

PFAS Color-Coding Legend and CAS Numbers
Minnesota Pollution Control Agency

Abbreviation		Acid Form	Acid Form CAS No.	Anion Form	Anion Form CAS No.
Short-chain PFCA's	PFBA	Perfluorobutyric acid	375-22-4	Perfluorobutanoate	45048-62-2
	PFPEA	Perfluoropentanoic acid	2706-90-3	Perfluoropentanoate	45167-47-3
	PFHXA	Perfluorohexanoic acid	307-24-4	Perfluorohexanoate	92612-52-7
	PFHPA	Perfluoroheptanoic acid	375-85-9	Perfluoroheptanoate	120885-29-2
Long-chain PFCA's	PFOA	Perfluorooctanoic acid	335-67-1	Perfluorooctanoate	45285-51-6
	PFNA	Perfluorononanoic acid	375-95-1	Perfluorononanoate	72007-68-2
	PFDA	Perfluorodecanoic acid	335-76-2	Perfluorodecanoate	73829-36-4
	PFUNA	Perfluoroundecanoic acid	2058-94-8	Perfluoroundecanoate	196859-54-8
	PFDOA	Perfluorododecanoic acid	307-55-1	Perfluorododecanoate	171978-95-3
	PFTDA	Perfluorotridecanoic acid	72629-94-8	Perfluorotridecanoate	862374-87-6
	PFTEDA	Perfluorotetradecanoic acid	376-06-7	Perfluorotetradecanoate	365971-87-5
Short-chain PFSA's	PFBS	Perfluorobutanesulfonic acid	375-73-5	Perfluorobutanesulfonate	45187-15-3
	PFPEs	Perfluoropentanesulfonic acid	2706-91-4	Perfluoropentanesulfonate	175905-36-9
Long-chain PFSA's	PFHXS	Perfluorohexanesulfonic acid	355-46-4	Perfluorohexanesulfonate	108427-53-8
	PFHPS	Perfluoroheptanesulfonic acid	375-92-8	Perfluoroheptanesulfonate	146689-46-5
	PFOS	Perfluorooctanesulfonic acid	1763-23-1	Perfluorooctanesulfonate	45298-90-6
	PFNS	Perfluorononanesulfonic acid	68259-12-1	Perfluorononanesulfonate	474511-07-4
	PFDS	Perfluorodecanesulfonic acid	335-77-3	Perfluorodecanesulfonate	126105-34-8
	PFDOS	Perfluorododecanesulfonic acid	79780-39-5	Perfluorododecanesulfonate	343629-43-6
Fluorotelomers	4:2 FTS	4:2 fluorotelomersulfonic acid	757124-72-4	4:2 fluorotelomersulfonate	414911-30-1
	6:2 FTS	6:2 fluorotelomersulfonic acid	27619-97-2	6:2 fluorotelomersulfonate	425670-75-3
	8:2 FTS	8:2 fluorotelomersulfonic acid	39108-34-4	8:2 fluorotelomersulfonate	481071-78-7
FOSA, FAISE, FASAMs	PFOSA	Perfluorooctanesulfonamide	754-91-6	NA	NA
	N-MEFOSA	N-Methylperfluorooctanesulfonamide	31506-32-8	NA	NA
	N-ETFOSA	N-Ethylperfluorooctanesulfonamide	4151-50-2	NA	NA
	MEFOSAA	N-Methylperfluorooctanesulfonamidoacetic acid	2355-31-9	N-Methylperfluorooctanesulfonamidoacetate	NA
	ETFOSAA	N-Ethylperfluorooctanesulfonamidoacetic acid	2991-50-6	N-Ethylperfluorooctanesulfonamidoacetate	NA
	N-MEFOSE	N-Methylperfluorooctanesulfonamidoethanol	24448-09-7	NA	NA
	N-ETFOSE	N-Ethylperfluorooctanesulfonamidoethanol	1691-99-2	NA	NA
Replacement Chemistries	HFPO-DA	2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	13252-13-6	2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoate	122499-17-6
	ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	919005-14-4	Dodecafluoro-3H-4,8-dioxanonanoate	2127366-90-7
	9CL-PF3ONS	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	756426-58-1	9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	1621485-21-9
	11CL-PF3OUDS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	2196242-82-5

Table 1
2019-2020 Sampling Events
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Sampling Event	Date(s) of Investigation
Baseline Sampling Event	August 12-16, 2019
Beta Site Investigation (BS 3,4,5,6)	November 11, 2019 - January 16, 2020
Winter Seasonal Sampling Event	February 24-26 2019
Sediment Sampling Event	April 22, 2020 - May 15, 2020
April 2020 Foam and Rain Sampling Event	April 7, April 28-30, 2020
Beta Site Investigation (BS 2,7,9,13)	May 26, 2020 - June 26, 2020
May 2020 Rain Sampling Event	May 18, 2020
June 2020 Rain Sampling Event	June 29, 2020
Spring 2020 Seasonal Surface Water Sampling Event	May 4, 2020 - May 14, 2020

Surface Sampling

Subsurface Investigation and Installation of Monitoring Wells

BS = Beta Site

Table 2
Surface Sampling Location EQUIS ID and GPS Coordinates
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Sampling Location ID	AECOM Sampling Events	EQUIS Unique ID (Surface Sampling Location)	Surface Sampling Location Coordinates (NAD 83 UTM 15)
Raleigh Creek and Tri-Lakes Area			
RC1	Baseline Sampling Event (August 2019)	82-0103-00-205	504744.57 4984367.64
RC2	Baseline Sampling Event (August 2019)	82-0104-00-204	505336.31 4984408.54
RC3	Baseline Sampling Event (August 2019)	S016-051	502815.721443 4982450.02525
	Winter Seasonal Sampling Event (Feb 2020)		
	Sediment Sampling Event (Apr-June 2020)		
RC3A	Sediment Sampling Event (Apr-June 2020)	S016-338	502904.664 4982457.005
RC4	Baseline Sampling Event (August 2019)	S016-052	503278.665937 4982484.95273
RC5	Baseline Sampling Event (August 2019)	S016-189	503672.297 4982412.167
	Winter Seasonal Sampling Event (Feb 2020)		
	Sediment Sampling Event (Apr-June 2020)		
RC6	Baseline Sampling Event (August 2019)	S016-190	503808.894 4982388.679
	Sediment Sampling Event (Apr-June 2020)		
RC7	Baseline Sampling Event (August 2019)	S016-053 S016-055 (foam) S016-054 (foam)	504154.041088 4982271.53157
RC7A	Winter Seasonal Sampling Event (Feb 2020)	S016-313 (Water & Foam)	503988.94 982288.57
RC8	Baseline Sampling Event (August 2019)	S016-056	504373.761721 4981843.1652
RC9	Baseline Sampling Event (August 2019)	S016-057	504558.363857 4982071.74863
RC10	Baseline Sampling Event (August 2019)	S016-058	504836.149902 4982081.98825
RC11	Baseline Sampling Event (August 2019)	S016-059	505251.952383 4982350.53342
RC12	Baseline Sampling Event (August 2019)	S016-060	505437.625766 4982221.19867
	Winter Seasonal Sampling Event (Feb 2020)	S016-061 (foam)	505434.75 4982252.86
	Sediment Sampling Event (Apr-June 2020)		
RC13	Baseline Sampling Event (August 2019)	S016-062	505643.739564 4982086.72812
RC14	Baseline Sampling Event (August 2019)	S016-063	505723.861328 4982090.33387
	Winter Seasonal Sampling Event (Feb 2020)		
RC15	Baseline Sampling Event (August 2019)	82-0399-00-202	505849.016132 4982226.94092
RC16	Baseline Sampling Event (August 2019)	S016-064	506003.204771 4982512.66226
RC16A	Sediment Sampling Event (Apr-June 2020)	S016-314	505892.708 4982606.086
RC17	Baseline Sampling Event (August 2019)	S016-065 S016-066 (foam) S016-067 (foam)	506004.287446 4981700.27201
	Winter Seasonal Sampling Event (Feb 2020)		
	Sediment Sampling Event (Apr-June 2020)		
RC17A	Baseline Sampling Event (August 2019)	S016-066	506063.037863 4981597.87444
	Winter Seasonal Sampling Event (Feb 2020)		
RC18	Baseline Sampling Event (August 2019)	82-0109-00-208	506148.296355 4981399.01366
	Winter Seasonal Sampling Event (Feb 2020)		
	Sediment Sampling Event (Apr-June 2020)		
RC19	Baseline Sampling Event (August 2019)	S016-068	505725.068758 4980898.02856
RC21	Winter Seasonal Sampling Event (Feb 2020)	S016-280 (Water & Foam)	505741.326 4981978.528
	Sediment Sampling Event (Apr-June 2020)		
RC22	Sediment Sampling Event (Apr-June 2020)	PS00175	504268.323 4982142.758
RC23	Sediment Sampling Event (Apr-June 2020)	PS00176	504269.196 4982097.363
FC1	Sediment Sampling Event (Apr-June 2020)	S016-315	505931.71 4981013.57

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Sampling Location ID	AECOM Sampling Events	EQUIS Unique ID (Surface Sampling Location)	Surface Sampling Location Coordinates (NAD 83 UTM 15)
Eagle Point Lake and Lake Elmo Area			
EP1	Baseline Sampling Event (August 2019)	82-0109-00-205	506572.25 4980886
EP2	Baseline Sampling Event (August 2019)	82-0109-00-206	506913.32 4979861.03
EP3	Baseline Sampling Event (August 2019)	82-0109-00-207	507051.97 4980691.45
EP4	Baseline Sampling Event (August 2019)	82-0109-00-209	507398.366118 4980562.644
EP5	Baseline Sampling Event (August 2019)	S016-069	507679.095633 4980525.87378
EP7	Baseline Sampling Event (August 2019)	82-0109-00-210	507911.488333 4980578.91399
EP8	Baseline Sampling Event (August 2019)	82-0109-00-211	508277.93611 4980523.93088
	Winter Seasonal Sampling Event (Feb 2020)		
EP9	Baseline Sampling Event (August 2019)	82-0106-00-207	508589.01 4980408.72
EP10	Baseline Sampling Event (August 2019)	PI00001	509216.224832 4980324.90156
EP11	Baseline Sampling Event (August 2019)	PI00002	509216.779294 4980325.6097
	Winter Seasonal Sampling Event (Feb 2020)		
EP12	Baseline Sampling Event (August 2019)	S016-070	509221.808094 4980301.51832
	Beta Site 6 Subsurface Investigation (November 2019)		
EP13	Baseline Sampling Event (August 2019)	PS00165	509705.825214 4980259.03425
EP14	Baseline Sampling Event (August 2019)	82-0106-00-208	509364.92 4981284.07
EP15	Baseline Sampling Event (August 2019)	82-0106-00-209	509072.72 4982306.21
EP16	Baseline Sampling Event (August 2019)	S016-234	509396.25 4980242.56
	Beta Site 6 Subsurface Investigation (November 2019)		
	Winter Seasonal Sampling Event (Feb 2020)		
	Sediment Sampling Event (Apr-June 2020)		
EP17	Sediment Sampling Event (Apr-June 2020)	82-0109-00-452	506498.7 4981235.85
EP18	Sediment Sampling Event (Apr-June 2020)	82-0109-00-455	507265.836 4979686.348
EP19	Winter Seasonal Sampling Event (Feb 2020)	82-0109-00-453	507091.05 4980718.26
	Sediment Sampling Event (Apr-June 2020)		
EP20	Winter Seasonal Sampling Event (Feb 2020)	82-0109-00-454	508325.12 4980523.01
	Sediment Sampling Event (Apr-June 2020)		
EP21A	Sediment Sampling Event (Apr-June 2020)	82-0106-00-303	508977.397 4981428.481
EP21B	Sediment Sampling Event (Apr-June 2020)	82-0106-00-303	509032.708 4981519.887
EP23	Sediment Sampling Event (Apr-June 2020)	82-0106-00-302	509229.48 4982373.42
EP24	Sediment Sampling Event (Apr-June 2020)	82-0107-00-204	507660.56 4983522.21
BP1	Sediment Sampling Event (Apr-June 2020)	82-0111-00-201	507949.39 4979783.7
GL1	Sediment Sampling Event (Apr-June 2020)	82-0113-00-201	507529.61 4978544.24

Table 2
Surface Sampling Location EQUIS ID and GPS Coordinates
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Sampling Location ID	AECOM Sampling Events	EQUIS Unique ID (Surface Sampling Location)	Surface Sampling Location Coordinates (NAD 83 UTM 15)
West Lakeland Storage Sites Area			
WL1	Baseline Sampling Event (August 2019)	PS00166	510088.03 4980118.59
WL2	Baseline Sampling Event (August 2019)	82-0074-00-203	510356.31 4979886.80
WL3	Baseline Sampling Event (August 2019)	82-0074-00-204	510849.35 4979224.19
WL5	Baseline Sampling Event (August 2019)	82-0074-00-205	511191.85 4979454.84
WL6	Baseline Sampling Event (August 2019)	S016-071	511275.898493 4979372.46015
	Winter Seasonal Sampling Event (Feb 2020)		
WL7	Baseline Sampling Event (August 2019)	S016-072	511749.126093 4978953.71348
	Winter Seasonal Sampling Event (Feb 2020)		
WL8	Baseline Sampling Event (August 2019)	PS00167	512107.171827 4978971.00269
WL9	Baseline Sampling Event (August 2019)	PS00168	512166.774266 4978852.28633
	Winter Seasonal Sampling Event (Feb 2020)		
WL10	Baseline Sampling Event (August 2019)	S016-073	512276.294939 4978594.80033
WL11	Baseline Sampling Event (August 2019)	S016-074	512277.651631 4978455.49756
WL12	Baseline Sampling Event (August 2019)	PS00169	512160.395304 4978202.96668
	Winter Seasonal Sampling Event (Feb 2020)		
WL13	Baseline Sampling Event (August 2019)	S016-075	512182.131014 4978125.04332
WL14	Baseline Sampling Event (August 2019)	PS00170	512184.375016 4978073.47438
WL15	Baseline Sampling Event (August 2019)	PS00171	512164.063838 4977817.3546
	Winter Seasonal Sampling Event (Feb 2020)		
WL16	Baseline Sampling Event (August 2019)	PS00172	512386.132373 4977872.77725
WL17	Baseline Sampling Event (August 2019)	S016-076	512175.442661 4977693.81109
WL18	Baseline Sampling Event (August 2019)	SS00087	514134.4961 4977761.3672
	Winter Seasonal Sampling Event (Feb 2020)		
WL19	Baseline Sampling Event (August 2019)	SS00088	514647.507075 4977823.06088
WL20	Baseline Sampling Event (August 2019)	SS00089	517561.873318 4978661.14657
Valley Branch Creek and Afton Area			
VB1	Sediment Sampling Event (Apr-June 2020)	S006-732	512407.81 4976788.89
VB2	Winter Seasonal Sampling Event (Feb 2020)	S016-282	515205.32 4975357.02
VB3	Sediment Sampling Event (Apr-June 2020)	S016-316	515591 4974690.65
St. Croix River Area			
SC1	Baseline Sampling Event (August 2019)	S016-077	518468.85 4978931.14
SC2	Baseline Sampling Event (August 2019)	S016-078	518459.28 4978931.32
SC3	Baseline Sampling Event (August 2019)	S016-079	518461.01 4978938.11
SC4	Baseline Sampling Event (August 2019)	S016-080	518461.71 4978923.92

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 3-1
Beta Site Investigation Summary BS 3,4,5,6
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Beta Site	Well Name	MWI Unique ID	Easting	Northing	Ground Elevation (US Feet)	Top of Casing Elevation (US Feet)	Video	Stratigraphy Source	Well Aquifer Unit	Screen or Open Hole
3	MW3A	847052	507372.86	4979696.86	910.508	912.368	MGS	Well Construction Log	Jordan	20-foot open hole
3	MW3B	847053	507372.01	4979693.32	910.379	912.008	MGS	Well Construction Log	Shakopee	20-foot open hole
4	MW4A	847054	508614.01	4980608.11	890.06	892.009	MGS	Well Construction Log	Oneota	20-foot open hole
5	MW5A	847056	508682.95	4980840.19	908.045	909.731	MGS	Well Construction Log	Jordan	10-foot open hole
5	MW5B	847057	508681.37	4980837.84	907.861	909.785	MGS	Well Construction Log	Shakopee	10-foot open hole
6	MW6A	847058	509410.8	4980133.29	890.464	892.45	Traut	Well Construction Log	Jordan	7-foot telescoping screen
6	MW6B	847059	509412.93	4980132.12	890.534	891.99	NA	Well Construction Log	Oneota	10-foot screen

NOTES

Coordinates are reported in NAD 83, UTM Zone 15N (meters)

Vertical elevations reported in NAV88 (feet)

