



July 25, 2018

Reference No. 012607

Distributed via E mail

Mr. Greg Rudloff
U.S. Environmental Protection Agency, Region 5
Land and Chemicals Division
77 West Jackson Blvd., LU 9J
Chicago, Illinois 60604 3590

Dear Mr. Rudloff:

**Re: 1st 2018 Semi Annual Progress Report
Performance Based Administrative Order on Consent
Docket Number RCRA 05 2011 0025
13000 Eckles Road Site, Livonia, Michigan
USEPA ID No. MID 005 356 621**

In accordance with the Performance Based Administrative Order on Consent between the U.S. Environmental Protection Agency Region 5 (USEPA) and Revitalizing Auto Communities Environmental Response Trust (RACER), please find the attached progress report for the 1st half of 2018 (January 1, 2017 through June 30, 2018).

Please contact Grant Trigger or Jeff Crum (regarding AOI 31 vapor intrusion pathway monitoring matters), or Dave Favero or myself (regarding system operation and Area 1 groundwater matters) if you would like to discuss further. Thank you.

Sincerely,

GHD

A handwritten signature in blue ink, appearing to read "Chris Meincke", is written over a horizontal line.

Christopher J. Meincke, P.E.

CJM/24/ds/Det.

Attachment A: 1st Semi Annual 2018 Progress Report

cc: Grant Trigger, RACER
Dave Favero, RACER
Richard Conforti, MDEQ
Jeff Crum, Hamp, Mathews & Associates
Livonia Civic Center Library



ATTACHMENT A
1st SEMI-ANNUAL 2018 PROGRESS REPORT
PERFORMANCE-BASED ADMINISTRATIVE ORDER ON CONSENT
13000 ECKLES ROAD SITE, LIVONIA, MICHIGAN
January 1, 2018 TO June 30, 2018

1. Description of Work Completed

- Continued operation of the Area 1 French Drain Collection Trench and Groundwater Treatment system. The Groundwater Treatment System was shut down for approximately 2 weeks during February 2018 due to low groundwater elevations and 1 week in May for a planned shutdown. The Great Lakes Water Authority (GLWA) has been updated on shutdowns. During the first half of 2018 the system has collected and treated 3,617,626 gallons of groundwater. Monthly discharge totals are presented in Table 1.
- Submitted the 2nd Semi-Annual 2018 Progress Report dated January 15, 2018 to USEPA.
- Installed monitoring wells near proposed Area 1 Permeable Reactive Barrier Wall to evaluate groundwater conditions.
- Collected groundwater samples from Area 1 monitoring wells to evaluate groundwater conditions following targeted ISCR injections and conditions near the proposed Permeable Reactive Gate Location January 12, 18, and 19, 2018.
- Collected soil vapor samples from AOI 31 soil gas probes in July 2017.
- Submitted an Area 1 Permeable Reactive Gate Work Plan to USEPA on April 25, 2018.
- Collected groundwater samples from Area 1 monitoring wells to evaluate groundwater conditions following targeted ISCR injections and conditions near the proposed Permeable Reactive Gate Location May 21 through May 24, 2018.
- Collected groundwater samples from select Area 1 monitoring wells to evaluate the potential presence of perfluorinated compounds (PFAS) in groundwater impacted from former plating operations on May 23, 2018 and May 24, 2018.
- Received comments from USEPA on the Area 1 Permeable Reactive Gate Work Plan on May 29, 2018.
- Installed vapor mitigation subslab depressurization system (SSDS) at Home 8 January 30/31, 2018.
- Upgraded Home 8 SSDS fan based on vacuum pressure monitoring results to attain EPA recommended vacuum of 0.004 inches of water at subslab Vapor Pin® perimeter monitoring points.



- Facilitated sale of home (Home 8: 37750 Grantland Street) overlying TCE plume with letter, SSDS information and site fact sheet March 30, 2018.
- Performed soil borings June 25-28, 2018 to obtain diagnostic soil and groundwater data to facilitate design of a pilot in-situ groundwater treatment of TCE.
- Continued evaluation of potential cost savings to decrease OM&M costs associated with the Area 1 Groundwater Collection and Treatment System, including monitoring the influent for reductions in chromium and nickel concentrations as a result of the targeted or full scale ISCR injections.

2. Data Collected

- Groundwater sample results associated with the Area 1 ISCR and Permeable Reactive Gate evaluation sampling events from Area 1 monitoring wells are included on Figure 1 and in Table 2.
- Cumulative groundwater sample results associated with the Area 1 and AOI 31 PFAS evaluation are presented on Figures 2 and 3, respectively, and in Table 3.
- SSDS vacuum pressure monitoring results obtained from subslab Vapor Pins® at Home 8.

3. Problems Encountered

- None

4. Estimated Percent Complete and Information Summary for Selected Activities

- O&M of the Groundwater Pump & Treat System (GWTP, Barrier Wall, Cover) 33%
Continued operation of the Area 1 French Drain Collection Trench and Groundwater Treatment system. Submitted appropriate discharge reports as per the Special Discharge Permit. (Percent complete estimated as 9 years complete of 27 years estimated in the May 2010 RCES.)
- Long-Term Groundwater Monitoring On-going 75%
Long-Term Groundwater Monitoring Plan proposed 5 years of monitoring to verify continued stability/reduction in off-Site/boundary concentrations (anticipated completion 2006 through 2010). Sampling activities are currently planned to continue pending USEPA approval to cease monitoring.
- Maintenance of the AOI 39 Dust Control Plan 100%



- Restrictive Covenants 100%
Prepared a revised Declaration of Restrictive Covenant (DRC) and Termination Agreement for the existing 2007 DRC and submitted to USEPA on June 25, 2015. Recorded final DRC and Termination Agreement on August 26, 2015.
- Vapor Intrusion Investigation 100%
Vapor Intrusion Investigation has been completed and subsequent mitigation has been implemented at one residence, and a VI pathway sampling plan downgradient of previously investigated homes has been approved and is being implemented. See AOI 31 below for additional activities.
- Installation of Vapor Mitigation System 100%
Installation completed and system operational September 2012.
- O&M and Performance Monitoring of Vapor Mitigation System On-going
System performance monitoring is being implemented at pre-scheduled time periods, though some delay in the schedule occurred due to home foreclosure and achieving contact with new homeowners. Latest system performance monitoring completed December 2017.
- Pilot Tests - Alternative Chemicals & Target In-Situ Treatment Injection 100%
Objective was to design, implement, and evaluate a pilot test to use alternative chemicals in the wastewater treatment process that could reduce treatment system operating time and/or operating costs. Also, design and implement an in-situ stabilization treatment in Area 1 that could also reduce treatment system operating time and long-term monitoring duration.

The Area 1 field pilot test was conducted in November and December 2010. Based on an evaluation of the pilot test results, additional pilot study injection and monitoring activities were recommended to determine if full-scale on-site implementation would significantly reduce dissolved concentrations of chromium and nickel and allow for the groundwater treatment plant activities to be reduced or eliminated.

The groundwater treatment plant optimization activities have not been conducted due to health and safety concerns associated with handling, storing, and mixing the proposed replacement chemicals.

Additional cost and remedial alternative evaluations were performed in 2013. Additional Area 1 Characterization activities have been implemented. A laboratory treatability study was performed using site groundwater to evaluate the effectiveness of utilizing a permeable reactive barrier wall (PRB) with zero valent iron (ZVI) to treat Area 1 groundwater if the existing groundwater collection and treatment system operations are ceased. Groundwater modeling activities were also performed to evaluate the optimal location and number of PRBs and the effects on groundwater flow inside and outside of the Area 1 Barrier Wall.



