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Project name:
Project 1007-E. Metro Drinking Water

Project ref:
60608807

To:
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Date:

Decemober 20, 2019

CC:
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Memo

Subject: Baseline Sampling Summary Memo – PFAS in Surface Water and Sediment

AECOM has prepared this memo to describe the baseline PFAS surface water, sediment, and foam sampling that was conducted during the week of August 12, 2019 along the Project 1007 conveyance route.

The sampling was completed as part of the FY20 work order 3000024460 under task item #5 and included collection of surface water samples, sediment samples, and foam samples. All samples were shipped to AXYS Laboratory and analyzed using AXYS Method MLA-110 for aqueous and solids at key focus areas along the Project 1007 conveyance route. The general locations of samples throughout the Project 1007 area included:

- Lake Olson and Lake Jane;
- Raleigh Creek from Hadley Avenue downstream to its confluence with Project 1007 at Tablyn Park;
- Downstream of Tablyn Park to Eagle Point Lake located in Lake Elmo Park;
- Eagle Point Lake and throughout its connection to Lake Elmo including sampling from Lake Elmo;
- Lake Elmo to Horseshoe Lake;
- Downstream of Horseshoe Lake toward the West Lakeland Storage sites (north, middle, and south ponds) to the I-94 Rest Area Pond; and
- At the Project 1007 discharge point at the St. Croix River.

The baseline sampling event included the following sampling data collection approach:

- Surface water samples that replicated locations where previous historic samples were collected, biased locations representing inlet and outlet locations or locations where surface flow velocities were likely to vary from surrounding areas, and at unbiased locations that allowed for continuous sampling coverage along the entire Project 1007 conveyance route.
    - All surface water samples were collected from the 0-3-inch depth interval. Where adequate water column depth was present, a sample was collected from the 18-21-inch depth interval.
- Sediment samples were co-located at locations where surface water samples were collected. If sufficient water was not present, only a sediment sample was collected. Sediment samples were collected from the 0-3-inch depth interval.
- Foam samples were collected if observed on any water body during baseline sampling activities.

- QA/QC samples were collected for validation purposes. These samples included duplicates (1 for every 10 samples collected for each media), equipment rinseate blanks (daily), and matrix spike/matrix spike duplicates (MS/MSD) were collected 1 for every 20 samples.
- Surface water flow velocities were collected at four separate Project 1007 locations.

The surface water and sediment sampling were performed to obtain a data set of PFAS samples collected during a single, short duration sampling event, under similar conditions throughout the entire Project 1007 conveyance route. A heavy rain event occurred following the second day of sampling (August 13, 2019) that resulted in approximately 1-4 inches of rain falling over portions of the Valley Branch Watershed and resulting in increased flow within the Project 1007 conveyance route. Modifications to the sampling plan occurred as a result of the higher flow and included the collection of surface water samples from locations that had been dry prior to the rain event (RC11 and RC12), resampling of four previously-sampled locations (RC3, RC7, RC17, and WL10), and the resampling of one foam location (RC7) where foam accumulation had increased following the rain event.

All PFAS samples were shipped to AXYS laboratory in Sydney, British Columbia, Canada (analyzed using Method MLA-110). All non-PFAS samples were shipped to Pace Analytical in Minneapolis, MN and analyzed for:

- Alkalinity
- pH
- TOC
- TSS
- Turbidity
- BOD
- TDS
- Cl
- SO4
- NO3

For presentation and organizational purposes, Project 1007 was geographically divided west to east into four sampling areas and given unique sample identification prefixes:

- Raleigh Creek and Tri-Lakes Area (RC)
- Eagle Point Lake and Lake Elmo Area (EP)
- West Lakeland Storage Sites (WL)
- St. Croix River Area (SC)

The summary below includes the type of samples and sample location count for each of the four sampling areas.

		Raleigh Creek	Eagle Point Lake and Lake Elmo	West Lakeland Storage	St. Croix River	Totals
Location Type	Repeat Sample Locations	11	9	7	1	28
	Unbiased New Locations	7	2	6	0	15
	Biased New Locations	1	4	7	3	15
Sample Type	Total Surface Water Samples	19	15	20	4	58
	Coincident Sediment Samples	19	7	17	0	43
	Foam Samples	4	0	0	0	4
			Total Baseline Samples			105

The information included in this Baseline Sampling Summary Memo is intended to provide sampling results data only and is the first step in developing the Project 1007 conceptual site model. Interpretation of the data, additional sampling and investigative activities and recommendations will be completed in subsequent scopes of work.

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Table 1
Baseline Sampling Plan
Project 1007
Minnesota Pollution Control Agency

Sample ID	Location	Rationale for Location	Sample Type	Sampling Notes
Raleigh Creek and Tri-Lakes Area				
RC1	Lake Olson	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Surface and elbow depth water samples collected
RC2	Lake Jane	Unbiased Surface Water and Sediment Sample Location	Water and Sediment	Surface and elbow depth water samples collected; Duplicate and MS/MSD surface water samples collected
RC3	Raleigh Creek	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Baseline and high flow water samples collected; Sediment duplicate sample collected
RC4	Raleigh Creek	Unbiased Surface Water and Sediment Sample Location	Water and Sediment	
RC5	Raleigh Creek	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	
RC6	Raleigh Creek	Unbiased Surface Water and Sediment Sample Location	Water and Sediment	
RC7	Raleigh Creek	Repeat Surface Water and New Sediment Sample Location	Water, Sediment, and Foam	Baseline and high flow surface water samples collected
RC8	Raleigh Creek	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	
RC9	Raleigh Creek	Unbiased Surface Water and Sediment Sample Location	Water and Sediment	
RC10	Raleigh Creek	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	
RC11	Raleigh Creek	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Water only present following rain event
RC12	Raleigh Creek	Unbiased Surface Water and Sediment Sample Location	Water, Sediment, and Foam	Water only present following rain event
RC13	Raleigh Creek	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	
RC14	Tri-Lakes Project 1007 Discharge, Unnamed Creek	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Flow measurement collected during normal, baseline flow conditions
RC15	Tri-Lakes Project 1007 Discharge, Unnamed Creek	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	
RC16	Tri-Lakes Project 1007 Discharge, Unnamed Creek	Unbiased Surface Water and Sediment Sample Location	Water and Sediment	
RC17	Raleigh Creek and Tri-Lakes Project 1007 Discharge	Repeat Surface Water and New Sediment Sample Location	Water, Sediment, and Foam	Baseline and high flow water samples collected; Flow measurement collected during high flow conditions; Sediment duplicate sample collected; Two foam samples collected from two unique locations
RC18	Raleigh Creek and Tri-Lakes Project 1007 Discharge	Biased Surface Water and Sediment Sample Location	Water and Sediment	
RC19	Farney Creek	Unbiased Sediment Sample Location	Sediment only	Location dry during normal, baseline conditions

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Baseline Sampling Plan
Project 1007
Minnesota Pollution Control Agency

Sample ID	Location	Rationale for Location	Sample Type	Sampling Notes
Eagle Point Lake and Lake Elmo Area				
EP1	Eagle Point Lake	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Surface and elbow depth water samples collected; Duplicate and MS/MSD surface water samples collected
EP2	Eagle Point Lake	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Surface and elbow depth water samples collected
EP3	Eagle Point Lake	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Surface and elbow depth water samples collected
EP4	Lake Elmo Park Reserve	Biased Surface Water and Sediment Sample Location	Water and Sediment	
EP5	Lake Elmo Park Reserve	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Flow measurement collected during normal, baseline flow conditions
EP7	Lake Elmo Park Reserve	Unbiased Surface Water and Sediment Sample Location	Water and Sediment	
EP8	Lake Elmo Park Reserve	Biased Surface Water Sample Location	Water only	
EP9	Lake Elmo	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Surface and elbow depth water samples collected; Duplicate and MS/MSD sediment samples collected
EP10	Lake Elmo Discharge and Diversion Pipe	Repeat Surface Water Sample Location	Water only	Flow measurement collected during normal, baseline flow conditions
EP11	Lake Elmo Discharge and Diversion Pipe	Repeat Surface Water Sample Location	Water only	Flow measurement collected during normal, baseline flow conditions
EP12	Lake Elmo Discharge and Diversion Pipe	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Duplicate surface water sample collected; Duplicate and MS/MSD sediment samples collected; Flow measurement collected during normal, baseline flow conditions
EP13	Royal Golf Club	Biased Surface Water and Sediment Sample Location	Water and Sediment	
EP14	Lake Elmo	Unbiased Surface Water and Sediment Sample Location	Water and Sediment	Surface and elbow depth water samples collected
EP15	Lake Elmo	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Surface and elbow depth water samples collected

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Project 1007
Minnesota Pollution Control Agency

Sample ID	Location	Rationale for Location	Sample Type	Sampling Notes
West Lakeland Storage Sites and St. Croix River Area				
WL1	Royal Golf Club	Unbiased Surface Water Sample Location	Water only	
WL2	Horseshoe Lake	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Surface and elbow depth water samples collected
WL3	Horseshoe Lake	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	Surface and elbow depth water samples collected
WL5	Horseshoe Lake	Biased Surface Water and Sediment Sample Location	Water and Sediment	
WL6	West Lakeland Storage Sites	Repeat Surface Water and New Sediment Sample Location	Water and Sediment	
WL7	West Lakeland Storage Sites	Unbiased Surface Water and Sediment Sample Location	Water and Sediment	
WL8	West Lakeland Storage Sites, North Pond	Repeat Surface Water Sample Location	Water only	
WL9	West Lakeland Storage Sites, North Pond	Biased Surface Water and Sediment Sample Location	Water and Sediment	Duplicate and MS/MSD surface water and sediment samples collected; Flow measurement collected during normal, baseline flow conditions
WL10	West Lakeland Storage Sites	Unbiased Surface Water and Sediment Sample Location	Water and Sediment	Baseline and high flow surface water samples collected; Flow measurement collected during normal, baseline flow conditions
WL11	West Lakeland Storage Sites	Biased Surface Water and Sediment Sample Location	Water and Sediment	
WL12	West Lakeland Storage Sites, Middle Pond	Biased Surface Water and Sediment Sample Location	Water and Sediment	
WL13	West Lakeland Storage Sites	Unbiased Surface Water and Sediment Sample Location	Water and Sediment	
WL14	West Lakeland Storage Sites	Biased Surface Water and Sediment Sample Location	Water and Sediment	
WL15	West Lakeland Storage Sites	Biased Surface Water and Sediment Sample Location	Water and Sediment	
WL16	West Lakeland Storage Sites, South Pond	Repeat Surface Water Sample Location	Water only	
WL17	West Lakeland Storage Sites	Unbiased Surface Water and Sediment Sample Location	Water and Sediment	
WL18	I-94 Rest Area Pond	Biased Surface Water Sample Location	Water only	Water sample collected from manhole
WL19	I-94 Rest Area Pond	Repeat Surface Water Sample Location	Water only	Water sample collected from manhole
WL20	I-94 Entrance Ramp	Unbiased Surface Water Sample Location	Water only	Water sample collected from manhole
SC1	St. Croix River	Biased Surface Water Sample Location	Water only	Sample collected in river at depth
SC2	St. Croix River	Biased Surface Water Sample Location	Water only	Sample collected in river at depth
SC3	St. Croix River	Biased Surface Water Sample Location	Water only	Sample collected in river at depth
SC4	St. Croix River	Biased Surface Water Sample Location	Water only	Sample collected in river at depth

Table 2
EQUIS Sample IDs and GPS Coordinates
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	EQUIS Unique ID	Coordinates (NAD 83 UTM 15)	Sample Analysis*
Raleigh Creek and Tri-Lakes Area				
RC1	RC1-WAT-SUR-01-081519	82-0103-00-205	504744.57 4984367.64	PFAS and Water Quality Parameters
	RC1-SED-0-6-01-081519			PFAS Only
RC2	RC2-WAT-SUR-01-081519	82-0104-00-204	505336.31 4984408.54	PFAS and Water Quality Parameters
	RC2-WAT-18-21-01-081519			PFAS and Water Quality Parameters
	RC2-WAT-SUR-02-081519			PFAS and Water Quality Parameters
	RC2-WAT-SUR-03-081519			PFAS and Water Quality Parameters
	RC2-WAT-SUR-03-081519			PFAS and Water Quality Parameters
	RC2-SED-0-6-01-081519			PFAS Only
RC3	RC3-WAT-SUR-01-081219	S016-051	502815.721443 4982450.02525	PFAS and Water Quality Parameters
	RC3-SED-0-6-01-081219			PFAS Only
	RC3-SED-0-6-02-081219			PFAS Only
	RC3-WAT-SUR-01-081419			PFAS Only
RC4	RC4-WAT-SUR-01-081219	S016-052	503278.665937 4982484.95273	PFAS and Water Quality Parameters
	RC4-SED-0-6-01-081219			PFAS Only
RC5	RC5-WAT-SUR-01-081219	S016-189	503672.297 4982412.167	PFAS and Water Quality Parameters
	RC5-SED-0-6-01-081219			PFAS Only
RC6	RC6-WAT-SUR-01-081219	S016-190	503808.894 4982388.679	PFAS and Water Quality Parameters
	RC6-SED-0-6-01-081219			PFAS Only
RC7	RC7-WAT-SUR-01-081219	S016-053	504154.041088 4982271.53157	PFAS and Water Quality Parameters
	RC7-SED-0-6-01-081219			PFAS Only
	RC7-WAT-SUR-01-081419			PFAS Only
	RC7-FOAM-081219	S016-055	504131.22 4982282.99	PFAS Only
	RC7-FOAM-081419	S016-054	504154.041088 4982271.53157	PFAS Only
RC8	RC8-WAT-SUR-01-081219	S016-056	504373.761721 4981843.1652	PFAS and Water Quality Parameters
	RC8-SED-0-6-01-081219			PFAS Only
RC9	RC9-WAT-SUR-01-081219	S016-057	504558.363857 4982071.74863	PFAS and Water Quality Parameters
	RC9-SED-0-6-01-081219			PFAS Only
RC10	RC10-WAT-SUR-01-081219	S016-058	504836.149902 4982081.98825	PFAS and Water Quality Parameters
	RC10-SED-0-6-01-081219			PFAS Only
RC11	RC11-WAT-SUR-01-081419	S016-059	505251.952383 4982350.53342	PFAS and Water Quality Parameters
	RC11-SED-0-6-01-081219			PFAS Only
RC12	RC12-SED-0-6-01-081219	S016-060	505437.625766 4982221.19867	PFAS Only
	RC12-WAT-SUR-01-081419			PFAS and Water Quality Parameters
	RC12-FOAM-081419	S016-061	505434.75 4982252.86	PFAS Only
RC13	RC13-WAT-SUR-01-081219	S016-062	505643.739564 4982086.72812	PFAS and Water Quality Parameters
	RC13-SED-0-6-01-081219			PFAS Only
RC14	RC14-WAT-SUR-01-081219	S016-063	505723.861328 4982090.33387	PFAS and Water Quality Parameters
	RC14-SED-0-6-01-081219			PFAS Only
RC15	RC15-WAT-SUR-01-081219	82-0399-00-202	505849.016132 4982226.94092	PFAS and Water Quality Parameters
	RC15-SED-0-6-01-081219			PFAS Only
RC16	RC16-WAT-SUR-01-081219	S016-064	506003.204771 4982512.66226	PFAS and Water Quality Parameters
	RC16-SED-0-6-01-081219			PFAS Only
RC17	RC17-WAT-SUR-01-081219	S016-065	506004.287446 4981700.27201	PFAS and Water Quality Parameters
	RC17-SED-0-6-01-081219			PFAS Only
	RC17-WAT-SUR-02-081219			PFAS and Water Quality Parameters
	RC17-SED-0-6-02-081219			PFAS Only
	RC17-WAT-SUR-01-081419			PFAS Only
	RC17A-FOAM-081419	S016-066	506063.037863 4981597.87444	PFAS Only
	RC17-FOAM-081419	S016-067	506018.653189 4981680.42395	PFAS Only
RC18	RC18-WAT-SUR-01-081319	82-0109-00-208	506148.296355 4981399.01366	PFAS and Water Quality Parameters
	RC18-SED-0-6-01-081319			PFAS Only
RC19	RC19-SED-0-6-01-081319	S016-068	505725.068758 4980898.02856	PFAS Only

Table 2
EQUIS Sample IDs and GPS Coordinates
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	EQUIS Unique ID	Coordinates (NAD 83 UTM 15)	Sample Analysis*
Eagle Point Lake and Lake Elmo Area				
EP1	EP1-WAT-SUR-01-081319	82-0109-00-205	506572.25 4980886	PFAS and Water Quality Parameters
	EP1-WAT-18-21-01-081319			PFAS and Water Quality Parameters
	EP1-WAT-SUR-02-081319			PFAS and Water Quality Parameters
	EP1-WAT-SUR-03-081319			PFAS and Water Quality Parameters
	EP1-WAT-SUR-03-081319			PFAS and Water Quality Parameters
	EP1-SED-0-6-01-082719			PFAS Only
EP2	EP2-WAT-SUR-01-081319	82-0109-00-206	506913.32 4979861.03	PFAS and Water Quality Parameters
	EP2-WAT-18-21-01-081319			PFAS and Water Quality Parameters
	EP2-SED-0-6-01-082719			PFAS Only
EP3	EP3-WAT-SUR-01-081319	82-0109-00-207	507051.97 4980691.45	PFAS and Water Quality Parameters
	EP3-WAT-18-21-01-081319			PFAS and Water Quality Parameters
	EP3-SED-0-6-01-082719			PFAS Only
EP4	EP4-WAT-SUR-01-081319	82-0109-00-209	507398.366118 4980562.644	PFAS and Water Quality Parameters
	EP4-SED-0-6-01-081319			PFAS Only
EP5	EP5-WAT-SUR-01-081319	S016-069	507679.095633 4980525.87378	PFAS and Water Quality Parameters
	EP5-SED-0-6-01-081319			PFAS Only
EP7	EP7-WAT-SUR-01-081319	82-0109-00-210	507911.488333 4980578.91399	PFAS and Water Quality Parameters
	EP7-SED-0-6-01-081319			PFAS Only
EP8	EP8-WAT-SUR-01-081319	82-0109-00-211	508277.93611 4980523.93088	PFAS and Water Quality Parameters
EP9	EP9-WAT-SUR-01-081319	82-0106-00-207	508589.01 4980408.72	PFAS and Water Quality Parameters
	EP9-WAT-18-21-01-081319			PFAS and Water Quality Parameters
	EP9-SED-0-6-01-082719			PFAS Only
	EP9-SED-0-6-02-082719			PFAS Only
	EP9-SED-0-6-03-08719			PFAS Only
EP10	EP10-WAT-SUR-01-081319	PI00001	509216.224832 4980324.90156	PFAS and Water Quality Parameters
EP11	EP11-WAT-SUR-01-081319	PI00002	509216.779294 4980325.6097	PFAS and Water Quality Parameters
EP12	EP12-WAT-SUR-01-081319	S016-070	509221.808094 4980301.51832	PFAS and Water Quality Parameters
	EP12-SED-0-6-01-081319			PFAS Only
	EP12-WAT-SUR-02-081319			PFAS and Water Quality Parameters
	EP12-SED-0-6-02-081319			PFAS Only
	EP12-SED-0-6-03-081319			PFAS Only
EP13	EP13-WAT-SUR-01-081519	PS00165	509705.825214 4980259.03425	PFAS and Water Quality Parameters
	EP13-SED-0-6-01-081519			PFAS Only
EP14	EP14-WAT-SUR-01-081319	82-0106-00-208	509364.92 4981284.07	PFAS and Water Quality Parameters
	EP14-WAT-18-21-01-081319			PFAS and Water Quality Parameters
	EP14-SED-0-6-01-082719			PFAS Only
EP15	EP15-WAT-SUR-01-081319	82-0106-00-209	509072.72 4982306.21	PFAS and Water Quality Parameters
	EP15-WAT-18-21-01-081319			PFAS and Water Quality Parameters
	EP15-SED-0-6-01-082719			PFAS Only