MWI = Minnesota Well Index

ft bgs = feet below ground surface

in = inches

NA = not available

Quat = Quaternary

Table 3-1
Beta Site Investigation Summary BS 3,4,5,6
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
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Beta Site	Well Name	MWI Unique ID	Screen/Open Hole Top (ft bgs)	Screen/Open Hole Bottom (ft bgs)	Quat Top (ft bgs)	Quat Bottom (ft bgs)	First Bedrock Unit	First Bedrock Top (ft bgs)	First Bedrock Bottom (ft bgs)	Second Bedrock Unit	Second Bedrock Top (ft bgs)	Second Bedrock Bottom (ft bgs)	Third Bedrock Unit	Third Bedrock Top (ft bgs)	Third Bedrock Bottom (ft bgs)
3	MW3A	847052	230	250	0	74	Shakopee	74	170	Oneota	170	221	Jordan	221	250 (bottom of well, not unit)
3	MW3B	847053	110	130	0	79	Shakopee	79	130 (bottom of well, not unit)						
4	MW4A	847054	140	160	0	90	Shakopee	90	133	Oneota	133	160 (bottom of well, not unit)			
5	MW5A	847056	210	220	0	60	Shakopee	60	140	Oneota	140	203	Jordan	203	220 (bottom of well, not unit)
5	MW5B	847057	110	120	0	58	Shakopee	58	120 (bottom of well, not unit)						
6	MW6A	847058	185	192	0	109.5	Shakopee	109.5	130	Oneota	130	182	Jordan	182	210 (bottom of hole, not unit)
6	MW6B	847059	140	150	0	132.6	Oneota	132.6	150 (bottom of well, not unit)						

NOTES

Coordinates are reported in NAD 83, UTM Zone 15N
Vertical elevations reported in NAV88 (feet)
MWI = Minnesota Well Index
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in = inches
NA = not available
Quat = Quaternary

Table 3-2
Beta Site Investigation BS 3,4,5,6 Well Gauging Summary
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Beta Site	Well Name	MWI Unique ID	Easting	Northing	Ground Elevation (US Feet)	Top of Casing Elevation (US Feet)	Aquifer	Screen or Open Hole	Screen Top (ft bgs)	Screen Bottom (ft bgs)	Depth to Water (ft bgs)	
											2/25/2020	5/15/2020
3	MW3A	847052	507372.86	4979696.86	910.508	912.368	Jordan	20-foot open hole	230	250	23.88	23.7
3	MW3B	847053	507372.01	4979693.32	910.379	912.008	Shakopee	20-foot open hole	110	130	17.85	17.73
4	MW4A	847054	508614.01	4980608.11	890.06	892.009	Oneota	20-foot open hole	140	160	3.72	3.5
5	MW5A	847056	508682.95	4980840.19	908.045	909.731	Jordan	10-foot open hole	210	220	21.53	21.39
5	MW5B	847057	508681.37	4980837.84	907.861	909.785	Shakopee	10-foot open hole	110	120	21.23	21.04
6	MW6A	847058	509410.8	4980133.29	890.464	892.45	Jordan	7-foot telescoping screen	185	192	10.03	9.93
6	MW6B	847059	509412.93	4980132.12	890.534	891.99	Oneota	10-foot screen	140	150	10.55	10.59

NOTES

Coordinates are reported in NAD 83, UTM Zone 15N (meters)

MWI = Minnesota Well Index

ft bgs = feet below ground surface

Table 3-3
Beta Site Investigation BS 3,4,5,6 Vertical Aquifer Profile Sampling Rationale
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Sample ID	Depth Interval (ft bgs)	Sample Type	Rationale for Sampling
Beta Site 3			
MW3B-SOIL-15-16.5-01-011320	15-16.5	Discrete Soil	Targeted interval soil sample of sandy and silty clay; collected directly above water table in vadose zone
MW3B-SOIL-16.5-19-01-011320	16.5-19	Discrete Soil	Targeted interval soil sample of fine- to coarse-grained sand; corresponds to water table sample interval
MW3B-GW-16.5-19-01-011320	16.5-19	Discrete Groundwater	Targeted interval water table sample
MW3B-SOIL-31-35-01-011320	31-35	Composite Soil	Targeted interval soil sample of fine- to coarse-grained sand; corresponds to groundwater sample interval above a confining layer
MW3B-SOIL-31-35-02-011320	31-35	Composite Soil	Duplicate soil sample
MW3B-GW-31-35-01-011320	31-35	Discrete Groundwater	Targeted interval groundwater sample above a confining layer
MW3B-GW-31-35-02-011320	31-35	Discrete Groundwater	Duplicate groundwater sample
MW3B-SOIL-41-42-01-011320	41-42	Discrete Soil	Interval soil sample of coarse-grained sandy gravel; corresponds to groundwater sample from the same interval
MW3B-SOIL-44-45-01-011320	44-45	Discrete Soil	Interval soil sample of fine-grained sand; corresponds to groundwater sample from the same interval
MW3B-GW-41-45-01-011320	41-45	Discrete Groundwater	Interval groundwater sample
MW3B-SOIL-51-53-01-011320	51-53	Discrete Soil	Interval soil sample of coarse-grained sand; corresponds to groundwater sample from the same interval
MW3B-SOIL-53-55-01-011320	53-55	Discrete Soil	Interval soil sample of fine-grained interval; corresponds to groundwater sample the same interval
MW3B-GW-51-55-01-011320	51-55	Discrete Groundwater	Interval groundwater sample
MW3B-SOIL-74-75-01-011420	74-75	Discrete Soil	Targeted interval soil sample of fine-grained sand with silt
MW3B-SOIL-75-79-01-011420	75-79	Composite Soil	Targeted interval soil sample of fine- to medium-grained sand; corresponds to targeted groundwater sample above bedrock contact.
MW3B-GW-75-79-01-011420	75-79	Discrete Groundwater	Targeted interval groundwater sample above bedrock contact

Table 3-3
Beta Site Investigation BS 3,4,5,6 Vertical Aquifer Profile Sampling Rationale
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Sample ID	Depth Interval (ft bgs)	Sample Type	Rationale for Sampling
Beta Site 4			
MW4A-SOIL-8-8.5-01-121319	8-8.5	Discrete Soil	Targeted interval soil sample of clay lens between sand layers
MW4A-SOIL-20-21-01-121319	20-21	Discrete Soil	Targeted interval soil sample of medium to coarse-grained sand that overlies a silty sand layer at the top of the water table
MW4A-SOIL-21-23-01-121319	21-23	Discrete Soil	Targeted interval soil sample of silty sand below the water table
MW4A-SOIL-31-32-01-121319	31-32	Discrete Soil	Targeted interval soil sample of clayey sand with higher clay content than in shallower intervals
MW4A-SOIL-37-38-01-121319	37-38	Discrete Soil	Targeted interval soil sample of clay from the bottom of a clay layer
MW4A-SOIL-38-40-01-121319	38-40	Discrete Soil	Targeted interval soil sample of fine- to coarse-grained sand just below a clay layer
MW4A-SOIL-50-52-01-121319	50-52	Discrete Soil	Interval soil sample of fine-grained sand
MW4A-SOIL-60-62-01-121319	60-62	Discrete Soil	Interval soil sample of fine- to coarse-grained sand
MW4A-SOIL-68-70-01-121319	68-70	Discrete Soil	Interval soil sample of fine- to coarse-grained sand (more fine sand than above)
MW4A-SOIL-74-75-01-121319	74-75	Discrete Soil	Targeted interval soil sample of fine- to coarse-grained sand above weathered bedrock
MW4A-SOIL-74-75-02-121319	74-75	Discrete Soil	Duplicate soil sample
MW4A-SOIL-80-81-01-121319	80-81	Discrete Soil	Targeted interval soil sample of weathered bedrock (gravel with sand)
MW4A-SOIL-85-86-01-121319	85-86	Discrete Soil	Targeted interval soil sample of fine- to medium-grained sand between two weathered bedrock layers
MW4A-SOIL-88-89-01-121319	88-89	Discrete Soil	Targeted interval soil sample of weathered bedrock (sand with gravel) above bedrock contact

Table 3-3
Beta Site Investigation BS 3,4,5,6 Vertical Aquifer Profile Sampling Rationale
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Sample ID	Depth Interval (ft bgs)	Sample Type	Rationale for Sampling
Beta Site 5			
MW5B-SOIL-18-20-01-120919	18-20	Discrete Soil	Targeted interval soil sample of clay layer above the water table
MW5B-SOIL-28-30-01-120919	28-30	Discrete Soil	Targeted interval soil sample of sandy clay and silt; collected immediately above the water table in vadose zone
MW5B-SOIL-28-30-02-120919	28-30	Discrete Soil	Duplicate soil sample
MW5B-SOIL-31-32-01-120919	31-32	Discrete Soil	Targeted interval soil sample of sandy silt; corresponds to targeted water table sample
MW5B-SOIL-34-35-01-120919	34-35	Discrete Soil	Targeted interval soil sample of medium- to coarse-grained sand; corresponds to targeted water table sample
MW5B-GW-31-35-01-120919	31-35	Discrete Groundwater	Targeted interval water table sample
MW5B-SOIL-48-49-01-120919	48-49	Discrete Soil	Targeted interval soil sample of clay between sand layers
MW5B-SOIL-50-54-01-120919	50-54	Composite Soil	Targeted interval soil sample of sandy silt and fine- to coarse- grained sand; corresponds to targeted groundwater sample
MW5B-GW-51-55-01-120919	51-55	Discrete Groundwater	Targeted interval groundwater sample from an interval of fine sand and silt
MW5B-GW-51-55-02-120919	51-55	Discrete Groundwater	Duplicate groundwater sample
MW5B-SOIL-55-58-01-121019	55-58	Composite Soil	Targeted interval soil sample of medium- to coarse-grained sand above bedrock contact; corresponds to targeted groundwater sample
MW5B-GW-55-58-01-121019	55-58	Discrete Groundwater	Targeted interval groundwater sample above bedrock contact

Table 3-3
Beta Site Investigation BS 3,4,5,6 Vertical Aquifer Profile Sampling Rationale
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Sample ID	Depth Interval (ft bgs)	Sample Type	Rationale for Sampling
Beta Site 6			
MW6B-SOIL-6-7-01-111919	6-7	Discrete Soil	Targeted interval soil sample of fine- to coarse-grained sand above inferred water table range and vadose zone
MW6B-SOIL-8.5-10-01-111919	8.5-10	Discrete Soil	Targeted interval soil sample fine- to coarse-grained sand; collected immediately above the water table in vadose zone
MW6B-SOIL-10-13-01-111919	10-13	Composite Soil	Targeted interval soil sample of sand and gravel; corresponds to targeted water table sample
MW6B-GW-11-13-01-111919	11-13	Discrete Groundwater	Targeted interval water table sample
MW6B-SOIL-36-40-01-111919	36-40	Composite Soil	Targeted interval soil sample of sand and gravel; corresponds to targeted groundwater sample
MW6B-SOIL-37-38-01-111919	37-38	Discrete Soil	Targeted interval soil sample of a gravel lens within the 36-40' soil interval
MW6B-SOIL-38-39-01-111919	38-39	Discrete Soil	Targeted interval soil sample of a fine- to medium-grained sand lens within the 36-40' soil interval
MW6B-GW-36-40-01-111919	36-40	Discrete Groundwater	Targeted interval groundwater sample from sand and gravel soil interval
MW6B-GW-36-40-02-111919	36-40	Discrete Groundwater	Duplicate groundwater sample
MW6B-SOIL-46-47-01-111919	46-47	Discrete Soil	Targeted interval soil sample of silty sand
MW6B-SOIL-46-47-02-111919	46-47	Discrete Soil	Duplicate soil sample
MW6B-SOIL-81-85-01-111919	81-85	Composite Soil	Interval soil sample of medium- to coarse-grained sand; corresponds to interval groundwater sample
MW6B-GW-81-85-01-111919	81-85	Discrete Groundwater	Interval groundwater sample
MW6B-SOIL-106-110-01-111919	106-110	Composite Soil	Targeted interval soil sample of sand and gravel; corresponds to targeted groundwater sample
MW6B-GW-106-110-01-112019	106-110	Discrete Groundwater	Targeted interval groundwater sample from sand and gravel soil interval
MW6B-SOIL-129-133-01-112019	129-133	Composite Soil	Targeted interval soil sample of gravel, trace sand, and silt above bedrock contact; corresponds to targeted groundwater sample
MW6B-GW-129-133-01-112019	129-133	Discrete Groundwater	Targeted interval groundwater sample above bedrock contact

Table 3-4
Beta Site Investigation BS 3,4,5,6, MW3B Groundwater PFAS VAP Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Well ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1
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
MW3B	MW3B-GW-16.5-19-01-011320	1/13/2020	0.0763	0.00345	0.00146	< 0.00073	0.00195	< 0.00073	< 0.00073	< 0.00073	< 0.00073	< 0.00073	< 0.00073	0.00248	< 0.00073	< 0.00073	< 0.00073	< 0.00073
	MW3B-GW-31-35-01-011320	1/13/2020	0.436	0.0233	0.0339	0.0183	0.216	0.00126	0.00102	< 0.00073	< 0.00073	< 0.00073	< 0.00073	0.0117	0.00948	0.0196	0.00432	0.279
	MW3B-GW-31-35-02-011320 (DUP)	1/13/2020	0.418	0.0218	0.0351	0.0178	0.219	0.00102	0.000979	< 0.000734	< 0.000734	< 0.000734	< 0.000734	0.0113	0.00929	0.019	0.00429	0.288
	MW3B-GW-41-45-01-011320	1/13/2020	0.164	0.0112	0.0185	0.0136	0.152	0.00156	0.00246	< 0.000745	< 0.000745	< 0.000745	< 0.000745	0.00569	0.00548	0.0141	0.00397	0.483
	MW3B-GW-51-55-01-011320	1/13/2020	0.113	0.00901	0.0151	0.0133	0.136	0.00187	0.00296	< 0.00074	< 0.00074	< 0.00074	< 0.00074	0.00494	0.00493	0.0138	0.00475	0.561
	MW3B-GW-75-79-01-011420	1/14/2020	0.798	0.0419	0.0779	0.0399	0.368	0.00211	0.00228	< 0.000727	< 0.000727	< 0.000727	< 0.000727	0.0239	0.0218	0.0392	0.00812	0.589

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
VAP - Vertical Aquifer Profiling

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluorotelomers
FOSA, FASE, FASAAAs
Replacement Chemistries

Table 3-4
Beta Site Investigation BS 3,4,5,6, MW3B Groundwater PFAS VAP Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Well ID	Sample ID	Sample Date	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
CAS Number			68259-12-1	335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
MDH HBV (µg/L)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW3B	MW3B-GW-16.5-19-01-011320	1/13/2020	< 0.00073	< 0.00073	< 0.00073	< 2.92	< 2.63	< 2.92	< 0.00073	< 0.00084	< 0.00183	< 0.00073	< 0.00073	< 0.0073	< 0.00548	< 0.00292	< 0.00292	< 0.00292	< 0.00292
	MW3B-GW-31-35-01-011320	1/13/2020	< 0.00073	< 0.00073	< 0.00073	< 0.00294	< 0.00264	< 0.00294	< 0.00073	< 0.000844	< 0.00183	< 0.00073	< 0.00073	< 0.0073	< 0.0055	< 0.00294	< 0.00294	< 0.00294	< 0.00294
	MW3B-GW-31-35-02-011320 (DUP)	1/13/2020	< 0.000734	< 0.000734	< 0.000734	< 0.00294	< 0.00264	< 0.00294	< 0.000734	< 0.000845	< 0.00184	< 0.000734	< 0.000734	< 0.00734	< 0.00551	< 0.00294	< 0.00294	< 0.00294	< 0.00294
	MW3B-GW-41-45-01-011320	1/13/2020	< 0.000745	< 0.000745	< 0.000745	< 0.00298	< 0.00268	< 0.00298	0.00172	< 0.000857	< 0.00186	< 0.000745	< 0.000745	< 0.00745	< 0.00559	< 0.00298	< 0.00298	< 0.00298	< 0.00298
	MW3B-GW-51-55-01-011320	1/13/2020	< 0.00074	< 0.00074	< 0.00074	< 0.00296	< 0.00266	< 0.00296	0.0026	< 0.000851	< 0.00185	< 0.00074	0.000881	< 0.0074	< 0.00555	< 0.00296	< 0.00296	< 0.00296	< 0.00296
	MW3B-GW-75-79-01-011420	1/14/2020	< 0.000727	< 0.000727	< 0.000727	< 0.00291	< 0.00262	< 0.00291	0.00194	< 0.000837	< 0.00182	< 0.000727	0.000794	< 0.00727	< 0.00546	< 0.00291	< 0.00291	< 0.00291	< 0.00291

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

VAP - Vertical Aquifer Profiling

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAAs
Long-chain PFSAAs
Fluorotelomers
FOSA, FASE, FASAAAs
Replacement Chemistries

Table 3-5
Beta Site Investigation BS 3,4,5,6, MW5B Groundwater PFAS VAP Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Well ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1
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
MW5B	MW5B-GW-31-35-01-120919	12/9/2019	0.0165	< 0.00398	< 0.00199	< 0.00199	0.00375 J	< 0.00199	< 0.00199	< 0.00199	< 0.00199	< 0.00199	< 0.00199	< 0.00199	< 0.00199	< 0.00199	< 0.00199	< 0.00199
	MW5B-GW-51-55-01-120919	12/9/2019	0.255	< 0.00147	< 0.000735	< 0.000735	0.00618	< 0.000735	< 0.000735	< 0.000735	< 0.000735	< 0.000735	< 0.000735	0.00262	0.000824 J	0.0043	< 0.000735	0.00359
	MW5B-GW-51-55-02-120919 (DUP)	12/9/2019	0.258	< 0.00146	< 0.000732	< 0.000732	0.00597	< 0.000732	< 0.000732	< 0.000732	< 0.000732	< 0.000732	< 0.000732	0.00281	0.00106 J	0.00437	< 0.000732	0.00409
	MW5B-GW-55-58-01-121019	12/10/2019	0.251	< 0.00146	< 0.000732	< 0.000732	0.00521	< 0.000732	< 0.000732	< 0.000732	< 0.000732	< 0.000732	< 0.000732	0.00307	0.000922 J	0.004	< 0.000732	0.00501