An additional field pilot test injection was completed in November 2013 and monitoring activities were completed through October 2014 with an additional Pilot Injections in the northern portion of the Area 1 chromium and nickel-impacted groundwater plume proposed in the 2015 Annual EA Budget Request.

Additional expanded pilot study injections were completed in May through June of 2015 including the injection of sodium sulfide, sodium dithionite, or a combination of the two in 83 injections points in the northern portion of the Area 1 chromium and nickel-impacted groundwater plume. Groundwater monitoring concluded in December 2015. An Area 1 ISCR Pilot Study Summary Report was submitted in January 2016.

- Groundwater Treatment System Decommissioning & Removal 0%

Anticipated to be completed in 2037 per May 2010 RCES but could be completed in 2018 or 2019 if the implemented ISCR and proposed Permeable Reactive Gate remedies are successful.

- Completion Report & Well Abandonment 0%

Anticipated to be completed in 2037 per May 2010 RCES.

- AOI 31 40%

A Long-Term VI Pathway Monitoring Work Plan was approved which included a minimum two years of semi-annual soil vapor and groundwater sample collection to evaluate groundwater plume stability, downgradient extent of the groundwater and soil vapor TCE plume, and spatial and temporal variability in TCE soil vapor concentrations. The first semi-annual event was conducted in June 2016. Based on the results of the first event, additional groundwater delineation activities (Phase I Geoprobe®) were completed during the 1st Quarter of 2017 to further delineate TCE and TCA groundwater plumes and concentrations to determine if modifications are needed to the VI pathway monitoring plan, or if response actions are needed to mitigate potential unacceptable VI risk. Additional permanent monitoring wells and soil vapor probes were installed in June 2017 and were sampled in July 2017. Home 1 and Home 8 subslab soil vapor probes were resampled in December 2017. A summary report will be completed during the second half of 2018.

Groundwater and soil diagnostic data were collected June 2018 to assist design of a pilot groundwater treatment of the TCE plume to lessen vapor intrusion pathway risk assessment activities in the future at homes downgradient of the current plume's extent.

- Area 1 Remedial Implementation 90%

A request to perform Targeted Area 1 ISCR Injections was submitted to USEPA in April 2016 and approved by USEPA on May 18, 2016. Targeted injections were implemented in August 2016. An Area 1 Full Scale ISCR Work Plan was submitted to USEPA in April 2016



and approved by USEPA on May 18, 2016. Implementation of the work plan activities began September 2016. ISCR injections were completed in November 2016. Performance groundwater monitoring following the ISCR injections was completed in January 2017 and April/May 2017.

An Area 1 Permeable Reactive Gate Evaluation report was submitted to USEPA in September 2017 proposing to install a permeable reactive gate (PRG) along a portion of the eastern alignment of the Area 1 Barrier Wall, to allow groundwater to exit the area surrounded by the barrier wall while being passively treated. An Area 1 Permeable Reactive Gate Work Plan was submitted to USEPA in April 2018. Comments received from USEPA are being evaluated along with recently collected groundwater sample results.

Follow-up targeted injections were conducted in December 2017 along the south and southern eastern alignments of the Area 1 Barrier Wall (in the vicinity of French drain collection trench and proposed PRG location, where injections had not previously been conducted. Follow-up groundwater monitoring activities was completed in January 2018 and May 2018.

5. Summary of Contacts with Interested Parties

- Coordination with redevelopment activities continues as necessary.
- Residents are updated on a one-on-one basis to maintain privacy of VI pathway risk evaluations at their homes.

6. Changes in Personnel

- None

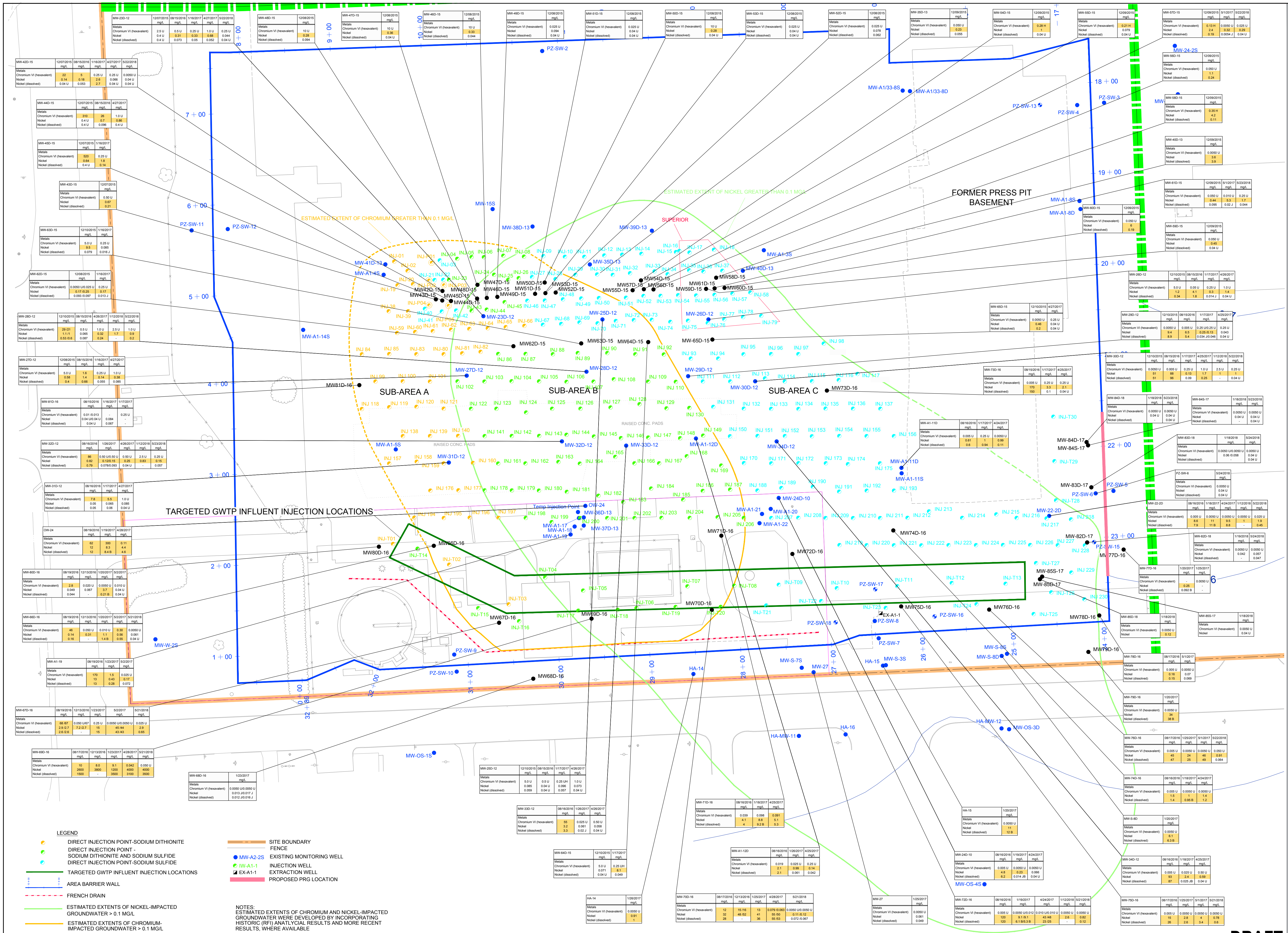
7. Projected Work for Next Reporting Period (July 2018 through December 2018)

- Conduct a semi-annual soil vapor and groundwater sampling event according to USEPA approved Long-Term Vapor Intrusion Pathway Monitoring Work Plan or as otherwise approved by USEPA.
- Prepare a 2018 summary report of the Vapor Intrusion Pathway investigations for submittal to USEPA.
- Continue operation of the Area 1 French Drain Collection Trench and Groundwater Treatment system.