Table 2
EQUIS Sample IDs and GPS Coordinates
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	EQUIS Unique ID	Coordinates (NAD 83 UTM 15)	Sample Analysis*
West Lakeland Storage Sites and St. Croix River Area				
WL1	WL1-WAT-SUR-01-081519	PS00166	510088.03 4980118.59	PFAS and Water Quality Parameters
WL2	WL2-WAT-SUR-01-081519	82-0074-00-203	510356.31 4979886.80	PFAS and Water Quality Parameters
	WL2-WAT-18-21-01-081519			PFAS and Water Quality Parameters
	WL2-SED-0-6-01-081519			PFAS Only
WL3	WL3-WAT-SUR-01-081419	82-0074-00-204	510849.35 4979224.19	PFAS Only
	WL3-WAT-18-21-01-081419			PFAS and Water Quality Parameters
	WL3-SED-0-6-01-082719			PFAS Only
WL5	WL5-WAT-SUR-01-081419	82-0074-00-205	511191.85 4979454.84	PFAS and Water Quality Parameters
	WL5-SED-0-6-01-081419			PFAS Only
WL6	WL6-WAT-SUR-01-081419	S016-071	511275.898493 4979372.46015	PFAS and Water Quality Parameters
	WL6-SED-0-6-01-081419			PFAS Only
WL7	WL7-WAT-SUR-01-081419	S016-072	511749.126093 4978953.71348	PFAS and Water Quality Parameters
	WL7-SED-0-6-01-081419			PFAS Only
WL8	WL8-WAT-SUR-01-081419	PS00167	512107.171827 4978971.00269	PFAS and Water Quality Parameters
WL9	WL9-WAT-SUR-01-081419	PS00168	512166.774266 4978852.28633	PFAS and Water Quality Parameters
	WL9-SED-0-6-01-081419			PFAS Only
	WL9-WAT-SUR-02-081419			PFAS and Water Quality Parameters
	WL9-SED-0-6-02-081419			PFAS Only
	WL9-WAT-SUR-03-081419			PFAS and Water Quality Parameters
	WL9-SED-0-6-03-081419			PFAS Only
WL10	WL10-WAT-SUR-01-081319	S016-073	512276.294939 4978594.80033	PFAS and Water Quality Parameters
	WL10-SED-0-6-01-081319			PFAS Only
	WL10-WAT-SUR-01-081419			PFAS Only
WL11	WL11-WAT-SUR-01-081319	S016-074	512277.651631 4978455.49756	PFAS and Water Quality Parameters
	WL11-SED-0-6-01-081319			PFAS Only
WL12	WL12-WAT-SUR-01-081419	PS00169	512160.395304 4978202.96668	PFAS and Water Quality Parameters
	WL12-SED-0-6-01-081419			PFAS Only
WL13	WL13-WAT-SUR-01-081419	S016-075	512182.131014 4978125.04332	PFAS and Water Quality Parameters
	WL13-SED-0-6-01-081419			PFAS Only
WL14	WL14-WAT-SUR-01-081419	PS00170	512184.375016 4978073.47438	PFAS and Water Quality Parameters
	WL14-SED-0-6-01-081419			PFAS Only
WL15	WL15-WAT-SUR-01-081419	PS00171	512164.063838 4977817.3546	PFAS and Water Quality Parameters
	WL15-SED-0-6-01-081419			PFAS Only
WL16	WL16-WAT-SUR-01-081419	PS00172	512386.132373 4977872.77725	PFAS and Water Quality Parameters
WL17	WL17-WAT-SUR-01-081319	S016-076	512175.442661 4977693.81109	PFAS and Water Quality Parameters
	WL17-SED-0-6-01-081319			PFAS Only
WL18	WL18-WAT-SUR-01-081519	SS00087	514134.4961 4977761.3672	PFAS and Water Quality Parameters
WL19	WL19-WAT-SUR-01-081519	SS00088	514647.507075 4977823.06088	PFAS and Water Quality Parameters
WL20	WL20-WAT-SUR-01-081519	SS00089	517561.873318 4978661.14657	PFAS and Water Quality Parameters
SC1	SC1-WAT-18-21-01-081219	S016-077	518468.85 4978931.14	PFAS and Water Quality Parameters
SC2	SC2-WAT-18-21-01-081219	S016-078	518459.28 4978931.32	PFAS and Water Quality Parameters
SC3	SC3-WAT-18-21-01-081219	S016-079	518461.01 4978938.11	PFAS Only
SC4	SC4-WAT-18-21-01-081219	S016-080	518461.71 4978923.92	PFAS Only

Notes:
PFAS = Per- and polyfluoroalkyl substances
*The SGS AXYS Method MLA-110 was used for all PFAS analyses and includes a suite of 33 PFAS Compounds

Table 3a
Raleigh Creek and Tri-Lakes Area
Surface Water PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPES	PFHxS	PFHPS	PFOS
MDH HBV (µg/L)		7.0	NS	NS	NS	0.035	NS	NS	NS	NS	NS	NS	2.0	NS	0.047	NS	0.015
RC1	RC1-WAT-SUR-01-081519	0.0919 J	0.00534	0.00423 J	0.0019 J	0.00738	0.000843 J	< 0.000721	< 0.000721	< 0.000721	< 0.000721	< 0.000721	0.00221	< 0.000721	0.00287	< 0.000721	0.00178
	RC1-WAT-18-21-01-081519	0.0876 J	0.00473	0.00384 J	0.00207 J	0.00811	< 0.000723	< 0.000723	< 0.000723	< 0.000723	< 0.000723	< 0.000723	0.00203	< 0.000723	0.00262	< 0.000723	0.00132 J
RC2	RC2-WAT-SUR-01-081519	0.119	0.00628	0.00482 J	0.00252 J	0.0107	0.00115 J	< 0.000721	< 0.000721	< 0.000721	< 0.000721	< 0.000721	0.00164	< 0.000721	0.00302	< 0.000721	0.00169
	RC2-WAT-SUR-02-081519 (DUP)	0.139	0.00635	0.00454 J	0.00226 J	0.00952	0.00137 J	< 0.000712	< 0.000712	< 0.000712	< 0.000712	< 0.000712	0.00181	< 0.000712	0.00277	< 0.000712	0.00135 J
	RC2-WAT-18-21-01-081519	0.156	0.0061	0.00461 J	0.00236 J	0.00928	0.00127 J	< 0.000712	< 0.000712	< 0.000712	< 0.000712	< 0.000712	0.00161	< 0.000712	0.0028	< 0.000712	0.0016
RC3	RC3-WAT-SUR-01-081219	0.412	0.0405	0.0768	0.0709	0.832	0.00681	0.0148	0.000847 J	< 0.000826	< 0.000826	< 0.000826	0.0252	0.0311	0.0872	0.0412	3.9 D
	RC3-WAT-SUR-01-081419	0.301 J	0.0267	0.0521	0.0491	0.548	0.00531	0.00991	< 0.00074	< 0.00074	< 0.00074	< 0.00074	0.0159	0.0183	0.0593	0.0256	2.47 D
RC4	RC4-WAT-SUR-01-081219	0.694	0.0386	0.0901	0.0462	0.57	0.00358	0.00604	< 0.000818	< 0.000818	< 0.000818	< 0.000818	0.0208	0.0232	0.0584	0.0175	1.59
RC5	RC5-WAT-SUR-01-081219	0.404	0.0264	0.0602	0.036	0.395	0.0038	0.00824	< 0.000819	< 0.000819	< 0.000819	< 0.000819	0.0145	0.0155	0.0435	0.0188	1.99
RC6	RC6-WAT-SUR-01-081219	0.417	0.0276	0.0609	0.0365	0.382	0.0038	0.00887	< 0.00074	< 0.00074	< 0.00074	< 0.00074	0.0161	0.0163	0.0433	0.0173	2.77 D
RC7	RC7-WAT-SUR-01-081219	0.349	0.0218	0.0463	0.0338	0.347	0.00402	0.00793	< 0.000737	< 0.000737	< 0.000737	< 0.000737	0.0145	0.0137	0.0367	0.0157	1.91
	RC7-WAT-SUR-01-081419	0.158 J	0.0125	0.0223	0.015	0.184	0.00252	0.00666	< 0.000783	< 0.000783	< 0.000783	< 0.000783	0.00569	0.00623	0.0183	0.00915	1.54
RC8	RC8-WAT-SUR-01-081219	0.15	0.0124 J	0.00945 J	< 0.00572	0.0227	< 0.00572	< 0.00572	< 0.00572	< 0.00572	< 0.00572	< 0.00572	< 0.00572	< 0.00572	< 0.00572	< 0.00572	0.0116 J
RC9	RC9-WAT-SUR-01-081219	0.207	0.0149	0.0397	0.0278	0.276	0.00351	0.00551	< 0.000761	< 0.000761	< 0.000761	< 0.000761	0.0154	0.0137	0.0384	0.0172	1.78 D
RC10	RC10-WAT-SUR-01-081219	0.175	0.0116	0.0225	0.0157	0.137	0.00217 J	0.00336	< 0.00074	< 0.00074	< 0.00074	< 0.00074	0.0114	0.0082	0.0252	0.00848	1.07
RC11	RC11-WAT-SUR-01-081419	0.239 J	0.0127	0.0212	0.0146	0.163	0.00239	0.00422	< 0.000719	< 0.000719	< 0.000719	< 0.000719	0.00663	0.00515	0.0187	0.00749	1.15
RC12	RC12-WAT-SUR-01-081419	0.214 J	0.0136	0.0222	0.0145	0.164	0.00217	0.00441	< 0.000727	< 0.000727	< 0.000727	< 0.000727	0.00636	0.00549	0.0194	0.00734	1.22
RC13	RC13-WAT-SUR-01-081219	0.189	0.00936	0.0159	0.0112	0.103	0.00115 J	0.0042	< 0.00073	< 0.00073	< 0.00073	< 0.00073	0.0113	0.00861	0.0228	0.00855	0.964
RC14	RC14-WAT-SUR-01-081219	0.108	0.00522 J	0.00449 J	0.00191 J	0.00807	0.000735 J	< 0.000707	< 0.000707	< 0.000707	< 0.000707	< 0.000707	0.00194 J	< 0.000707	0.00333 J	< 0.000707	0.00187 J
RC15	RC15-WAT-SUR-01-081219	0.0984	0.00522 J	0.00427 J	0.00183 J	0.0071	< 0.000715	< 0.000715	< 0.000715	< 0.000715	< 0.000715	< 0.000715	0.00217 J	< 0.000715	0.00271 J	< 0.000715	0.00166 J
RC16	RC16-WAT-SUR-01-081219	0.0938	0.00506 J	0.00415 J	0.00155 J	0.00792	< 0.000726	< 0.000726	< 0.000726	< 0.000726	< 0.000726	< 0.000726	0.00229 J	< 0.000726	0.00254 J	< 0.000726	0.00197 J
RC17	RC17-WAT-SUR-01-081219	0.0879	0.00528 J	0.00398 J	0.00191 J	0.00799	< 0.000725	< 0.000725	< 0.000725	< 0.000725	< 0.000725	< 0.000725	0.00211 J	< 0.000725	0.00293 J	< 0.000725	0.00204 J
	RC17-WAT-SUR-02-081219 (DUP)	0.0974	0.00541 J	0.00382 J	0.00196 J	0.00823	0.000788 J	< 0.00072	< 0.00072	< 0.00072	< 0.00072	< 0.00072	0.00195 J	< 0.00072	0.00299 J	< 0.00072	0.00164 J
	RC17-WAT-SUR-01-081419	0.194 J	0.00988	0.0142	0.00878	0.095	0.00139 J	0.00191	< 0.000722	< 0.000722	< 0.000722	< 0.000722	0.00524	0.00342	0.0121	0.0042	0.702
RC18	RC18-WAT-SUR-01-081319	0.0727	0.0045	0.00388 J	0.00165 J	0.00876	0.000791 J	< 0.000745	< 0.000745	< 0.000745	< 0.000745	< 0.000745	0.0018	< 0.000745	0.00298	< 0.000745	0.00248

Notes:
MDH - Minnesota Department of Health
HBV - Health-Based Values
NS - No standard
All results are shown in parts per billion (ppb) or µg/L
Result is in exceedance of MDH HBV
Bold - Result is above the laboratory minimum reporting limit.
<0.0002 - Concentration is less than laboratory reportable limit
J - Estimated concentration
D - Dilution data
DUP - duplicate sample

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 3a
Raleigh Creek and Tri-Lakes Area
Surface Water PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFNS	PFDS	PFDOS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	N-MEFOSA	N-ETFOSA	MEFOSAA	ETFOSAA	N-MEFOSE	N-ETFOSE	HFPO-DA	ADONA	9CL-PF3ONS	11CL-PF3OUDS
MDH HBV (µg/L)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
RC1	RC1-WAT-SUR-01-081519	< 0.000721	< 0.000721	< 0.000721	< 0.00288	< 0.00259	< 0.00288	< 0.000721	< 0.000829	< 0.0018	< 0.000721	< 0.000721	< 0.00721	< 0.0054	< 0.00288	< 0.00288	< 0.00288	< 0.00288
	RC1-WAT-18-21-01-081519	< 0.000723	< 0.000723	< 0.000723	< 0.00289	< 0.0026	< 0.00289	< 0.000723	< 0.000831	< 0.00181	< 0.000723	< 0.000723	< 0.00723	< 0.00542	< 0.00289	< 0.00289	< 0.00289	< 0.00289
RC2	RC2-WAT-SUR-01-081519	< 0.000721	< 0.000721	< 0.000721	< 0.00288	< 0.00259	< 0.00288	< 0.000721	< 0.000829	< 0.0018	< 0.000721	< 0.000721	< 0.00721	< 0.0054	< 0.00288	< 0.00288	< 0.00288	< 0.00288
	RC2-WAT-SUR-02-081519 (DUP)	< 0.000712	< 0.000712	< 0.000712	< 0.00285	< 0.00256	< 0.00285	< 0.000712	< 0.000819	< 0.00178	< 0.000712	< 0.000712	< 0.00712	< 0.00534	< 0.00285	< 0.00285	< 0.00285	< 0.00285
	RC2-WAT-18-21-01-081519	< 0.000712	< 0.000712	< 0.000712	< 0.00285	< 0.00256	< 0.00285	< 0.000712	< 0.000819	< 0.00178	< 0.000712	< 0.000712	< 0.00712	< 0.00534	< 0.00285	< 0.00285	< 0.00285	< 0.00285
RC3	RC3-WAT-SUR-01-081219	**0.00195 J**	**0.00179 J**	< 0.000826	< 0.0033	< 0.00297	< 0.0033	**0.123**	< 0.000949	**0.00386 J**	**0.00124 J**	**0.478**	< 0.00826	**0.00747 J**	< 0.0033	< 0.0033	< 0.0033	< 0.0033
	RC3-WAT-SUR-01-081419	**0.000982 J**	< 0.00074	< 0.00074	< 0.00296	< 0.00266	< 0.00296	**0.0561**	< 0.000851	< 0.00185	< 0.00074	**0.129**	< 0.0074	< 0.00555	< 0.00296	< 0.00296	< 0.00296	< 0.00296
RC4	RC4-WAT-SUR-01-081219	< 0.000818	< 0.000818	< 0.000818	< 0.00327	< 0.00294	< 0.00327	**0.0356**	< 0.00094	< 0.00204	< 0.000818	**0.0499**	< 0.00818	< 0.00613	< 0.00327	< 0.00327	< 0.00327	< 0.00327
RC5	RC5-WAT-SUR-01-081219	< 0.000819	< 0.000819	< 0.000819	< 0.00328	< 0.00295	< 0.00328	**0.0308**	< 0.000942	< 0.00205	< 0.000819	**0.0311**	< 0.00819	< 0.00615	< 0.00328	< 0.00328	< 0.00328	< 0.00328
RC6	RC6-WAT-SUR-01-081219	< 0.00074	< 0.00074	< 0.00074	< 0.00296	< 0.00266	< 0.00296	**0.0321**	< 0.000851	< 0.00185	< 0.00074	**0.0286**	< 0.0074	< 0.00555	< 0.00296	< 0.00296	< 0.00296	< 0.00296
RC7	RC7-WAT-SUR-01-081219	< 0.000737	< 0.000737	< 0.000737	< 0.00295	< 0.00265	< 0.00295	**0.0247**	< 0.000848	< 0.00184	< 0.000737	**0.0115**	< 0.00737	< 0.00553	< 0.00295	< 0.00295	< 0.00295	< 0.00295
	RC7-WAT-SUR-01-081419	< 0.000783	< 0.000783	< 0.000783	< 0.00313	< 0.00282	< 0.00313	**0.0172**	< 0.0009	< 0.00196	< 0.000783	**0.0118**	< 0.00783	< 0.00587	< 0.00313	< 0.00313	< 0.00313	< 0.00313
RC8	RC8-WAT-SUR-01-081219	< 0.00572	< 0.00572	< 0.00572	< 0.0229	< 0.0206	< 0.0229	< 0.00572	< 0.00658	< 0.0143	< 0.00572	< 0.00572	< 0.0572	< 0.0429	< 0.0229	< 0.0229	< 0.0229	< 0.0229
RC9	RC9-WAT-SUR-01-081219	< 0.000761	< 0.000761	< 0.000761	< 0.00304	< 0.00274	< 0.00304	**0.00926**	< 0.000875	< 0.0019	< 0.000761	**0.00278 J**	< 0.00761	< 0.00571	< 0.00304	< 0.00304	< 0.00304	< 0.00304
RC10	RC10-WAT-SUR-01-081219	< 0.00074	< 0.00074	< 0.00074	< 0.00296	< 0.00266	< 0.00296	**0.00513**	< 0.000851	< 0.00185	< 0.00074	**0.00166 J**	< 0.0074	< 0.00555	< 0.00296	< 0.00296	< 0.00296	< 0.00296
RC11	RC11-WAT-SUR-01-081419	< 0.000719	< 0.000719	< 0.000719	< 0.00288	< 0.00259	< 0.00288	**0.00974**	< 0.000827	< 0.0018	< 0.000719	**0.00662**	< 0.00719	< 0.00539	< 0.00288	< 0.00288	< 0.00288	< 0.00288
RC12	RC12-WAT-SUR-01-081419	< 0.000727	< 0.000727	< 0.000727	< 0.00291	< 0.00262	< 0.00291	**0.0104**	< 0.000836	< 0.00182	< 0.000727	**0.00516**	< 0.00727	< 0.00545	< 0.00291	< 0.00291	< 0.00291	< 0.00291
RC13	RC13-WAT-SUR-01-081219	< 0.00073	< 0.00073	< 0.00073	< 0.00292	< 0.00263	< 0.00292	**0.00665**	< 0.00084	< 0.00183	< 0.00073	**0.00383**	< 0.0073	< 0.00548	< 0.00292	< 0.00292	< 0.00292	< 0.00292
RC14	RC14-WAT-SUR-01-081219	< 0.000707	< 0.000707	< 0.000707	< 0.00283	< 0.00255	< 0.00283	< 0.000707	< 0.000814	< 0.00177	< 0.000707	< 0.000707	< 0.00707	< 0.00531	< 0.00283	< 0.00283	< 0.00283	< 0.00283
RC15	RC15-WAT-SUR-01-081219	< 0.000715	< 0.000715	< 0.000715	< 0.00286	< 0.00257	< 0.00286	< 0.000715	< 0.000822	< 0.00179	< 0.000715	< 0.000715	< 0.00715	< 0.00536	< 0.00286	< 0.00286	< 0.00286	< 0.00286
RC16	RC16-WAT-SUR-01-081219	< 0.000726	< 0.000726	< 0.000726	< 0.0029	< 0.00261	< 0.0029	< 0.000726	< 0.000835	< 0.00181	< 0.000726	< 0.000726	< 0.00726	< 0.00544	< 0.0029	< 0.0029	< 0.0029	< 0.0029
RC17	RC17-WAT-SUR-01-081219	< 0.000725	< 0.000725	< 0.000725	< 0.0029	< 0.00261	< 0.0029	< 0.000725	< 0.000833	< 0.00181	< 0.000725	< 0.000725	< 0.00725	< 0.00544	< 0.0029	< 0.0029	< 0.0029	< 0.0029
	RC17-WAT-SUR-02-081219 (DUP)	< 0.00072	< 0.00072	< 0.00072	< 0.00288	< 0.00259	< 0.00288	< 0.00072	< 0.000828	< 0.0018	< 0.00072	< 0.00072	< 0.0072	< 0.0054	< 0.00288	< 0.00288	< 0.00288	< 0.00288
	RC17-WAT-SUR-01-081419	< 0.000722	< 0.000722	< 0.000722	< 0.00289	**0.0137 J**	< 0.00289	**0.0057**	< 0.00083	< 0.0018	< 0.000722	**0.00296**	< 0.00722	< 0.00541	< 0.00289	< 0.00289	< 0.00289	< 0.00289
RC18	RC18-WAT-SUR-01-081319	< 0.000745	< 0.000745	< 0.000745	< 0.00298	< 0.00268	< 0.00298	< 0.000745	< 0.000857	< 0.00186	< 0.000745	< 0.000745	< 0.00745	< 0.00559	< 0.00298	< 0.00298	< 0.00298	< 0.00298

Notes:
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All results are shown in parts per billion (ppb) or µg/L
Result is in exceedance of MDH HBV
Bold - Result is above the laboratory minimum reporting limit.
<0.0002 - Concentration is less than laboratory reportable limit
J - Estimated concentration
D - Dilution data
DUP - duplicate sample