Notes:
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J - estimated concentration
< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample
VAP - Vertical Aquifer Profiling

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFASs
Long-chain PFASs
Fluorotelomers
FOSA, FASE, FASAAs
Replacement Chemistries

**Table 3-5
Beta Site Investigation BS 3,4,5,6, MW5B Groundwater PFAS VAP Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency**

Well ID	Sample ID	Sample Date	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
CAS Number			68259-12-1	335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
MDH HBV (µg/L)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW5B	MW5B-GW-31-35-01-120919	12/9/2019	< 0.00199	< 0.00199	< 0.00199	< 0.00795	< 0.00716	< 0.00795	< 0.00199	< 0.00229	< 0.00497	< 0.00199	< 0.00199	< 0.0199	< 0.0149	< 0.00795	< 0.00795	< 0.00795	< 0.00795
	MW5B-GW-51-55-01-120919	12/9/2019	< 0.000735	< 0.000735	< 0.000735	< 0.00294	< 0.00265	< 0.00294	< 0.000735	< 0.000845	< 0.00184	< 0.000735	< 0.000735	< 0.00735	< 0.00551	< 0.00294	< 0.00294	< 0.00294	< 0.00294
	MW5B-GW-51-55-02-120919 (DUP)	12/9/2019	< 0.000732	< 0.000732	< 0.000732	< 0.00293	< 0.00263	< 0.00293	< 0.000732	< 0.000842	< 0.00183	< 0.000732	< 0.000732	< 0.00732	< 0.00549	< 0.00293	< 0.00293	< 0.00293	< 0.00293
	MW5B-GW-55-58-01-121019	12/10/2019	< 0.000732	< 0.000732	< 0.000732	< 0.00293	0.00773 J	< 0.00293	< 0.000732	< 0.000841	< 0.00183	< 0.000732	< 0.000732	< 0.00732	< 0.00549	< 0.00293	< 0.00293	< 0.00293	< 0.00293

Notes:
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J - estimated concentration
< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample
VAP - Vertical Aquifer Profiling

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFASs
Long-chain PFASs
Fluorotelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 3-6
Beta Site Investigation BS 3,4,5,6, MW6B Groundwater PFAS VAP Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Minnesota Pollution Control Agency

Well ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	
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	
MW6B	MW6B-GW-11-13-01-111919	11/19/2019	0.42	0.0328	0.0153 J	< 0.00656	< 0.00656	< 0.00656	< 0.00656	< 0.00656	< 0.00656	< 0.00656	< 0.00656	< 0.00656	< 0.00656	< 0.00656	< 0.00656	< 0.00656	
	MW6B-GW-36-40-01-111919	11/19/2019	0.672	0.0228	0.0119	0.00714	0.0723	< 0.000721	< 0.000721	< 0.000721	< 0.000721	< 0.000721	< 0.000721	0.00565	0.0029	0.00835	0.00164	0.137	
	MW6B-GW-36-40-02-111919 (DUP)	11/19/2019	0.67	0.0231	0.0124	0.00693	0.0727	< 0.000746	< 0.000746	< 0.000746	< 0.000746	< 0.000746	< 0.000746	0.0059	0.00321	0.00931	0.00149	0.146	
	MW6B-GW-81-85-01-111919	11/19/2019	0.379	0.0119	0.0121	0.00716	0.065	0.000847 J	0.000861 J	< 0.000724	< 0.000724	< 0.000724	< 0.000724	0.00339	0.00335	0.00796	0.00195	0.135	
	MW6B-GW-106-110-01-112019	11/20/2019	0.122	< 0.0233	< 0.0117	< 0.0117	0.0233 J	< 0.0117	< 0.0117	< 0.0117	< 0.0117	< 0.0117	< 0.0117	< 0.0117	< 0.0117	< 0.0117	< 0.0117	< 0.0117	0.0358
	MW6B-GW-129-133-01-112019	11/20/2019	0.0504	0.00166 J	0.00258 J	0.000883	0.00852	< 0.00075	< 0.00075	< 0.00075	< 0.00075	< 0.00075	< 0.00075	0.000848 J	< 0.00075	0.00145 J	< 0.00075	0.0124	
	MW6B-GW-136-140-01-112019	11/20/2019	0.0411	< 0.00148	0.00173 J	0.000753 J	0.00683	< 0.000739	< 0.000739	< 0.000739	< 0.000739	< 0.000739	< 0.000739	< 0.000739	< 0.000739	0.00088 J	< 0.000739	0.0106	

Notes:
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Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSA
Long-chain PFSA
Fluorotelomers
FOSA, FASE, FASAA
Replacement Chemistries

Table 3-6
Beta Site Investigation BS 3,4,5,6, MW6B Groundwater PFAS VAP Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Well ID	Sample ID	Sample Date	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
CAS Number			68259-12-1	335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
MDH HBV (µg/L)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW6B	MW6B-GW-11-13-01-111919	11/19/2019	< 0.00656	< 0.00656	< 0.00656	< 0.0262	< 0.0472	< 0.0262	< 0.00656	< 0.00754	< 0.0164	< 0.00656	< 0.0131	< 0.0656	< 0.0492	< 0.0262	< 0.0262	< 0.0262	< 0.0262
	MW6B-GW-36-40-01-111919	11/19/2019	< 0.000721	< 0.000721	< 0.00288	< 0.00288	< 0.00519	< 0.00288	< 0.00288	< 0.000829	< 0.0018	< 0.00288	< 0.00144	< 0.00721	< 0.00541	< 0.00288	< 0.00288	< 0.00288	< 0.00288
	MW6B-GW-36-40-02-111919 (DUP)	11/19/2019	< 0.000746	< 0.000746	< 0.000746	< 0.00298	< 0.00537	< 0.00298	< 0.000746	< 0.000857	< 0.00186	< 0.000746	< 0.00149	< 0.000746	< 0.00559	< 0.00298	< 0.00298	< 0.00298	< 0.00298
	MW6B-GW-81-85-01-111919	11/19/2019	< 0.000724	< 0.000724	< 0.000724	< 0.00289	< 0.00521	< 0.00289	0.00083 J	< 0.000832	< 0.00181	< 0.000724	< 0.00145	< 0.00724	< 0.00543	< 0.00289	< 0.00289	< 0.00289	< 0.00289
	MW6B-GW-106-110-01-112019	11/20/2019	< 0.0117	< 0.0117	< 0.0117	< 0.0466	< 0.042	< 0.0466	< 0.0117	< 0.0134	< 0.0291	< 0.0117	< 0.0117	< 0.117	< 0.0874	< 0.0466	< 0.0466	< 0.0466	< 0.0466
	MW6B-GW-129-133-01-112019	11/20/2019	< 0.00075	< 0.00075	< 0.00075	< 0.003	< 0.0054	< 0.003	< 0.00075	< 0.000862	< 0.00187	< 0.00075	< 0.0015	< 0.0075	< 0.00562	< 0.003	< 0.003	< 0.003	< 0.003
	MW6B-GW-136-140-01-112019	11/20/2019	< 0.000739	< 0.000739	< 0.000739	< 0.00296	< 0.00532	< 0.00296	< 0.000739	< 0.00085	< 0.00185	< 0.000739	< 0.00148	< 0.00739	< 0.00554	< 0.00296	< 0.00296	< 0.00296	< 0.00296

Notes:
MPCA - Minnesota Pollution Control Agency
HBV - Health-Based Values
NS - No standard
All results are shown in parts per billion (ppb) or µg/L
Result 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
VAP - Vertical Aquifer Profiling

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSAs
Long-chain PFSAs
Fluorotelomers
FOSA, FASE, FASAs
Replacement Chemistries

Table 3-7
Beta Site Investigation BS 3,4,5,6, MW3B Soil PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Well ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	
Residential/Recreational SRV (µg/kg)			38,000	NS	NS	NS	240	NS	NS	NS	NS	NS	NS	5,700	NS	130	NS	41	
Commercial/Industrial SRV (µg/kg)			520,000	NS	NS	NS	3,200	NS	NS	NS	NS	NS	NS	77,000	NS	1,700	NS	560	
MW3B	MW3B-SOIL-15-16.5-01-011320	1/13/2020	< 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	< 0.0737	
	MW3B-SOIL-16.5-19-01-011320	1/13/2020	< 0.291	< 0.146	< 0.0728	< 0.0728	< 0.0728	< 0.0728	< 0.0728	< 0.0728	< 0.0728	< 0.0728	< 0.0728	< 0.0728	< 0.0728	< 0.0728	< 0.0728	< 0.0728	
	MW3B-SOIL-31-35-01-011320	1/13/2020	< 0.313	< 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	< 0.0781	
	MW3B-SOIL-31-35-02-011320 (DUP)	1/13/2020	< 0.309	< 0.155	< 0.0773	< 0.0773	< 0.0773	< 0.0773	< 0.0773	< 0.0773	< 0.0773	< 0.0773	< 0.0773	< 0.0773	< 0.0773	< 0.0773	< 0.0773	< 0.0773	
	MW3B-SOIL-41-42-01-011320	1/13/2020	< 0.301	< 0.151	< 0.0753	< 0.0753	< 0.0753	< 0.0753	< 0.0753	< 0.0753	< 0.0753	< 0.0753	< 0.0753	< 0.0753	< 0.0753	< 0.0753	< 0.0753	< 0.0753	
	MW3B-SOIL-44-45-01-011320	1/13/2020	< 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	< 0.0798	0.099 J
	MW3B-SOIL-51-53-01-011320	1/13/2020	< 0.304	< 0.152	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	
	MW3B-SOIL-53-55-01-011320	1/13/2020	< 0.318	< 0.159	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	
	MW3B-SOIL-74-75-01-011420	1/14/2020	< 0.318	< 0.159	< 0.0794	< 0.0794	0.114 J	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	
MW3B-SOIL-75-79-01-011420	1/14/2020	< 0.313	< 0.156	< 0.0782	< 0.0782	< 0.0782	< 0.0782	< 0.0782	< 0.0782	< 0.0782	< 0.0782	< 0.0782	< 0.0782	< 0.0782	< 0.0782	< 0.0782	< 0.0782		

Notes:
SRV - Soil Reference Value
NS - No standard
All results are shown in parts per billion (ppb) or µg/kg
Result is in exceedance of SRV
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
Short-chain PFSA
Long-chain PFSA
Fluorotelomers
FOSA, FASE, FASAA
Replacement Chemistries

Table 3-7
Beta Site Investigation BS 3,4,5,6, MW3B Soil PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Well ID	Sample ID	Sample Date	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
CAS Number			68259-12-1	335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
Residential/Recreational SRV (µg/kg)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Commercial/Industrial SRV (µg/kg)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW3B	MW3B-SOIL-15-16.5-01-011320	1/13/2020	< 0.0737	< 0.0737	< 0.0737	< 0.295	< 0.265	< 0.295	< 0.0737	< 0.0848	< 0.184	< 0.0737	< 0.0737	< 0.737	< 0.553	< 0.295	< 0.295	< 0.295	< 0.295
	MW3B-SOIL-16.5-19-01-011320	1/13/2020	< 0.0728	< 0.0728	< 0.0728	< 0.291	< 0.262	< 0.291	< 0.0728	< 0.0838	< 0.182	< 0.0728	< 0.0728	< 0.728	< 0.546	< 0.291	< 0.291	< 0.291	< 0.291
	MW3B-SOIL-31-35-01-011320	1/13/2020	< 0.0781	< 0.0781	< 0.0781	< 0.313	< 0.281	< 0.313	< 0.0781	< 0.0898	< 0.195	< 0.0781	< 0.0781	< 0.781	< 0.586	< 0.313	< 0.313	< 0.313	< 0.313
	MW3B-SOIL-31-35-02-011320 (DUP)	1/13/2020	< 0.0773	< 0.0773	< 0.0773	< 0.309	< 0.278	< 0.309	< 0.0773	< 0.0889	< 0.193	< 0.0773	< 0.0773	< 0.773	< 0.58	< 0.309	< 0.309	< 0.309	< 0.309
	MW3B-SOIL-41-42-01-011320	1/13/2020	< 0.0753	< 0.0753	< 0.0753	< 0.301	< 0.271	< 0.301	< 0.0753	< 0.0866	< H 0.188	< 0.0753	< 0.0753	< 0.753	< 0.565	< 0.301	< 0.301	< 0.301	< 0.301
	MW3B-SOIL-44-45-01-011320	1/13/2020	< 0.0798	< 0.0798	< 0.0798	< 0.319	< 0.287	< 0.319	< 0.0798	< 0.0918	< 0.2	< 0.0798	< 0.0798	< 0.798	< 0.599	< 0.319	< 0.319	< 0.319	< 0.319
	MW3B-SOIL-51-53-01-011320	1/13/2020	< 0.0761	< 0.0761	< 0.0761	< 0.304	1.63 J	< 0.304	< 0.0761	< 0.0875	< 0.19	< 0.0761	< 0.0761	< 0.761	< 0.571	< 0.304	< 0.304	< 0.304	< 0.304
	MW3B-SOIL-53-55-01-011320	1/13/2020	< 0.0796	< 0.0796	< 0.0796	< 0.318	< 0.286	< 0.318	< 0.0796	< 0.0915	< 0.199	< 0.0796	< 0.0796	< 0.796	< 0.597	< 0.318	< 0.318	< 0.318	< 0.318
	MW3B-SOIL-74-75-01-011420	1/14/2020	< 0.0794	< 0.0794	< 0.0794	< 0.318	< 0.286	< 0.318	< 0.0794	< 0.0913	< 0.198	< 0.0794	< 0.0794	< 0.794	< 0.595	< 0.318	< 0.318	< 0.318	< 0.318
MW3B-SOIL-75-79-01-011420	1/14/2020	< 0.0782	< 0.0782	< 0.0782	< 0.313	< 0.281	< 0.313	< 0.0782	< 0.0899	< 0.195	< 0.0782	< 0.0782	< 0.782	< 0.586	< 0.313	< 0.313	< 0.313	< 0.313	

Notes:
SRV - Soil Reference Value
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All results are shown in parts per billion (ppb) or µg/kg
Result is in exceedance of SRV
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
Short-chain PFASs
Long-chain PFASs
Fluorotelomers
FOSA, FASE, FASAAAs
Replacement Chemistries

**Table 3-8
Beta Site Investigation BS 3,4,5,6, MW4A Soil PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Minnesota Pollution Control Agency**

Well ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1
Residential/Recreational SRV (µg/kg)			38,000	NS	NS	NS	240	NS	NS	NS	NS	NS	NS	5,700	NS	130	NS	41
Commercial/Industrial SRV (µg/kg)			520,000	NS	NS	NS	3,200	NS	NS	NS	NS	NS	NS	77,000	NS	1,700	NS	560
MW4A	MW4A-SOIL-8-8.5-01-121319	12/13/2019	< 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	< 0.0741
	MW4A-SOIL-20-21-01-121319	12/13/2019	< 0.297	< 0.148	< 0.0742	< 0.0742	< 0.0742	< 0.0742	< 0.0742	< 0.0742	< 0.0742	< 0.0742	< 0.0742	< 0.0742	< 0.0742	< 0.0742	< 0.0742	< 0.0742
	MW4A-SOIL-21-23-01-121319	12/13/2019	< 0.306	< 0.153	< 0.0765	< 0.0765	< 0.0765	< 0.0765	< 0.0765	< 0.0765	< 0.0765	< 0.0765	< 0.0765	< 0.0765	< 0.0765	< 0.0765	< 0.0765	< 0.0765
	MW4A-SOIL-31-32-01-121319	12/13/2019	< 0.29	< 0.145	< 0.0726	< 0.0726	< 0.0726	< 0.0726	< 0.0726	< 0.0726	< 0.0726	< 0.0726	< 0.0726	< 0.0726	< 0.0726	< 0.0726	< 0.0726	< 0.0726
	MW4A-SOIL-37-38-01-121319	12/13/2019	< 0.293	< 0.146	< 0.0732	< 0.0732	< 0.0732	< 0.0732	< 0.0732	< 0.0732	< 0.0732	< 0.0732	< 0.0732	< 0.0732	< 0.0732	< 0.0732	< 0.0732	< 0.0732
	MW4A-SOIL-38-40-01-121319	12/13/2019	< 0.281	< 0.14	< 0.0702	< 0.0702	< 0.0702	< 0.0702	< 0.0702	< 0.0702	< 0.0702	< 0.0702	< 0.0702	< 0.0702	< 0.0702	< 0.0702	< 0.0702	< 0.0702
	MW4A-SOIL-50-52-01-121319	12/13/2019	< 0.315	< 0.157	< 0.0787	< 0.0787	< 0.0787	< 0.0787	< 0.0787	< 0.0787	< 0.0787	< 0.0787	< 0.0787	< 0.0787	< 0.0787	< 0.0787	< 0.0787	< 0.0787
	MW4A-SOIL-60-62-01-121319	12/13/2019	< 0.295	< 0.148	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738	< 0.0738
	MW4A-SOIL-68-70-01-121319	12/13/2019	< 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	< 0.0737
	MW4A-SOIL-74-75-01-121319	12/13/2019	< 0.294	< 0.147	< 0.0734	< 0.0734	< 0.0734	< 0.0734	< 0.0734	< 0.0734	< 0.0734	< 0.0734	< 0.0734	< 0.0734	< 0.0734	< 0.0734	< 0.0734	< 0.0734
	MW4A-SOIL-74-75-02-121319 (DUP)	12/13/2019	< 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
	MW4A-SOIL-80-81-01-121319	12/13/2019	< 0.29	< 0.145	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724
MW4A-SOIL-85-86-01-121319	12/13/2019	< 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	< 0.0755	
MW4A-SOIL-88-89-01-121319	12/13/2019	< 0.289	< 0.145	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	< 0.0723	