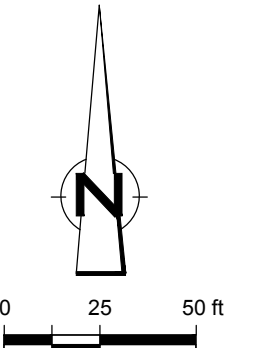


- Collect groundwater samples from select Area 1 monitoring wells to evaluate the presence of PFAS and evaluate impacts of PFAS concentrations on the French Drain Collection Trench, Groundwater Treatment system, and proposed Permeable Reactive Gate.
- Continue evaluation of potential cost savings to decrease OM&M costs associated with the Area 1 Groundwater Collection and Treatment System including evaluating results of the full scale and targeted ISCR injections.
- Address USEPA comments on Permeable Reactive Gate Work Plan.
- Evaluate June 2018 groundwater and soil data to complete a design and installation of a pilot TCE groundwater treatment system for off-site AOI 31 vapor intrusion risk.
- Conduct a vapor mitigation system performance evaluation at 37780 Grantland Street (Home 7) and 37750 Grantland Street (Home 8).
- Continue support of redevelopment activities.
- Prepare summaries of meetings, data reviews, or conference calls with USEPA, as appropriate.
- Prepare the 1st 2018 Semi-Annual Progress Report.

Attachments: Figure 1 – Area 1 ISCR/PRG Groundwater Sample Results
Figure 2 – Area 1 PFAS Sample Results
Figure 3 – AOI 31 PFAS Sample Results
Table 1 – Summary of Monthly Groundwater Treatment Plant Discharge Volume
Table 2 – Area 1 ISCR/PRG Groundwater Sample Results
Table 3 – Area 1 and AOI 31 PFAS Sample Results



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SAMPLE LOCATION		SAMPLE DATE		RESULT (mg/L)	
MW-29D-12	Metals	12/10/2015	0.050 U	8.4	
	Chromium VI (hexavalent)	12/10/2015	0.050 U	8.4	
	Nickel (dissolved)	12/10/2015	0.050 U	8.4	
PARAMETER		EXCEEDANCE OF CRITERIA			
Parameter	Non-Residential Health-Based Drinking Water Criteria (mg/L)	Site-Specific Risk-Based Groundwater Criteria (mg/L)			
	Chromium		0.1		28
	Chromium VI (hexavalent)		0.1		28
Nickel	Nickel	Nickel	0.1		2400

Client
RACER TRUST
Project
**13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

No.	Issue	Drawn	Approved	Date
-	-	-	-	-
Drawn	DRAWN	Designer		
Drafting		Design		
Check		Check		
Project Manager	CM	Date	Jul 25, 2018	
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Project No. 012607-T01

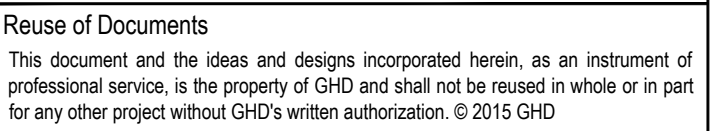
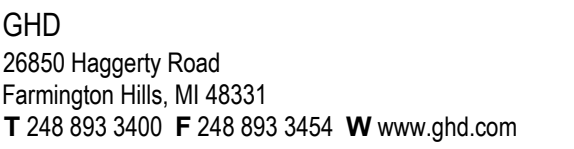
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**AREA 1 ISCR INJECTION
LOCATIONS & GROUNDWATER
SAMPLE RESULTS**

Sheet No.

FIGURE 1

DRAFT



RACER TRUST

**13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

No.	Issue	Drawn	Approved	Date
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Drafting	Design
Check	Check

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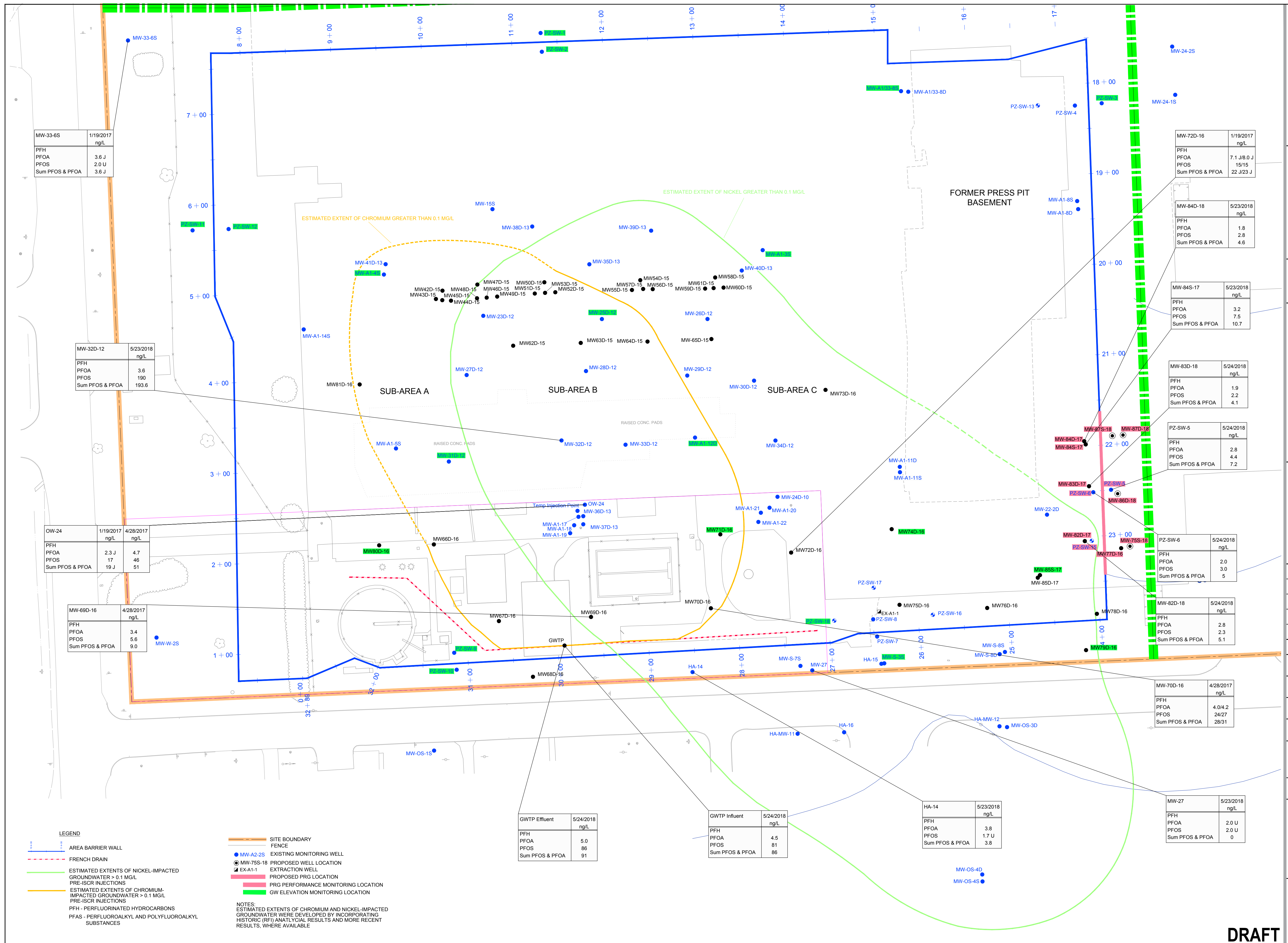
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SUMMARY OF GROUNDWATER RESULTS