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 3b
Raleigh Creek and Tri-Lakes Area
Sediment PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPES	PFHxS	PFHPS	PFOS	PFNS
	MPCA SDCV - 5 days/week (µg/kg)	**87,000**	NS	NS	NS	**540**	NS	NS	NS	NS	NS	NS	**13,000**	NS	**290**	NS	**93**	NS
	MPCA SDCV - 2 days/week (µg/kg)	**310,000**	NS	NS	NS	**1,900**	NS	NS	NS	NS	NS	NS	**46,000**	NS	**1,000**	NS	**330**	NS
RC1	RC1-SED-0-6-01-081519	< 0.296	< 0.148	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739
RC2	RC2-SED-0-6-01-081519	**0.67**	< 0.178	< 0.0888	< 0.0888	< 0.0888	< 0.0888	< 0.0888	< 0.0888	< 0.0888	< 0.0888	< 0.0888	< 0.0888	< 0.0888	< 0.0888	< 0.0888	< 0.0888	< 0.0888
RC3	RC3-SED-0-6-01-081219	< 0.312	< 0.156	< 0.078	< 0.078	**0.217**	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	< 0.078	**5.89**	< 0.078
	RC3-SED-0-6-02-081219 (DUP)	< 0.341	< 0.17	< 0.0852	< 0.0852	**0.581**	< 0.0852	**0.094**	< 0.0852	< 0.0852	< 0.0852	< 0.0852	< 0.0852	< 0.0852	< 0.0852	< 0.0852	**14**	< 0.0852
RC4	RC4-SED-0-6-01-081219	**0.841**	< 0.193	**0.112**	**0.111**	**1.53**	< 0.0964	**0.301**	< 0.0964	**0.272**	**0.159 R**	< 0.0964	< 0.0964	< 0.0964	**0.22**	**0.171**	**59.9**	< 0.107
RC5	RC5-SED-0-6-01-081219	**0.314**	< 0.132	< 0.0662	< 0.0662	**0.634**	< 0.0662	**0.175**	< 0.0662	**0.127**	< 0.0662	< 0.0662	< 0.0662	< 0.0662	**0.081**	< 0.0662	**27.5**	**0.118**
RC6	RC6-SED-0-6-01-081219	**0.566**	< 0.178	**0.106**	**0.108**	**1.34**	< 0.0892	**0.453**	**0.097**	**0.208**	< 0.0892	< 0.0892	< 0.0892	< 0.0892	**0.173**	**0.119**	**65.8**	< 0.0892
RC7	RC7-SED-0-6-01-081219	**0.53**	< 0.149	**0.092**	< 0.0746	**0.684**	< 0.0746	**0.139**	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	**11.5**	< 0.0746
RC8	RC8-SED-0-6-01-081219	< 0.303	< 0.152	< 0.0758	< 0.0758	**0.08**	< 0.0758	**0.079**	< 0.0758	< 0.0758	< 0.0758	< 0.0758	< 0.0758	< 0.0758	< 0.0758	< 0.0758	**0.721**	< 0.0758
RC9	RC9-SED-0-6-01-081219	**0.311**	< 0.155	< 0.0776	< 0.0776	**0.655**	< 0.0776	**0.17**	< 0.0776	< 0.0776	< 0.0776	< 0.0776	< 0.0776	< 0.0776	< 0.0776	< 0.0776	**14.9**	< 0.0776
RC10	RC10-SED-0-6-01-081219	< 0.3	< 0.15	< 0.0749	< 0.0749	**0.401**	< 0.0749	**0.132**	< 0.0749	< 0.0749	< 0.0749	< 0.0749	< 0.0749	< 0.0749	< 0.0749	< 0.0749	**7.98**	< 0.0749
RC11	RC11-SED-0-6-01-081219	**0.5**	< 0.149	< 0.0746	< 0.0746	**0.474**	< 0.0746	**0.257**	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	**10**	< 0.0746
RC12	RC12-SED-0-6-01-081219	**0.52**	< 0.146	**0.115**	< 0.0729	**0.948**	< 0.0729	**0.459**	< 0.0729	< 0.0729	< 0.0729	< 0.0729	< 0.0729	< 0.0729	< 0.0729	< 0.0729	**19.6**	< 0.0729
RC13	RC13-SED-0-6-01-081219	< 0.289	< 0.145	< 0.0723	< 0.0723	**0.311**	< 0.0723	**0.172**	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	**7.67**	< 0.0723
RC14	RC14-SED-0-6-01-081219	< 0.295	< 0.147	< 0.0737	< 0.0737	< 0.0737	< 0.0737	< 0.0737	< 0.0737	< 0.0737	< 0.0737	< 0.0737	< 0.0737	< 0.0737	< 0.0737	< 0.0737	**0.499**	< 0.0737
RC15	RC15-SED-0-6-01-081219	< 0.312	< 0.156	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	**0.133**	< 0.0781
RC16	RC16-SED-0-6-01-081219	< 0.298	< 0.149	< 0.0745	< 0.0745	< 0.0745	< 0.0745	< 0.0745	< 0.0745	< 0.0745	< 0.0745	< 0.0745	< 0.0745	< 0.0745	< 0.0745	< 0.0745	< 0.0745	< 0.0745
RC17	RC17-SED-0-6-01-081219	< 0.302	< 0.151	< 0.0755	< 0.0755	< 0.0755	< 0.0755	< 0.0755	< 0.0755	< 0.0755	< 0.0755	< 0.0755	< 0.0755	< 0.0755	< 0.0755	< 0.0755	**1.29**	< 0.0755
	RC17-SED-0-6-02-081219 (DUP)	< 0.309	< 0.154	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	**0.864**	< 0.0772
RC18	RC18-SED-0-6-01-081319	< 0.296	< 0.148	< 0.074	< 0.074	**0.319**	< 0.074	**0.183**	< 0.074	< 0.074	< 0.074	< 0.074	< 0.074	< 0.074	**0.086 J**	< 0.074	**14**	< 0.074
RC19	RC19-SED-0-6-01-081319	**1.56**	**0.149 J**	**0.092 J**	< 0.0743	**0.621**	**0.096 J**	**0.116 J**	< 0.0743	< 0.0743	< 0.0743	< 0.0743	< 0.0743	< 0.0743	< 0.0743	< 0.0743	**1.42**	< 0.0743

Notes:
MPCA - Minnesota Pollution Control Agency
SDCV - Site-specific sediment cleanup values
NS - No standard
All results are shown in parts per billion (ppb) or µg/kg
Result is in exceedance of MPCA SDCV
Bold - Result is above the laboratory minimum reporting limit.
J - estimated concentration

R - peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration

< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 3b
Raleigh Creek and Tri-Lakes Area
Sediment PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFDS	PFDOS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	N-MEFOSA	N-ETFOSA	MEFOSAA	ETFOSAA	N-MEFOSE	N-ETFOSE	HFPO-DA	ADONA	9CL-PF3ONS	11CL-PF3OUDS
MPCA SDCV - 5 days/week (µg/kg)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MPCA SDCV - 2 days/week (µg/kg)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
RC1	RC1-SED-0-6-01-081519	< 0.0739	< 0.0739	< 0.296	< 0.266	< 0.296	< 0.0739	< 0.085	< 0.185	< 0.0739	< 0.0739	< 0.739	< 0.554	< 0.296	< 0.296	< 0.296	< 0.296
RC2	RC2-SED-0-6-01-081519	< 0.0888	< 0.0888	< 0.355	< 0.32	< 0.355	< 0.0888	< 0.102	< 0.222	< 0.0888	< 0.0888	< 0.888	< 0.666	< 0.355	< 0.355	< 0.355	< 0.355
RC3	RC3-SED-0-6-01-081219	< 0.078	< 0.078	< 0.312	< 0.281	< 0.312	**1.71**	< 0.0897	**0.493**	< 0.078	**2.25**	< 0.78	< 0.585	< 0.312	< 0.312	< 0.312	< 0.312
	RC3-SED-0-6-02-081219 (DUP)	**0.107**	**0.103**	< 0.341	< 0.307	< 0.341	**3.04**	< 0.0979	**0.589**	< 0.0852	**3.14**	< 0.852	< 0.639	< 0.341	< 0.341	< 0.341	< 0.341
RC4	RC4-SED-0-6-01-081219	**0.647**	**0.392**	< 0.385	< 0.347	< 0.385	**5.09**	**0.121**	**1.28**	**0.187**	**13.3**	< 0.963	**1.11**	< 0.385	< 0.385	< 0.385	< 0.385
RC5	RC5-SED-0-6-01-081219	**0.316**	< 0.0662	< 0.265	< 0.238	< 0.265	**1.2**	**0.107**	**0.193**	< 0.0662	**2.84**	< 0.662	< 0.497	< 0.265	< 0.265	< 0.265	< 0.265
RC6	RC6-SED-0-6-01-081219	**0.568**	**0.156**	< 0.357	< 0.321	< 0.357	**3.99**	< 0.103	**0.318**	**0.113**	**6.31**	< 0.892	< 0.669	< 0.357	< 0.357	< 0.357	< 0.357
RC7	RC7-SED-0-6-01-081219	**0.135**	< 0.0746	< 0.298	< 0.268	< 0.298	**1.38**	< 0.0858	< 0.186	< 0.0746	**0.617**	< 0.746	< 0.559	< 0.298	< 0.298	< 0.298	< 0.298
RC8	RC8-SED-0-6-01-081219	< 0.0758	< 0.0758	< 0.303	< 0.273	< 0.303	< 0.0758	< 0.0872	< 0.19	< 0.0758	**0.094**	< 0.758	< 0.569	< 0.303	< 0.303	< 0.303	< 0.303
RC9	RC9-SED-0-6-01-081219	**0.106**	< 0.0776	< 0.31	< 0.279	< 0.31	**0.779**	< 0.0893	< 0.194	< 0.0776	**0.371**	< 0.776	< 0.582	< 0.31	< 0.31	< 0.31	< 0.31
RC10	RC10-SED-0-6-01-081219	< 0.0749	< 0.0749	< 0.3	< 0.27	< 0.3	**0.75**	< 0.0862	< 0.187	< 0.0749	**0.136**	< 0.749	< 0.562	< 0.3	< 0.3	< 0.3	< 0.3
RC11	RC11-SED-0-6-01-081219	< 0.0746	< 0.0746	< 0.298	< 0.268	< 0.298	**0.714**	< 0.0858	< 0.186	< 0.0746	**0.235**	< 0.746	< 0.559	< 0.298	< 0.298	< 0.298	< 0.298
RC12	RC12-SED-0-6-01-081219	< 0.0729	< 0.0729	< 0.292	< 0.262	< 0.292	**1.02**	< 0.0838	< 0.182	< 0.0729	**0.178**	< 0.729	< 0.547	< 0.292	< 0.292	< 0.292	< 0.292
RC13	RC13-SED-0-6-01-081219	< 0.0723	< 0.0723	< 0.289	< 0.26	< 0.289	**0.339**	< 0.0831	< 0.181	< 0.0723	**0.194**	< 0.723	< 0.542	< 0.289	< 0.289	< 0.289	< 0.289
RC14	RC14-SED-0-6-01-081219	< 0.0737	< 0.0737	< 0.295	< 0.265	< 0.295	< 0.0737	< 0.0847	< 0.184	< 0.0737	**0.096**	< 0.737	< 0.552	< 0.295	< 0.295	< 0.295	< 0.295
RC15	RC15-SED-0-6-01-081219	< 0.0781	< 0.0781	< 0.312	< 0.281	< 0.312	< 0.0781	< 0.0898	< 0.195	< 0.0781	< 0.0781	< 0.781	< 0.586	< 0.312	< 0.312	< 0.312	< 0.312
RC16	RC16-SED-0-6-01-081219	< 0.0745	< 0.0745	< 0.298	< 0.268	< 0.298	< 0.0745	< 0.0856	< 0.186	< 0.0745	< 0.0745	< 0.745	< 0.558	< 0.298	< 0.298	< 0.298	< 0.298
RC17	RC17-SED-0-6-01-081219	< 0.0755	< 0.0755	< 0.302	< 0.272	< 0.302	< 0.0755	< 0.0869	< 0.189	< 0.0755	< 0.0755	< 0.755	< 0.566	< 0.302	< 0.302	< 0.302	< 0.302
	RC17-SED-0-6-02-081219 (DUP)	< 0.0772	< 0.0772	< 0.309	< 0.278	< 0.309	< 0.0772	< 0.0888	< 0.193	< 0.0772	< 0.0772	< 0.772	< 0.579	< 0.309	< 0.309	< 0.309	< 0.309
RC18	RC18-SED-0-6-01-081319	**0.15**	< 0.074	< 0.296	**1.56 J**	< 0.296	**0.461**	< 0.0852	< 0.185	< 0.074	**0.465**	< 0.74	< 0.555	< 0.296	< 0.296	< 0.296	< 0.296
RC19	RC19-SED-0-6-01-081319	< 0.0743	< 0.0743	< 0.297	< 0.268	< 0.297	< 0.0743	< 0.0855	< 0.186	< 0.0743	< 0.0743	< 0.743	< 0.558	< 0.297	< 0.297	< 0.297	< 0.297

Notes:
MPCA - Minnesota Pollution Control Agency
SDCV - Site-specific sediment cleanup values
NS - No standard
All results are shown in parts per billion (ppb) or µg/kg
Result is in exceedance of MPCA SDCV
Bold - Result is above the laboratory minimum reporting limit.
J - estimated concentration

R - peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration

< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 3c
Raleigh Creek and Tri-Lakes Area
Foam PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPES	PFHxS	PFHPS	PFOS
MDH HBV (µg/L)		7.0	NS	NS	NS	0.035	NS	NS	NS	NS	NS	NS	2.0	NS	0.047	NS	0.015
RC7	RC7-FOAM-081219	< 0.311	< 0.155	< 0.0777	< 0.0777	**0.658**	< 0.0777	**1.62**	**1.93**	**1.17**	< 0.0777	< 0.0777	< 0.0777	< 0.0777	< 0.0777	< 0.0777	**40.1**
	RC7-FOAM-081419	< 32	< 16	< 8	< 8	**175**	**14.7 J**	**96.5**	< 8	< 8	< 8	< 8	< 8	< 8	< 8	**24.9**	**13,800**
RC12	RC12-FOAM-081419	< 32	< 16	< 8	< 8	**16.2 J**	**11.1 J**	**72.8**	< 8	< 8	< 8	< 8	< 8	< 8	< 8	< 8	**10,500**
RC17	RC17A-FOAM-081419	< 0.316	< 0.158	< 0.0791	< 0.0791	**0.504**	**0.332**	**5.26**	**0.401**	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	**0.243**	**595 D**
	RC17-FOAM-081419	< 8	< 4	< 2	< 2	**3.75 J**	< 2	**31.5**	**3.63 J**	< 2	< 2	< 2	< 2	< 2	< 2	< 2	**2,750**

Notes:
MDH - Minnesota Department of Health
HBV - Health-Based Values
NS - No standard
All results are shown in parts per billion (ppb) or µg/L
Result is in exceedance of MDH HBV for drinking water
Bold - Result is above the laboratory minimum reporting limit.
< 0.0002 - Concentration is less than laboratory reportable limit
J - Estimated concentration
D - Dilution data

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 3c
Raleigh Creek and Tri-Lakes Area
Foam PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFNS	PFDS	PFDOS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	N-MEFOSA	N-ETFOSA	MEFOSAA	ETFOSAA	N-MEFOSE	N-ETFOSE	HFPO-DA	ADONA	9CL-PF3ONS	11CL-PF3OUDS
MDH HBV (µg/L)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
RC7	RC7-FOAM-081219	**1.1**	**3.1**	< 0.0777	< 0.311	< 0.28	< 0.311	**18.8**	**2.12**	**5.5**	**1.18**	**94.5**	< 0.777	< 0.583	< 0.311	< 0.311	< 0.311	< 0.311
	RC7-FOAM-081419	**12.6 J**	**< 8**	< 8	< 32	**592**	< 32	**270**	< 9.2	< 20	< 8	**263**	< 80	< 60	< 32	< 32	< 32	< 32
RC12	RC12-FOAM-081419	< 8	< 8	< 8	< 32	**361 J**	< 32	**71.1**	< 9.2	< 20	< 8	**168**	< 80	< 60	< 32	< 32	< 32	< 32
RC17	RC17A-FOAM-081419	**0.582**	**0.147 J**	< 0.0791	< 0.316	< 0.285	< 0.316	**8.78**	< 0.0909	**0.211 J**	**0.216**	**10.6**	< 0.791	< 0.593	< 0.316	< 0.316	< 0.316	< 0.316
	RC17-FOAM-081419	**3.17 J**	< 2	< 2	< 8	< 7.2	< 8	**51**	< 2.3	< 5	**2.1 J**	**92.5**	< 20	< 15	< 8	< 8	< 8	< 8

Notes:
MDH - Minnesota Department of Health
HBV - Health-Based Values
NS - No standard
All results are shown in parts per billion (ppb) or µg/L
Result is in exceedance of MDH HBV for drinking water
Bold - Result is above the laboratory minimum reporting limit.
< 0.0002 - Concentration is less than laboratory reportable limit
J - Estimated concentration
D - Dilution data

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 3d
Raleigh Creek
Surface Water Analytical Results (2006 - 2019)
Project 1007
Minnesota Pollution Control Agency

MDH Location ID	Weston Location ID (1)	AECOM Location ID	Sample Date	PFBA (µg/L)	PFOA (µg/L)	PFBS (µg/L)	PFOS (µg/L)	PFPeA (µg/L)	PFHxA (µg/L)	PFHxS (µg/L)
MDH HBV (µg/L)				7.000	0.035	2.0	0.015	NS	NS	0.047
SW-1			6/1/2006	5.900	8.00	0.2	8.00	0.50	1.10	0.60
SW-1			6/20/2006	3.900	4.10	0.2	8.00	< 1	0.80	0.30
	SW01		11/17/2010	0.782	1.43	NA	4.00	NA	NA	NA
	SW01		3/13/2012	0.860	0.847	0.029	3.92	NA	NA	NA
	SW01		6/13/2013	0.630	1.97	0.056	6.63	NA	NA	NA
	SW01		6/14/2014	0.586	2.00	0.048	6.39	NA	NA	NA
	SW01		8/22/2014	0.437	0.425	0.027	1.71	NA	NA	NA
	SW01		6/16/2015	0.549	1.21	0.031	4.43	NA	NA	NA
	SW01		9/1/2015	0.414	1.01	< 0.025	4.99	NA	NA	NA
	SW01		11/20/2015	0.727	1.90	0.048	4.54	NA	NA	NA
	SW01		11/3/2016	0.798	1.55	0.063	3.47	NA	NA	NA
SW-1			7/28/2017	0.210	0.37	0.020	1.40	0.02	0.037	0.035
	SW01		11/2/2017	0.700	0.967	0.036	3.04	0.053	0.093	0.093
	SW01		10/22/2018	0.774	1.220	0.044	3.16	0.055	0.146	0.124
		RC3	8/12/2019	0.412	0.832	0.025	3.9	0.041	0.077	0.087
		RC3	8/14/2019	0.300	0.548	0.016	2.466	0.027	0.052	0.059
		RC4	8/12/2019	0.694	0.570	0.021	1.590	0.039	0.090	0.058
SW-3			6/20/2006	2.800	2.30	< 0.5	2.80	< 1	0.500	0.20
	SW12		11/17/2010	0.805	1.17	NA	2.35	NA	NA	NA
	SW12		3/13/2012	0.435	0.361	< 0.025	1.17	NA	NA	NA
	SW12		6/13/2013	0.545	1.16	0.036	3.38	NA	NA	NA
	SW12		6/14/2014	0.726	1.69	0.047	5.44	NA	NA	NA
	SW12		8/22/2014	0.868	0.791	0.033	3.10	NA	NA	NA
	SW12		3/23/2015	0.806	0.572	< 0.025	1.47	NA	NA	NA
	SW12		6/16/2015	0.650	1.02	< 0.025	3.52	NA	NA	NA
	SW12		9/1/2015	0.658	0.866	< 0.025	3.02	NA	NA	NA
	SW12		11/20/2015	0.709	1.75	0.046	3.52	NA	NA	NA
	SW12		11/3/2016	0.684	0.992	0.037	2.4	NA	NA	NA
SW-3			7/28/2017	0.800	0.650	0.028	2.4	0.049	0.11	0.067
	SW12		11/2/2017	0.601	0.593	< 0.025	1.69	0.034	0.085	0.067
	SW12		10/22/2018	0.675	0.878	0.03	2.12	< 0.05	0.119	0.085
		RC5	8/12/2019	0.404	0.395	0.015	1.992	0.026	0.061	0.043
		RC6	8/12/2019	0.417	0.382	0.016	2.77 D	0.028	0.061	0.043
SW-4			6/20/2006	2.200	2.300	< 0.5	5.00	< 1	0.50	0.20
	SW13		11/17/2010	0.761	1.00	NA	2.00	NA	NA	NA
	SW13		3/13/2012	0.323	0.257	< 0.025	0.933	NA	NA	NA
	SW13		6/13/2013	0.434	0.821	< 0.025	2.88	NA	NA	NA
	SW13		6/14/2014	0.666	1.53	0.041	4.76	NA	NA	NA
	SW13		8/22/2014	0.684	0.728	0.030	2.81	NA	NA	NA
	SW13		6/16/2015	0.562	0.974	< 0.025	3.92	NA	NA	NA
	SW13		9/1/2015	0.580	0.817	< 0.025	3.11	NA	NA	NA
	SW13		11/20/2015	0.597	1.36	0.037	2.72	NA	NA	NA
	SW13		11/3/2016	0.569	0.820	0.033	2.35	NA	NA	NA
SW-4			7/28/2017	0.450	0.620	0.027	3.40	0.037	0.082	0.065
	SW13		11/2/2017	0.571	0.641	0.025	2.13	< 0.025	0.062	0.070
	SW13		10/22/2018	0.537	0.679	0.027	1.86	< 0.05	0.101	0.070
		RC7	8/12/2019	0.350	0.347	0.015	1.91	0.022	0.046	0.037
		RC7	8/14/2019	0.158	0.184	0.006	1.538	0.012	0.022	0.018
		RC8	7/28/2017	0.21	0.035	0.013	0.019	0.014	0.013	0
		RC8	8/12/2019	0.15	0.0227	< 0.00572	0.0116 J	0.0124 J	0.00945 J	< 0.00572
		RC9	8/12/2019	0.21	0.276	0.0154	1.78 D	0.0149	0.0397	0.0384

