpretation of the chains of custody.