Notes:
 SRV - Soil Reference Value
 NS - No standard
 All results are shown in parts per billion (ppb) or µg/kg
 Result is in exceedance of SRV
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
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 DUP - duplicate sample

Short-chain PFCAs
 Short-chain PFSA
 Long-chain PFSA
 Fluorotelomers
 FOSA, FASE, FASAAs
 Replacement Chemistries

**Table 3-8
Beta Site Investigation BS 3,4,5,6, MW4A Soil PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency**

Well ID	Sample ID	Sample Date	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
CAS Number			68259-12-1	335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
Residential/Recreational SRV (µg/kg)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Commercial/Industrial SRV (µg/kg)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW4A	MW4A-SOIL-8-8.5-01-121319	12/13/2019	< 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
	MW4A-SOIL-20-21-01-121319	12/13/2019	< 0.0742	< 0.0742	< 0.0742	< 0.297	< 0.267	< 0.297	< 0.0742	< 0.0853	< 0.185	< 0.0742	< 0.0742	< 0.742	< 0.556	< 0.297	< 0.297	< 0.297	< 0.297
	MW4A-SOIL-21-23-01-121319	12/13/2019	< 0.0765	< 0.0765	< 0.0765	< 0.306	< 0.275	< 0.306	< 0.0765	< 0.088	< 0.191	< 0.0765	< 0.0765	< 0.765	< 0.574	< 0.306	< 0.306	< 0.306	< 0.306
	MW4A-SOIL-31-32-01-121319	12/13/2019	< 0.0726	< 0.0726	< 0.0726	< 0.29	< 0.261	< 0.29	< 0.0726	< 0.0834	< 0.181	< 0.0726	< 0.0726	< 0.726	< 0.544	< 0.29	< 0.29	< 0.29	< 0.29
	MW4A-SOIL-37-38-01-121319	12/13/2019	< 0.0732	< 0.0732	< 0.0732	< 0.293	< 0.263	< 0.293	< 0.0732	< 0.0842	< 0.183	< 0.0732	< 0.0732	< 0.732	< 0.549	< 0.293	< 0.293	< 0.293	< 0.293
	MW4A-SOIL-38-40-01-121319	12/13/2019	< 0.0702	< 0.0702	< 0.0702	< 0.281	< 0.253	< 0.281	< 0.0702	< 0.0808	< 0.176	< 0.0702	< 0.0702	< 0.702	< 0.527	< 0.281	< 0.281	< 0.281	< 0.281
	MW4A-SOIL-50-52-01-121319	12/13/2019	< 0.0787	< 0.0787	< 0.0787	< 0.315	< 0.283	< 0.315	< 0.0787	< 0.0905	< 0.197	< 0.0787	< 0.0787	< 0.787	< 0.59	< 0.315	< 0.315	< 0.315	< 0.315
	MW4A-SOIL-60-62-01-121319	12/13/2019	< 0.0738	< 0.0738	< 0.0738	< 0.295	< 0.266	< 0.295	< 0.0738	< 0.0848	< 0.184	< 0.0738	< 0.0738	< 0.738	< 0.553	< 0.295	< 0.295	< 0.295	< 0.295
	MW4A-SOIL-68-70-01-121319	12/13/2019	< 0.0737	< 0.0737	< 0.0737	< 0.295	< 0.265	< 0.295	< 0.0737	< 0.0847	< 0.184	< 0.0737	< 0.0737	< 0.737	< 0.553	< 0.295	< 0.295	< 0.295	< 0.295
	MW4A-SOIL-74-75-01-121319	12/13/2019	< 0.0734	< 0.0734	< 0.0734	< 0.294	< 0.264	< 0.294	< 0.0734	< 0.0844	< 0.184	< 0.0734	< 0.0734	< 0.734	< 0.551	< 0.294	< 0.294	< 0.294	< 0.294
	MW4A-SOIL-74-75-02-121319 (DUP)	12/13/2019	< 0.0739	< 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
	MW4A-SOIL-80-81-01-121319	12/13/2019	< 0.0724	< 0.0724	< 0.0724	< 0.29	1.1 J	< 0.29	< 0.0724	< 0.0833	< 0.181	< 0.0724	< 0.0724	< 0.724	< 0.543	< 0.29	< 0.29	< 0.29	< 0.29
MW4A-SOIL-85-86-01-121319	12/13/2019	< 0.0755	< 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	
MW4A-SOIL-88-89-01-121319	12/13/2019	< 0.0723	< 0.0723	< 0.0723	< 0.289	< 0.26	< 0.289	< 0.0723	< 0.0832	< 0.181	< 0.0723	< 0.0723	< 0.723	< 0.542	< 0.289	< 0.289	< 0.289	< 0.289	

Notes:
 SRV - Soil Reference Value
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 All results are shown in parts per billion (ppb) or µg/kg
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Bold - Result is above the laboratory minimum reporting limit.
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 < 0.0002 - Concentration is less than laboratory reportable limit
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Short-chain PFCAs
 Short-chain PFSAAs
 Long-chain PFSAAs
 Fluorotelomers
 FOSA, FASE, FASAAs
 Replacement Chemistries

**Table 3-9
Beta Site Investigation BS 3,4,5,6, MW5B Soil PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency**

Well ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS		
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1		
Residential/Recreational SRV (µg/kg)			38,000	NS	NS	NS	240	NS	NS	NS	NS	NS	NS	5,700	NS	130	NS	41		
Commercial/Industrial SRV (µg/kg)			520,000	NS	NS	NS	3,200	NS	NS	NS	NS	NS	NS	77,000	NS	1,700	NS	560		
MW5B	MW5B-SOIL-18-20-01-120919	12/9/2019	< 0.293	< 0.147	< 0.0733	< 0.0733	< 0.0733	< 0.0733	< 0.0733	< 0.0733	< 0.0733	< 0.0733	< 0.0733	< 0.0733	< 0.0733	< 0.0733	< 0.0733	< 0.0733	< 0.0733	
	MW5B-SOIL-28-30-01-120919	12/9/2019	< 0.29	< 0.145	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725	< 0.0725
	MW5B-SOIL-28-30-02-120919 (DUP)	12/9/2019	< 0.29	< 0.145	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724
	MW5B-SOIL-31-32-01-120919	12/9/2019	< 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	< 0.0739
	MW5B-SOIL-34-35-01-120919	12/9/2019	< 0.319	< 0.159	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797
	MW5B-SOIL-48-49-01-120919	12/9/2019	< 0.308	< 0.154	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077
	MW5B-SOIL-50-54-01-120919	12/9/2019	< 0.318	< 0.159	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794
MW5B-SOIL-55-58-01-121019	12/10/2019	< 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	< 0.0762	< 0.0762	< 0.0762	

Notes:
 SRV - Soil Reference Value
 NS - No standard
 All results are shown in parts per billion (ppb) or µg/kg
 Result is in exceedance of SRV
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
 Short-chain PFSAAs
 Long-chain PFSAAs
 Fluorotelomers
 FOSA, FASE, FASAAs
 Replacement Chemistries

**Table 3-9
Beta Site Investigation BS 3,4,5,6, MW5B Soil PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency**

Well ID	Sample ID	Sample Date	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
CAS Number			68259-12-1	335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
Residential/Recreational SRV (µg/kg)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Commercial/Industrial SRV (µg/kg)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW5B	MW5B-SOIL-18-20-01-120919	12/9/2019	< 0.0733	< 0.0733	< 0.0733	< 0.293	< 0.264	< 0.293	< 0.0733	< 0.0843	< 0.183	< 0.0733	< 0.0733	< 0.733	< 0.55	< 0.293	< 0.293	< 0.293	< 0.293
	MW5B-SOIL-28-30-01-120919	12/9/2019	< 0.0725	< 0.0725	< 0.0725	< 0.29	< 0.261	< 0.29	< 0.0725	< 0.0834	< 0.181	< 0.0725	< 0.0725	< 0.725	< 0.544	< 0.29	< 0.29	< 0.29	< 0.29
	MW5B-SOIL-28-30-02-120919 (DUP)	12/9/2019	< 0.0724	< 0.0724	< 0.0724	< 0.29	< 0.261	< 0.29	< 0.0724	< 0.0833	< 0.181	< 0.0724	< 0.0724	< 0.724	< 0.543	< 0.29	< 0.29	< 0.29	< 0.29
	MW5B-SOIL-31-32-01-120919	12/9/2019	< 0.0739	< 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
	MW5B-SOIL-34-35-01-120919	12/9/2019	< 0.0797	< 0.0797	< 0.0797	< 0.319	< 0.287	< 0.319	< 0.0797	< 0.0916	< 0.199	< 0.0797	< 0.0797	< 0.797	< 0.597	< 0.319	< 0.319	< 0.319	< 0.319
	MW5B-SOIL-48-49-01-120919	12/9/2019	< 0.077	< 0.077	< 0.077	< 0.308	< 0.277	< 0.308	< 0.077	< 0.0885	< 0.192	< 0.077	< 0.077	< 0.77	< 0.577	< 0.308	< 0.308	< 0.308	< 0.308
	MW5B-SOIL-50-54-01-120919	12/9/2019	< 0.0794	< 0.0794	< 0.0794	< 0.318	< 0.286	< 0.318	< 0.0794	< 0.0913	< 0.198	< 0.0794	< 0.0794	< 0.794	< 0.595	< 0.318	< 0.318	< 0.318	< 0.318
MW5B-SOIL-55-58-01-121019	12/10/2019	< 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	

Notes:
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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
 Short-chain PFASs
 Long-chain PFASs
 Fluorotelomers
 FOSA, FASE, FASAAs
 Replacement Chemistries

Table 3-10
Beta Site Investigation BS 3,4,5,6, MW6B Soil PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Well ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	
Residential/Recreational SRV (µg/kg)			38,000	NS	NS	NS	240	NS	NS	NS	NS	NS	NS	5,700	NS	130	NS	41	
Commercial/Industrial SRV (µg/kg)			520,000	NS	NS	NS	3,200	NS	NS	NS	NS	NS	NS	77,000	NS	1,700	NS	560	
MW6B	MW6B-SOIL-6-7-01-111919	11/19/2019	< 0.299	< 0.15	< 0.0748	< 0.0748	0.132 J	< 0.0748	< 0.0748	< 0.0748	< 0.0748	< 0.0748	< 0.0748	< 0.0748	< 0.0748	< 0.0748	< 0.0748	< 0.0748	
	MW6B-SOIL-8.5-10-01-111919	11/19/2019	< 0.29	< 0.145	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	< 0.0724	
	MW6B-SOIL-10-13-01-111919	11/19/2019	< 0.307	< 0.154	< 0.0769	< 0.0769	< 0.0769	< 0.0769	< 0.0769	< 0.0769	< 0.0769	< 0.0769	< 0.0769	< 0.0769	< 0.0769	< 0.0769	< 0.0769	< 0.0769	
	MW6B-SOIL-36-40-01-111919	11/19/2019	< 0.294	< 0.147	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	
	MW6B-SOIL-37-38-01-111919	11/19/2019	< 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	0.079 J	
	MW6B-SOIL-38-39-01-111919	11/19/2019	< 0.316	< 0.158	< 0.0789	< 0.0789	< 0.0789	< 0.0789	< 0.0789	< 0.0789	< 0.0789	< 0.0789	< 0.0789	< 0.0789	< 0.0789	< 0.0789	< 0.0789	< 0.0789	< 0.0789
	MW6B-SOIL-46-47-01-111919	11/19/2019	< 0.318	< 0.159	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794	< 0.0794
	MW6B-SOIL-46-47-02-111919 (DUP)	11/19/2019	< 0.294	< 0.147	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735	< 0.0735
	MW6B-SOIL-81-85-01-111919	11/19/2019	< 0.305	< 0.153	< 0.0763	< 0.0763	< 0.0763	< 0.0763	< 0.0763	< 0.0763	< 0.0763	< 0.0763	< 0.0763	< 0.0763	< 0.0763	< 0.0763	< 0.0763	< 0.0763	< 0.0763
	MW6B-SOIL-106-110-01-111919	11/19/2019	< 0.297	< 0.149	< 0.0744	< 0.0744	< 0.0744	< 0.0744	< 0.0744	< 0.0744	< 0.0744	< 0.0744	< 0.0744	< 0.0744	< 0.0744	< 0.0744	< 0.0744	< 0.0744	< 0.0744
MW6B-SOIL-129-133-01-112019	11/20/2019	< 0.302	< 0.151	< 0.0754	< 0.0754	< 0.0754	< 0.0754	< 0.0754	< 0.0754	< 0.0754	< 0.0754	< 0.0754	< 0.0754	< 0.0754	< 0.0754	< 0.0754	< 0.0754	< 0.0754	

Notes:
SRV - Soil Reference Value
NS - No standard
All results are shown in parts per billion (ppb) or µg/kg
Result is in exceedance of SRV
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
Short-chain PFSA
Long-chain PFSA
Fluorotelomers
FOSA, FASE, FASAs
Replacement Chemistries

Table 3-10
Beta Site Investigation BS 3,4,5,6, MW6B Soil PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Well ID	Sample ID	Sample Date	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	
CAS Number			68259-12-1	335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9	
Residential/Recreational SRV (µg/kg)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Commercial/Industrial SRV (µg/kg)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW6B	MW6B-SOIL-6-7-01-111919	11/19/2019	< 0.0748	< 0.0748	< 0.0748	< 0.299	1.46 J	< 0.299	< 0.0748	< 0.086	< 0.187	< 0.0748	< 0.15	< 0.748	< 0.561	< 0.299	< 0.299	< 0.299	< 0.299	
	MW6B-SOIL-8.5-10-01-111919	11/19/2019	< 0.0724	< 0.0724	< 0.0724	< 0.29	< 0.522	< 0.29	< 0.0724	< 0.0833	< 0.181	< 0.0724	< 0.145	< 0.724	< 0.543	< 0.29	< 0.29	< 0.29	< 0.29	
	MW6B-SOIL-10-13-01-111919	11/19/2019	< 0.0769	< 0.0769	< 0.0769	< 0.307	< 0.553	< 0.307	< 0.0769	< 0.0884	< 0.192	< 0.0769	< 0.154	< 0.769	< 0.577	< 0.307	< 0.307	< 0.307	< 0.307	
	MW6B-SOIL-36-40-01-111919	11/19/2019	< 0.0735	< 0.0735	< 0.0735	< 0.294	< 0.529	< 0.294	< 0.0735	< 0.0845	< 0.184	< 0.0735	< 0.147	< 0.735	< 0.551	< 0.294	< 0.294	< 0.294	< 0.294	
	MW6B-SOIL-37-38-01-111919	11/19/2019	< 0.0737	< 0.0737	< 0.0737	< 0.295	< 0.53	< 0.295	< 0.0737	< 0.0847	< 0.184	< 0.0737	< 0.147	< 0.736	< 0.552	< 0.295	< 0.295	< 0.295	< 0.295	
	MW6B-SOIL-38-39-01-111919	11/19/2019	< 0.0789	< 0.0789	< 0.0789	< 0.316	< 0.568	< 0.316	< 0.0789	< 0.0907	< 0.197	< 0.0789	< 0.158	< 0.789	< 0.592	< 0.316	< 0.316	< 0.316	< 0.316	< 0.316
	MW6B-SOIL-46-47-01-111919	11/19/2019	< 0.0794	< 0.0794	< 0.0794	< 0.318	< 0.572	< 0.318	< 0.0794	< 0.0914	< 0.199	< 0.0794	< 0.159	< 0.794	< 0.596	< 0.318	< 0.318	< 0.318	< 0.318	< 0.318
	MW6B-SOIL-46-47-02-111919 (DUP)	11/19/2019	< 0.0735	< 0.0735	< 0.0735	< 0.294	< 0.529	< 0.294	< 0.0735	< 0.0846	< 0.184	< 0.0735	< 0.147	< 0.735	< 0.552	< 0.294	< 0.294	< 0.294	< 0.294	< 0.294
	MW6B-SOIL-81-85-01-111919	11/19/2019	< 0.0763	< 0.0763	< 0.0763	< 0.305	< 0.549	< 0.305	< 0.0763	< 0.0877	< 0.191	< 0.0763	< 0.153	< 0.763	< 0.572	< 0.305	< 0.305	< 0.305	< 0.305	< 0.305
	MW6B-SOIL-106-110-01-111919	11/19/2019	< 0.0744	< 0.0744	< 0.0744	< 0.297	< 0.535	< 0.297	< 0.0744	< 0.0855	< 0.186	< 0.0744	< 0.149	< 0.743	< 0.558	< 0.297	< 0.297	< 0.297	< 0.297	< 0.297
MW6B-SOIL-129-133-01-112019	11/20/2019	< 0.0754	< 0.0754	< 0.0754	< 0.302	< 0.543	< 0.302	< 0.0754	< 0.0867	< 0.189	< 0.0754	< 0.151	< 0.754	< 0.566	< 0.302	< 0.302	< 0.302	< 0.302	< 0.302	

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

Short-chain PFCAs
Short-chain PFSA
Long-chain PFSA
Fluorotelomers
FOSA, FASE, FASAA
Replacement Chemistries