Table 3d
Raleigh Creek
Surface Water Analytical Results (2006 - 2019)
Project 1007
Minnesota Pollution Control Agency

MDH Location ID	Weston Location ID (1)	AECOM Location ID	Sample Date							
MDH HBV (µg/L)				7.000	0.035	2.0	0.015	NS	NS	0.047
SW-6			8/29/2006	1.400	1.900	< 0.5	5.20	< 1	0.20	< 0.5
	SW14		11/17/2010	0.644	0.779	NA	1.54	NA	NA	NA
	SW14		3/13/2012	0.166	0.012	< 0.025	0.965	NA	NA	NA
	SW14		6/13/2013	0.294	0.341	< 0.025	1.16	NA	NA	NA
	SW14		6/14/2014	0.540	1.17	0.037	3.91	NA	NA	NA
	SW14		11/20/2015	0.569	1.31	0.038	2.56	NA	NA	NA
	SW14		11/2/2017	0.202	< 0.048	< 0.025	< 0.0928	< 0.025	< 0.025	< 0.025
	SW14		10/22/2018	0.460	0.664	0.028	1.82	< 0.05	0.091	0.069
		RC10	8/12/2019	0.175	0.137	0.011	1.07	0.012	0.023	0.025
		RC11	8/29/2006	1.4	2.1	< 0.5	5.6	< 1	0.2	< 0.5
		RC12	8/14/2019	0.214 J	0.164	0.006	1.22	0.014	0.022	0.019
SW-7			9/25/2006	0.200	< 1	< 0.5	0.20	< 1	< 1	< 0.5
	SW15		11/17/2010	0.570	0.686	NA	1.33	NA	NA	NA
	SW15		3/13/2012	0.132	0.079	< 0.025	0.591	NA	NA	NA
	SW15		6/13/2013	0.309	0.586	< 0.025	2.18	NA	NA	NA
	SW15		11/20/2015	0.524	1.20	0.032	2.04	NA	NA	NA
SW-7			7/23/2017	0.092	0	0	0.027	0.011	0	0
		RC13	8/12/2019	0.189	0.103	0.011	0.964	0.009	0.016	0.023
		RC14	9/25/2006	0.2	< 1	< 0.5	< 1	< 1	< 1	< 0.5
		RC14	7/23/2017	0.57	0.058	0	0.067	0.017	0.014	0
		RC14	8/12/2019	0.11	0.00807	0.00194 J	0.00187 J	0.00522 J	0.00449 J	0.00333 J
SW-2			6/1/2006	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 0.5
SW-2			9/25/2006	< 1	< 1	< 0.5	0.2	< 1	< 1	< 0.5
	SW16		11/17/2010	0.553	0.626	NA	1.22	NA	NA	NA
	SW16		3/13/2012	0.098	0.041	< 0.025	0.388	NA	NA	NA
	SW16		6/13/2013	0.197	0.261	< 0.025	0.950	NA	NA	NA
	SW16		6/14/2014	0.085	< 0.024	< 0.025	< 0.0232	NA	NA	NA
	SW16		8/22/2014	0.076	< 0.024	< 0.025	< 0.0232	NA	NA	NA
	SW16		3/23/2015	NS	NS	NS	NS	NA	NA	NA
	SW16		6/16/2015	NS	NS	NS	NS	NA	NA	NA
	SW16		9/1/2015	< 0.1	< 0.024	< 0.025	< 0.0232	NA	NA	NA
	SW16		11/20/2015	0.261	0.370	< 0.025	0.722	NA	NA	NA
	SW16		11/3/2016	0.076	< 0.024	< 0.025	< 0.0232	NA	NA	NA
	SW16		11/2/2017	0.109	< 0.048	< 0.025	< 0.0928	< 0.025	< 0.025	< 0.025
	SW16		10/22/2018	0.109	< 0.024	< 0.025	< 0.0464	< 0.05	< 0.025	< 0.025
		RC17	8/12/2019	0.0879	0.0080	0.00211 J	0.00204 J	0.00528 J	0.00398 J	0.00293 J
		RC-17 (DUP)	8/12/2019	0.0974	0.0082	0.00195 J	0.00164 J	0.00541 J	0.00382 J	0.00299 J
		RC17	8/14/2019	0.194100	0.09502	0.005237	0.7019	0.009877	0.01416	0.01211
		RC18	8/13/2019	0.0727	0.00876	0.0018	0.00248	0.0045	0.00388 J	0.00298

Notes:

Bold = Result is above the laboratory minimum reporting limit
DUP = duplicate sample
µg/L = micrograms per liter or parts per billion (ppb)
< 0.0002 = Concentration is less than laboratory reportable limit
NA = Data not available
NS = Not sampled
D = dilution data
J = estimated concentration less than laboratory reportable limit
MDH = Minnesota Department of Health
HBV = Health-Based Values

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

(1) Weston 3M PFAS values shown are the arithmetic mean (average) of the primary and duplicate sample collected at each location.
(2) MDH HBVs are not established for PFPeA or PFHxA
Exceedance of MDH HBVs

Table 4a
Eagle Point Lake and Lake Elmo Area
Surface Water PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPES	PFHxS	PFHPS	PFOS	PFNS
MDH HBV (µg/L)		7.0	NS	NS	NS	0.035	NS	NS	NS	NS	NS	NS	2.0	NS	0.047	NS	0.015	NS
EP1	EP1-WAT-SUR-01-081319	0.0953	0.00696	0.00713	0.00452	0.0372	0.000894 J	0.0011 J	< 0.000724	< 0.000724	< 0.000724	< 0.000724	0.00307	0.00101 J	0.00543	< 0.000724	0.16	< 0.000724
	EP1-WAT-SUR-02-081319 (DUP)	0.0934	0.0069	0.00677 J	0.00485	0.0349	0.00103 J	0.001 J	< 0.000729	< 0.000729	< 0.000729	< 0.000729	0.00346	0.000945 J	0.00533	0.00115 J	0.163	< 0.000729
	EP1-WAT-18-21-01-081319	0.0964	0.00657	0.00613 J	0.00421	0.0287	0.00116 J	0.00141 J	< 0.000719	< 0.000719	< 0.000719	< 0.000719	0.00299	< 0.000719	0.00524	0.00105 J	0.157	< 0.000719
EP2	EP2-WAT-SUR-01-081319	0.0949	< 0.0113	0.011 J	0.00865 J	0.0674	< 0.00564	< 0.00564	< 0.00564	< 0.00564	< 0.00564	< 0.00564	< 0.00564	< 0.00564	0.00779 J	< 0.00564	0.254	< 0.00564
	EP2-WAT-18-21-01-081319	0.121	0.00989	0.0127	0.0097	0.078	0.00139 J	0.00209	< 0.00071	< 0.00071	< 0.00071	< 0.00071	0.00489	0.00338	0.00932	0.00225	0.279	< 0.00071
EP3	EP3-WAT-SUR-01-081319	0.109	0.0082	0.00948	0.00666	0.0553	0.00115 J	0.0014 J	< 0.00072	< 0.00072	< 0.00072	< 0.00072	0.00425	0.00216	0.00729	0.00128 J	0.229	< 0.00072
	EP3-WAT-18-21-01-081319	0.107	0.00846	0.00965	0.00751	0.0536	0.000945 J	0.00125 J	< 0.000711	< 0.000711	< 0.000711	< 0.000711	0.00391	0.00212	0.00797	0.00121 J	0.217	< 0.000711
EP4	EP4-WAT-SUR-01-081319	0.107	0.0084	0.00953	0.00701	0.0549	0.00129 J	0.0018	< 0.000744	< 0.000744	< 0.000744	< 0.000744	0.004	0.00167	0.0079	0.00159	0.274	< 0.000744
EP5	EP5-WAT-SUR-01-081319	0.109	0.00855	0.00971	0.00766	0.061	0.00117 J	0.00142 J	< 0.000764	< 0.000764	< 0.000764	< 0.000764	0.00427	0.00208	0.00836	0.00209	0.237	< 0.000764
EP7	EP7-WAT-SUR-01-081319	0.0985	0.00751	0.00946	0.00691	0.0545	0.000933 J	0.00154	< 0.000763	< 0.000763	< 0.000763	< 0.000763	0.00407	0.0015	0.00742	0.00183	0.219	< 0.000763
EP8	EP8-WAT-SUR-01-081319	0.111	0.00858	0.00995	0.00766	0.0717	0.00126 J	0.00159	< 0.000729	< 0.000729	< 0.000729	< 0.000729	0.00426	0.00227	0.00834	0.00218	0.276	< 0.000729
EP9	EP9-WAT-SUR-01-081319	0.514	0.0127	0.0131	0.00541	0.0658	< 0.000742	< 0.000742	< 0.000742	< 0.000742	< 0.000742	< 0.000742	0.00293	0.0016	0.0064	< 0.000742	0.0732	< 0.000742
	EP9-WAT-18-21-01-081319	0.391 J	0.00684	0.00887	0.00473	0.0663	< 0.000736	< 0.000736	< 0.000736	< 0.000736	< 0.000736	< 0.000736	0.00125 J	0.00109 J	0.00645	0.000829 J	0.0673	< 0.000736
EP10	EP10-WAT-SUR-01-081319	0.153	0.0082	0.01	0.00769	0.0667	0.00147	0.00183	< 0.000726	< 0.000726	< 0.000726	< 0.000726	0.00395	0.00237	0.00843	0.002	0.288	< 0.000726
EP11	EP11-WAT-SUR-01-081319	0.745	0.0131	0.015	0.00596	0.0692	< 0.000722	< 0.000722	< 0.000722	< 0.000722	< 0.000722	< 0.000722	0.00313	0.00225	0.00801	0.000758 J	0.0757	< 0.000722
EP12	EP12-WAT-SUR-01-081319	0.607 J	0.014	0.0146	0.00698	0.072	0.000748 J	< 0.000724	< 0.000724	< 0.000724	< 0.000724	< 0.000724	0.00344	0.00252	0.00768	0.000975 J	0.118	< 0.000724
	EP12-WAT-SUR-02-081319 (DUP)	0.595 J	0.0146	0.0154	0.00712	0.0739	0.00103 J	0.000919 J	< 0.000714	< 0.000714	< 0.000714	< 0.000714	0.00346	0.00186	0.00783	0.000963 J	0.147	< 0.000714
EP13	EP13-WAT-SUR-01-081519	0.214	< 0.0112	0.00831 J	< 0.00559	0.0516	< 0.00559	< 0.00559	< 0.00559	< 0.00559	< 0.00559	< 0.00559	< 0.00559	< 0.00559	0.00611 J	< 0.00559	0.156	< 0.00559
EP14	EP14-WAT-SUR-01-081319	0.589 J	0.0113	0.0117	0.00533	0.065	< 0.000736	< 0.000736	< 0.000736	< 0.000736	< 0.000736	< 0.000736	0.00258	0.00152	0.00665	0.001 J	0.0851	< 0.000736
	EP14-WAT-18-21-01-081319	0.358	0.00804	0.00931	0.00461	0.0642	< 0.000739	< 0.000739	< 0.000739	< 0.000739	< 0.000739	< 0.000739	0.0017	0.00131 J	0.00609	0.000871 J	0.0884	< 0.000739
EP15	EP15-WAT-SUR-01-081319	0.988 J	0.0159	0.0163	0.00678	0.075	0.000724 J	< 0.000719	< 0.000719	< 0.000719	< 0.000719	< 0.000719	0.00357	0.00221	0.00599	0.000889 J	0.0676	< 0.000719
	EP15-WAT-18-21-01-081319	0.743 J	0.0134	0.0142	0.00561	0.0681	0.000786 J	< 0.00073	< 0.00073	< 0.00073	< 0.00073	< 0.00073	0.00305	0.00218	0.00775	0.00103 J	0.0696	< 0.00073

Notes:
MDH - Minnesota Department of Health
HBV - Health-Based Values
NS - No standard
All results are shown in parts per billion (ppb) or µg/L
Result is in exceedance of MDH HBV
Bold - Result is above the laboratory minimum reporting limit.
J - estimated concentration
< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 4a
Eagle Point Lake and Lake Elmo Area
Surface Water PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFDS	PFDOS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	N-MEFOSA	N-ETFOSA	MEFOSAA	ETFOSAA	N-MEFOSE	N-ETFOSE	HFPO-DA	ADONA	9CL-PF3ONS	11CL-PF3OUDS
MDH HBV (µg/L)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EP1	EP1-WAT-SUR-01-081319	< 0.000724	< 0.000724	< 0.0029	< 0.00261	< 0.0029	< 0.000724	< 0.000833	< 0.00181	< 0.000724	< 0.000724	< 0.00724	< 0.00543	< 0.0029	< 0.0029	< 0.0029	< 0.0029
	EP1-WAT-SUR-02-081319 (DUP)	< 0.000729	< 0.000729	< 0.00291	< 0.00262	< 0.00291	< 0.000729	< 0.000838	< 0.00182	< 0.000729	**0.000755 J**	< 0.00729	< 0.00546	< 0.00291	< 0.00291	< 0.00291	< 0.00291
	EP1-WAT-18-21-01-081319	< 0.000719	< 0.000719	< 0.00287	< 0.00259	< 0.00287	**0.000723 J**	< 0.000827	< 0.0018	< 0.000719	< 0.000719	< 0.00719	< 0.00539	< 0.00287	< 0.00287	< 0.00287	< 0.00287
EP2	EP2-WAT-SUR-01-081319	< 0.00564	< 0.00564	< 0.0226	< 0.0406	< 0.0226	< 0.00564	< 0.00649	< 0.0141	< 0.00564	< 0.0113	< 0.0564	< 0.0423	< 0.0226	< 0.0226	< 0.0226	< 0.0226
	EP2-WAT-18-21-01-081319	< 0.00071	< 0.00071	< 0.00284	< 0.00255	< 0.00284	< 0.00071	< 0.000816	< 0.00177	< 0.00071	< 0.00071	< 0.0071	< 0.00532	< 0.00284	< 0.00284	< 0.00284	< 0.00284
EP3	EP3-WAT-SUR-01-081319	< 0.00072	< 0.00072	< 0.00288	< 0.00259	< 0.00288	< 0.00072	< 0.000828	< 0.0018	< 0.00072	< 0.00072	< 0.0072	< 0.0054	< 0.00288	< 0.00288	< 0.00288	< 0.00288
	EP3-WAT-18-21-01-081319	< 0.000711	< 0.000711	< 0.00284	< 0.00256	< 0.00284	< 0.000711	< 0.000818	< 0.00178	< 0.000711	< 0.000711	< 0.00711	< 0.00533	< 0.00284	< 0.00284	< 0.00284	< 0.00284
EP4	EP4-WAT-SUR-01-081319	< 0.000744	< 0.000744	< 0.00298	< 0.00268	< 0.00298	< 0.000744	< 0.000855	< 0.00186	< 0.000744	< 0.000744	< 0.00744	< 0.00558	< 0.00298	< 0.00298	< 0.00298	< 0.00298
EP5	EP5-WAT-SUR-01-081319	< 0.000764	< 0.000764	< 0.00306	< 0.00275	< 0.00306	< 0.000764	< 0.000878	< 0.00191	< 0.000764	< 0.000764	< 0.00764	< 0.00573	< 0.00306	< 0.00306	< 0.00306	< 0.00306
EP7	EP7-WAT-SUR-01-081319	< 0.000763	< 0.000763	< 0.00305	< 0.00275	< 0.00305	< 0.000763	< 0.000878	< 0.00191	< 0.000763	< 0.000763	< 0.00763	< 0.00572	< 0.00305	< 0.00305	< 0.00305	< 0.00305
EP8	EP8-WAT-SUR-01-081319	< 0.000729	< 0.000729	< 0.00292	< 0.00263	< 0.00292	**0.000805 J**	< 0.000839	< 0.00182	< 0.000729	< 0.000729	< 0.00729	< 0.00547	< 0.00292	< 0.00292	< 0.00292	< 0.00292
EP9	EP9-WAT-SUR-01-081319	< 0.000742	< 0.000742	< 0.00297	< 0.00267	< 0.00297	< 0.000742	< 0.000853	< 0.00185	< 0.000742	< 0.000742	< 0.00742	< 0.00556	< 0.00297	< 0.00297	< 0.00297	< 0.00297
	EP9-WAT-18-21-01-081319	< 0.000736	< 0.000736	< 0.00294	< 0.00265	< 0.00294	< 0.000736	< 0.000847	< 0.00184	< 0.000736	< 0.000736	< 0.00736	< 0.00552	< 0.00294	< 0.00294	< 0.00294	< 0.00294
EP10	EP10-WAT-SUR-01-081319	< 0.000726	< 0.000726	< 0.0029	< 0.00261	< 0.0029	< 0.000726	< 0.000834	< 0.00181	< 0.000726	< 0.000726	< 0.00726	< 0.00544	< 0.0029	< 0.0029	< 0.0029	< 0.0029
EP11	EP11-WAT-SUR-01-081319	< 0.000722	< 0.000722	< 0.00289	< 0.0026	< 0.00289	< 0.000722	< 0.00083	< 0.0018	< 0.000722	< 0.000722	< 0.00722	< 0.00541	< 0.00289	< 0.00289	< 0.00289	< 0.00289
EP12	EP12-WAT-SUR-01-081319	< 0.000724	< 0.000724	< 0.0029	< 0.00261	< 0.0029	< 0.000724	< 0.000833	< 0.00181	< 0.000724	< 0.000724	< 0.00724	< 0.00543	< 0.0029	< 0.0029	< 0.0029	< 0.0029
	EP12-WAT-SUR-02-081319 (DUP)	< 0.000714	< 0.000714	< 0.00286	< 0.00257	< 0.00286	< 0.000714	< 0.000821	< 0.00179	< 0.000714	< 0.000714	< 0.00714	< 0.00536	< 0.00286	< 0.00286	< 0.00286	< 0.00286
EP13	EP13-WAT-SUR-01-081519	< 0.00559	< 0.00559	< 0.0224	< 0.0403	< 0.0224	< 0.00559	< 0.00643	< 0.014	< 0.00559	< 0.0112	< 0.0559	< 0.0419	< 0.0224	< 0.0224	< 0.0224	< 0.0224
EP14	EP14-WAT-SUR-01-081319	< 0.000736	< 0.000736	< 0.00294	< 0.00265	< 0.00294	< 0.000736	< 0.000846	< 0.00184	< 0.000736	< 0.000736	< 0.00736	< 0.00552	< 0.00294	< 0.00294	< 0.00294	< 0.00294
	EP14-WAT-18-21-01-081319	< 0.000739	< 0.000739	< 0.00295	< 0.00266	< 0.00295	< 0.000739	< 0.000849	< 0.00185	< 0.000739	< 0.000739	< 0.00739	< 0.00554	< 0.00295	< 0.00295	< 0.00295	< 0.00295
EP15	EP15-WAT-SUR-01-081319	< 0.000719	< 0.000719	< 0.00288	< 0.00259	< 0.00288	< 0.000719	< 0.000827	< 0.0018	< 0.000719	< 0.000719	< 0.00719	< 0.00539	< 0.00288	< 0.00288	< 0.00288	< 0.00288
	EP15-WAT-18-21-01-081319	< 0.00073	< 0.00073	< 0.00292	< 0.00263	< 0.00292	< 0.00073	< 0.000839	< 0.00182	< 0.00073	< 0.00073	< 0.0073	< 0.00547	< 0.00292	< 0.00292	< 0.00292	< 0.00292