AREA 1 PFAS INVESTIGATION

FIGURE 2

Sheet 1 of 1



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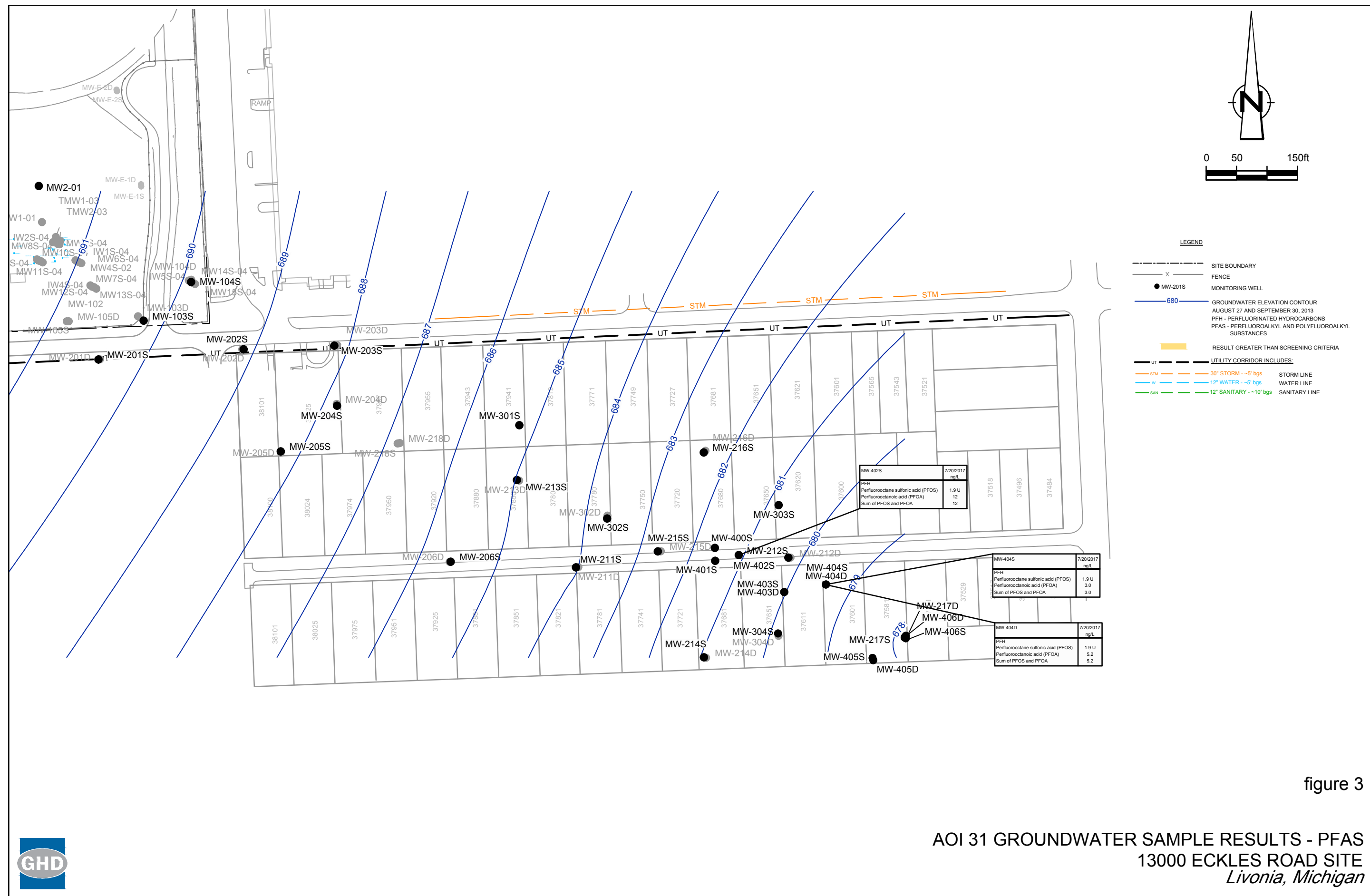


figure 3



**SUMMARY OF MONTHLY GROUNDWATER TREATMENT PLANT DISCHARGE
AREA 1 - FORMER PLATING AREA
ECKLES ROAD SITE
LIVONIA, MICHIGAN**

	Monthly GWTP Discharge Volume (Gallons)
Month	
January 2018	592,202
February 2018	152,527
March 2018	589,946
April 2018	821,663
May 2018	716,109
June 2018	745,179
Total January 2018 to June 2018 Discharge	3,617,626

Table 2

July 2018
Page 1 of 5

Summary of Grounwdater Sample Results - PRG/ISCR Monitoring
Area 1 - Former Plating Area
Eckles Road Site
Livonia, Michigan

Sample Location:	MW-22-2D	MW-22-2D	MW-23D-12	MW-28D-12	MW-28D-12	MW-28D-12	MW-30D-12	MW-30D-12
Sample Identification:	GW-12607-011218-SK-001	GW-12607A-052218-SK-009	GW-12607A-052218-SK-012	GW-12607-011218-SK-004	GW-12607A-052218-SK-011	GW-12607-011218-SK-003	GW-12607A-052218-SK-010	
Sample Date:	1/12/2018	5/22/2018	5/22/2018	1/12/2018	5/22/2018	1/12/2018	5/22/2018	
Sample Type:								
Parameters	Units							
Metals								
Calcium	mg/L	--	140	91	--	5 U	--	100
Calcium (dissolved)	mg/L	--	140	98	--	5 U	--	100
Chromium	mg/L	0.005 U	0.005 U	0.021	0.28	0.16	0.005 U	0.005 U
Chromium (dissolved)	mg/L	--	0.005 U	0.0052	--	0.046	--	0.005 U
Chromium III (trivalent)	mg/L	0.0050 U	0.0050 U	0.021	0.28	0.16	0.0050 U	0.0050 U
Chromium VI (hexavalent)	mg/L	0.0050 U	0.025 U	0.25 U	2.5 U	1.0 U	2.5 U	0.25 U
Iron	mg/L	--	3.8	2.1	--	1.1	--	0.65
Iron (dissolved)	mg/L	--	0.92	0.4	--	1.1	--	0.1 U
Magnesium	mg/L	--	20	14	--	5 U	--	15
Magnesium (dissolved)	mg/L	--	20	14	--	5 U	--	15
Manganese	mg/L	0.053	0.065	0.82	0.015 U	0.015 U	0.093	0.084
Manganese (dissolved)	mg/L	--	0.059	0.89	--	0.015 U	--	0.075
Nickel	mg/L	1	1.9	0.044	1.7	0.9	1	1
Nickel (dissolved)	mg/L	--	0.45	0.04 U	--	0.2	--	0.04 U
Sodium	mg/L	160	150	400	13000	8700	6800	3400
Sodium (dissolved)	mg/L	--	150	440	--	9100	--	3400
General Chemistry								
Alkalinity, total (as CaCO3)	mg/L	--	--	--	--	--	--	--
Hardness	mg/L	--	--	--	--	--	--	--
Sulfate	mg/L	--	--	--	--	--	--	--
Sulfide	mg/L	--	--	--	--	--	--	--
Field Parameters								
Conductivity, field	mS/cm	1.46	1.379	2.73	46.15	32.9	23.68	14.34
Dissolved oxygen (DO), field	mg/L	0	0.09	0.2	0	0.12	0	0.11
Oxidation reduction potential (ORP), f millivolts		-326.4	-372	-425	-591.4	-608	-507	-549
pH, field	s.u.	7.69	8.65	8.83	12.07	11.85	11.46	10.24
Temperature, field	Deg C	8.95	16.24	16.24	10.73	15.58	9.42	16.73
Turbidity, field	NTU	8.26	52.1	18.5	3.63	13.6	8.49	16.5

Notes:

U - Not detected at the associated reporting limit.