Table 4-1
Beta Site Investigation Summary BS 2,7,9,13
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Beta Site	Well Name	MWI Unique ID	Easting	Northing	Video	Stratigraphy Source	Well Aquifer Unit	Screen or Open Hole	Screen/Open Hole Top (ft bgs)	Screen/Open Hole Bottom (ft bgs)
2	MW2A	848623	505707.3	4982063.717	MGS	Well Construction Log	Jordan	21-foot open hole	240	261
7	MW7A	848622	511211.38	4979425.32	MGS	Well Construction Log	Jordan	10-foot screen	200	210
9	MW9A	848624	512443.1	4978389.197	N/A	Well Construction Log	Oneota	10-foot screen	140	150
13	MW13A	848626	508221.33	4979807.846	MGS	Well Construction Log	Tunnel City	20-foot open hole	350	370
13	MW13B	848625	508216.15	4979807.128	N/A	Well Construction Log	Jordan	10-foot screen	295	305

NOTES

Coordinates are reported in NAD 83, UTM Zone 15N (meters)
 Vertical elevations reported in NAV88 (feet)
 MWI = Minnesota Well Index
 ft bgs = feet below ground surface
 in = inches
 NA = not available
 Quat = Quaternary

Table 4-1
Beta Site Investigation Summary BS 2,7,9,13
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Beta Site	Well Name	MWI Unique ID	Quat Top (ft bgs)	Quat Bottom (ft bgs)	First Bedrock Unit	First Bedrock Top (ft bgs)	First Bedrock Bottom (ft bgs)	Second Bedrock Unit	Second Bedrock Top (ft bgs)	Second Bedrock Bottom (ft bgs)	Third Bedrock Unit	Third Bedrock Top (ft bgs)	Third Bedrock Bottom (ft bgs)	Third Bedrock Unit	Third Bedrock Top (ft bgs)	Third Bedrock Bottom (ft bgs)
2	MW2A	848623	0	68	St Peter	68	100	Shakopee	100	186	Oneota	186	240	Jordan	240	261 (bottom of well, not unit)
7	MW7A	848622	0	77	Shakopee	77	133	Oneota	133	197	Jordan	197	220 (bottom of hole, not unit)			
9	MW9A	848624	0	138	Oneota	138	150 (bottom of well, not unit)									
13	MW13A	848626	0	278	Jordan	278	310	St Lawrence	310	345	Tunnel City	345	370 (bottom of well, not unit)			
13	MW13B	848625	0	286	Jordan	286	310 (bottom of hole, not unit)									

NOTES

Coordinates are reported in NAD 83, UTM Zone 15N
Vertical elevations reported in NAV88 (feet)
MWI = Minnesota Well Index
ft bgs = feet below ground surface
in = inches
NA = not available
Quat = Quaternary

Table 4-2
Beta Site Investigation Summary BS 2,7,9,13 Vertical Aquifer Profile Sampling Rationale
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Sample ID	Depth Interval (ft bgs)	Analysis	Sample Type	Rationale for Sampling
Beta Site 2				
MW2A-SOIL-8-10-01-062220	8-10	PFAS, TOC, CEC	Discrete Soil	Targeted interval soil sample of fine- to coarse-grained sand with gravel; collected directly above water table in vadose zone
MW2A-SOIL-11-12-01-062220	11-12	PFAS, TOPA, TOC, CEC, Anions	Discrete Soil	Targeted interval soil sample of low plasticity clay; corresponds to targeted interval groundwater sample
MW2A-GW-11-12-01-062220	11-12	PFAS, TOC, Water Qual, Isotope	Discrete Groundwater	Targeted interval groundwater sample. Isotope sample collected from top of water table to determine source of quaternary groundwater.
MW2A-SOIL-COMP-36-40-01-062220	36-40	PFAS, TOC, CEC	Composite Soil	Targeted interval soil sample of sand and gravel below a confining layer; corresponds to groundwater sample interval
MW2A-GW-36-40-01-062220	36-40	PFAS, TOPA, TOC, Water Qual, Anions/Cations	Discrete Groundwater	Targeted interval groundwater sample below a confining layer
MW2A-GW-36-40-02-062220	36-40	PFAS	Discrete Groundwater	Duplicate groundwater sample
MW2A-SOIL-COMP-66-70-01-062220	66-70	PFAS, TOC, CEC	Composite Soil	Targeted interval soil sample of fine- to coarse-grained gravel and fine- to medium-grained clay; corresponds to groundwater sample interval above bedrock contact.
MW2A-GW-66-70-01-062220	66-70	PFAS, TOC, Water Qual	Discrete Groundwater	Targeted interval groundwater sample above bedrock contact
MW2A-GW-86-90-01-062220	86-90	PFAS, TOC, Water Qual, Anions/Cations	Discrete Groundwater	Groundwater sample interval from within the St Peter bedrock aquifer.
MW2A-GW-116-120-01-062320	116-120	PFAS, TOC, Water Qual, Isotope	Discrete Groundwater	Groundwater sample interval from the top of the Shakopee bedrock aquifer. Isotope sample collected to determine if different source of water to Shakopee unit.
MW2A-GW-136-140-01-062320	136-140	PFAS, TOC, Water Qual, Anions/Cations	Discrete Groundwater	Groundwater sample interval from the middle of the Shakopee bedrock aquifer.
MW2A-GW-206-210-01-062420	206-210	PFAS, TOC, Water Qual, Anions/Cations	Discrete Groundwater	Groundwater sample interval from the top of the Oneota bedrock aquifer.
RC14-WAT-BULK-01-062220	Surface	Isotope	Grab Surface Water	Corresponding isotope surface water sample from P1007 prior to confluence with Raleigh Creek.
RC21-WAT-BULK-01-062220	Surface	Isotope	Grab Surface Water	Corresponding isotope surface water sample from Raleigh Creek after confluence with P1007.

Table 4-2
Beta Site Investigation Summary BS 2,7,9,13 Vertical Aquifer Profile Sampling Rationale
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Minnesota Pollution Control Agency

Sample ID	Depth Interval (ft bgs)	Analysis	Sample Type	Rationale for Sampling
Beta Site 7				
MW7A-SOIL-10-12-01-052620	10-12	PFAS, TOC, CEC	Discrete Soil	Targeted interval soil sample of medium- to coarse-grained sand; collected directly above water table in vadose zone
MW7A-SOIL-12-14-01-052620	12-14	PFAS, TOC, CEC, Anions	Discrete Soil	Targeted interval soil sample of coarse-grained sand with gravel; corresponds to water table sample interval
MW7A-GW-12-16-01-052620	12-16	PFAS, TOC, Water Qual, Anions/Cations, Isotope	Discrete Groundwater	Targeted interval groundwater sample. Isotope sample collected from top of water table to determine source of quaternary groundwater.
MW7A-SOIL-COMP-26-30-01-052620	26-30	PFAS, TOC, CEC	Composite Soil	Interval soil sample of medium- to coarse-grained sand; corresponds to interval groundwater sample
MW7A-GW-26-30-01-052620	26-30	PFAS, TOC, Water Qual	Discrete Groundwater	Interval groundwater sample
MW7A-SOIL-COMP-46-50-01-052620	46-50	PFAS, TOC, CEC	Composite Soil	Soil sample of sandy clay; corresponds to interval groundwater sample
MW7A-GW-46-50-01-052620	46-50	PFAS, TOC, Water Qual, Anions/Cations	Discrete Groundwater	Interval groundwater sample
MW7A-GW-46-50-02-052620	46-50	PFAS	Discrete Groundwater	Duplicate groundwater sample
MW7A-GW-46-50-03-052620	46-50	PFAS	Discrete Groundwater	MS/MSD groundwater sample
MW7A-GW-73-77-01-052620	73-77	PFAS, TOPA, TOC, Water Qual	Discrete Groundwater	Targeted interval groundwater sample above bedrock contact. No corresponding soil sample due to lack of core recovery.
MW7A-GW-86-90-01-052720	86-90	PFAS, TOPA, TOC, Water Qual, Anions/Cations	Discrete Groundwater	Groundwater sample interval from within the Shakopee bedrock aquifer.
MW7A-GW-156-160-01-052820	156-160	PFAS, TOC, Water Qual	Discrete Groundwater	Groundwater sample interval from the top of the Oneota bedrock aquifer.
WL5-WAT-BULK-01-052620	Surface	Isotope	Grab Surface Water	Corresponding isotope surface water sample from Horseshoe Lake.

Table 4-2
Beta Site Investigation Summary BS 2,7,9,13 Vertical Aquifer Profile Sampling Rationale
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Sample ID	Depth Interval (ft bgs)	Analysis	Sample Type	Rationale for Sampling
Beta Site 9				
MW9A-SOIL-3-5-01-060220	3-5	PFAS, TOC, CEC	Discrete Soil	Targeted interval soil sample of medium plasticity clay with sand; collected directly above water table in vadose zone
MW9A-SOIL-5-7-01-060220	5-7	PFAS, TOPA, TOC, CEC, Anions	Discrete Soil	Targeted interval soil sample of clayey sand; corresponds to water table sample interval
MW9A-GW-6-10-01-060220	6-10	PFAS, TOC, Water Qual, Isotope	Discrete Groundwater	Targeted interval groundwater sample. Isotope sample collected from top of water table to determine source of quaternary groundwater.
MW9A-SOIL-COMP-16-20-01-060220	16-20	PFAS, TOPA, TOC, CEC	Composite Soil	Targeted interval soil sample of fine- to coarse-grained sand; corresponds to interval groundwater sample
MW9A-SOIL-COMP-16-20-02-060220	16-20	PFAS	Composite Soil	Duplicate soil sample
MW9A-SOIL-COMP-16-20-03-060220	16-20	PFAS	Composite Soil	MS/MSD soil sample
MW9A-GW-16-20-01-060220	16-20	PFAS, TOPA, TOC, Water Qual, Anions/Cations	Discrete Groundwater	Interval groundwater sample
MW9A-SOIL-COMP-96-100-01-060220	96-100	PFAS, TOC, CEC	Composite Soil	Targeted interval soil sample of coarse-grained sand with fine gravel; corresponds to groundwater sample interval collected below 40-ft thick confining layer.
MW9A-GW-96-100-01-060220	96-100	PFAS, TOPA, Water Qual, Isotope	Discrete Groundwater	Targeted interval groundwater sample collected below 40-ft thick confining layer. Isotope sample collected to determine if different source of water is present beneath confining layer.
WL11-WAT-BULK-01-060220	Surface	Isotope	Grab Surface Water	Corresponding isotope surface water sample from channel upgradient of Middle Pond.

Table 4-2
Beta Site Investigation Summary BS 2,7,9,13 Vertical Aquifer Profile Sampling Rationale
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Minnesota Pollution Control Agency

Sample ID	Depth Interval (ft bgs)	Analysis	Sample Type	Rationale for Sampling
Beta Site 13				
MW13B-SOIL-11-14-01-061520	11-14	PFAS, TOC, CEC	Discrete Soil	Targeted interval soil sample of fine- to medium-grained sand collected from perched water interval above a confining layer; corresponding water sample was not possible.
MW13B-SOIL-20-22-01-061520	20-22	PFAS, TOC, CEC	Discrete Soil	Targeted interval soil sample of fine- to medium-grained sand; collected directly above water table in vadose zone
MW13B-SOIL-22-24-01-061520	22-24	PFAS, TOC, CEC, Anions	Discrete Soil	Targeted interval soil sample of fine- to coarse-grained sand; corresponds to water table sample interval
MW13B-GW-22-24-01-061520	22-24	PFAS, TOC, Water Qual, Anions/Cations, Isotope	Discrete Groundwater	Targeted interval groundwater sample. Isotope sample collected from top of water table to determine source of quaternary groundwater.
MW13B-SOIL-COMP-46-50-01-061520	46-50	PFAS, TOPA, TOC, CEC	Composite Soil	Targeted interval soil sample of fine- to coarse-grained sand; corresponds to groundwater sample interval collected below a 10-ft clay layer.
MW13B-GW-46-50-01-061520	46-50	PFAS, TOPA, TOC, Water Qual	Discrete Groundwater	Targeted interval groundwater sample collected below a 10-ft thick clay layer.
MW13B-SOIL-COMP-91-95-01-061520	91-95	PFAS, TOC, CEC	Composite Soil	Targeted interval soil sample of fine-grained sand; corresponds to groundwater sample interval below a 20-ft thick dry, high plasticity clay layer
MW13B-SOIL-COMP-91-95-02-061520	91-95	PFAS	Composite Soil	Duplicate soil sample
MW13B-SOIL-COMP-91-95-03-061520	91-95	PFAS	Composite Soil	MS/MSD soil sample
MW13B-GW-91-95-01-061520	91-95	PFAS, TOC, Water Qual	Discrete Groundwater	Targeted interval groundwater sample collected below a 20-ft thick dry, high plasticity clay layer.
MW13B-GW-91-95-02-061520	91-95	PFAS	Discrete Groundwater	Duplicate groundwater sample
MW13B-GW-91-95-03-061520	91-95	PFAS	Discrete Groundwater	MS/MSD groundwater sample
MW13A-SOIL-COMP-121-125-01-061520	121-125	PFAS, TOPA, TOC, CEC	Composite Soil	Interval soil sample of fine- to coarse-grained sand; corresponds to Interval groundwater sample interval
MW13A-GW-121-125-01-061520	121-125	PFAS, TOPA, TOC, Water Qual, Anions/Cations	Discrete Groundwater	Interval groundwater sample
N/A	156-160	N/A	Discrete Groundwater	Groundwater sample attempted but pump became clogged with fines.
MW13A-SOIL-COMP-181-185-01-061620	181-185	PFAS, TOC, CEC	Composite Soil	Targeted interval soil sample of fine- to coarse-grained sand; corresponds to groundwater sample interval collected below silty sand / sandy silt 20-ft thick layer.
MW13A-GW-181-185-01-061620	181-185	PFAS, TOC, Water Qual, Anions/Cations	Discrete Groundwater	Targeted interval groundwater sample collected below silty sand / sandy silt 20-ft thick layer.
MW13A-SOIL-COMP-221-225-01-061620	221-225	PFAS, TOC, CEC	Composite Soil	Interval soil sample of fine- to coarse-grained sand; corresponds to interval groundwater sample
MW13A-SOIL-COMP-221-225-02-061620	221-225	PFAS	Composite Soil	Duplicate soil sample
MW13A-GW-221-225-01-061620	221-225	PFAS, TOC, Water Qual	Discrete Groundwater	Interval groundwater sample
MW13A-GW-221-225-02-061620	221-225	PFAS	Discrete Groundwater	Duplicate groundwater sample
MW13A-SOIL-COMP-266-270-01-061620	266-270	PFAS, TOPA, TOC, CEC	Composite Soil	Targeted interval soil sample of fine-grained sand above bedrock contact.
N/A	266-270	N/A	Discrete Groundwater	Groundwater sample attempted but pump became clogged with fines.
MW13A-GW-286-290-01-060820	286-290	PFAS, TOC, Water Qual, Anions/Cations, Isotope	Discrete Groundwater	Targeted interval groundwater sample from consolidated bottom of bedrock valley. Isotope sample collected to compare against isotope data from upper quaternary water.
BP1-WAT-BULK-01-061520	Surface	Isotope	Grab Surface Water	Corresponding isotope surface water sample from Browns Pond.