Notes:
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All results are shown in parts per billion (ppb) or µg/L
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Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 4b
Eagle Point Lake and Lake Elmo Area
Sediment PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPES	PFHxS	PFHPS	PFOS
MPCA SDCV - 5 days/week (µg/kg)		**87,000**	NS	NS	NS	**540**	NS	NS	NS	NS	NS	NS	**13,000**	NS	**290**	NS	**93**
MPCA SDCV - 2 days/week (µg/kg)		**310,000**	NS	NS	NS	**1,900**	NS	NS	NS	NS	NS	NS	**46,000**	NS	**1,000**	NS	**330**
EP1	EP1-SED-0-6-01-082719	< 0.272	< 0.136	< 0.0681	< 0.0681	**0.491**	< 0.0681	**0.126 J**	< 0.0681	< 0.0681	< 0.0681	< 0.0681	< 0.0681	< 0.0681	**0.077 J**	< 0.0681	**12.5**
EP2	EP2-SED-0-6-01-082719	< 0.32	< 0.16	< 0.0801	< 0.0801	**0.541**	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	**6.2**
EP3	EP3-SED-0-6-01-082719	**0.709 J**	< 0.258	**0.144 J**	**0.273**	**6.97**	< 0.129	**0.516**	< 0.129	< 0.129	< 0.129	< 0.129	**0.208 J**	**0.298**	**1.29**	**0.56**	**75.3**
EP4	EP4-SED-0-6-01-081319	< 0.286	< 0.143	< 0.0716	< 0.0716	**0.229**	< 0.0716	**0.083 J**	< 0.0716	< 0.0716	< 0.0716	< 0.0716	< 0.0716	< 0.0716	< 0.0716	< 0.0716	**7.18**
EP5	EP5-SED-0-6-01-081319	< 0.305	< 0.152	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	**3.5**
EP7	EP7-SED-0-6-01-081319	< 0.291	< 0.145	< 0.0727	< 0.0727	**0.195**	< 0.0727	**0.102 J**	< 0.0727	< 0.0727	< 0.0727	< 0.0727	< 0.0727	< 0.0727	< 0.0727	< 0.0727	**10.1**
EP9	EP9-SED-0-6-01-082719	**1.24 J**	< 0.342	< 0.171	< 0.171	**1.24**	< 0.171	< 0.171	< 0.171	< 0.171	< 0.171	< 0.171	< 0.171	< 0.171	< 0.171	< 0.171	**5.46**
	EP9-SED-0-6-02-082719 (DUP)	**1.1 J**	< 0.331	**0.2 J**	< 0.165	**1.11**	< 0.165	< 0.165	< 0.165	< 0.165	< 0.165	< 0.165	< 0.165	< 0.165	< 0.165	< 0.165	**2.14**
EP12	EP12-SED-0-6-01-081319	< 0.319	< 0.16	< 0.0798	< 0.0798	< 0.0798	< 0.0798	< 0.0798	< 0.0798	< 0.0798	< 0.0798	< 0.0798	< 0.0798	< 0.0798	< 0.0798	< 0.0798	**0.797**
	EP12-SED-0-6-02-081319 (DUP)	< 0.304	< 0.152	< 0.076	< 0.076	< 0.076	< 0.076	< 0.076	< 0.076	< 0.076	< 0.076	< 0.076	< 0.076	< 0.076	< 0.076	< 0.076	**0.72**
EP13	EP13-SED-0-6-01-081519	**0.958 J**	< 0.236	< 0.118	< 0.118	**0.237**	< 0.118	< 0.118	< 0.118	< 0.118	< 0.118	< 0.118	< 0.118	< 0.118	< 0.118	< 0.118	**0.287**
EP14	EP14-SED-0-6-01-082719	< 0.312	< 0.156	< 0.0779	< 0.0779	< 0.0779	< 0.0779	< 0.0779	< 0.0779	< 0.0779	< 0.0779	< 0.0779	< 0.0779	< 0.0779	< 0.0779	< 0.0779	**1.1**
EP15	EP15-SED-0-6-01-082719	**5.21**	< 0.187	**0.126 J**	< 0.0934	**0.373**	< 0.0934	< 0.0934	< 0.0934	< 0.0934	< 0.0934	< 0.0934	< 0.0934	< 0.0934	< 0.0934	< 0.0934	**0.847**

Notes:
MPCA - Minnesota Pollution Control Agency
SDCV - Site-specific sediment cleanup values
NS - No standard
All results are shown in parts per billion (ppb) or µg/kg
Result is in exceedance of MPCA SDCV
Bold - Result is above the laboratory minimum reporting limit.
J - estimated concentration
< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 4b
Eagle Point Lake and Lake Elmo Area
Sediment PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFNS	PFDS	PFDOS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	N-MEFOSA	N-ETFOSA	MEFOSAA	ETFOSAA	N-MEFOSE	N-ETFOSE	HFPO-DA	ADONA	9CL-PF3ONS	11CL-PF3OUDS
MPCA SDCV - 5 days/week (µg/kg)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MPCA SDCV - 2 days/week (µg/kg)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EP1	EP1-SED-0-6-01-082719	< 0.0681	**0.081 J**	< 0.0681	< 0.272	< 0.245	< 0.272	**0.169 J**	< 0.0783	< 0.17	< 0.0681	**0.253**	< 0.681	< 0.511	< 0.272	< 0.272	< 0.272	< 0.272
EP2	EP2-SED-0-6-01-082719	< 0.0801	< 0.0801	< 0.0801	< 0.32	< 0.288	< 0.32	< 0.0801	< 0.0921	< 0.2	< 0.0801	< 0.0801	< 0.8	< 0.6	< 0.32	< 0.32	< 0.32	< 0.32
EP3	EP3-SED-0-6-01-082719	< 0.129	< 0.129	< 0.129	< 0.516	< 0.464	< 0.516	**1.43**	< 0.148	< 0.322	< 0.129	**1.74**	< 1.29	< 0.967	< 0.516	< 0.516	< 0.516	< 0.516
EP4	EP4-SED-0-6-01-081319	< 0.0716	< 0.0716	< 0.0716	< 0.286	< 0.258	< 0.286	**0.134 J**	< 0.0823	< 0.179	< 0.0716	**0.218**	< 0.716	< 0.537	< 0.286	< 0.286	< 0.286	< 0.286
EP5	EP5-SED-0-6-01-081319	< 0.0762	< 0.0762	< 0.0762	< 0.305	< 0.274	< 0.305	< 0.0762	< 0.0876	< 0.19	< 0.0762	< 0.0762	< 0.762	< 0.571	< 0.305	< 0.305	< 0.305	< 0.305
EP7	EP7-SED-0-6-01-081319	< 0.0727	< 0.0727	< 0.0727	< 0.291	< 0.262	< 0.291	**0.114 J**	< 0.0836	< 0.182	< 0.0727	**0.244**	< 0.727	< 0.545	< 0.291	< 0.291	< 0.291	< 0.291
EP9	EP9-SED-0-6-01-082719	< 0.171	< 0.171	< 0.171	< 0.684	< 0.615	< 0.684	< 0.171	< 0.197	< 0.427	< 0.171	< 0.171	< 1.71	< 1.28	< 0.684	< 0.684	< 0.684	< 0.684
	EP9-SED-0-6-02-082719 (DUP)	< 0.165	< 0.165	< 0.165	< 0.661	< 0.595	< 0.661	< 0.165	< 0.19	< 0.413	< 0.165	< 0.165	< 1.65	< 1.24	< 0.661	< 0.661	< 0.661	< 0.661
EP12	EP12-SED-0-6-01-081319	< 0.0798	< 0.0798	< 0.0798	< 0.319	**1.24 J**	< 0.319	< 0.0798	< 0.0917	< 0.199	< 0.0798	< 0.0798	< 0.798	< 0.598	< 0.319	< 0.319	< 0.319	< 0.319
	EP12-SED-0-6-02-081319 (DUP)	< 0.076	< 0.076	< 0.076	< 0.304	< 0.274	< 0.304	< 0.076	< 0.0874	< 0.19	< 0.076	< 0.076	< 0.76	< 0.57	< 0.304	< 0.304	< 0.304	< 0.304
EP13	EP13-SED-0-6-01-081519	< 0.118	< 0.118	< 0.118	< 0.472	**2.24 J**	< 0.472	< 0.118	< 0.136	< 0.295	< 0.118	< 0.118	< 1.18	< 0.885	< 0.472	< 0.472	< 0.472	< 0.472
EP14	EP14-SED-0-6-01-082719	< 0.0779	< 0.0779	< 0.0779	< 0.312	< 0.281	< 0.312	< 0.0779	< 0.0896	< 0.195	< 0.0779	< 0.0779	< 0.779	< 0.585	< 0.312	< 0.312	< 0.312	< 0.312
EP15	EP15-SED-0-6-01-082719	< 0.0934	< 0.0934	< 0.0934	< 0.374	**4.53**	< 0.374	< 0.0934	< 0.107	< 0.234	< 0.0934	< 0.0934	< 0.934	< 0.701	< 0.374	< 0.374	< 0.374	< 0.374

Notes:
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SDCV - Site-specific sediment cleanup values
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All results are shown in parts per billion (ppb) or µg/kg
Result is in exceedance of MPCA SDCV
Bold - Result is above the laboratory minimum reporting limit.
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Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 5a
West Lakeland Storage Sites and St. Croix River Area
Surface Water PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPES	PFHxS	PFHPS	PFOS
MDH HBV (µg/L)		7.0	NS	NS	NS	0.035	NS	NS	NS	NS	NS	NS	2.0	NS	0.047	NS	0.015
WL1	WL1-WAT-SUR-01-081519	0.439 J	0.00993	0.011	0.00599	0.0583	0.000904 J	< 0.000734	< 0.000734	< 0.000734	< 0.000734	< 0.000734	0.00363	0.00189	0.00682	0.00122 J	0.157
WL2	WL2-WAT-SUR-01-081519	0.331 J	0.00984	0.0106	0.00579	0.0581	< 0.000725	0.000789 J	< 0.000725	< 0.000725	< 0.000725	< 0.000725	0.00373	0.00215	0.00731	0.00109 J	0.167
	WL2-WAT-18-21-01-081519	0.29	< 0.0111	0.0103 J	0.00619 J	0.0517	< 0.00555	< 0.00555	< 0.00555	< 0.00555	< 0.00555	< 0.00555	< 0.00555	< 0.00555	0.00657 J	< 0.00555	0.148
WL3	WL3-WAT-SUR-01-081419	0.267	< 0.0111	0.0104 J	0.0066 J	0.0586	< 0.00553	< 0.00553	< 0.00553	< 0.00553	< 0.00553	< 0.00553	< 0.00553	< 0.00553	0.00703 J	< 0.00553	0.148
	WL3-WAT-18-21-01-081419	0.227	< 0.0113	0.0106 J	0.00627 J	0.0543	< 0.00564	< 0.00564	< 0.00564	< 0.00564	< 0.00564	< 0.00564	< 0.00564	< 0.00564	0.00826 J	< 0.00564	0.163
WL5	WL5-WAT-SUR-01-081419	0.257	< 0.0116	0.0099 J	0.00648 J	0.0579	< 0.00578	< 0.00578	< 0.00578	< 0.00578	< 0.00578	< 0.00578	< 0.00578	< 0.00578	0.00652 J	< 0.00578	0.146
WL6	WL6-WAT-SUR-01-081419	0.218	< 0.0114	0.00793 J	< 0.00568	0.0565	< 0.00568	< 0.00568	< 0.00568	< 0.00568	< 0.00568	< 0.00568	< 0.00568	< 0.00568	0.0079 J	< 0.00568	0.149
WL7	WL7-WAT-SUR-01-081419	0.403 J	0.00886	0.00986	0.00649	0.0656	0.000954 J	< 0.000723	< 0.000723	< 0.000723	< 0.000723	< 0.000723	0.0033	0.00213	0.00988	0.00149	0.169
WL8	WL8-WAT-SUR-01-081419	0.275	< 0.0116	0.011 J	0.00656 J	0.058	< 0.00579	< 0.00579	< 0.00579	< 0.00579	< 0.00579	< 0.00579	< 0.00579	< 0.00579	0.00917 J	< 0.00579	0.151
WL9	WL9-WAT-SUR-01-081419	0.433	0.0117	0.0122	0.00708	0.069	0.00112 J	< 0.00075	< 0.00075	< 0.00075	< 0.00075	< 0.00075	0.0038	0.00202	0.0101	0.00158	0.177
	WL9-WAT-SUR-02-081419 (DUP)	0.385	0.0111	0.0121	0.00629	0.0677	0.0011 J	< 0.000724	< 0.000724	< 0.000724	< 0.000724	< 0.000724	0.00366	0.00193	0.00923	0.000913 J	0.179
WL10	WL10-WAT-SUR-01-081319	0.136	< 0.0115	0.00783 J	0.00614 J	0.0539	< 0.00577	< 0.00577	< 0.00577	< 0.00577	< 0.00577	< 0.00577	< 0.00577	< 0.00577	0.00712 J	< 0.00577	0.156
	WL10-WAT-SUR-01-081419	0.38	0.0114	0.0122	0.00669	0.0699	0.00121 J	< 0.000791	< 0.000791	< 0.000791	< 0.000791	< 0.000791	0.00407	0.00202	0.00995	0.00155	0.177
WL11	WL11-WAT-SUR-01-081319	0.36	0.0112	0.0122	0.00729	0.0673	0.00101 J	0.00106 J	< 0.000766	< 0.000766	< 0.000766	< 0.000766	0.00438	0.00245	0.00941	0.00105 J	0.18
WL12	WL12-WAT-SUR-01-081419	0.249	< 0.0116	0.00989 J	0.00637 J	0.0565	< 0.00579	< 0.00579	< 0.00579	< 0.00579	< 0.00579	< 0.00579	< 0.00579	< 0.00579	0.00655 J	< 0.00579	0.185
WL13	WL13-WAT-SUR-01-081419	0.342 J	0.0101	0.00987	0.00596	0.0577	0.000796 J	< 0.000741	< 0.000741	< 0.000741	< 0.000741	< 0.000741	0.00335	0.00209	0.00851	0.0011 J	0.159
WL14	WL14-WAT-SUR-01-081419	0.323 J	0.0114	0.0115	0.00702	0.0659	0.000963 J	0.00118 J	< 0.00076	< 0.00076	< 0.00076	< 0.00076	0.00351	0.00237	0.00986	0.00137 J	0.183
WL15	WL15-WAT-SUR-01-081419	0.285	< 0.0111	0.0122 J	0.00752 J	0.0556	< 0.00554	< 0.00554	< 0.00554	< 0.00554	< 0.00554	< 0.00554	< 0.00554	< 0.00554	0.00844 J	< 0.00554	0.151
WL16	WL16-WAT-SUR-01-081419	0.389 J	0.0131	0.013	0.00752	0.0739	0.00114 J	0.000963 J	< 0.000762	< 0.000762	< 0.000762	< 0.000762	0.0038	0.0021	0.0103	0.00179	0.169
WL17	WL17-WAT-SUR-01-081319	0.42 J	0.0127	0.0128	0.00772	0.0758	0.000868 J	0.00114 J	< 0.00073	< 0.00073	< 0.00073	< 0.00073	0.00436	0.0022	0.0103	0.00163	0.185
WL18	WL18-WAT-SUR-01-081519	0.43 J	0.0119	0.0123	0.00733	0.0697	0.00118 J	< 0.000719	< 0.000719	< 0.000719	< 0.000719	< 0.000719	0.0039	0.0026	0.0098	0.00136 J	0.17
WL19	WL19-WAT-SUR-01-081519	0.303	0.0102	0.0114	0.00644	0.0566	0.000948 J	< 0.00076	< 0.00076	< 0.00076	< 0.00076	< 0.00076	0.00398	0.00196	0.00938	0.00128 J	0.142
WL20	WL20-WAT-SUR-01-081519	0.203	< 0.0113	0.00851 J	0.00572 J	0.0495	< 0.00566	< 0.00566	< 0.00566	< 0.00566	< 0.00566	< 0.00566	< 0.00566	< 0.00566	0.0074 J	< 0.00566	0.166
SC1	SC1-WAT-18-21-01-081219	0.102	0.0032 J	0.00328 J	0.00216 J	0.0177	< 0.000702	< 0.000702	< 0.000702	< 0.000702	< 0.000702	< 0.000702	0.00125 J	< 0.000702	0.00239 J	< 0.000702	0.0377
SC2	SC2-WAT-18-21-01-081219	< 0.0257	< 0.0128	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642
SC3	SC3-WAT-18-21-01-081219	0.0126	< 0.0014	< 0.000698	< 0.000698	< 0.000698	< 0.000698	< 0.000698	< 0.000698	< 0.000698	< 0.000698	< 0.000698	< 0.000698	< 0.000698	< 0.000698	< 0.000698	< 0.000698
SC4	SC4-WAT-18-21-01-081219	0.0182	< 0.00141	< 0.000705	< 0.000705	0.00078 J	< 0.000705	< 0.000705	< 0.000705	< 0.000705	< 0.000705	< 0.000705	< 0.000705	< 0.000705	< 0.000705	< 0.000705	< 0.000705