Table 2
Summary of Grounwater Sample Results - PRG/ISCR Monitoring
Area 1 - Former Plating Area
Eckles Road Site
Livonia, Michigan

Sample Location:	MW-32D-12	MW-32D-12	MW-42D-15	MW-57D-15	MW-61D-15	MW-66D-16
Sample Identification:	GW-12607-011218-SK-005	GW-12607A-052318-SK-018	GW-12607A-052218-SK-013	GW-12607A-052218-SK-014	GW-12607A-052318-SK-015	GW-12607A-052118-SK-001
Sample Date:	1/12/2018	5/23/2018	5/22/2018	5/22/2018	5/23/2018	5/21/2018
Sample Type:						
Parameters	Units					
Metals						
Calcium	mg/L	--	70	40	41	70
Calcium (dissolved)	mg/L	--	68	42	51	72
Chromium	mg/L	0.087	0.13	1.4	0.005 U	0.005 U
Chromium (dissolved)	mg/L	--	0.019	0.046	0.005 U	0.005 U
Chromium III (trivalent)	mg/L	0.087	0.13	1.4	0.0050 U	0.0050 U
Chromium VI (hexavalent)	mg/L	2.5 U	0.25 U	0.0050 U	0.025 U	0.025 U
Iron	mg/L	--	0.19	0.21	0.4	1.5
Iron (dissolved)	mg/L	--	0.1 U	0.1 U	0.1 U	0.1 U
Magnesium	mg/L	--	13	8	17	14
Magnesium (dissolved)	mg/L	--	12	8.3	22	15
Manganese	mg/L	0.015 U	0.03	0.071	0.024	0.18
Manganese (dissolved)	mg/L	--	0.026	0.064	0.019	0.18
Nickel	mg/L	0.83	0.15	0.04 U	0.29	1.7
Nickel (dissolved)	mg/L	--	0.057	0.04 U	0.044	0.04 U
Sodium	mg/L	2100	2400	54	380	160
Sodium (dissolved)	mg/L	--	2400	58	200	150
General Chemistry						
Alkalinity, total (as CaCO3)	mg/L	--	--	--	--	--
Hardness	mg/L	--	--	--	--	--
Sulfate	mg/L	--	--	--	--	--
Sulfide	mg/L	--	--	--	--	--
Field Parameters						
Conductivity, field	mS/cm	9.58	9.61	0.52	2.72	1.073
Dissolved oxygen (DO), field	mg/L	0	0.31	0.19	0.17	0.12
Oxidation reduction potential (ORP), f millivolts		-431.2	-467	-343	-393	-400
pH, field	s.u.	10.47	9.65	8.01	10.37	8.07
Temperature, field	Deg C	8.56	14.62	15.47	14.78	16.22
Turbidity, field	NTU	23.3	11.1	16.3	4.76	10.2

Notes:
U - Not detected at the associated reporting limi

Table 2
Summary of Grounwater Sample Results - PRG/ISCR Monitoring
Area 1 - Former Plating Area
Eckles Road Site
Livonia, Michigan

Sample Location:		MW-67D-16	MW-69D-16	MW-70D-16	MW-70D-16	MW-72D-16	MW-72D-16
Sample Identification:		GW-12607A-052118-SK-002	GW-12607A-052118-SK-003	GW-12607A-052118-SK-004	GW-12607A-052118-SK-005	GW-12607-011218-SK-002	GW-12607A-052118-SK-006
Sample Date:		5/21/2018	5/21/2018	5/21/2018	5/21/2018	1/12/2018	5/21/2018
Sample Type:					Duplicate		
Parameters	Units						
Metals							
Calcium	mg/L	310	570	160	150	--	300
Calcium (dissolved)	mg/L	300	530	150	140	--	300
Chromium	mg/L	0.25	0.5 U	0.013	0.011	0.005 U	0.005 U
Chromium (dissolved)	mg/L	0.043	0.5 U	0.0088	0.0082	--	0.005 U
Chromium III (trivalent)	mg/L	0.25	0.0050 U	0.013	0.011	0.0050 U	0.0050 U
Chromium VI (hexavalent)	mg/L	0.025 U	0.050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Iron	mg/L	0.47	10 U	0.1 U	0.1 U	--	0.19
Iron (dissolved)	mg/L	0.14	10 U	0.1 U	0.1 U	--	0.1 U
Magnesium	mg/L	9.4	500 U	11	11	--	39
Magnesium (dissolved)	mg/L	8.9	500 U	11	11	--	39
Manganese	mg/L	0.9	9.1	0.084	0.098	0.37	0.16
Manganese (dissolved)	mg/L	0.8	8	0.096	0.097	--	0.16
Nickel	mg/L	2.9	4000	0.11	0.12	2.6	0.82
Nickel (dissolved)	mg/L	0.65	3500	0.072	0.067	--	0.12
Sodium	mg/L	11000	1200	930	860	550	500
Sodium (dissolved)	mg/L	12000	1100	860	860	--	500
General Chemistry							
Alkalinity, total (as CaCO3)	mg/L	--	--	--	--	--	--
Hardness	mg/L	--	--	--	--	--	--
Sulfate	mg/L	--	--	--	--	--	--
Sulfide	mg/L	--	--	--	--	--	--
Field Parameters							
Conductivity, field	mS/cm	33.3	13.75	4.27	4.27	3.74	3.72
Dissolved oxygen (DO), field	mg/L	0.14	0.41	0.18	0.18	0	0.11
Oxidation reduction potential (ORP), 1 millivolts		-482	-187	-435	-435	-213.2	-364
pH, field	s.u.	8.91	6.15	9.56	9.56	8.29	8.56
Temperature, field	Deg C	13.78	13.61	12.77	12.77	9.75	13.79
Turbidity, field	NTU	10.8	9.64	2.47	2.47	4.67	10.6

Notes:
U - Not detected at the associated reporting limi

Table 2

July 2018
Page 4 of 5

Summary of Grounwdater Sample Results - PRG/ISCR Monitoring
Area 1 - Former Plating Area
Eckles Road Site
Livonia, Michigan