Notes
VAP = Vertical Aquifer Profiling
ft bgs = feet below ground surface

**Table 5-1
Winter Seasonal Sampling Event, Work Plan Sampling Locations and Analyses
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Location ID	Sample ID	Sample Date	Sample Type	Analyses
Raleigh Creek Area				
RC3	RC3-WAT-BULK-01-022420	2/24/2020	Water	PFAS, TOC, Chloride, and TDS
RC5	RC5-WAT-BULK-01-022420	2/24/2020	Water	PFAS, TOC, Chloride, and TDS
	RC5-FOAM-01-022420	2/24/2020	Foam	PFAS Only
RC7A	RC7A-WAT-BULK-01-022420	2/24/2020	Water	PFAS, TOC, Chloride, and TDS
	RC7A-FOAM-01-022420	2/24/2020	Foam	PFAS Only
RC14	RC14-WAT-BULK-01-022420	2/24/2020	Water	PFAS, TOC, Chloride, and TDS
RC17A	RC17A-WAT-BULK-01-022420	2/24/2020	Water (plus DUP and MS/MSD)	PFAS, TOC, Chloride, and TDS
	RC17A-WAT-BULK-02-022420	2/24/2020		PFAS, TOC, Chloride, and TDS
	RC17A-WAT-BULK-03-022420	2/24/2020		PFAS, TOC, Chloride, and TDS
	RC17A-WAT-SML-01-022420	2/24/2020	Surface Microlayer (plus DUP)	PFAS Only
RC18	RC18-WAT-BULK-01-022520	2/25/2020	Water	PFAS, TOC, Chloride, and TDS
RC21	RC21-WAT-BULK-01-022420	2/24/2020	Water	PFAS, TOC, Chloride, and TDS
	RC21-FOAM-01-022420	2/24/2020	Foam	PFAS Only
Eagle Point Lake and Lake Elmo Area				
EP8	EP8-WAT-BULK-01-022520	2/25/2020	Water	PFAS, TOC, Chloride, and TDS
EP11	EP11-WAT-BULK-01-022520	2/25/2020	Water (plus DUP)	PFAS, TOC, Chloride, and TDS
	EP11-WAT-BULK-02-022520	2/25/2020		PFAS, TOC, Chloride, and TDS
EP16	EP16-WAT-BULK-01-022520	2/25/2020	Water	PFAS, TOC, Chloride, and TDS
EP19	EP19-WAT-BULK-01-022520	2/25/2020	Water	PFAS, TOC, Chloride, and TDS
EP20	EP20-WAT-BULK-01-022520	2/25/2020	Water	PFAS, TOC, Chloride, and TDS
West Lakeland Storage Sites Area				
WL6	WL6-WAT-BULK-01-022520	2/25/2020	Water	PFAS, TOC, Chloride, and TDS
	WL6-WAT-FOAM-01-022520	2/25/2020	Foam	PFAS Only
WL7	WL7-WAT-BULK-01-022520	2/25/2020	Water	PFAS, TOC, Chloride, and TDS
WL9	WL9-WAT-BULK-01-022520	2/25/2020	Water (plus DUP and MS/MSD)	PFAS, TOC, Chloride, and TDS
	WL9-WAT-BULK-02-022520	2/25/2020		PFAS, TOC, Chloride, and TDS
	WL9-WAT-BULK-03-022520	2/25/2020		PFAS, TOC, Chloride, and TDS
	WL9-WAT-SML-01-022520	2/25/2020	Surface Microlayer (plus DUP)	PFAS Only
	WL9-WAT-SML-02-022520	2/25/2020		PFAS Only
WL12	WL12-WAT-BULK-01-022620	2/26/2020	Water	PFAS, TOC, Chloride, and TDS
WL15	WL15-WAT-BULK-01-022620	2/26/2020	Water	PFAS, TOC, Chloride, and TDS
WL18	WL18-WAT-BULK-01-022620	2/26/2020	Water	PFAS, TOC, Chloride, and TDS
Valley Branch Creek and Afton Area				
VB2	VB2-WAT-BULK-01-022620	2/26/2020	Water	PFAS, TOC, Chloride, and TDS

Total Sample Count					
Water	Foam	Surface Microlayer	QC Samples and Duplicates	Discrete Sampling Locations	Total Samples Collected
19	4	2	6	19	31

Notes
SML = Surface Microlayer
DUP = Duplicate sample
MS/MSD = Matrix Spike and Spike Duplicate
TOC = Total Organic Carbon
TDS = Total Dissolved Solids

Analytical Methods
PFAS: MLA-110
TOC: SM 53100 C-2011
TDS: SM2540C
Chloride: EPA 300.0

Table 5-3
Winter Seasonal Sampling Event, Foam PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Location ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	PFNS
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1
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
RC5	RC5-FOAM-01-022420	2/24/2020	0.51	0.0438 J	0.0924 J	0.0905	1.24	0.0394	0.378	0.0217 J	< 0.0108	< 0.0108	< 0.0108	0.0205 J	0.0233	0.0752	0.0788	30.7 D	0.0416 R
RC7A	RC7A-FOAM-01-022420	2/24/2020	< 3.180	< 1.590	< 0.796	< 0.796	5.21	< 0.796	8.2	1.8	< 0.796	< 0.796	< 0.796	< 0.796	< 0.796	< 0.796	< 0.796	531	2.950 R
RC21	RC21-FOAM-01-022420	2/24/2020	0.103	< 0.00872	0.0174 J	0.0599	6.79	7.31	2.88	0.196	0.0237	0.00653 J	< 0.00436	0.00471 J	< 0.00436	1.13	0.642	56.4 D	< 0.00436
WL6	WL6-FOAM-01-022520	2/25/2020	< 3.170	< 1.580	< 0.792	< 0.792	1.54 J	2.73	15.3	0.846 J	< 0.792	< 0.792	< 0.792	< 0.792	< 0.792	< 0.792	1.65	1630 D	< 0.792

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

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSA
Long-chain PFSA
Fluorotelomers
FOSA, FASE, FASAs
Replacement Chemistries

Table 5-3
Winter Seasonal Sampling Event, Foam PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Minnesota Pollution Control Agency

Location ID	Sample ID	Sample Date	PFDS	PFDOS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	N-MEFOSA	N-ETFOSA	MEFOSA A	ETFOSA A	N-MEFOSE	N-ETFOSE	HFPO-DA	ADONA	9CL-PF3ONS	11CL-PF3OUDS
CAS Number			335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
MDH HBV (µg/L)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
RC5	RC5-FOAM-01-022420	2/24/2020	0.0155 J	< 0.0108	< 0.0432	< 0.0389	< 0.0432	2.96	0.0131 J	0.204	0.0274	4.01	< 0.108	< 0.0811	< 0.0411	< 0.0432	< 0.0432	< 0.0432
RC7A	RC7A-FOAM-01-022420	2/24/2020	3.16	< 0.796	< 3.180	< 2.870	< 3.180	103	5.31	54.1	1.320 J	96.4	< 7.960	< 5.970	< 3.020	< 3.180	< 3.180	< 3.180
RC21	RC21-FOAM-01-022420	2/24/2020	< 0.00436	< 0.00436	< 0.0174	< 0.0157	< 0.0174	0.214	< 0.00501	< 0.0109	0.0315	0.136	< 0.0436	< 0.0327	< 0.0166	< 0.0174	< 0.0174	< 0.0174
WL6	WL6-FOAM-01-022520	2/25/2020	< 0.792	< 0.792	< 3.170	< 2.850	< 3.170	8.57	< 0.911	< 1.980	< 0.792	8.4	< 7.920	< 5.940	< 3.010	< 3.170	< 3.170	< 3.170

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

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFASs
Long-chain PFASs
Fluorotelomers
FOSA, FASE, FASAs
Replacement Chemistries

Table 5-4
Winter Seasonal Sampling Event, Water Quality Analytical Results
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Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	Date	Chloride	Total Dissolved Solids	Total Organic Carbon
Raleigh Creek Area					
RC3	RC3-WAT-BULK-01-022420	2/24/2020	495	1040	8.1
RC5	RC5-WAT-BULK-01-022420	2/24/2020	792	1440	6.4
RC7A	RC7A-WAT-BULK-01-022420	2/24/2020	625	1390	5.3
RC14	RC14-WAT-BULK-01-022420	2/24/2020	112	307	5.6
RC17A	RC17A-WAT-BULK-01-022420	2/24/2020	111	292	5.6
	RC17A-WAT-BULK-02-022420 (DUP)	2/24/2020	113	325	5.6
	RC17A-WAT-BULK-03-022420 (MS/MSD)	2/24/2020	109	310	5.5
RC18	RC18-WAT-BULK-01-022520	2/25/2020	110	332	5.6
RC21	RC21-WAT-BULK-01-022420	2/24/2020	113	300	5.6
Eagle Point Lake and Lake Elmo Area					
EP8	EP8-WAT-BULK-01-022520	2/25/2020	113	350	7.8
EP11	EP11-WAT-BULK-01-022520	2/25/2020	42.3	258	4.4
	EP11-WAT-BULK-02-022520 (DUP)	2/25/2020	42.5	262	4.2
EP16	EP16-WAT-BULK-01-022520	2/25/2020	69.2	292	5.2
EP19	EP19-WAT-BULK-01-022520	2/25/2020	108	345	7.5
EP20	EP20-WAT-BULK-01-022520	2/25/2020	99.4	397	4.8
West Lakeland Storage Sites Area					
WL6	WL6-WAT-BULK-01-022520	2/25/2020	68.5	312	5
WL7	WL7-WAT-BULK-01-022520	2/25/2020	69	303	5
WL9	WL9-WAT-BULK-01-022520	2/25/2020	55.3	312	4.9
	WL9-WAT-BULK-02-022520 (DUP)	2/25/2020	71.3	313	5.0
	WL9-WAT-BULK-03-022520 (MS/MSD)	2/25/2020	70.5	299	5.0
WL12	WL12-WAT-BULK-01-022620	2/26/2020	69.8	304	4.9
WL15	WL15-WAT-BULK-01-022620	2/26/2020	73.8	297	4.9
WL18	WL18-WAT-BULK-01-022620	2/26/2020	86.0	316	5.2
Valley Branch Creek and Afton Area					
VB2	VB2-WAT-BULK-01-022620	2/26/2020	46.3	344	1.3

Notes:

All results are shown in milligrams per liter (mg/L) or parts per million (ppm)

DUP - duplicate sample

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Table 6-1
Sediment Sampling Event, Work Plan Sampling Locations and Analyses
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Minnesota Pollution Control Agency

Location ID	Sample ID	Sample Date	Sample Type	Analyses
Raleigh Creek Area				
RC3	RC3-SED-WET-0-6-01-042520	4/25/2020	2 wetland sediment samples from 0-6" and 12-18"	PFAS, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC3-SED-WET-12-18-01-042520			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
RC3A	RC3A-SED-WET-0-6-01-042520	4/25/2020	0-6" channel sediment sample	PFAS, TOPA, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
RC5	RC5-SED-WET-3-12-01-042420	4/24/2020	2 wetland sediment samples (one shallow 3-12" sample and one deeper 12-18" sample); 3 channel sediment samples from 0-4", 4-6", and 22-26"	PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC5-SED-WET-12-18-01-042420			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC5-SED-0-4-01-042420			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC5-SED-4-6-01-042420			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC5-SED-22-26-01-042420			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
RC6	RC6-SED-WET-0-6-01-042420	4/24/2020	2 wetland sediment samples downstream of RC6 where several secondary channels split from the main channel and the wetland area widens; sample collected south of the main channel in a secondary channel (0-6" and 12-18")	PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC6-SED-WET-12-18-01-042420			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
RC12	RC12-SED-COMP-0-6-01-042420	4/24/2020	1 composite sediment sample (the top 6" of sediment from each bank and center of channel); 2 channel sediment samples from 12-18" and 30-36"	PFAS, TOC, Grain Size, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC12-SED-12-18-01-042420			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC12-SED-30-36-01-042420			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC12-SED-0-6-01-042520	4/25/2020	1 channel sediment sample (0-6")	PFAS, TOPA, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
RC16A	RC16A-SED-WET-0-6-01-043020	4/30/2020	2 wetland sediment samples from 0-6" (plus DUP) and 6-12"	PFAS, Phosphorous, Nitrite as N, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC16A-SED-WET-0-6-02-043020			PFAS Only
	RC16A-SED-WET-6-12-01-043020			PFAS, TOC, Grain Size, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
RC17	RC17-SED-BANK-EAST-0-3-01-042320	4/23/2020	4 channel bank sediment samples: 0-3" and 3-6" from east and west banks	PFAS, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC17-SED-BANK-EAST-3-6-01-042320			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC17-SED-BANK-WEST-0-3-01-042320			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC17-SED-BANK-WEST-3-6-01-042320			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
RC18	RC18-SED-COMP-0-3-01-042320	4/23/2020	1 composite sediment sample (the top 3" of sediment from each bank and center of channel)	PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
RC21	RC21-SED-COMP-0-3-01-042320	4/23/2020	1 composite sediment sample (the top 3" of sediment from each bank and center of channel)	PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC21-WATER-BULK-01-042320	4/23/2020	Water	PFAS Only
	RC21-FOAM-01-042320	4/23/2020	Foam	PFAS Only
RC22	RC22-SED-WET-0-6-01-051420	5/14/2020	2 wetland sediment samples from 0-6" and 6-12"	PFAS, Chloride, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, CEC
	RC22-SED-WET-6-12-01-051420			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC22-WAT-BULK-01-051420	Water	PFAS, Alkalinity, pH, TDS, TOC, TSS, Turbidity	
RC23	RC23-SED-WET-0-6-01-051420	5/14/2020	2 wetland sediment samples from 0-6" and 6-12"	PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC23-SED-WET-6-12-01-051420			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	RC23-WAT-BULK-01-051420	Water	PFAS, Alkalinity, pH, TDS, TOC, TSS, Turbidity	
FC1	FC1-SED-0-3-01-042320	4/23/2020	0-3" channel sediment from northeast side of pond	PFAS, Chloride, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC

Table 6-1
Sediment Sampling Event, Work Plan Sampling Locations and Analyses
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Location ID	Sample ID	Sample Date	Sample Type	Analyses
Eagle Point Lake and Lake Elmo Area				
EP16	EP16-SED-0-6-01-042720	4/27/2020	3 channel sediment samples from 0-6" (plus DUP and MS/MSD), 6-18", and 30-36"	PFAS, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP16-SED-0-6-02-042720			PFAS Only
	EP16-SED-0-6-03-042720			PFAS Only
	EP16-SED-6-18-01-042720			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP16-SED-30-36-01-042720			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
EP17	EP17-SED-WET-0-6-01-042520	4/25/2020	2 wetland sediment samples from 0-6" and 6-12"; 1 channel sediment sample from 0-6"	PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP17-SED-WET-6-12-01-042520			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP17-SED-0-6-01-042520			PFAS, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
EP18	EP18-SED-0-6-01-051220	5/12/2020	0-6" lake sediment sample from southeastern end of Eagle Point Lake	PFAS, Chloride, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP18-WAT-BULK-01-051220	5/12/2020	Water	PFAS, Alkalinity, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, pH, Sulfate, TDS, TOC, TSS, Turbidity, Fe, Mg, K, Ca, Zn, Na
EP19	EP19-SED-WET-0-6-01-042520	4/25/2020	2 wetland sediment samples from 0-6" and 6-12"; 2 channel sediment samples from 24-30" and 36-42"	PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP19-SED-WET-6-12-01-042520			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP19-SED-24-30-01-042520			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP19-SED-36-42-01-042520			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
EP20	EP20-SED-WET-0-6-01-042720	4/27/2020	2 wetland sediment samples from 0-6" and 6-12"; 2 channel sediment samples from 24-30" and 36-42"	PFAS, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP20-SED-WET-6-12-01-042720			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP20-SED-24-30-01-042720			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP20-SED-36-42-01-042720			PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
EP21A - canoe launch	EP21-SED-FOAM-01-042320	4/23/2020	0-6" beach sediment sample from west side of Lake Elmo	PFAS, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, Grain Size, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	EP21-WAT-BULK-01-042320	4/23/2020	Water	PFAS Only
	EP21-FOAM-01-042320	4/23/2020	Foam	PFAS Only
	EP21-WAT-BULK-01-042420	4/24/2020	Water	PFAS Only
	EP21-WAT-SML-01-042420	4/24/2020	SML	PFAS Only
	EP21-SED-0-6-01-042520	4/25/2020	0-6" beach sediment underlying foam observed on two different occasions	PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
EP21B - boat launch	EP21-WAT-BULK-01-050520	5/5/2020	Water	PFAS, Alkalinity, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, pH, Sulfate, TDS, TOC, TSS, Turbidity, Fe, Mg, K, Ca, Zn, Na
	EP21-FOAM-01-050520		Foam (plus DUP)	PFAS Only
	EP21-FOAM-02-050520			PFAS Only
	EP21-SED-BEACH-FOAM-01-050520		0-6" beach sediment underlying foam	PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
EP23	EP23-SED-0-6-01-042720	4/27/2020	0-6" beach sediment from northern edge of Lake Elmo	PFAS, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
EP24	EP24-SED-0-6-01-042720	4/27/2020	0-6" lake sediment from northern end of Sunfish Lake	PFAS, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
BP1	BP1-SED-0-6-01-042720	4/27/2020	0-6" lake sediment from northeastern end of Brown's Pond	PFAS, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
GL1	GL1-SED-0-6-01-051220	5/12/2020	0-6" lake sediment from southern end of Goose Lake	PFAS, Chloride, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	GL1-WAT-BULK-01-051220	5/12/2020	Water	PFAS, Alkalinity, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, pH, Sulfate, TDS, TOC, TSS, Turbidity, Fe, Mg, K, Ca, Zn, Na

Table 6-1
Sediment Sampling Event, Work Plan Sampling Locations and Analyses
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Location ID	Sample ID	Sample Date	Sample Type	Analyses
Valley Branch Creek and Afton Area				
VB1	VB1-SED-COMP-0-6-01-042720	4/27/2020	1 composite sediment sample (the top 6" of each bank and center of channel)	PFAS, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
VB3	VB3-SED-COMP-0-6-01-042720	4/27/2020	1 composite sediment sample (the top 6" of each bank and center of channel (plus DUP and MS/MSD))	PFAS, Chloride, Phosphorous, Bromide, Fluoride, Nitrate as N, Nitrite as N, Sulfate, TOC, pH, Buffer Index, OM, Soluble Salts, Phosphorus, K, Ca, Mg, Na, Zn, CEC
	PFAS Only			
	PFAS Only			

Total Sample Count						
Water	Surface Microlayer	Foam	Sediment	QC Samples and Duplicates	Discrete Sampling Locations	Total Samples Collected
8	1	3	51	6	24	61

Notes:

- DUP = Duplicate sample
SML = Surface Microlayer
MS/MSD = Matrix Spike and Spike Duplicate
TOC = Total Organic Carbon
TDS = Total Dissolved Solids
TSS = Total Suspended Solids
(1) channel sediment - sample collected from the center of a channel; in a wetland, the channel is the primary waterway where water moves fastest and is transported through and across the wetland as opposed to transport via secondary drainage channels through the wetland body
(2) channel bank sediment - sample collected from one or both banks of a channel
(3) wetland sediment - sample collected within the wetland body or from a secondary channel, but not from the primary channel; usually collected as a pair that includes a shallow, biomass-rich layer and a deeper layer containing less biomass
(4) beach sediment - sample collected from the beach of a prominent water body, usually a lake or a pond
(5) lake sediment - sample collected from the bottom of a lake or a pond
(6) composite sediment sample - a well-mixed, combined sample consisting of sediment, of equal parts, from each bank of a channel and from the center of the channel