Notes:
MDH - Minnesota Department of Health
HBV - Health-Based Values
NS - No standard
All results are shown in parts per billion (ppb) or µg/L
Result is in exceedance of MDH HBV
Bold - Result is above the laboratory minimum reporting limit.
J - estimated concentration
< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 5a
West Lakeland Storage Sites and St. Croix River Area
Surface Water PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFNS	PFDS	PFDOS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	N-MEFOSA	N-ETFOSA	MEFOSAA	ETFOSAA	N-MEFOSE	N-ETFOSE	HFPO-DA	ADONA	9CL-PF3ONS	11CL-PF3OUDS
MDH HBV (µg/L)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
WL1	WL1-WAT-SUR-01-081519	< 0.000734	< 0.000734	< 0.000734	< 0.00293	< 0.00264	< 0.00293	< 0.000734	< 0.000844	< 0.00183	< 0.000734	< 0.000734	< 0.00734	< 0.0055	< 0.00293	< 0.00293	< 0.00293	< 0.00293
WL2	WL2-WAT-SUR-01-081519	< 0.000725	< 0.000725	< 0.000725	< 0.0029	< 0.00261	< 0.0029	< 0.000725	< 0.000834	< 0.00181	< 0.000725	< 0.000725	< 0.00725	< 0.00544	< 0.0029	< 0.0029	< 0.0029	< 0.0029
	WL2-WAT-18-21-01-081519	< 0.00555	< 0.00555	< 0.00555	< 0.0222	< 0.04	< 0.0222	< 0.00555	< 0.00639	< 0.0139	< 0.00555	< 0.0111	< 0.0555	< 0.0417	< 0.0222	< 0.0222	< 0.0222	< 0.0222
WL3	WL3-WAT-SUR-01-081419	< 0.00553	< 0.00553	< 0.00553	< 0.0221	< 0.0398	< 0.0221	< 0.00553	< 0.00636	< 0.0138	< 0.00553	< 0.0111	< 0.0553	< 0.0415	< 0.0221	< 0.0221	< 0.0221	< 0.0221
	WL3-WAT-18-21-01-081419	< 0.00564	< 0.00564	< 0.00564	< 0.0226	< 0.0406	< 0.0226	< 0.00564	< 0.00648	< 0.0141	< 0.00564	< 0.0113	< 0.0564	< 0.0423	< 0.0226	< 0.0226	< 0.0226	< 0.0226
WL5	WL5-WAT-SUR-01-081419	< 0.00578	< 0.00578	< 0.00578	< 0.0231	**0.0587 J**	< 0.0231	< 0.00578	< 0.00665	< 0.0145	< 0.00578	< 0.0116	< 0.0578	< 0.0434	< 0.0231	< 0.0231	< 0.0231	< 0.0231
WL6	WL6-WAT-SUR-01-081419	< 0.00568	< 0.00568	< 0.00568	< 0.0227	< 0.0409	< 0.0227	< 0.00568	< 0.00653	< 0.0142	< 0.00568	< 0.0114	< 0.0568	< 0.0426	< 0.0227	< 0.0227	< 0.0227	< 0.0227
WL7	WL7-WAT-SUR-01-081419	< 0.000723	< 0.000723	< 0.000723	< 0.00289	< 0.0026	< 0.00289	< 0.000723	< 0.000832	< 0.00181	< 0.000723	< 0.000723	< 0.00723	< 0.00542	< 0.00289	< 0.00289	< 0.00289	< 0.00289
WL8	WL8-WAT-SUR-01-081419	< 0.00579	< 0.00579	< 0.00579	< 0.0232	< 0.0417	< 0.0232	< 0.00579	< 0.00666	< 0.0145	< 0.00579	< 0.0116	< 0.0579	< 0.0434	< 0.0232	< 0.0232	< 0.0232	< 0.0232
WL9	WL9-WAT-SUR-01-081419	< 0.00075	< 0.00075	< 0.00075	< 0.003	< 0.0027	< 0.003	< 0.00075	< 0.000862	< 0.00187	< 0.00075	< 0.00075	< 0.0075	< 0.00562	< 0.003	< 0.003	< 0.003	< 0.003
	WL9-WAT-SUR-02-081419 (DUP)	< 0.000724	< 0.000724	< 0.000724	< 0.0029	< 0.00261	< 0.0029	< 0.000724	< 0.000833	< 0.00181	< 0.000724	< 0.000724	< 0.00724	< 0.00543	< 0.0029	< 0.0029	< 0.0029	< 0.0029
WL10	WL10-WAT-SUR-01-081319	< 0.00577	< 0.00577	< 0.00577	< 0.0231	< 0.0416	< 0.0231	< 0.00577	< 0.00664	< 0.0144	< 0.00577	< 0.0115	< 0.0577	< 0.0433	< 0.0231	< 0.0231	< 0.0231	< 0.0231
	WL10-WAT-SUR-01-081419	< 0.000791	< 0.000791	< 0.000791	< 0.00316	< 0.00285	< 0.00316	< 0.000791	< 0.000909	< 0.00198	< 0.000791	< 0.000791	< 0.00791	< 0.00593	< 0.00316	< 0.00316	< 0.00316	< 0.00316
WL11	WL11-WAT-SUR-01-081319	< 0.000766	< 0.000766	< 0.000766	< 0.00306	< 0.00276	< 0.00306	< 0.000766	< 0.000881	< 0.00191	< 0.000766	< 0.000766	< 0.00766	< 0.00574	< 0.00306	< 0.00306	< 0.00306	< 0.00306
WL12	WL12-WAT-SUR-01-081419	< 0.00579	< 0.00579	< 0.00579	< 0.0232	< 0.0417	< 0.0232	< 0.00579	< 0.00666	< 0.0145	< 0.00579	< 0.0116	< 0.0579	< 0.0434	< 0.0232	< 0.0232	< 0.0232	< 0.0232
WL13	WL13-WAT-SUR-01-081419	< 0.000741	< 0.000741	< 0.000741	< 0.00296	< 0.00267	< 0.00296	< 0.000741	< 0.000852	< 0.00185	< 0.000741	< 0.000741	< 0.00741	< 0.00556	< 0.00296	< 0.00296	< 0.00296	< 0.00296
WL14	WL14-WAT-SUR-01-081419	< 0.00076	< 0.00076	< 0.00076	< 0.00304	< 0.00274	< 0.00304	< 0.00076	< 0.000875	< 0.0019	< 0.00076	< 0.00076	< 0.0076	< 0.0057	< 0.00304	< 0.00304	< 0.00304	< 0.00304
WL15	WL15-WAT-SUR-01-081419	< 0.00554	< 0.00554	< 0.00554	< 0.0222	< 0.0399	< 0.0222	< 0.00554	< 0.00637	< 0.0139	< 0.00554	< 0.0111	< 0.0554	< 0.0416	< 0.0222	< 0.0222	< 0.0222	< 0.0222
WL16	WL16-WAT-SUR-01-081419	< 0.000762	< 0.000762	< 0.000762	< 0.00305	< 0.00274	< 0.00305	< 0.000762	< 0.000876	< 0.0019	< 0.000762	< 0.000762	< 0.00762	< 0.00571	< 0.00305	< 0.00305	< 0.00305	< 0.00305
WL17	WL17-WAT-SUR-01-081319	< 0.00073	< 0.00073	< 0.00073	< 0.00292	< 0.00263	< 0.00292	< 0.00073	< 0.000839	< 0.00182	< 0.00073	< 0.00073	< 0.0073	< 0.00547	< 0.00292	< 0.00292	< 0.00292	< 0.00292
WL18	WL18-WAT-SUR-01-081519	< 0.000719	< 0.000719	< 0.000719	< 0.00287	< 0.00259	< 0.00287	< 0.000719	< 0.000827	< 0.0018	< 0.000719	< 0.000719	< 0.00719	< 0.00539	< 0.00287	< 0.00287	< 0.00287	< 0.00287
WL19	WL19-WAT-SUR-01-081519	< 0.00076	< 0.00076	< 0.00076	< 0.00304	< 0.00273	< 0.00304	< 0.00076	< 0.000874	< 0.0019	< 0.00076	< 0.00076	< 0.0076	< 0.0057	< 0.00304	< 0.00304	< 0.00304	< 0.00304
WL20	WL20-WAT-SUR-01-081519	< 0.00566	< 0.00566	< 0.00566	< 0.0226	**0.0452 J**	< 0.0226	< 0.00566	< 0.00651	< 0.0141	< 0.00566	< 0.0113	< 0.0566	< 0.0424	< 0.0226	< 0.0226	< 0.0226	< 0.0226
SC1	SC1-WAT-18-21-01-081219	< 0.000702	< 0.000702	< 0.000702	< 0.00281	< 0.00253	< 0.00281	< 0.000702	< 0.000807	< 0.00175	< 0.000702	< 0.000702	< 0.00702	< 0.00526	< 0.00281	< 0.00281	< 0.00281	< 0.00281
SC2	SC2-WAT-18-21-01-081219	< 0.00642	< 0.00642	< 0.00642	< 0.0257	< 0.0231	< 0.0257	< 0.00642	< 0.00738	< 0.016	< 0.00642	< 0.00642	< 0.0642	< 0.0481	< 0.0257	< 0.0257	< 0.0257	< 0.0257
SC3	SC3-WAT-18-21-01-081219	< 0.000698	< 0.000698	< 0.000698	< 0.00279	< 0.00251	< 0.00279	< 0.000698	< 0.000803	< 0.00175	< 0.000698	< 0.000698	< 0.00698	< 0.00524	< 0.00279	< 0.00279	< 0.00279	< 0.00279
SC4	SC4-WAT-18-21-01-081219	< 0.000705	< 0.000705	< 0.000705	< 0.00282	< 0.00254	< 0.00282	< 0.000705	< 0.000811	< 0.00176	< 0.000705	< 0.000705	< 0.00705	< 0.00529	< 0.00282	< 0.00282	< 0.00282	< 0.00282

Notes:
MDH - Minnesota Department of Health
HBV - Health-Based Values
NS - No standard
All results are shown in parts per billion (ppb) or µg/L
Result is in exceedance of MDH HBV
Bold - Result is above the laboratory minimum reporting limit.
J - estimated concentration
< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 5b
West Lakeland Storage Sites Area
Sediment PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPES	PFHxS	PFHPS	PFOS
MPCA SDCV - 5 days/week (µg/kg)		**87,000**	NS	NS	NS	**540**	NS	NS	NS	NS	NS	NS	**13,000**	NS	**290**	NS	**93**
MPCA SDCV - 2 days/week (µg/kg)		**310,000**	NS	NS	NS	**1,900**	NS	NS	NS	NS	NS	NS	**46,000**	NS	**1,000**	NS	**330**
WL2	WL2-SED-0-6-01-081519	< 0.286	< 0.143	< 0.0714	< 0.0714	< 0.0714	**0.11 J**	< 0.0714	**0.074 J**	< 0.0714	< 0.0714	< 0.0714	< 0.0714	< 0.0714	< 0.0714	< 0.0714	**0.83**
WL3	WL3-SED-0-6-01-082719	< 0.298	< 0.149	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	< 0.0746	**2.86**
WL5	WL5-SED-0-6-01-081419	< 0.304	< 0.152	< 0.0759	< 0.0759	< 0.0759	< 0.0759	< 0.0759	< 0.0759	< 0.0759	< 0.0759	< 0.0759	< 0.0759	< 0.0759	< 0.0759	< 0.0759	**1.05**
WL6	WL6-SED-0-6-01-081419	**0.361 J**	< 0.152	< 0.0762	< 0.0762	**0.221**	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	< 0.0762	**4.81**
WL7	WL7-SED-0-6-01-081419	< 0.276	< 0.138	< 0.0689	< 0.0689	< 0.0689	< 0.0689	< 0.0689	< 0.0689	< 0.0689	< 0.0689	< 0.0689	< 0.0689	< 0.0689	< 0.0689	< 0.0689	**1.1**
WL9	WL9-SED-0-6-01-081419	< 0.296	< 0.148	< 0.074	< 0.074	< 0.074	< 0.074	< 0.074	< 0.074	< 0.074	< 0.074	< 0.074	< 0.074	< 0.074	< 0.074	< 0.074	**0.917**
	WL9-SED-0-6-02-081419 (DUP)	< 0.296	< 0.148	< 0.0741	< 0.0741	< 0.0741	< 0.0741	< 0.0741	< 0.0741	< 0.0741	< 0.0741	< 0.0741	< 0.0741	< 0.0741	< 0.0741	< 0.0741	**0.66**
WL10	WL10-SED-0-6-01-081319	< 0.266	< 0.133	< 0.0665	< 0.0665	**0.125 J**	< 0.0665	< 0.0665	< 0.0665	< 0.0665	< 0.0665	< 0.0665	< 0.0665	< 0.0665	< 0.0665	< 0.0665	**3.18**
WL11	WL11-SED-0-6-01-081319	< 0.31	< 0.155	< 0.0775	< 0.0775	**0.092 J**	< 0.0775	< 0.0775	< 0.0775	< 0.0775	< 0.0775	< 0.0775	< 0.0775	< 0.0775	< 0.0775	< 0.0775	**1.14**
WL12	WL12-SED-0-6-01-081419	< 0.295	< 0.148	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	< 0.0739	**0.939**
WL13	WL13-SED-0-6-01-081419	< 0.312	< 0.156	< 0.0781	< 0.0781	**0.106 J**	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	**2.04**
WL14	WL14-SED-0-6-01-081419	< 0.3	< 0.15	< 0.075	< 0.075	**0.203**	< 0.075	< 0.075	< 0.075	< 0.075	< 0.075	< 0.075	< 0.075	< 0.075	< 0.075	< 0.075	**3.82**
WL15	WL15-SED-0-6-01-081419	< 0.317	< 0.159	< 0.0793	< 0.0793	**0.137 J**	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	**3.17**
WL17	WL17-SED-0-6-01-081319	< 0.295	< 0.148	< 0.0738	< 0.0738	**0.081 J**	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	**1.7**

Notes:
MPCA - Minnesota Pollution Control Agency
SDCV - Site-specific sediment cleanup values
NS - No standard
All results are shown in parts per billion (ppb) or µg/kg
Result is in exceedance of MPCA SDCV
Bold - Result is above the laboratory minimum reporting limit.
J - estimated concentration
< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 5b
West Lakeland Storage Sites Area
Sediment PFAS Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	PFNS	PFDS	PFDOS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	N-MEFOSA	N-ETFOSA	MEFOSAA	ETFOSAA	N-MEFOSE	N-ETFOSE	HFPO-DA	ADONA	9CL-PF3ONS	11CL-PF3OUDS
MPCA SDCV - 5 days/week (µg/kg)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MPCA SDCV - 2 days/week (µg/kg)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
WL2	WL2-SED-0-6-01-081519	< 0.0714	< 0.0714	< 0.0714	< 0.286	< 0.257	< 0.286	< 0.0714	< 0.0822	< 0.179	< 0.0714	< 0.0714	< 0.714	< 0.536	< 0.286	< 0.286	< 0.286	< 0.286
WL3	WL3-SED-0-6-01-082719	< 0.0746	< 0.0746	< 0.0746	< 0.298	< 0.269	< 0.298	< 0.0746	< 0.0858	< 0.187	< 0.0746	**0.081 J**	< 0.746	< 0.56	< 0.298	< 0.298	< 0.298	< 0.298
WL5	WL5-SED-0-6-01-081419	< 0.0759	< 0.0759	< 0.0759	< 0.304	< 0.273	< 0.304	< 0.0759	< 0.0873	< 0.19	< 0.0759	< 0.0759	< 0.759	< 0.569	< 0.304	< 0.304	< 0.304	< 0.304
WL6	WL6-SED-0-6-01-081419	< 0.0762	< 0.0762	< 0.0762	< 0.305	< 0.274	< 0.305	< 0.0762	< 0.0877	< 0.191	< 0.0762	< 0.0762	< 0.762	< 0.572	< 0.305	< 0.305	< 0.305	< 0.305
WL7	WL7-SED-0-6-01-081419	< 0.0689	< 0.0689	< 0.0689	< 0.276	< 0.248	< 0.276	< 0.0689	< 0.0792	< 0.172	< 0.0689	< 0.0689	< 0.689	< 0.517	< 0.276	< 0.276	< 0.276	< 0.276
WL9	WL9-SED-0-6-01-081419	< 0.074	< 0.074	< 0.074	< 0.296	< 0.266	< 0.296	< 0.074	< 0.0851	< 0.185	< 0.074	< 0.074	< 0.74	< 0.555	< 0.296	< 0.296	< 0.296	< 0.296
	WL9-SED-0-6-02-081419 (DUP)	< 0.0741	< 0.0741	< 0.0741	< 0.296	< 0.267	< 0.296	< 0.0741	< 0.0852	< 0.185	< 0.0741	< 0.0741	< 0.741	< 0.556	< 0.296	< 0.296	< 0.296	< 0.296
WL10	WL10-SED-0-6-01-081319	< 0.0665	< 0.0665	< 0.0665	< 0.266	< 0.239	< 0.266	< 0.0665	< 0.0765	< 0.166	< 0.0665	< 0.0665	< 0.665	< 0.499	< 0.266	< 0.266	< 0.266	< 0.266
WL11	WL11-SED-0-6-01-081319	< 0.0775	< 0.0775	< 0.0775	< 0.31	< 0.558	< 0.31	< 0.0775	< 0.0892	< 0.194	< 0.0775	< 0.155	< 0.775	< 0.582	< 0.31	< 0.31	< 0.31	< 0.31
WL12	WL12-SED-0-6-01-081419	< 0.0739	< 0.0739	< 0.0739	< 0.295	< 0.266	< 0.295	< 0.0739	< 0.085	< 0.185	< 0.0739	< 0.0739	< 0.739	< 0.554	< 0.295	< 0.295	< 0.295	< 0.295
WL13	WL13-SED-0-6-01-081419	< 0.0781	< 0.0781	< 0.0781	< 0.312	< 0.281	< 0.312	< 0.0781	< 0.0898	< 0.195	< 0.0781	< 0.0781	< 0.781	< 0.586	< 0.312	< 0.312	< 0.312	< 0.312
WL14	WL14-SED-0-6-01-081419	< 0.075	< 0.075	< 0.075	< 0.3	< 0.27	< 0.3	< 0.075	< 0.0862	< 0.187	< 0.075	< 0.075	< 0.75	< 0.562	< 0.3	< 0.3	< 0.3	< 0.3
WL15	WL15-SED-0-6-01-081419	< 0.0793	< 0.0793	< 0.0793	< 0.317	< 0.286	< 0.317	< 0.0793	< 0.0912	< 0.198	< 0.0793	< 0.0793	< 0.793	< 0.595	< 0.317	< 0.317	< 0.317	< 0.317
WL17	WL17-SED-0-6-01-081319	< 0.0738	< 0.0738	< 0.0738	< 0.295	< 0.266	< 0.295	< 0.0738	< 0.0849	< 0.185	< 0.0738	< 0.0738	< 0.738	< 0.554	< 0.295	< 0.295	< 0.295	< 0.295

Notes:
MPCA - Minnesota Pollution Control Agency
SDCV - Site-specific sediment cleanup values
NS - No standard
All results are shown in parts per billion (ppb) or µg/kg
Result is in exceedance of MPCA SDCV
Bold - Result is above the laboratory minimum reporting limit.
J - estimated concentration
< 0.0002 - Concentration is less than laboratory reportable limit
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Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluortelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 6
Water Quality Analytical Results
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	Alkalinity (1)	BOD	Chloride	Nitrate as N	pH	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Suspended Solids	Turbidity (2)
EPA MCL (mg/L)		NS	NS	NS	10	NS	NS	NS	NS	NS	NS
Raleigh Creek and Tri-Lakes Area											
RC1	RC1-WAT-SUR-01-081519	76.7	ND	121	ND	7.6	3.5	285	5.7	ND	1.1
RC2	RC2-WAT-SUR-01-081519	66.2	ND	47.6	ND	7.5	ND	164	5.0	ND	0.95
	RC2-WAT-SUR-02-081519 (DUP)	66.2	ND	47.6	ND	7.4	ND	155	5.4	ND	0.85
	RC2-WAT-18-21-01-081519	65.7	ND	47.4	ND	7.2	ND	155	5.0	ND	0.93
RC3	RC3-WAT-SUR-01-081219	81.9	ND	139	ND	7.3	ND	326	11.5	ND	8.7
RC4	RC4-WAT-SUR-01-081219	181	ND	392	ND	7.1	10.1	925	8.8	ND	25.8
RC5	RC5-WAT-SUR-01-081219	143	ND	359	ND	7.4	6.4	790	8.3	11.0	23.3
RC6	RC6-WAT-SUR-01-081219	140	ND	359	ND	6.7	6.7	780	7.7	ND	15.4
RC7	RC7-WAT-SUR-01-081219	127	2.1	263	ND	7.2	7.8	624	6.5	ND	2.3
RC8	RC8-WAT-SUR-01-081219	162	3.5	95.2	0.27	7.2	5.1	280	8.5	11.0	4.2
RC9	RC9-WAT-SUR-01-081219	83.8	ND	231	ND	7.2	14.1	493	6.3	ND	0.95
RC10	RC10-WAT-SUR-01-081219	122	2.0	168	0.24	7.6	11.1	427	7.0	ND	1.4
RC11	RC11-WAT-SUR-01-081419	95.6	ND	171	ND	7.6	7.3	402	7.4	ND	2.4
RC12	RC12-WAT-SUR-01-081419	97.0	ND	173	ND	7.6	7.4	395	7.3	ND	2.5
RC13	RC13-WAT-SUR-01-081219	116	2.4	164	0.27	7.2	14.0	362	7.7	ND	1.9
RC14	RC14-WAT-SUR-01-081219	85.9	ND	112	0.12	6.2	3.0	280	6.2	ND	3.0
RC15	RC15-WAT-SUR-01-081219	85.0	ND	111	0.14	7.3	3.0	ND	6.2	ND	2.5
RC16	RC16-WAT-SUR-01-081219	86.0	ND	111	0.14	6.4	3.0	282	6.3	ND	6.6
RC17	RC17-WAT-SUR-01-081219	86.7	ND	111	0.15	7.3	3.1	279	6.5	ND	2.2
	RC17-WAT-SUR-02-081219 (DUP)	82.8	ND	113	0.15	7.2	3.1	273	6.2	ND	2.8
RC18	RC18-WAT-SUR-01-081319	84.5	ND	113	0.17	8.0	3.1	282	5.6	ND	2.0
Eagle Point Lake and Lake Elmo Area											
EP1	EP1-WAT-SUR-01-081319*	92	ND	110	ND	7.4	ND	243	7.6	ND	8.6
	EP1-WAT-SUR-02-081319 (DUP)*	92.4	6.3	112	ND	7.4	ND	302	8.2	ND	8.8
	EP1-WAT-18-21-01-081319	91.2	3.3	110	ND	7.4	ND	309	7.7	ND	6.9
EP2	EP2-WAT-SUR-01-081319	88.7	2.9	99.9	ND	7.6	ND	269	9.3	ND	6.2
	EP2-WAT-18-21-01-081319	89.4	3.2	101	ND	7.5	ND	266	9.2	ND	6.8
EP3	EP3-WAT-SUR-01-081319	95.3	3.0	109	ND	6.8	ND	285	8.7	ND	6.4
	EP3-WAT-18-21-01-081319	94.5	2.9	108	ND	6.8	ND	292	8.6	ND	6.4
EP4	EP4-WAT-SUR-01-081319	94.2	ND	110	ND	6.5	ND	265	7.9	ND	3.2
EP5	EP5-WAT-SUR-01-081319	96.6	2.2	110	ND	7.4	ND	291	8.3	ND	3.4
EP7	EP7-WAT-SUR-01-081319	96.2	ND	110	ND	7.3	ND	290	8.2	ND	2.8
EP8	EP8-WAT-SUR-01-081319	94.7	2.3	110	ND	7.2	ND	285	8.3	ND	2.5
EP9	EP9-WAT-SUR-01-081319	135	ND	50.5	ND	7.9	6.5	222	7.0	ND	0.62
	EP9-WAT-18-21-01-081319	132	ND	49.9	ND	7.5	6.5	222	5.1	ND	0.77
EP10	EP10-WAT-SUR-01-081319	92.4	ND	110	ND	7.8	ND	286	7.5	ND	2.0
EP11	EP11-WAT-SUR-01-081319	133	ND	50.1	ND	7.7	6.5	227	4.3	ND	0.67
EP12	EP12-WAT-SUR-01-081319	128	ND	60.3	ND	7.5	5.7	228	5.4	ND	0.78
	EP12-WAT-SUR-02-081319 (DUP)	120	ND	72.9	ND	7.2	4.4	238	6.1	ND	1.3
EP13	EP13-WAT-SUR-01-081519	107	ND	80.6	ND	7.2	3.2	246	6.5	ND	1.6
EP14	EP14-WAT-SUR-01-081319	132	ND	50.4	ND	7.9	6.5	229	5.1	ND	0.80
	EP14-WAT-18-21-01-081319	134	ND	49.7	ND	7.9	6.4	219	5.0	ND	0.64
EP15	EP15-WAT-SUR-01-081319	136	ND	50.1	ND	7.8	6.5	206	4.9	ND	0.67
	EP15-WAT-18-21-01-081319	132	ND	50.9	ND	8.0	6.5	212	4.9	ND	1.1
West Lakeland Storage Sites and St. Croix River Area											
WL1	WL1-WAT-SUR-01-081519	108	ND	80.2	ND	7.2	3.3	251	6.4	ND	1.5
WL2	WL2-WAT-SUR-01-081519	109	ND	79.2	ND	7.2	3.4	237	6.6	ND	2.8
	WL2-WAT-18-21-01-081519**	--	--	--	--	--	--	--	--	--	--
WL3	WL3-WAT-18-21-01-081419	109	10.0	79.9	ND	7.8	3.9	241	7.3	10.0	6.9
WL5	WL5-WAT-SUR-01-081419	112	2.8	81.6	ND	7.5	3.4	256	6.8	ND	6.3
WL6	WL6-WAT-SUR-01-081419	107	3.2	80.4	ND	7.5	3.3	262	6.8	ND	7.1
WL7	WL7-WAT-SUR-01-081419	108	2.7	82.0	ND	7.0	3.6	258	6.8	15.0	5.2
WL8	WL8-WAT-SUR-01-081419	109	2.6	80.1	ND	7.5	3.4	260	6.4	14.0	6.6
WL9	WL9-WAT-SUR-01-081419	108	2.9	79.0	ND	7.0	3.7	258	7.2	ND	5.2
	WL9-WAT-SUR-02-081419 (DUP)	108	3.0	78.8	ND	7.1	3.5	253	7.2	10.0	4.2
WL10	WL10-WAT-SUR-01-081319	113	2.1	83.6	ND	7.9	3.7	256	6.4	ND	4.4
WL11	WL11-WAT-SUR-01-081319	112	ND	83.6	ND	7.6	3.6	262	6.6	ND	3.8
WL12	WL12-WAT-SUR-01-081419	107	2.4	79.2	ND	7.5	3.4	247	6.8	ND	3.4
WL13	WL13-WAT-SUR-01-081419	106	2.7	77.9	ND	7.6	3.4	260	7.2	ND	3.2
WL14	WL14-WAT-SUR-01-081419	106	2.3	77.3	ND	6.9	3.4	252	6.4	ND	3.3
WL15	WL15-WAT-SUR-01-081419	105	2.3	79.8	ND	7.4	3.7	251	6.4	ND	4.6
WL16	WL16-WAT-SUR-01-081419	110	2.4	80.3	ND	7.2	3.7	237	6.5	ND	3.6
WL17	WL17-WAT-SUR-01-081319	113	2.2	80.3	ND	7.3	3.8	253	6.5	ND	3.6
WL18	WL18-WAT-SUR-01-081519	108	2.3	81.7	ND	7.4	3.6	257	7.1	ND	3.1
WL19	WL19-WAT-SUR-01-081519	111	2.5	88.9	ND	7.8	3.9	266	7.3	ND	3.4
WL20	WL20-WAT-SUR-01-081519	105	4.0	88.0	ND	7.1	4.3	270	7.5	ND	3.8
SC1	SC1-WAT-18-21-01-081219	104	ND	32.2	0.17	7.7	12.0	182	7.4	ND	2.3
SC2	SC2-WAT-18-21-01-081219	97.3	ND	8.8	0.24	7.6	4.4	128	7.6	ND	2.5