Sample Location:	MW-75D-16	MW-76D-16	MW-82D-18	MW-82D-18	MW-83D-18	MW-83D-18	MW-83D-18
Sample Identification:	GW-12607A-052118-SK-007	GW-12607A-052218-SK-008	GW-12607-011918-SK-012	GW-12607A-052418-SK-023	GW-12607-011818-SK-008	GW-12607-011818-SK-009	GW-12607A-052418-SK-022
Sample Date:	5/21/2018	5/22/2018	1/19/2018	5/24/2018	1/18/2018	1/18/2018	5/24/2018
Sample Type:							
Parameters	Units					Duplicate	
Metals							
Calcium	mg/L	130	23	87	140	130	150
Calcium (dissolved)	mg/L	130	21	--	140	--	150
Chromium	mg/L	0.005 U	0.0067	0.005 U	0.005 U	0.005 U	0.005 U
Chromium (dissolved)	mg/L	0.005 U	0.005 U	--	0.005 U	--	0.005 U
Chromium III (trivalent)	mg/L	0.0050 U	0.0067	--	0.0050 U	0.0050 U	0.0050 U
Chromium VI (hexavalent)	mg/L	0.0050 U	0.050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Iron	mg/L	0.56	4.2	0.49	2	0.19	0.16
Iron (dissolved)	mg/L	0.16	0.77	--	1.6	--	0.1 U
Magnesium	mg/L	13	5 U	14	17	11	13
Magnesium (dissolved)	mg/L	12	5 U	--	18	--	13
Manganese	mg/L	0.52	0.14	1.1	1.2	0.31	0.3
Manganese (dissolved)	mg/L	0.36	0.015 U	--	1	--	0.29
Nickel	mg/L	0.78	0.91	0.042	0.057	0.058	0.04 U
Nickel (dissolved)	mg/L	0.6	0.064	--	0.047	--	0.04 U
Sodium	mg/L	120	530	32	51	11	13
Sodium (dissolved)	mg/L	120	560	--	49	--	13
General Chemistry							
Alkalinity, total (as CaCO ₃)	mg/L	--	--	340	290	290	360
Hardness	mg/L	--	--	270	470	380	450
Sulfate	mg/L	--	--	64	100	49	56
Sulfide	mg/L	--	--	3.0 U	3.0 U	3.0 U	3.0 U
Field Parameters							
Conductivity, field	mS/cm	1.355	2.99	0.64	1.024	0.69	0.769
Dissolved oxygen (DO), field	mg/L	0.1	0.08	0	0.2	0	0.19
Oxidation reduction potential (ORP), f millivolts		-317	-544	16.5	-107	32.9	76
pH, field	s.u.	7.32	11.86	7.51	7.6	7.11	7.14
Temperature, field	Deg C	11.84	17.91	10.33	13.56	10.01	14.38
Turbidity, field	NTU	6.76	20.5	14	10.8	9.59	7.41

Notes:

U - Not detected at the associated reporting limi

Table 2

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Summary of Grounwater Sample Results - PRG/ISCR Monitoring
Area 1 - Former Plating Area
Eckles Road Site
Livonia, Michigan

Sample Location:	MW-84D-18	MW-84D-18	MW-84S-17	MW-84S-17	MW-85D-18	MW-85S-17	PZ-SW-6
Sample Identification:	GW-12607-011818-SK-007	GW-12607A-052318-SK-019	GW-12607-011818-SK-006	GW-12607A-052318-SK-020	GW-12607-011818-SK-010	GW-12607-011818-SK-011	GW-12607A-052418-SK-024
Sample Date:	1/18/2018	5/23/2018	1/18/2018	5/23/2018	1/18/2018	1/18/2018	5/24/2018
Sample Type:							
Parameters	Units						
Metals							
Calcium	mg/L	160	160	140	130	86	140
Calcium (dissolved)	mg/L	--	150	--	130	--	140
Chromium	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Chromium (dissolved)	mg/L	--	0.005 U	--	0.005 U	--	0.005 U
Chromium III (trivalent)	mg/L	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chromium VI (hexavalent)	mg/L	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Iron	mg/L	0.38	0.6	0.99	0.1 U	0.52	4.2
Iron (dissolved)	mg/L	--	0.13	--	0.1 U	--	3.4
Magnesium	mg/L	11	11	12	11	14	9
Magnesium (dissolved)	mg/L	--	10	--	11	--	8.9
Manganese	mg/L	0.47	0.32	0.079	0.23	0.63	3.4
Manganese (dissolved)	mg/L	--	0.29	--	0.23	--	3.5
Nickel	mg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.12	0.04 U
Nickel (dissolved)	mg/L	--	0.04 U	--	0.04 U	--	0.04 U
Sodium	mg/L	6.4	10	16	18	56	30
Sodium (dissolved)	mg/L	--	8.8	--	19	--	30
General Chemistry							
Alkalinity, total (as CaCO ₃)	mg/L	330	370	340	370	230	350
Hardness	mg/L	430	470	410	430	280	440
Sulfate	mg/L	130	130	31	31	130	28
Sulfide	mg/L	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Field Parameters							
Conductivity, field	mS/cm	0.79	0.845	0.75	0.785	0.73	0.851
Dissolved oxygen (DO), field	mg/L	0	0.31	4.6	0.22	0.46	0.21
Oxidation reduction potential (ORP), f millivolts		93.9	-53	51.6	73	28.5	-81
pH, field	s.u.	7.12	7.14	7.00	7.01	7.54	7.06
Temperature, field	Deg C	11.61	14.14	9.13	14.81	9.16	14.62
Turbidity, field	NTU	17.6	16.1	26.3	4.31	13.9	22.3

Notes:

U - Not detected at the associated reporting limi

Table 3

July 2018
Page 1 of 6Analytical Results of Groundwater Samples
PFAS Evaluation
Eckles Road Site
Livonia, Michigan

AOI:		Proposed MDEQ ⁽²⁾	Area 01	Area 01	Area 01	Area 01	Area 01
Sample Location:		Residential	GWTP Effluent	GWTP Influent	HA-14	MW-27	MW-32D-12
Sample Identification:		Drinking Water	GW-12607A-052418-SK-026	GW-12607A-052418-SK-025	GW-12607A-052318-JK-016	GW-12607A-052318-JK-017	GW-12607A-052318-JK-018
Sample Date:		Criteria	5/24/2018	5/24/2018	5/23/2018	5/23/2018	5/23/2018
Sample Type:							
	Units						
Perfluorinated Hydrocarbons							
Perfluorhexanoic acid (PFHxA)	ng/L		2.0 U	1.8	1.7 U	2.0 U	2.0 U
Perfluorobutane sulfonic acid (PFBS)	ng/L		3.3	3.0	2.7	2.2	56
Perfluorobutanoic acid (PFBA)	ng/L		14	16	8.5	3.3	170
Perfluorodecanesulfonic acid (PFDS)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	2.0 U
Perfluorodecanoic acid (PFDA)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	2.0 U
Perfluorododecanoic acid (PFDoA)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	2.0 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	6.2
Perfluoroheptanoic acid (PFHpA)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	2.0 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L		5.2	5.1	3.4	2.5	69
Perfluorononane sulfonic acid (PFNS)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	2.0 U
Perfluorononanoic acid (PFNA)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	2.0 U
Perfluorooctane sulfonamide (FOSA)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	2.0 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	70	86	81	1.7 U	2.0 U	190
Perfluorooctanoic acid (PFOA)	ng/L	70	5.0	4.5	3.8	2.0 U	3.6
Perfluoropentane sulfonic acid (PFPeS)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	14
Perfluoropentanoic acid (PFPeA)	ng/L		2.0 U	1.8 U	2.2	2.0 U	2.0 U
Perfluorotetradecanoic acid (PFTeA)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	2.0 U
Perfluorotridecanoic acid (PFTrDA)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	2.0 U
Perfluoroundecanoic acid (PFUnA)	ng/L		2.0 U	1.8 U	1.7 U	2.0 U	2.0 U
Fluorotelomer sulfonic acid (4:2)	ng/L		20 U	18 U	17 U	20 U	20 U
Fluorotelomer sulfonic acid(8:2)	ng/L		20 U	18 U	17 U	20 U	200 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L		20 U	18 U	17 U	20 U	20 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L		20 U	18 U	17 U	20 U	20 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L		20 U	18 U	17 U	20 U	20 U
Sum of Perfluoro-n-Octanoic acid and Perfluorooctane sulfonate	ng/L		91	85.5	3.8	N/A	193.6

Notes:

U - Not detected at the associated reporting limit.