Analytical Methods - Surface Water

- PFAS: MLA-110
Iron: EPA6010D
Na, Mg, K, Ca, Zn: EPA 6020B
Turbidity: EPA180.1
Alkalinity: SM2320B
TDS: SM2540C
pH: SM4500-H+B
Anions: EPA 300.0
TOC: SM 53100 C-2011
Phosphorus: SM 4500-P F
Nitrogen (NO2 plus NO3): EPA353.2

Analytical Methods - Sediment

- PFAS: MLA-110
PFAS TOPA: MLA-111
Percent Moisture: ASTM D 2974-13 (2013)
TOC: EPA 9060A
Anions: 9056A
CEC: Calculated by Laboratory
Grain Size: ASTM D422-63

**Table 6-2
Sediment Sampling Event, Sediment Co-located Surface Water PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Location ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1
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
RC21	RC21-WAT-BULK-01-042320	4/23/2020	0.0737	0.00537	0.004 J	0.00181 J	0.00672	<0.000752	<0.000752	<0.000752	<0.000752	<0.000752	<0.000752	0.00226	<0.000752	0.00281	<0.000752	0.0021
RC22	RC22-WAT-BULK-01-051420	5/14/2020	0.574	0.0537	0.13	0.132	1.13	0.00735	0.00645	<0.000736	<0.000736	<0.000736	<0.000736	0.0383	0.0472	0.12	0.0345	2.08 D
RC23	RC23-WAT-BULK-01-051420	5/14/2020	0.688	0.0797	0.166	0.164	1.34	0.00741 J	0.00681 J	<0.00555	<0.00555	<0.00555	<0.00555	0.0528	0.0623	0.148	0.036	2.84
EP18	EP18-WAT-BULK-01-051220	5/12/2020	0.0596	0.00599	0.0109	0.0124	0.111	0.0014 J	0.001 J	<0.000734	<0.000734	<0.000734	<0.000734	0.00379	0.00369	0.0123	0.0029	0.244
EP21A	EP21-WAT-BULK-01-042320	4/23/2020	0.772	0.0158	0.0155	0.0057	0.0658	0.00107 J	0.00204	<0.000947	<0.000947	<0.000947	<0.000947	0.003	0.00206	0.00633	0.00102 J	0.183
	EP21-WAT-BULK-01-042420	4/24/2020	0.806	0.0162	0.016	0.00608	0.0621	<0.000719	<0.000719	<0.000719	<0.000719	<0.000719	<0.000719	0.00306	0.00208	0.00646	0.000889 J	0.0688
	EP21-WAT-SML-01-042420	4/24/2020	1.02	0.0163	0.0169	0.00588	0.0686	0.000936 J	0.00186	<0.000756	<0.000756	<0.000756	<0.000756	0.0032	0.00227	0.00688	0.001 J	0.17
EP21B	EP21-WAT-BULK-01-050520	5/5/2020	0.814	0.0164	0.0161	0.00566	0.065	<0.000776	<0.000776	<0.000776	<0.000776	<0.000776	<0.000776	0.00314	0.00219	0.00685	0.00084 J	0.0777
GL1	GL1-WAT-BULK-01-051220	5/12/2020	0.0306	0.00265 J	0.00183 J	0.00128 J	<0.00471	<0.00073	<0.00073	<0.00073	<0.00073	<0.00073	<0.00073	<0.00073	<0.00073	<0.00073	0.00073	0.00302

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
B - analyte found in the associated blank and concentration in sample is less than 10X the concentration in the associated blank
SML = Surface Microlayer

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFASs
Long-chain PFASs
Fluortelomers
FOSA, FASE, FASAAAs
Replacement Chemistries

**Table 6-2
Sediment Sampling Event, Sediment Co-located Surface Water PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Location ID	Sample ID	Sample Date	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
CAS Number			68259-12-1	335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
MDH HBV (µg/L)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
RC21	RC21-WAT-BULK-01-042320	4/23/2020	<0.000752	<0.000752	<0.000752	<0.00301	<0.00271	<0.00301	<0.00752	<0.000864	<0.00188	<0.000752	<0.000752	<0.00752	<0.00564	<0.00286	<0.00301	<0.00301	<0.00301
RC22	RC22-WAT-BULK-01-051420	5/14/2020	<0.000736	<0.000736	<0.000736	<0.00294	<0.00265	<0.00294	0.0195	<0.000847	<0.00184	<0.000736	0.0112	<0.00736	<0.00552	<0.0028	<0.00294	<0.00294	<0.00294
RC23	RC23-WAT-BULK-01-051420	5/14/2020	<0.00555	<0.00555	<0.00555	<0.0222	<0.02	<0.0222	0.0224 B	<0.00638	<0.0139	<0.00555	0.0138	<0.0555	<0.0416	<0.0211	<0.0222	<0.0222	<0.0222
EP18	EP18-WAT-BULK-01-051220	5/12/2020	<0.000734	<0.000734	<0.000734	<0.00294	<0.00264	<0.00294	0.00107 BJ	<0.000844	<0.00184	<0.000734	<0.000734	<0.00734	<0.00551	<0.00279	<0.00294	<0.00294	<0.00294
EP21A	EP21-WAT-BULK-01-042320	4/23/2020	<0.000947	<0.000947	<0.000947	<0.00379	<0.00341	<0.00397	<0.000947	<0.000109	<0.00237	<0.000947	<0.000947	<0.00947	<0.00711	<0.0036	<0.00379	<0.00379	<0.00379
	EP21-WAT-BULK-01-042420	4/24/2020	<0.000719	<0.000719	<0.000719	<0.00288	<0.00259	<0.00288	<0.000719	<0.000827	<0.0018	<0.000719	<0.000719	<0.00719	<0.00539	<0.00273	<0.00288	<0.00288	<0.00288
	EP21-WAT-SML-01-042420	4/24/2020	<0.000756	<0.000756	<0.000756	<0.00302	<0.00272	<0.00302	0.000798 J	<0.000869	<0.00189	0.00233	<0.000756	<0.00756	<0.00567	<0.00287	<0.00302	<0.00302	<0.00302
EP21B	EP21-WAT-BULK-01-050520	5/5/2020	<0.000776	<0.000776	<0.000776	<0.00311	<0.0028	<0.00311	<0.000776	<0.000893	<0.00194	<0.000776	<0.000776	<0.00776	<0.00582	<0.00295	<0.00311	<0.00311	<0.00311
GL1	GL1-WAT-BULK-01-051220	5/12/2020	<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	<0.00277	<0.00292	<0.00292	<0.00292

Notes:

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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

B - analyte found in the associated blank and concentration in sample is less than 10X

the concentration in the associated blank

SML = Surface Microlayer

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFASs
Long-chain PFASs
Fluorotelomers
FOSA, FASE, FASAAAs
Replacement Chemistries

Table 6-3
 Sediment Sampling Event, Sediment Co-located Foam PFAS Analytical Results
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 Minnesota Pollution Control Agency

Location ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	PFNS	PFDS
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1	335-77-3
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	NS
RC21	RC21-FOAM-01-042320	4/23/2020	0.0793	<0.0115	0.00651 J	0.00617 J	0.212	0.184	0.139	0.03	0.00968 J	<0.00576	<0.00576	<0.00576	<0.00576	0.0353	0.00909 J	1.57	<0.00576	<0.00576
EP21A	EP21-FOAM-01-042320	4/23/2020	0.897 J	<0.223	<0.111	<0.111	0.521	0.26	2.11	0.331	<0.111	<0.111	<0.111	<0.111	<0.111	<0.111	0.15 J	216 D	<0.111	<0.111
EP21B	EP21-FOAM-01-050520	5/5/2020	0.839 J	<0.22	<0.11	<0.11	1.05	0.999	10.8	0.952	0.125 J	<0.11	<0.11	<0.11	<0.11	<0.11	0.503	904 D	<0.11	<0.11
EP21B	EP21-FOAM-02-050520 (DUP)	5/5/2020	0.83	<0.199	<0.0995	<0.0995	1.07	1.0	10.4	1.1	0.144 J	<0.0995	<0.0995	<0.0995	<0.0995	<0.0995	0.498	862 D	<0.0995	<0.0995

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 PFASs
 Long-chain PFASs
 Fluorotelomers
 FOSA, FASE, FASAAAs
 Replacement Chemistries

**Table 6-3
Sediment Sampling Event, Sediment Co-located Foam PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Minnesota Pollution Control Agency**

Location ID	Sample ID	Sample Date	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
CAS Number			79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
MDH HBV (µg/L)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
RC21	RC21-FOAM-01-042320	4/23/2020	<0.00576	<0.0231	0.0561 J	<0.0231	0.0143	<0.00663	<0.0144	0.0147	0.0259	<0.0576	<0.0432	<0.0219	<0.0231	<0.0231	<0.0231
EP21A	EP21-FOAM-01-042320	4/23/2020	<0.111	<0.445	<0.401	<0.445	0.463	<0.128	<0.278	<0.111	1.3	<1.11	<0.835	<0.423	<0.445	<0.445	<0.445
EP21B	EP21-FOAM-01-050520	5/5/2020	<0.11	<0.44	<0.396	<0.44	0.737	<0.127	<0.275	0.365	3.12	<1.1	<0.825	<0.418	<0.44	<0.44	<0.44
EP21B	EP21-FOAM-02-050520 (DUP)	5/5/2020	<0.0995	<0.398	<0.358	<0.398	0.692	<0.114	<0.249	0.358	2.81 D	<0.995	<0.747	<0.378	<0.398	<0.398	<0.398

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 PFASs
Long-chain PFASs
Fluorotelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 6-4
Sediment Sampling Event, Sediment PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Minnesota Pollution Control Agency

Location ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	PFNS	
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1	
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	8/15/2019	< 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	< 0.0739
RC2	RC2-SED-0-6-01-081519	8/15/2019	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	< 0.0888
RC3	RC3-SED-0-6-01-081219	8/12/2019	< 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	< 0.078
RC3	RC3-SED-0-6-02-081219 (DUP)	8/12/2019	< 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	< 0.0852
RC3	RC3-SED-WET-0-6-042520	4/25/2020	2.28	0.282 J	0.497	0.618	7.73	0.148 J	0.803	0.116 J	0.349	0.178	0.155 J	0.173	0.255	0.813	0.562	140	0.151	< 0.0781
RC3	RC3-SED-WET-12-18-042520	4/25/2020	0.619 J	< 0.156	0.238	0.181	2.54	< 0.0781	0.323	< 0.0781	0.193	0.087 J	< 0.0781	< 0.0781	0.094 J	0.409	0.217	58.5	< 0.0781	< 0.0781
RC3A	RC3A-SED-WET-0-6-01-042520	4/25/2020	10.6	0.507	1.65	1.09	24.2	0.28	0.813	0.249	0.589	0.156 J	0.156 J	0.356	0.585	2.76	2.64	179 D	0.773	< 0.0781
RC4	RC4-SED-0-6-01-081219	8/12/2019	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	< 0.107
RC5	RC5-SED-0-6-01-081219	8/12/2019	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	< 0.0662
RC5	RC5-SED-0-4-01-042420	4/24/2020	0.612 J	< 0.151	0.088 J	< 0.0756	0.664	< 0.0756	0.2	< 0.0756	0.118 J	< 0.0756	< 0.0756	< 0.0756	< 0.0756	0.12 J	< 0.0756	24	0.097 J	< 0.0756
RC5	RC5-SED-4-6-01-042420	4/24/2020	0.481 J	< 0.154	0.083 J	< 0.0768	0.653	< 0.0768	0.194	< 0.0768	< 0.0768	< 0.0768	< 0.0768	< 0.0768	< 0.0768	0.108 J	< 0.0768	24.1	< 0.0768	< 0.0768
RC5	RC5-SED-22-26-01-042420	4/24/2020	0.402 J	< 0.156	< 0.0781	< 0.0781	0.173	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	3.25	< 0.0781	< 0.0781
RC5	RC5-SED-WET-3-12-01-042420	4/24/2020	2.54	0.25 J	0.341	0.353	5.13	0.174	1.32	0.336	0.394	< 0.0792	0.083 J	< 0.0792	0.098 J	0.445	0.451	159	0.362	< 0.0792
RC5	RC5-SED-WET-12-18-01-042420	4/24/2020	0.491 J	< 0.154	0.114 J	0.086 J	0.727	< 0.0768	0.139 J	< 0.0768	< 0.0768	< 0.0768	< 0.0768	< 0.0768	< 0.0768	0.082 J	< 0.0768	19.8	< 0.0768	< 0.0768
RC6	RC6-SED-0-6-01-081219	8/12/2019	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	< 0.0892
RC6	RC6-SED-WET-0-6-01-042420	4/24/2020	3.05	0.423 J	0.943	1.06	14.9	0.303	1.54	0.434	1.4	0.377	0.269	0.331	0.406	1.81	1.27	261 D	0.608	< 0.0892
RC6	RC6-SED-WET-12-18-01-042420	4/24/2020	1.26	0.158 J	0.382	0.371	4.11	0.087 J	0.579	0.131 J	0.35	< 0.0778	< 0.0778	0.123 J	0.114 J	0.485	0.298	77.1	0.256	< 0.0778
RC7	RC7-SED-0-6-01-081219	8/12/2019	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	< 0.0746
RC8	RC8-SED-0-6-01-081219	8/12/2019	< 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	< 0.0758
RC9	RC9-SED-0-6-01-081219	8/12/2019	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	< 0.0776
RC10	RC10-SED-0-6-01-081219	8/12/2019	< 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	< 0.0749
RC11	RC11-SED-0-6-01-081219	8/12/2019	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	< 0.0746
RC12	RC12-SED-0-6-01-081219	8/12/2019	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	< 0.0729
RC12	RC12-SED-12-18-01-042420	4/24/2020	0.431 J	< 0.159	0.12 J	0.089 J	0.624	< 0.0795	0.126 J	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	6.69	< 0.0795	< 0.0795
RC12	RC12-SED-30-36-01-042420	4/24/2020	0.548 J	< 0.157	0.159	0.121 J	0.872	< 0.0783	0.117 J	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	5.37	< 0.0783	< 0.0783
RC12	RC12-SED-COMP-0-6-01-042420	4/24/2020	0.895	0.187 J	0.163	0.164	1.98	< 0.0796	0.275	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	0.123 J	0.081 J	25.8	< 0.0796	< 0.0796
RC12	RC12-SED-0-6-01-042520	4/25/2020	0.36 J	< 0.16	0.102 J	0.09 J	1.17	< 0.0799	0.186	< 0.0799	< 0.0799	< 0.0799	< 0.0799	< 0.0799	< 0.0799	< 0.0799	< 0.0799	12	< 0.0799	< 0.0799
RC13	RC13-SED-0-6-01-081219	8/12/2019	< 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	< 0.0723
RC14	RC14-SED-0-6-01-081219	8/12/2019	< 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	< 0.0737
RC15	RC15-SED-0-6-01-081219	8/12/2019	< 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	< 0.0781
RC16	RC16-SED-0-6-01-081219	8/12/2019	< 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	< 0.0745
RC16A	RC16A-SED-WET-0-6-01-043020	4/30/2020	< 0.314	< 0.157	0.105 J	< 0.0785	0.359	< 0.0785	< 0.0785	< 0.0785	< 0.0785	< 0.0785	< 0.0785	< 0.0785	< 0.0785	< 0.0785	< 0.0785	0.792	< 0.0785	< 0.0785
RC16A	RC16A-SED-WET-0-6-02-043020 (DUP)	4/30/2020	< 0.319	< 0.159	< 0.0797	< 0.0797	0.107 J	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	0.623	< 0.0797	< 0.0797
RC16A	RC16A-SED-WET-6-12-01-043020	4/30/2020	0.33 J	< 0.158	< 0.0791	< 0.0791	0.142 J	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	0.683	< 0.0791	< 0.0791
RC17	RC17-SED-0-6-01-081219	8/12/2019	< 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	< 0.0755
RC17	RC17-SED-0-6-02-081219 (DUP)	8/12/2019	< 0.309	< 0.154	< 0.0772	< 0.0772</														

**Table 6-4
Sediment Sampling Event, Sediment PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Minnesota Pollution Control Agency**