Notes:
EPA - Environmental Protection Agency
MCL - Maximum Contaminant Levels
All results are shown in mg/L except pH which is unitless.
(1) Alkalinity is reported as total CaCO3
(2) Turbidity is reported in Nephelometric Turbidity Units (NTU)
* = Duplicate sample labeled as primary sample on separate Chain of Custody
** = Sample not analyzed

mg/L - milligrams per liter or parts per million (ppm)
ND - Concentration is not detected above the laboratory reportable limit
NS - No standard
BOD - Biological Oxygen Demand
DUP - duplicate sample

Washington County Landfill

Oakdale Disposal Facility

Raleigh Creek

Fahey Creek

Valley Branch

St. Croix River

Project Location

Figure 1
Project Location
Baseline Sampling Event, August 12-15, 2019
Project 1007
Minnesota Pollution Control Agency

Project 1007 Structures
- Catch Basin
- Manhole
- Other Structure

- Channel
- Culvert
- Pipe

- Washington County Landfill connection
- MnDOT Pipeline

AECOM

N
W E
S

0 0.5 1 1.5 2 Miles

AECOM Path: G:\Minneapolis\DCS\GIS\ArcMap_GeoDB_Projects\Project 1007\Baseline Memo Figures\Figure 1 - Project Location.mxd Revised: 11/18/2019 By MGD

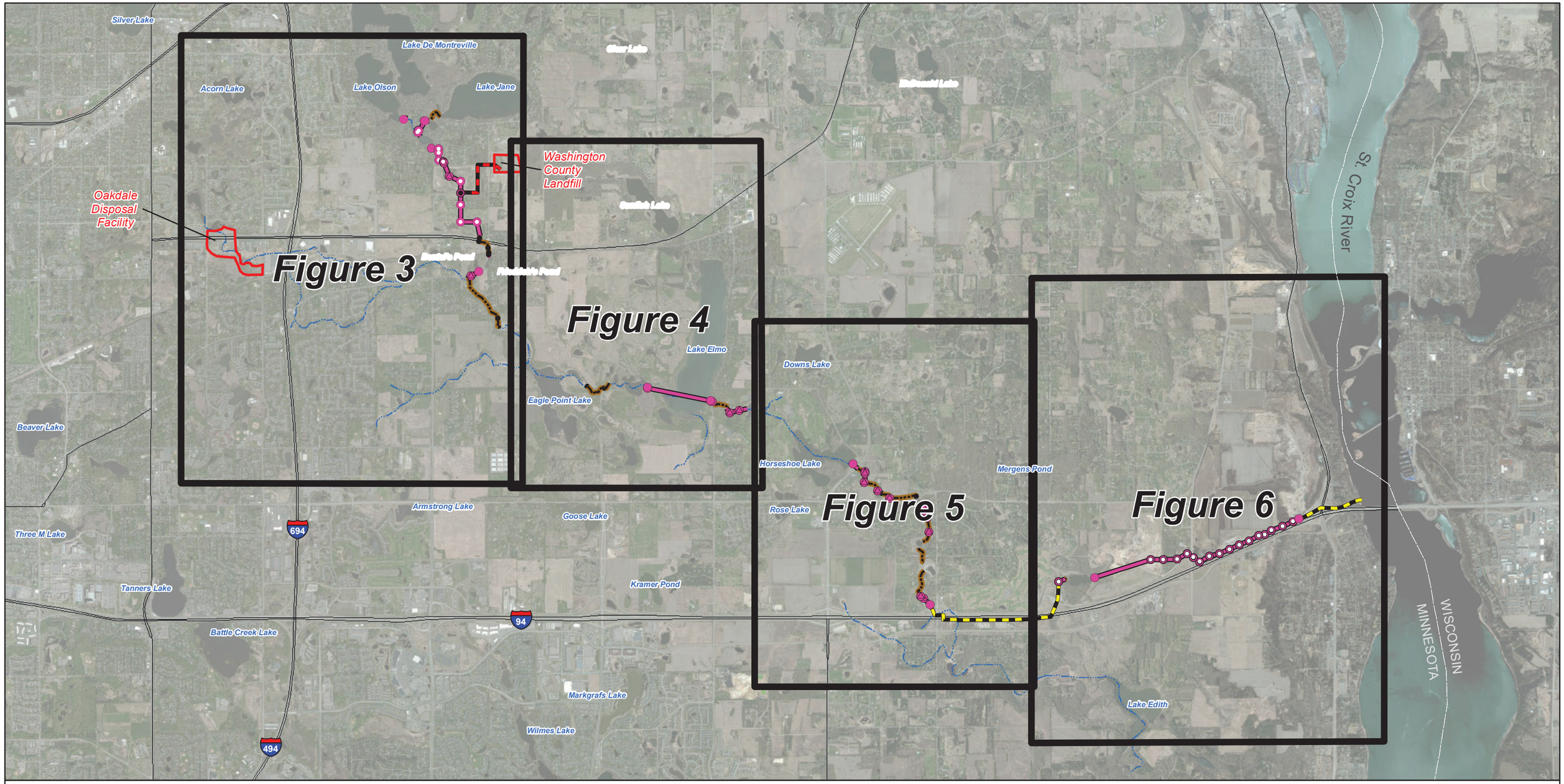


Figure 2
Project Overview
Baseline Sampling Event, August 12-15, 2019
Project 1007
Minnesota Pollution Control Agency

Project 1007 Structures

- Catch Basin
- Manhole
- Other Structure
- Channel
- Culvert
- Pipe
- Washington County Landfill connection
- MnDOT Pipeline

AECOM

N
W E
S

0 0.5 1 1.5 2 Miles

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; Other Sources: MDH, Barr Engineering
AECOM Path: G:\Minneapolis\DCS\GIS\ArcMap_GeoDB_Projects\Project 1007\Baseline Memo Figures\Figure 2 - Project Overview.mxd Revised: 11/18/2019 By MGD

RC1	8/15/2019	
	Surface	18-21"
PFBA	0.0919 J	0.0876 J
PFOA	0.00738	0.00811
PFBS	0.00221	0.00203
PFHxS	0.00287	0.00262
PFOS	0.00178	0.00132 J

RC2	8/15/2019		
	Surface	Duplicate	18-21"
PFBA	0.119	0.139	0.156
PFOA	0.0107	0.00952	0.00928
PFBS	0.00164	0.00181	0.00161
PFHxS	0.00302	0.00277	0.0028
PFOS	0.00169	0.00135 J	0.0016

RC3	8/12/2019	8/14/2019
	Surface	Surface
PFBA	0.412	0.301 J
PFOA	0.832	0.548
PFBS	0.0252	0.0159
PFHxS	0.0872	0.0593
PFOS	3.9 D	2.47 D

RC4	8/12/2019
	Surface
PFBA	0.694
PFOA	0.57
PFBS	0.0208
PFHxS	0.0584
PFOS	1.59

RC5	8/12/2019
	Surface
PFBA	0.404
PFOA	0.395
PFBS	0.0145
PFHxS	0.0435
PFOS	1.99

RC6	8/12/2019
	Surface
PFBA	0.417
PFOA	0.382
PFBS	0.0161
PFHxS	0.0433
PFOS	2.77 D

RC7	8/12/2019	8/14/2019
	Surface	Surface
PFBA	0.349	0.158 J
PFOA	0.347	0.184
PFBS	0.0145	0.00569
PFHxS	0.0367	0.0183
PFOS	1.91	1.54

RC8	8/12/2019
	Surface
PFBA	0.15
PFOA	0.0227
PFBS	< 0.00572
PFHxS	< 0.00572
PFOS	0.0116 J

RC9	8/12/2019
	Surface
PFBA	0.207
PFOA	0.276
PFBS	0.0154
PFHxS	0.0384
PFOS	1.78 D

RC10	8/12/2019
	Surface
PFBA	0.175
PFOA	0.137
PFBS	0.0114
PFHxS	0.0252
PFOS	1.07

RC11	8/14/2019
	Surface
PFBA	0.239 J
PFOA	0.163
PFBS	0.00663
PFHxS	0.0187
PFOS	1.15

RC12	8/14/2019
	Surface
PFBA	0.214 J
PFOA	0.164
PFBS	0.00636
PFHxS	0.0194
PFOS	1.22

RC13	8/12/2019
	Surface
PFBA	0.189
PFOA	0.103
PFBS	0.0113
PFHxS	0.0228
PFOS	0.964

RC14	8/12/2019
	Surface
PFBA	0.108
PFOA	0.00807
PFBS	0.00194 J
PFHxS	0.00333 J
PFOS	0.00187 J

RC15	8/12/2019
	Surface
PFBA	0.0984
PFOA	0.0071
PFBS	0.00217 J
PFHxS	0.00271 J
PFOS	0.00166 J

RC16	8/12/2019
	Surface
PFBA	0.0938
PFOA	0.00792
PFBS	0.00229 J
PFHxS	0.00254 J
PFOS	0.00197 J

RC17	8/12/2019		8/14/2019
	Surface	Duplicate	Surface
PFBA	0.0879	0.0974	0.194 J
PFOA	0.00799	0.00823	0.095
PFBS	0.00211 J	0.00195 J	0.00524
PFHxS	0.00293 J	0.00299 J	0.0121
PFOS	0.00204 J	0.00164 J	0.702

RC18	8/13/2019
	Surface
PFBA	0.0727
PFOA	0.00876
PFBS	0.0018
PFHxS	0.00298
PFOS	0.00248

Notes:

Surface water PFAS concentrations are reported in micrograms per liter (µg/L) or parts per billion (ppb)

<0.0002 = Concentration is less than the laboratory reportable limit

Bold = Result is above the laboratory minimum reporting limit

J = Estimated concentration

D = Dilution data

MDH = Minnesota Department of Health

HBV = Health-Based Value

Exceedance of MDH HBVs:

PFBA = 7.0 ppb

PFOA = 0.035 ppb

PFBS = 2.0 ppb

PFHxS = 0.047 ppb

PFOS = 0.015 ppb

Short-chain PFCAs

Long-chain PFCAs

Short-chain PFSAs

Long-chain PFSAs

Figure 3a
Surface Water PFAS Analytical Summary
Baseline Sampling Event, August 12-15, 2019
Project 1007
Minnesota Pollution Control Agency

Project 1007 Structures

Catch Basin
Manhole
Other Structure
Channel
Culvert
Pipe

Washington County Landfill connection
MnDOT Pipeline
Streams and Creeks
Surface Water Body
Baseline Sampling Location

AECOM

0 1,000 2,000 3,000 4,000 Feet

Service Layer Credits: ; Other Sources: MDH, Barr Engineering
AECOM Path: G:\Minneapolis\DCS\GIS\ArcMap_GeoDB_Projects\Project 1007\Baseline Memo Figures\Figure A - SW Figures_1_3.mxd Revised: 11/18/2019 By MGD

Sediment PFAS Analytical Summary

RC1	8/15/2019
	0 - 6"
PFBA	< 0.296
PFOA	< 0.0739
PFBS	< 0.0739
PFHxS	< 0.0739
PFOS	< 0.0739

RC2	8/15/2019
	0 - 6"
PFBA	0.67
PFOA	< 0.0888
PFBS	< 0.0888
PFHxS	< 0.0888
PFOS	< 0.0888

RC3	8/12/2019	
	0 - 6"	Duplicate
PFBA	< 0.312	< 0.341
PFOA	0.217	0.581
PFBS	< 0.078	< 0.0852
PFHxS	< 0.078	< 0.0852
PFOS	5.89	14

RC4	8/12/2019
	0 - 6"
PFBA	0.841
PFOA	1.53
PFBS	< 0.0964
PFHxS	0.22
PFOS	59.9

RC5	8/12/2019
	0 - 6"
PFBA	0.314
PFOA	0.634
PFBS	< 0.0662
PFHxS	0.081
PFOS	27.5

RC6	8/12/2019
	0 - 6"
PFBA	0.566
PFOA	1.34
PFBS	< 0.0892
PFHxS	0.173
PFOS	65.8

RC7	8/12/2019
	0 - 6"
PFBA	0.53
PFOA	0.684
PFBS	< 0.0746
PFHxS	< 0.0746
PFOS	11.5

RC8	8/12/2019
	0 - 6"
PFBA	< 0.303
PFOA	0.08
PFBS	< 0.0758
PFHxS	< 0.0758
PFOS	0.721

RC9	8/12/2019
	0 - 6"
PFBA	0.311
PFOA	0.655
PFBS	< 0.0776
PFHxS	< 0.0776
PFOS	14.9

RC10	8/12/2019
	0 - 6"
PFBA	< 0.3
PFOA	0.401
PFBS	< 0.0749
PFHxS	< 0.0749
PFOS	7.98

RC11	8/12/2019
	0 - 6"
PFBA	0.5
PFOA	0.474
PFBS	< 0.0746
PFHxS	< 0.0746
PFOS	10

RC12	8/12/2019
	0 - 6"
PFBA	0.52
PFOA	0.948
PFBS	< 0.0729
PFHxS	< 0.0729
PFOS	19.6

RC13	8/12/2019
	0 - 6"
PFBA	< 0.289
PFOA	0.311
PFBS	< 0.0723
PFHxS	< 0.0723
PFOS	7.67

RC14	8/12/2019
	0 - 6"
PFBA	< 0.295
PFOA	< 0.0737
PFBS	< 0.0737
PFHxS	< 0.0737
PFOS	0.499

RC15	8/12/2019
	0 - 6"
PFBA	< 0.312
PFOA	< 0.0781
PFBS	< 0.0781
PFHxS	< 0.0781
PFOS	0.133

RC16	8/12/2019
	0 - 6"
PFBA	< 0.298
PFOA	< 0.0745
PFBS	< 0.0745
PFHxS	< 0.0745
PFOS	< 0.0745

RC17	8/12/2019	
	0 - 6"	Duplicate
PFBA	< 0.302	< 0.309
PFOA	< 0.0755	< 0.0772
PFBS	< 0.0755	< 0.0772
PFHxS	< 0.0755	< 0.0772
PFOS	1.29	0.864

RC18	8/13/2019
	0 - 6"
PFBA	< 0.296
PFOA	0.319
PFBS	< 0.074
PFHxS	0.086 J
PFOS	14

RC19	8/13/2019
	0 - 6"
PFBA	1.56
PFOA	0.621
PFBS	< 0.0743
PFHxS	< 0.0743
PFOS	1.42

Notes:

Sediment PFAS concentrations are reported in micrograms per kilogram (µg/kg) or parts per billion (ppb)

<0.0002 = Concentration is less than the laboratory reportable limit

Bold = Result is above the laboratory minimum reporting limit

J = Estimated concentration

MPCA = Minnesota Pollution Control Agency

SDCV = Site-specific sediment cleanup values

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs

Exceedance of MPCA SDCVs:

	5 days/week	2 days/week
PFBA =	87,000 ppb	310,000 ppb
PFOA =	540 ppb	1,900 ppb
PFBS =	13,000 ppb	46,000 ppb
PFHxS =	290 ppb	1,000 ppb
PFOS =	93 ppb	330 ppb

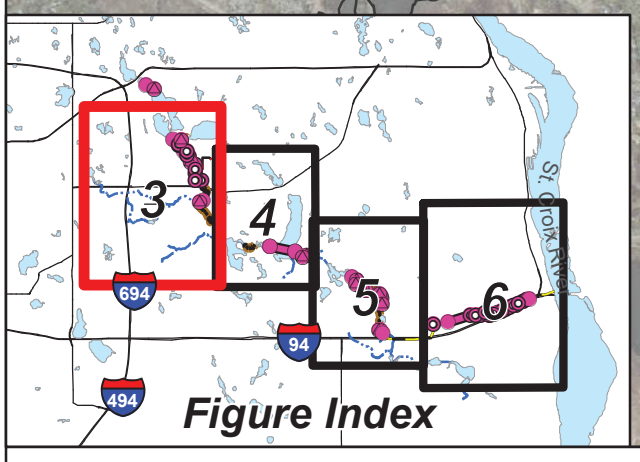


Figure 3b
Sediment PFAS Analytical Summary
Baseline Sampling Event, August 12-15, 2019
Project 1007
Minnesota Pollution Control Agency

Project 1007 Structures
- Catch Basin
- Manhole
- Other Structure
- Channel
- Culvert
- Pipe

- Washington County Landfill connection
- MnDOT Pipeline
- Streams and Creeks
- Surface Water Body
- Baseline Sampling Location

AECOM

N W E S

0 1,000 2,000 3,000 4,000 Feet

Service Layer Credits: ; Other Sources: MDH, Barr Engineering
AECOM Path: G:\Minneapolis\DCS\GIS\ArcMap_GeoDB_Projects\Project 1007\Baseline Memo Figures\Figure B - Sediment Figures_1_3.mxd Revised: 11/18/2019 By MGD

Foam PFAS Analytical Summary

RC12 foam	8/14/2019 Surface
PFBA	< 32
PFOA	**16.2 J**
PFBS	< 8
PFHxS	< 8
PFOS	**10,500**

RC7 foam	8/12/2019 Surface	8/14/2019 Surface
PFBA	< 0.311	< 32
PFOA	**0.658**	**175**
PFBS	< 0.0777	< 8
PFHxS	< 0.0777	< 8
PFOS	**40.1**	**13,800**

RC17 foam	8/14/2019 Surface
PFBA	< 8
PFOA	**3.75 J**
PFBS	< 2
PFHxS	< 2
PFOS	**2,750**