J - Estimated concentration.

UJ - Not detected; associated reporting limit is estimated.

PFH - Perfluorinated Hydrocarbons

PFAS - Perfluoroalkyl and Polyfluoroalkyl Substances

(2) Table 1 - Proposed Part 201 Generic Cleanup Criteria and Screening Levels/
Part 213 Risk-Based Screening Levels - August 2017

Table 3

July 2018
Page 2 of 6Analytical Results of Groundwater Samples
PFAS Evaluation
Eckles Road Site
Livonia, Michigan

AOI:		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Sample Location:		MW-69D-16	MW-70D-16	MW-70D-16	MW-72D-16	MW-72D-16	MW-82D-18
Sample Identification:		GW-12607-042817-SK-026	GW-12607-042817-SK-024	GW-12607-042817-SK-025	GW-12607-011917-SK-025	GW-12607-011917-SK-026	GW-12607A-052418-SK-023
Sample Date:		4/28/2017	4/28/2017	4/28/2017	1/19/2017	1/19/2017	5/24/2018
Sample Type:				Duplicate		Duplicate	
	Units						
Perfluorinated Hydrocarbons							
Perfluorhexanoic acid (PFHxA)	ng/L	36 UJ	1.9 UJ	1.9 UJ	2.0 U	2.0 UJ	1.8 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.8 U	2.4	2.5	3.0	3.2	1.8 U
Perfluorobutanoic acid (PFBA)	ng/L	140 J	14 J	13 J	2.0 UJ	2.0 UJ	8.0
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Perfluorododecanoic acid (PFDoA)	ng/L	1.8 U	1.9 UJ	1.9 U	2.0 U	2.0 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	11	11	9.6	17	18	1.8 U
Perfluorononane sulfonic acid (PFNS)	ng/L	--	--	--	--	--	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 UJ	1.9 UJ	1.9 UJ	2.0 UJ	2.0 UJ	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	5.6	27	24	15	15	2.3
Perfluorooctanoic acid (PFOA)	ng/L	3.4	4.2	4.0	7.1 J	8.0 J	2.8
Perfluoropentane sulfonic acid (PFPeS)	ng/L	--	--	--	--	--	1.8 U
Perfluoropentanoic acid (PFPeA)	ng/L	580 J	120 J	120 J	2.0 U	2.0 U	2.1
Perfluorotetradecanoic acid (PFTeA)	ng/L	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Perfluorotridecanoic acid (PFTTrDA)	ng/L	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.9 U	1.9 U	2.0 U	2.0 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L	--	--	--	--	--	18 U
Fluorotelomer sulfonic acid(8:2)	ng/L	--	--	--	--	--	18 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	--	--	--	--	--	18 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	--	--	--	--	--	18 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	18 U	19 U	19 U	20 U	20 U	18 U
Sum of Perfluoro-n-Octanoic acid and Perfluorooctane sulfonate	ng/L	9.0	31	28	22 J	23 J	5.1

Notes:

U - Not detected at the associated reporting limit.

J - Estimated concentration.

UJ - Not detected; associated reporting limit is estimated.

PFH - Perfluorinated Hydrocarbons

PFAS - Perfluoroalkyl and Polyfluoroalkyl Substances

(2) Table 1 - Proposed Part 201 Generic Cleanup Criteria and Screening L
Part 213 Risk-Based Screening Levels - August 2017

Table 3

July 2018
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PFAS Evaluation
Eckles Road Site
Livonia, Michigan

AOI:		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Sample Location:		MW-83D-18	MW-84D-18	MW-84S-17	OW-24	OW-24	PZ-SW-5
Sample Identification:		GW-12607A-052418-SK-022	GW-12607A-052318-JK-019	GW-12607A-052318-JK-020	GW-12607-011917-SK-022	GW-12607-042817-SK-027	GW-12607A-052418-SK-021
Sample Date:		5/24/2018	5/23/2018	5/23/2018	1/19/2017	4/28/2017	5/24/2018
Sample Type:							
	Units						
Perfluorinated Hydrocarbons							
Perfluorhexanoic acid (PFHxA)	ng/L	1.8 U	1.8 U	4.7	2.0 U	1.9 UJ	1.8 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.8 U	3.1	3.3	2.0 U	6.8	4.3
Perfluorobutanoic acid (PFBA)	ng/L	9.0	5.3	9.4	2.0 U	1.9 UJ	18
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.7 U	2.0 U	1.9 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	1.7 U	2.0 U	1.9 U	1.8 U
Perfluorododecanoic acid (PFDoA)	ng/L	1.8 U	1.8 U	1.7 U	2.0 U	1.9 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.8 U	1.7 U	2.0 U	2.7	1.8 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.8 U	1.8 U	2.1	2.0 U	2.0	1.8 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	1.8 U	1.8 U	1.8	11	17	1.8 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	1.7 U	--	--	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.8 U	1.7 U	2.0 U	1.9 U	1.8 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.8 U	1.7 U	2.0 UJ	1.9 UJ	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	2.2	2.8	7.5	17	46	4.4
Perfluorooctanoic acid (PFOA)	ng/L	1.9	1.8	3.2	2.3 J	4.7	2.8
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	1.8 U	1.7 U	--	--	1.8 U
Perfluoropentanoic acid (PFPeA)	ng/L	1.8 U	1.8 U	2.9	2.0 U	370 J	1.8 U
Perfluorotetradecanoic acid (PFTeA)	ng/L	1.8 U	1.8 U	1.7 U	2.0 U	1.9 U	1.8 U
Perfluorotridecanoic acid (PFTTrDA)	ng/L	1.8 U	1.8 U	1.7 U	2.0 U	1.9 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.7 U	2.0 U	1.9 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L	18 U	18 U	17 U	--	--	18 U
Fluorotelomer sulfonic acid(8:2)	ng/L	18 U	18 U	17 U	--	--	18 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	18 U	18 U	17 U	--	--	18 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	18 U	18 U	17 U	--	--	18 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	18 U	18 U	17 U	20 U	19 U	18 U
Sum of Perfluoro-n-Octanoic acid and Perfluorooctane sulfonate	ng/L	4.1	4.6	10.7	19 J	51	7.2

Notes:

U - Not detected at the associated reporting limit.

J - Estimated concentration.

UJ - Not detected; associated reporting limit is estimated.

PFH - Perfluorinated Hydrocarbons

PFAS - Perfluoroalkyl and Polyfluoroalkyl Substances

(2) Table 1 - Proposed Part 201 Generic Cleanup Criteria and Screening L
Part 213 Risk-Based Screening Levels - August 2017

Table 3

July 2018
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PFAS Evaluation
Eckles Road Site
Livonia, Michigan