RC17A foam	8/14/2019 Surface
PFBA	< 0.316
PFOA	**0.504**
PFBS	< 0.0791
PFHxS	< 0.0791
PFOS	**595 D**

Notes:

Foam PFAS concentrations are reported in micrograms per liter (µg/L) or parts per billion (ppb), and are compared against HBVs for drinking water

<0.0002 = Concentration is less than the laboratory reportable limit

Bold = Result is above the laboratory minimum reporting limit

J = Estimated concentration

D = Dilution data

MDH = Minnesota Department of Health

HBV = Health-Based Value

Exceedance of MDH HBVs:

PFBA = 7.0 ppb

PFOA = 0.035 ppb

PFBS = 2.0 ppb

PFHxS = 0.047 ppb

PFOS = 0.015 ppb

Short-chain PFCAs

Long-chain PFCAs

Short-chain PFSAs

Long-chain PFSAs

Figure 3c
Foam PFAS Analytical Summary
Baseline Sampling Event, August 12-15, 2019
Project 1007
Minnesota Pollution Control Agency

Project 1007 Structures

- Catch Basin
- Manhole
- Other Structure
- Channel
- Culvert
- Pipe

- Washington County Landfill connection
- MnDOT Pipeline
- Streams and Creeks
- Surface Water Body
- Baseline Sampling Location

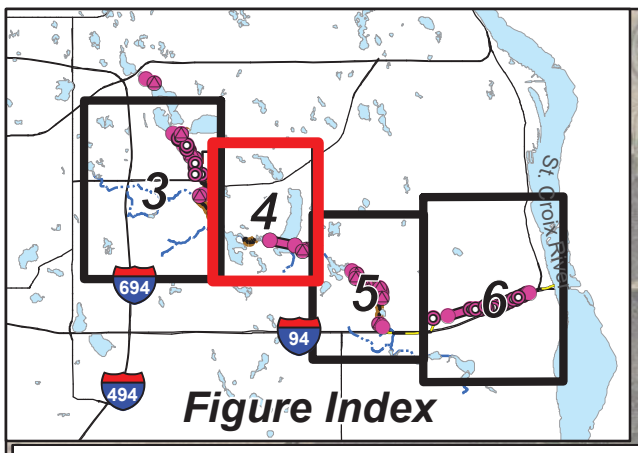
AECOM

0 1,000 2,000 3,000 4,000 Feet

Service Layer Credits: ; Other Sources: MDH, Barr Engineering

AECOM Path: G:\Minneapolis\DCS\GIS\ArcMap_GeoDB_Projects\Project 1007\Baseline Memo Figures\Figure C - Foam Figures_1.mxd Revised: 11/18/2019 By MGD

Surface Water PFAS Analytical Summary



Notes:

Surface water PFAS concentrations are reported in micrograms per liter (µg/L) or parts per billion (ppb)

<0.0002 = Concentration is less than the laboratory reportable limit

Bold = Result is above the laboratory minimum reporting limit

J = Estimated concentration

D = Dilution data

MDH = Minnesota Department of Health

HBV = Health-Based Value

Exceedance of MDH HBVs:
PFBA = 7.0 ppb
PFOA = 0.035 ppb
PFBS = 2.0 ppb
PFHxS = 0.047 ppb
PFOS = 0.015 ppb

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs

EP15	8/13/2019	
	Surface	18-21"
PFBA	0.988 J	0.743 J
PFOA	0.075	0.0681
PFBS	0.00357	0.00305
PFHxS	0.00599	0.00775
PFOS	0.0676	0.0696

EP1	8/13/2019		
	Surface	Duplicate	18-21"
PFBA	0.0953	0.0934	0.0964
PFOA	0.0372	0.0349	0.0287
PFBS	0.00307	0.00346	0.00299
PFHxS	0.00543	0.00533	0.00524
PFOS	0.16	0.163	0.157

EP3	8/13/2019	
	Surface	18-21"
PFBA	0.109	0.107
PFOA	0.0553	0.0536
PFBS	0.00425	0.00391
PFHxS	0.00729	0.00797
PFOS	0.229	0.217

EP5	8/13/2019
	Surface
PFBA	0.109
PFOA	0.061
PFBS	0.00427
PFHxS	0.00836
PFOS	0.237

EP8	8/13/2019
	Surface
PFBA	0.111
PFOA	0.0717
PFBS	0.00426
PFHxS	0.00834
PFOS	0.276

EP14	8/13/2019	
	Surface	18-21"
PFBA	0.589 J	0.358
PFOA	0.065	0.0642
PFBS	0.00258	0.0017
PFHxS	0.00665	0.00609
PFOS	0.0851	0.0884

EP10	8/13/2019
	Surface
PFBA	0.153
PFOA	0.0667
PFBS	0.00395
PFHxS	0.00843
PFOS	0.288

EP11	8/13/2019
	Surface
PFBA	0.745
PFOA	0.0692
PFBS	0.00313
PFHxS	0.00801
PFOS	0.0757

EP4	8/13/2019
	Surface
PFBA	0.107
PFOA	0.0549
PFBS	0.004
PFHxS	0.0079
PFOS	0.274

EP7	8/13/2019
	Surface
PFBA	0.0985
PFOA	0.0545
PFBS	0.00407
PFHxS	0.00742
PFOS	0.219

EP12	8/13/2019	
	Surface	Duplicate
PFBA	0.607 J	0.595 J
PFOA	0.072	0.0739
PFBS	0.00344	0.00346
PFHxS	0.00768	0.00783
PFOS	0.118	0.147

EP13	8/15/2019
	Surface
PFBA	0.214
PFOA	0.0516
PFBS	< 0.00559
PFHxS	0.00611 J
PFOS	0.156

EP9	8/13/2019	
	Surface	18-21"
PFBA	0.514	0.391 J
PFOA	0.0658	0.0663
PFBS	0.00293	0.00125 J
PFHxS	0.0064	0.00645
PFOS	0.0732	0.0673

EP2	8/13/2019	
	Surface	18-21"
PFBA	0.0949	0.121
PFOA	0.0674	0.078
PFBS	< 0.00564	0.00489
PFHxS	0.00779 J	0.00932
PFOS	0.254	0.279

Figure 4a
Surface Water PFAS Analytical Summary
Baseline Sampling Event, August 12-15, 2019
Project 1007
Minnesota Pollution Control Agency

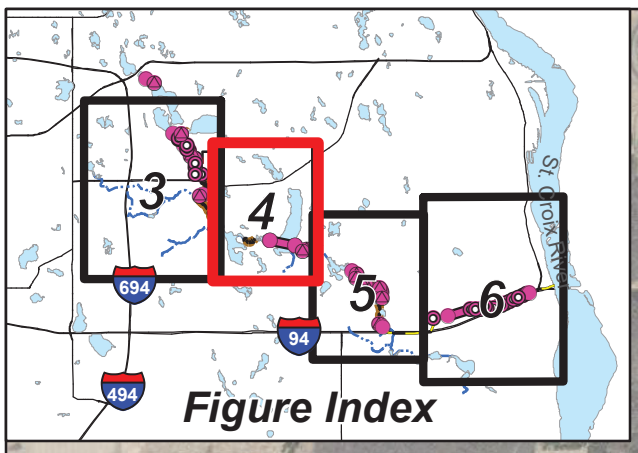
Project 1007 Structures
- Catch Basin
- Manhole
- Other Structure
- Channel
- Culvert
- Pipe
- Washington County Landfill connection
- MnDOT Pipeline
- Streams and Creeks
- Surface Water Body
- Baseline Sampling Location

AECOM

0 770 1,540 2,310 3,080 Feet

Service Layer Credits: ; Other Sources: MDH, Barr Engineering
AECOM Path: G:\Minneapolis\DCS\GIS\ArcMap_GeoDB_Projects\Project 1007\Baseline Memo Figures\Figure A - SW Figures_2.mxd Revised: 10/28/2019 By MGD

Sediment PFAS Analytical Summary



EP15	8/12/2019
	0 - 6"
PFBA	5.21
PFOA	0.373
PFBS	< 0.0934
PFHxS	< 0.0934
PFOS	0.847

EP1	8/27/2019
	0 - 6"
PFBA	< 0.272
PFOA	0.491
PFBS	< 0.0681
PFHxS	0.077 J
PFOS	12.5

EP3	8/27/2019
	0 - 6"
PFBA	0.709 J
PFOA	6.97
PFBS	0.208 J
PFHxS	1.29
PFOS	75.3

EP4	8/13/2019
	0 - 6"
PFBA	< 0.286
PFOA	0.229
PFBS	< 0.0716
PFHxS	< 0.0716
PFOS	7.18

EP5	8/13/2019
	0 - 6"
PFBA	< 0.305
PFOA	< 0.0762
PFBS	< 0.0762
PFHxS	< 0.0762
PFOS	3.5

EP7	8/13/2019
	0 - 6"
PFBA	< 0.291
PFOA	0.195
PFBS	< 0.0727
PFHxS	< 0.0727
PFOS	10.1

EP9	8/27/2019	
	0 - 6"	Duplicate
PFBA	1.24 J	1.1 J
PFOA	1.24	1.11
PFBS	< 0.171	< 0.165
PFHxS	< 0.171	< 0.165
PFOS	5.46	2.14

EP12	8/13/2019	
	0 - 6"	Duplicate
PFBA	< 0.319	< 0.304
PFOA	< 0.0798	< 0.076
PFBS	< 0.0798	< 0.076
PFHxS	< 0.0798	< 0.076
PFOS	0.797	0.72

EP14	8/12/2019
	0 - 6"
PFBA	< 0.312
PFOA	< 0.0779
PFBS	< 0.0779
PFHxS	< 0.0779
PFOS	1.1

EP13	8/12/2019
	0 - 6"
PFBA	0.958 J
PFOA	0.237
PFBS	< 0.118
PFHxS	< 0.118
PFOS	0.287

EP2	8/27/2019
	0 - 6"
PFBA	< 0.32
PFOA	0.541
PFBS	< 0.0801
PFHxS	< 0.0801
PFOS	6.2

Notes:

Sediment PFAS concentrations are reported in micrograms per kilogram (µg/kg) or parts per billion (ppb)

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Bold = Result is above the laboratory minimum reporting limit

J = Estimated concentration

MPCA = Minnesota Pollution Control Agency

SDCV = Site-specific sediment cleanup values

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs

Exceedance of MPCA SDCVs:	5 days/week	2 days/week
PFBA =	87,000 ppb	310,000 ppb
PFOA =	540 ppb	1,900 ppb
PFBS =	13,000 ppb	46,000 ppb
PFHxS =	290 ppb	1,000 ppb
PFOS =	93 ppb	330 ppb

Figure 4b
Sediment PFAS Analytical Summary
Baseline Sampling Event, August 12-15, 2019
Project 1007
Minnesota Pollution Control Agency

Project 1007 Structures
- Catch Basin
- Manhole
- Other Structure
- Channel
- Culvert
- Pipe
- Washington County Landfill connection
- MnDOT Pipeline
- Streams and Creeks
- Surface Water Body
- Baseline Sampling Location

AECOM

N W E S

0 770 1,540 2,310 3,080 Feet

Service Layer Credits: ; Other Sources: MDH, Barr Engineering
AECOM Path: G:\Minneapolis\DCS\GIS\ArcMap_GeoDB_Projects\Project 1007\Baseline Memo Figures\Figure B - Sediment Figures_2.mxd Revised: 10/25/2019 By MGD

Surface Water PFAS Analytical Summary

WL1	8/15/2019
	Surface
PFBA	0.439 J
PFOA	0.0583
PFBS	0.00363
PFHxS	0.00682
PFOS	0.157

WL2	8/15/2019	
	Surface	18-21"
PFBA	0.331 J	0.29
PFOA	0.0581	0.0517
PFBS	0.00373	< 0.00555
PFHxS	0.00731	0.00657 J
PFOS	0.167	0.148

WL3	8/15/2019	
	Surface	18-21"
PFBA	0.267	0.227
PFOA	0.0586	0.0543
PFBS	< 0.00553	< 0.00564
PFHxS	0.00703 J	0.00826 J
PFOS	0.148	0.163

WL5	8/14/2019
	Surface
PFBA	0.257
PFOA	0.0579
PFBS	< 0.00578
PFHxS	0.00652 J
PFOS	0.146

WL6	8/14/2019
	Surface
PFBA	0.218
PFOA	0.0565
PFBS	< 0.00568
PFHxS	0.0079 J
PFOS	0.149

WL7	8/14/2019
	Surface
PFBA	0.403 J
PFOA	0.0656
PFBS	0.0033
PFHxS	0.00988
PFOS	0.169

WL8	8/14/2019
	Surface
PFBA	0.275
PFOA	0.058
PFBS	< 0.00579
PFHxS	0.00917 J
PFOS	0.151

WL9	8/14/2019	
	Surface	Duplicate
PFBA	0.433	0.385
PFOA	0.069	0.0677
PFBS	0.0038	0.00366
PFHxS	0.0101	0.00923
PFOS	0.177	0.179

WL10	8/13/2019	8/14/2019
	Surface	Surface
PFBA	0.136	0.38
PFOA	0.0539	0.0699
PFBS	< 0.00577	0.00407
PFHxS	0.00712 J	0.00995
PFOS	0.156	0.177

WL11	8/13/2019
	Surface
PFBA	0.36
PFOA	0.0673
PFBS	0.00438
PFHxS	0.00941
PFOS	0.18

WL12	8/14/2019
	Surface
PFBA	0.249
PFOA	0.0565
PFBS	< 0.00579
PFHxS	0.00655 J
PFOS	0.185

WL13	8/14/2019
	Surface
PFBA	0.342 J
PFOA	0.0577
PFBS	0.00335
PFHxS	0.00851
PFOS	0.159

WL14	8/14/2019
	Surface
PFBA	0.323 J
PFOA	0.0659
PFBS	0.00351
PFHxS	0.00986
PFOS	0.183

WL15	8/14/2019
	Surface
PFBA	0.285
PFOA	0.0556
PFBS	< 0.00554
PFHxS	0.00844 J
PFOS	0.151

WL16	8/14/2019
	Surface
PFBA	0.389 J
PFOA	0.0739
PFBS	0.0038
PFHxS	0.0103
PFOS	0.169

WL17	8/13/2019
	Surface
PFBA	0.42 J
PFOA	0.0758
PFBS	0.00436
PFHxS	0.0103
PFOS	0.185

West Lakeland Storage Sites

Notes:

Surface water PFAS concentrations are reported in micrograms per liter (µg/L) or parts per billion (ppb)

<0.0002 = Concentration is less than the laboratory reportable limit

Bold = Result is above the laboratory minimum reporting limit

J = Estimated concentration

D = Dilution data

MDH = Minnesota Department of Health

HBV = Health-Based Value

Exceedance of MDH HBVs:

PFBA = 7.0 ppb

PFOA = 0.035 ppb

PFBS = 2.0 ppb

PFHxS = 0.047 ppb

PFOS = 0.015 ppb

Short-chain PFCAs

Long-chain PFCAs

Short-chain PFSAs

Long-chain PFSAs

Figure Index

Figure 5a
Surface Water PFAS Analytical Summary
Baseline Sampling Event, August 12-15, 2019
Project 1007
Minnesota Pollution Control Agency

Project 1007 Structures

- Catch Basin
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- MnDOT Pipeline
- Streams and Creeks
- Surface Water Body
- Baseline Sampling Location

AECOM

0 820 1,640 2,460 3,280 Feet

Service Layer Credits: ; Other Sources: MDH, Barr Engineering
AECOM Path: G:\Minneapolis\DCS\GIS\ArcMap_GeoDB_Projects\Project 1007\Baseline Memo Figures\Figure B - SW Figures_1_3.mxd Revised: 10/25/2019 By MGD

Sediment PFAS Analytical Summary

WL2	8/15/2019
	0 - 6"
PFBA	< 0.286
PFOA	< 0.0714
PFBS	< 0.0714
PFHxS	< 0.0714
PFOS	**0.83**

WL5	8/14/2019
	0 - 6"
PFBA	< 0.304
PFOA	< 0.0759
PFBS	< 0.0759
PFHxS	< 0.0759
PFOS	**1.05**

WL6	8/14/2019
	0 - 6"
PFBA	**0.361 J**
PFOA	**0.221**
PFBS	< 0.0762
PFHxS	< 0.0762
PFOS	**4.81**

WL7	8/14/2019
	0 - 6"
PFBA	< 0.276
PFOA	< 0.0689
PFBS	< 0.0689
PFHxS	< 0.0689
PFOS	**1.1**

WL9	8/14/2019	
	0 - 6"	**Duplicate**
PFBA	< 0.296	< 0.296
PFOA	< 0.074	< 0.0741
PFBS	< 0.074	< 0.0741
PFHxS	< 0.074	< 0.0741
PFOS	**0.917**	**0.66**

WL10	8/13/2019
	0 - 6"
PFBA	< 0.266
PFOA	**0.125 J**
PFBS	< 0.0665
PFHxS	< 0.0665
PFOS	**3.18**

WL11	8/13/2019
	0 - 6"
PFBA	< 0.31
PFOA	**0.092 J**
PFBS	< 0.0775
PFHxS	< 0.0775
PFOS	**1.14**

WL3	8/27/2019
	0 - 6"
PFBA	< 0.298
PFOA	< 0.0746
PFBS	< 0.0746
PFHxS	< 0.0746
PFOS	**2.86**

WL12	8/14/2019
	0 - 6"
PFBA	< 0.295
PFOA	< 0.0739
PFBS	< 0.0739
PFHxS	< 0.0739
PFOS	**0.939**

WL13	8/14/2019
	0 - 6"
PFBA	< 0.312
PFOA	**0.106 J**
PFBS	< 0.0781
PFHxS	< 0.0781
PFOS	**2.04**

WL14	8/14/2019
	0 - 6"
PFBA	< 0.3
PFOA	**0.203**
PFBS	< 0.075
PFHxS	< 0.075
PFOS	**3.82**

WL15	8/14/2019
	0 - 6"
PFBA	< 0.317
PFOA	**0.137 J**
PFBS	< 0.0793
PFHxS	< 0.0793
PFOS	**3.17**

WL17	8/13/2019
	0 - 6"
PFBA	< 0.295
PFOA	**0.081 J**
PFBS	< 0.0738
PFHxS	< 0.0738
PFOS	**1.7**

West Lakeland Storage Sites

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Figure Index

Figure 5b
Sediment PFAS Analytical Summary
Baseline Sampling Event, August 12-15, 2019
Project 1007
Minnesota Pollution Control Agency

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- Baseline Sampling Location

AECOM

0 820 1,640 2,460 3,280 Feet

Service Layer Credits: ; Other Sources: MDH, Barr Engineering
AECOM Path: G:\Minneapolis\DCS\GIS\ArcMap_GeoDB_Projects\Project 1007\Baseline Memo Figures\Figure B - Sediment Figures_1_3.mxd Revised: 10/25/2019 By MGD

Surface Water PFAS Analytical Summary

SC2	8/12/2019
	18-21"
PFBA	< 0.0257
PFOA	< 0.00642
PFBS	< 0.00642
PFHxS	< 0.00642
PFOS	< 0.00642

SC3	8/12/2019
	18-21"
PFBA	**0.0126**
PFOA	< 0.000698
PFBS	< 0.000698
PFHxS	< 0.000698
PFOS	< 0.000698

SC1	8/12/2019
	18-21"
PFBA	**0.102**
PFOA	**0.0177**
PFBS	**0.00125 J**
PFHxS	**0.00239 J**
PFOS	**0.0377**

SC4	8/12/2019
	18-21"
PFBA	**0.0182**
PFOA	**0.00078 J**
PFBS	< 0.000705
PFHxS	< 0.000705
PFOS	< 0.000705

WL19	8/15/2019
	Surface
PFBA	**0.303**
PFOA	**0.0566**
PFBS	**0.00398**
PFHxS	**0.00938**
PFOS	**0.142**

WL20	8/15/2019
	Surface
PFBA	**0.203**
PFOA	**0.0495**
PFBS	< 0.00566
PFHxS	**0.0074 J**
PFOS	**0.166**

WL18	8/15/2019
	Surface
PFBA	**0.43 J**
PFOA	**0.0697**
PFBS	**0.0039**
PFHxS	**0.0098**
PFOS	**0.17**

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Short-chain PFCAs

Long-chain PFCAs

Short-chain PFSAs

Long-chain PFSAs

Figure 6
Surface Water PFAS Analytical Summary
Baseline Sampling Event, August 12-15, 2019
Project 1007
Minnesota Pollution Control Agency

Project 1007 Structures

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AECOM

0 1,000 2,000 3,000 4,000 Feet

Service Layer Credits: ; Other Sources: MDH, Barr Engineering

AECOM Path: G:\Minneapolis\DCS\GIS\ArcMap_GeoDB_Projects\Project 1007\Baseline Memo Figures\Figure A - SW Figures_4.mxd Revised: 10/25/2019 By MGD