AOI:	Area 01	AOI 33	AOI 31	AOI 31	AOI 31	AOI 31	Area 01
Sample Location:	PZ-SW-6	MW-33-6S	MW-402S	MW-404D	MW-404S	Equipment Blank	
Sample Identification:	GW-12607A-052418-SK-024	GW-12607-011917-SK-021	GW-12607-072017-SK-011	GW-12607-072017-SK-013	GW-12607-072017-SK-012	EB-12607-011917-SK-023	
Sample Date:	5/24/2018	1/19/2017	7/20/2017	7/20/2017	7/20/2017	1/19/2017	
Sample Type:							
	Units						
Perfluorinated Hydrocarbons							
Perfluorhexanoic acid (PFHxA)	ng/L	2.0 U	2.0 U	56	88	8.0	2.0 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	12	2.0 U	25	22	9.2	2.0 U
Perfluorobutanoic acid (PFBA)	ng/L	110	10	12	12	5.6 U	2.0 U
Perfluorodecanesulfonic acid (PFDS)	ng/L	2.0 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Perfluorodecanoic acid (PFDA)	ng/L	2.0 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Perfluorododecanoic acid (PFDoA)	ng/L	2.0 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	2.0 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Perfluoroheptanoic acid (PFHpA)	ng/L	2.0 U	2.0 U	54	48	3.2	2.0 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	2.0 U	2.4	170	58	22	2.0 U
Perfluorononane sulfonic acid (PFNS)	ng/L	2.0 U	--	--	--	--	--
Perfluorononanoic acid (PFNA)	ng/L	2.0 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Perfluorooctane sulfonamide (FOSA)	ng/L	2.0 U	2.0 UJ	39 U	38 U	38 U	2.0 UJ
Perfluorooctane sulfonic acid (PFOS)	ng/L	3.0	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Perfluorooctanoic acid (PFOA)	ng/L	2.0	3.6 J	12	5.2	3.0	2.0 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L	2.0 U	--	--	--	--	--
Perfluoropentanoic acid (PFPeA)	ng/L	2.0 U	2.3	15	26	3.2	2.0 U
Perfluorotetradecanoic acid (PFTeA)	ng/L	2.0 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Perfluorotridecanoic acid (PFTTrDA)	ng/L	2.0 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Perfluoroundecanoic acid (PFUnA)	ng/L	2.0 U	2.0 U	1.9 U	1.9 U	1.9 U	2.0 U
Fluorotelomer sulfonic acid (4:2)	ng/L	20 U	--	--	--	--	--
Fluorotelomer sulfonic acid(8:2)	ng/L	20 U	--	--	--	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	20 U	--	--	--	--	--
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	20 U	--	--	--	--	--
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	20 U	20 U	19 U	19 U	19 U	20 U
Sum of Perfluoro-n-Octanoic acid and Perfluorooctane sulfonate	ng/L	5	3.6 J	12	5.2	3.0	N/A

Notes:

U - Not detected at the associated reporting limit.

J - Estimated concentration.

UJ - Not detected; associated reporting limit is estimated.

PFH - Perfluorinated Hydrocarbons

PFAS - Perfluoroalkyl and Polyfluoroalkyl Substances

(2) Table 1 - Proposed Part 201 Generic Cleanup Criteria and Screening L
Part 213 Risk-Based Screening Levels - August 2017

Table 3

July 2018
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PFAS Evaluation
Eckles Road Site
Livonia, Michigan

AOI:	Area 01	AOI 31	Area 01	Area 01	AOI 31	Area 01
Sample Location:	Equipment Blank	Equipment Blank	Equipment Blank	Field Blank	Field Blank	Field Blank
Sample Identification:	W-12607-042817-SK-028	EB-12607-072017-SK-002	EB-12607A-052418-SK-027	FB-12607-011917-SK-024	FB-12607-072017-SK-001	FB-12607A-052418-SK-028
Sample Date:	4/28/2017	7/20/2017	5/24/2018	1/19/2017	7/20/2017	5/24/2018
Sample Type:						
	Units					
Perfluorinated Hydrocarbons						
Perfluorhexanoic acid (PFHxA)	ng/L	1.9 U	0.81 J	1.8 U	2.0 U	1.9 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	1.9 U
Perfluorobutanoic acid (PFBA)	ng/L	1.9 U	1.2 J	1.8 U	2.0 U	1.2 J
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	1.9 U	0.48 J	1.8 U	2.0 U	1.9
Perfluorododecanoic acid (PFDoA)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	3.1
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	1.9 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	1.9 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	1.9 U
Perfluorononane sulfonic acid (PFNS)	ng/L	--	--	1.8 U	--	--
Perfluorononanoic acid (PFNA)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	1.2 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 UJ	38 U	1.8 U	2.0 UJ	38 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	1.9 U	15	1.8 U	2.0 U	1.9 U
Perfluorooctanoic acid (PFOA)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	1.9 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L	--	--	1.8 U	--	--
Perfluoropentanoic acid (PFPeA)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	1.9 U
Perfluorotetradecanoic acid (PFTeA)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	0.22 J
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	1.9 U	1.8 U	2.0 U	4.8
Fluorotelomer sulfonic acid (4:2)	ng/L	--	--	18 U	--	--
Fluorotelomer sulfonic acid(8:2)	ng/L	--	--	18 U	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	--	--	18 U	--	--
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	--	--	18 U	--	--
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	19 U	19 U	18 U	20 U	19 U
Sum of Perfluoro-n-Octanoic acid and Perfluorooctane sulfonate	ng/L	N/A	15	N/A	N/A	N/A

Notes:

U - Not detected at the associated reporting limit.

J - Estimated concentration.

UJ - Not detected; associated reporting limit is estimated.

PFH - Perfluorinated Hydrocarbons

PFAS - Perfluoroalkyl and Polyfluoroalkyl Substances

(2) Table 1 - Proposed Part 201 Generic Cleanup Criteria and Screening L
Part 213 Risk-Based Screening Levels - August 2017

Table 3
Analytical Results of Groundwater Samples
PFAS Evaluation
Eckles Road Site
Livonia, Michigan

AOI:		Area 01	Area 01
Sample Location:		Trip Blank	Trip Blank
Sample Identification:		TB-12607-011917-SK	W-12607-042817-SK-029
Sample Date:		1/19/2017	4/28/2017
Sample Type:			
	Units		
Perfluorinated Hydrocarbons			
Perfluorhexanoic acid (PFHxA)	ng/L	2.0 U	1.9 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	2.0 U	1.9 U
Perfluorobutanoic acid (PFBA)	ng/L	2.0 U	1.9 U
Perfluorodecanesulfonic acid (PFDS)	ng/L	2.0 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	2.0 U	1.9 U
Perfluorododecanoic acid (PFDoA)	ng/L	2.0 U	1.9 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	2.0 U	1.9 U
Perfluoroheptanoic acid (PFHpA)	ng/L	2.0 U	1.9 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	2.0 U	1.9 U
Perfluorononane sulfonic acid (PFNS)	ng/L	--	--
Perfluorononanoic acid (PFNA)	ng/L	2.0 U	1.9 U
Perfluorooctane sulfonamide (FOSA)	ng/L	2.0 UJ	1.9 UJ
Perfluorooctane sulfonic acid (PFOS)	ng/L	2.0 U	1.9 U
Perfluorooctanoic acid (PFOA)	ng/L	2.0 U	1.9 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L	--	--
Perfluoropentanoic acid (PFPeA)	ng/L	2.0 U	1.9 U
Perfluorotetradecanoic acid (PFTeA)	ng/L	2.0 U	1.9 U
Perfluorotridecanoic acid (PFTTrDA)	ng/L	2.0 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	2.0 U	1.9 U
Fluorotelomer sulfonic acid (4:2)	ng/L	--	--
Fluorotelomer sulfonic acid(8:2)	ng/L	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	--	--
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	--	--
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	20 U	19 U
Sum of Perfluoro-n-Octanoic acid and Perfluorooctane sulfonate	ng/L	N/A	N/A

Notes:
U - Not detected at the associated reporting limit.
J - Estimated concentration.
UJ - Not detected; associated reporting limit is estimated.
PFH - Perfluorinated Hydrocarbons
PFAS - Perfluoroalkyl and Polyfluoroalkyl Substances

(2) Table 1 - Proposed Part 201 Generic Cleanup Criteria and Screening L
Part 213 Risk-Based Screening Levels - August 2017