Location ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	PFNS
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1
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
WL2	WL2-SED-0-6-01-081519	8/15/2019	< 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	< 0.0714
WL3	WL3-SED-0-6-01-082719	8/27/2019	< 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	< 0.0746
WL5	WL5-SED-0-6-01-081419	8/14/2019	< 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	< 0.0759
WL6	WL6-SED-0-6-01-081419	8/14/2019	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	< 0.0762
WL7	WL7-SED-0-6-01-081419	8/14/2019	< 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	< 0.0689
WL9	WL9-SED-0-6-01-081419	8/14/2019	< 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	< 0.074
WL9	WL9-SED-0-6-02-081419 (DUP)	8/14/2019	< 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	< 0.0741
WL9	WL9-SED-0-6-03-081419 (MS/MSD)	8/14/2019	< 0.313	< 0.156	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	0.61	< 0.0783
WL10	WL10-SED-0-6-01-081319	8/13/2019	< 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	< 0.0665
WL11	WL11-SED-0-6-01-081319	8/13/2019	< 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	< 0.0775
WL12	WL12-SED-0-6-01-081419	8/14/2019	< 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	< 0.0739
WL13	WL13-SED-0-6-01-081419	8/14/2019	< 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	< 0.0781
WL14	WL14-SED-0-6-01-081419	8/14/2019	< 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	< 0.075
WL15	WL15-SED-0-6-01-081419	8/14/2019	< 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	< 0.0793
WL17	WL17-SED-0-6-01-081319	8/13/2019	< 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	< 0.0738
BP1	BP1-SED-0-6-01-042720	4/27/2020	<0.318	<0.159	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	0.18	<0.0796
FC1	FC1-SED-0-3-01-042320	4/23/2020	0.463 J	<0.162	<0.0812	<0.0812	0.145 J	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	0.854	<0.0812
GL1	GL1-SED-0-6-01-051220	5/12/2020	<0.321	<0.16	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	0.121 J	<0.0802
VB1	VB1-SED-COMP-0-6-01-042720	4/27/2020	<0.32	<0.16	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
VB3	VB3-SED-COMP-0-6-01-042720	4/27/2020	1.49	0.191 J	0.117 J	<0.0787	0.781	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	1.37	<0.0787
VB3	VB3-SED-COMP-0-6-02-042720 (DUP)	4/27/2020	0.74	<0.142	<0.0711	<0.0711	0.408	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	0.862	<0.0711
VB3	VB3-SED-COMP-0-6-03-042720 (MS/MSD)	4/27/2020	0.787	<0.152	<0.0762	<0.0762	0.329	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	0.852	<0.0762

Notes:
MPCA - Minnesota Pollution Control Agency
SDCV - Site-specific sediment cleanup values. Cleanup values apply only to sediment collected from locations with water column depth <6.5 feet.
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
MS/MSD - Matrix Spike and Spike Duplicate

Short-chain PFCA
Long-chain PFCA
Short-chain PFSA
Long-chain PFSA
Fluorotelomers
FOSA, FASE, FASAA
Replacement Chemistries

**Table 6-4
Sediment Sampling Event, Sediment PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Minnesota Pollution Control Agency**

Location ID	Sample ID	Sample Date	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
	CAS Number		335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
	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	8/15/2019	< 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	8/15/2019	< 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	8/12/2019	< 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	RC3-SED-0-6-02-081219 (DUP)	8/12/2019	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
RC3	RC3-SED-WET-0-6-042520	4/25/2020	1.12	0.777	< 0.32	< 0.288	< 0.32	14.1	0.314	4.6	0.141 J	16.8	< 0.799	1.48	< 0.304	< 0.32	< 0.32	< 0.32
RC3	RC3-SED-WET-12-18-042520	4/25/2020	0.566	0.664	< 0.313	< 0.281	< 0.313	34	0.451	3.34	0.213	6.52	< 0.781	2.31	< 0.297	< 0.313	< 0.313	< 0.313
RC3A	RC3A-SED-WET-0-6-01-042520	4/25/2020	1.78	0.749	< 0.33	< 0.297	< 0.33	50.2	2.97	2.83	0.49	16.2	< 0.826	0.854 J	< 0.314	< 0.33	< 0.33	< 0.33
RC4	RC4-SED-0-6-01-081219	8/12/2019	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	8/12/2019	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
RC5	RC5-SED-0-4-01-042420	4/24/2020	0.323	0.098 J	< 0.302	1.01 J	< 0.302	2.47	0.313	0.576	0.091 J	3.98	< 0.756	< 0.567	< 0.287	< 0.302	< 0.302	< 0.302
RC5	RC5-SED-4-6-01-042420	4/24/2020	0.08 J	< 0.0768	< 0.307	< 0.276	< 0.307	3.89	0.414	0.405	< 0.0768	3.25	< 0.768	< 0.576	< 0.292	< 0.307	< 0.307	< 0.307
RC5	RC5-SED-22-26-01-042420	4/24/2020	< 0.0781	< 0.0781	< 0.312	< 0.281	< 0.312	0.881	0.347	0.744	< 0.0781	0.636	< 0.781	< 0.585	< 0.297	< 0.312	< 0.312	< 0.312
RC5	RC5-SED-WET-3-12-01-042420	4/24/2020	1.31	0.235	< 0.317	< 0.285	< 0.317	5.07	0.122 J	< 0.198	0.125 J	1.53	< 0.792	< 0.594	< 0.301	< 0.317	< 0.317	< 0.317
RC5	RC5-SED-WET-12-18-01-042420	4/24/2020	0.121 J	< 0.0768	< 0.307	< 0.276	< 0.307	1.38	0.189	< 0.192	< 0.0768	0.46	< 0.768	< 0.576	< 0.292	< 0.307	< 0.307	< 0.307
RC6	RC6-SED-0-6-01-081219	8/12/2019	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
RC6	RC6-SED-WET-0-6-01-042420	4/24/2020	4.83	2.51	< 0.485	< 0.437	< 0.485	10.2	1.3	1.13	0.635	23.4	< 1.21	1.06 J	< 0.461	< 0.485	< 0.485	< 0.485
RC6	RC6-SED-WET-12-18-01-042420	4/24/2020	1.04	0.58	< 0.311	< 0.28	< 0.311	13.8	2.75	0.919	0.792	5.96	< 0.778	< 0.584	< 0.296	< 0.311	< 0.311	< 0.311
RC7	RC7-SED-0-6-01-081219	8/12/2019	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	8/12/2019	< 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	8/12/2019	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	8/12/2019	< 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	8/12/2019	< 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	8/12/2019	< 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
RC12	RC12-SED-12-18-01-042420	4/24/2020	< 0.0795	< 0.0795	< 0.318	< 0.286	< 0.318	0.54	< 0.0915	< 0.199	< 0.0795	< 0.0795	< 0.795	< 0.596	< 0.302	< 0.318	< 0.318	< 0.318
RC12	RC12-SED-30-36-01-042420	4/24/2020	< 0.0783	< 0.0783	< 0.313	< 0.282	< 0.313	0.31	< 0.0901	< 0.196	< 0.0783	< 0.0783	< 0.783	< 0.588	< 0.298	< 0.313	< 0.313	< 0.313
RC12	RC12-SED-COMP-0-6-01-042420	4/24/2020	< 0.0796	< 0.0796	< 0.318	< 0.286	< 0.318	0.948	< 0.0915	< 0.199	< 0.0796	0.261	< 0.796	< 0.597	< 0.302	< 0.318	< 0.318	< 0.318
RC12	RC12-SED-0-6-01-042520	4/25/2020	< 0.0799	< 0.0799	< 0.32	< 0.288	< 0.32	0.199 J	< 0.0919	< 0.2	< 0.0799	0.223	< 0.799	< 0.6	< 0.304	< 0.32	< 0.32	< 0.32
RC13	RC13-SED-0-6-01-081219	8/12/2019	< 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	8/12/2019	< 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	8/12/2019	< 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	8/12/2019	< 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
RC16A	RC16A-SED-WET-0-6-01-043020	4/30/2020	< 0.0785	< 0.0785	< 0.314	< 0.283	< 0.314	< 0.0785	< 0.0903	< 0.196	< 0.0785	< 0.0785	< 0.785	< 0.589	< 0.298	< 0.314	< 0.314	< 0.314
RC16A	RC16A-SED-WET-0-6-02-043020 (DUP)	4/30/2020	< 0.0797	< 0.0797	< 0.319	< 0.287	< 0.319	< 0.0797	< 0.0917	< 0.199	0.107 J	0.096 J	< 0.797	< 0.598	< 0.303	< 0.319	< 0.319	< 0.319
RC16A	RC16A-SED-WET-6-12-01-043020	4/30/2020	< 0.0791	< 0.0791	< 0.317	0.385 J	< 0.317	< 0.0791	< 0.091	< 0.198	< 0.0791	< 0.0791	< 0.791	< 0.593	< 0.301	< 0.317	< 0.317	< 0.317
RC17	RC17-SED-0-6-01-081219	8/12/2019	< 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	RC17-SED-0-6-02-081219 (DUP)	8/12/2019	< 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
RC17	RC17-SED-BANK-EAST-0-3-01-042320	4/23/2020	0.103 J	< 0.0816	< 0.326	< 0.294	< 0.326	0.393	< 0.0938	< 0.204	< 0.0816	0.223	< 0.816	< 0.612	< 0.31	< 0.326	< 0.326	< 0.326
RC17	RC17-SED-BANK-EAST-3-6-01-042320	4/23/2020	0.15 J	< 0.077	< 0.308	< 0.277	< 0.308	0.474	< 0.0885	< 0.192	< 0.077	0.126 J	< 0.77	< 0.577	< 0.292	< 0.308	< 0.308	< 0.308
RC17	RC17-SED-BANK-WEST-0-3-01-042320	4/23/2020	0.131 J	< 0.0811	< 0.325	< 0.292	< 0.325	0.182 J	< 0.0933	< 0.203	< 0.0811	0.127 J	< 0.811	< 0.609	< 0.308	< 0.325	< 0.325	< 0.325
RC17	RC17-SED-BANK-WEST-3-6-01-042320	4/23/2020	0.121 J	< 0.0795	< 0.318	< 0.286	< 0.318	0.21 J	< 0.0915	< 0.199	< 0.0795	0.09 J	< 0.795	< 0.597	< 0.302	< 0.318	< 0.318	< 0.318
RC18	RC18-SED-0-6-01-081319	8/13/2019	0.15															

**Table 6-4
Sediment Sampling Event, Sediment PFAS Analytical Results
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Minnesota Pollution Control Agency**

Location ID	Sample ID	Sample Date	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
CAS Number			335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
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
RC23	RC23-SED-WET-6-12-01-051420	5/14/2020	0.172	<0.0779	<0.312	<0.28	<0.312	5.18	0.381	<0.195	0.155 J	1.28	<0.779	<0.584	<0.296	<0.312	<0.312	<0.312
EP1	EP1-SED-0-6-01-082719	8/27/2019	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	8/27/2019	<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	8/27/2019	<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	8/13/2019	<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	8/13/2019	<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	8/13/2019	<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	8/27/2019	<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	EP9-SED-0-6-02-082719 (DUP)	8/27/2019	<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
EP9	EP9-SED-0-6-03-082719 (MS/MSD)	8/27/2019	<0.174	<0.174	<0.697	<0.628	<0.697	<0.174	<0.2	<0.436	<0.174	<0.174	<1.74	<1.31	<0.697	<0.697	<0.697	<0.697
EP12	EP12-SED-0-6-01-081319	8/13/2019	<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	EP12-SED-0-6-02-081319 (DUP)	8/13/2019	<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
EP12	EP12-SED-0-6-03-081319 (MS/MSD)	8/13/2019	<0.0757	<0.0757	<0.303	<0.273	<0.303	<0.0757	<0.0871	<0.189	<0.0757	<0.0757	<0.757	<0.568	<0.303	<0.303	<0.303	<0.303
EP12	EP12-SED-0-6-01-112119	11/21/2019	<0.0835	<0.0835	<0.334	<0.601	<0.334	<0.0835	<0.0961	<0.209	<0.0835	<0.167	<0.835	<0.626	<0.334	<0.334	<0.334	<0.334
EP13	EP13-SED-0-6-01-081519	8/15/2019	<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	8/27/2019	<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	8/27/2019	<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
EP16	EP16-SED-0-6-01-112119	11/21/2019	<0.0755	<0.0755	<0.302	<0.543	<0.302	<0.0755	<0.0868	<0.189	<0.0755	<0.151	<0.755	<0.566	<0.302	<0.302	<0.302	<0.302
EP16	EP16-SED-0-6-02-112119 (DUP)	11/21/2019	<0.0713	<0.0713	<0.285	<0.513	<0.285	<0.0713	<0.0819	<0.178	<0.0713	<0.143	<0.713	<0.534	<0.285	<0.285	<0.285	<0.285
EP16	EP16-SED-0-6-01-042720	4/27/2020	<0.0791	<0.0791	<0.316	<0.285	<0.316	<0.0791	<0.091	<0.198	<0.0791	<0.0791	<0.791	<0.593	<0.301	<0.316	<0.316	<0.316
EP16	EP16-SED-0-6-02-042720 (DUP)	4/27/2020	<0.0801	<0.0801	<0.32	<0.288	<0.32	<0.0801	<0.0921	<0.2	<0.0801	<0.0801	<0.801	<0.6	<0.304	<0.32	<0.32	<0.32
EP16	EP16-SED-0-6-03-042720 (MS/MSD)	4/27/2020	<0.0791	<0.0791	<0.316	<0.285	<0.316	<0.0791	<0.091	<0.198	<0.0791	<0.0791	<0.791	<0.593	<0.301	<0.316	<0.316	<0.316
EP16	EP16-SED-6-18-01-042720	4/27/2020	<0.0796	<0.0796	<0.318	<0.286	<0.318	<0.0796	<0.0915	<0.199	<0.0796	<0.0796	<0.795	<0.597	<0.302	<0.318	<0.318	<0.318
EP16	EP16-SED-30-36-01-042720	4/27/2020	<0.0793	<0.0793	<0.317	<0.285	<0.317	<0.0793	<0.0912	<0.198	<0.0793	<0.0793	<0.793	<0.595	<0.301	<0.317	<0.317	<0.317
EP17	EP17-SED-WET-0-6-01-042520	4/25/2020	0.273 J	<0.146	<0.585	<0.526	<0.585	1.35	<0.168	<0.365	<0.146	1.04	<1.46	<1.1	<0.555	<0.585	<0.585	<0.585
EP17	EP17-SED-0-6-01-042520	4/25/2020	<0.086	<0.086	<0.344	<0.31	<0.344	0.416	<0.0989	<0.215	0.09 J	0.27	<0.86	<0.645	<0.327	<0.344	<0.344	<0.344
EP17	EP17-SED-WET-6-12-01-042520	4/25/2020	<0.0713	<0.0713	<0.285	<0.257	<0.285	0.23 J	<0.0819	<0.178	<0.0713	<0.0713	<0.713	<0.534	<0.271	<0.285	<0.285	<0.285
EP18	EP18-SED-0-6-01-051220	5/12/2020	<0.16	<0.16	<0.64	1.62 J	<0.64	1.9	0.187 J	<0.4	<0.16	2.19	<1.6	<1.2	<0.608	<0.64	<0.64	<0.64
EP19	EP19-SED-WET-0-6-01-042520	4/25/2020	<0.0793	<0.0793	<0.317	<0.285	<0.317	0.125 J	<0.0911	<0.198	<0.0793	0.123 J	<0.792	<0.594	<0.301	<0.317	<0.317	<0.317
EP19	EP19-SED-WET-6-12-01-042520	4/25/2020	<0.0703	<0.0703	<0.281	<0.253	<0.281	0.119 J	<0.0808	<0.176	<0.0703	0.102 J	<0.703	<0.527	<0.267	<0.281	<0.281	<0.281
EP19	EP19-SED-24-30-01-042520	4/25/2020	<0.0806	<0.0806	<0.322	<0.29	<0.322	0.132 J	<0.0927	<0.201	<0.0806	0.108 R J	<0.806	<0.604	<0.306	<0.322	<0.322	<0.322
EP19	EP19-SED-36-42-01-042520	4/25/2020	<0.081	<0.081	<0.324	<0.292	<0.324	<0.081	<0.0931	<0.202	<0.081	<0.081	<0.81	<0.607	<0.308	<0.324	<0.324	<0.324
EP20	EP20-SED-WET-0-6-01-042720	4/27/2020	<0.0798	<0.0798	<0.319	<0.287	<0.319	<0.0798	<0.0918	<0.2	<0.0798	<0.0798	<0.798	<0.599	<0.303	<0.319	<0.319	<0.319
EP20	EP20-SED-WET-6-12-01-042720	4/27/2020	<0.0778	<0.0778	<0.311	<0.28	<0.311	<0.0778	<0.0895	<0.194	<0.0778	<0.0778	<0.778	<0.583	<0.296	<0.311	<0.311	<0.311
EP20	EP20-SED-24-30-01-042720	4/27/2020	<0.0772	<0.0772	<0.309	<0.278	<0.309	<0.0772	<0.0888	<0.193	<0.0772	<0.0772	<0.772	<0.579	<0.293	<0.309	<0.309	<0.309
EP20	EP20-SED-36-42-01-042720	4/27/2020	<0.0761	<0.0761	<0.304	<0.274	<0.304	<0.0761	<0.0875	<0.19	<0.0761	<0.0761	<0.761	<0.571	<0.289	<0.304	<0.304	<0.304
EP21A	EP21-SED-FOAM-0-6-01-042320	4/23/2020	<0.0795	<0.0795	<0.318	<0.312	<0.318	<0.0795	<0.0914	<0.199	<0.0795	<0.0795	<0.795	<0.596	<0.302	<0.318	<0.318	<0.318
EP21A	EP21-SED-0-6-01-042520	4/25/2020	<0.0752	<0.0752	<0.301	<0.271	<0.301	<0.0752	<0.0864	<0.188	<0.0752	<0.0752	<0.752	<0.564	<0.286	<0.301	<0.301	<0.301
EP21B	EP21-SED-BEACH-FOAM-01-050520	5/5/2020	<0.0973	<0.0973	<0.389	<0.375	<0.389	<0.0973	<0.112	<0.243	<0.0973	<0.0973	<0.973	<0.73	<0.37	<0.389	<0.389	<0.389
EP23	EP23-SED-0-6-01-042720	4/27/2020	<0.0792	<0.0792	<0.317	<0.285	<0.317	<0.0792	<0.0911	<0.198	<0.0792	<0.0792	<0.792	<0.594	<0.301	<0.317	<0.317	<0.317
EP24	EP24-SED-0-6-01-042720	4/27/2020	<0.0811	<0.0811	<0.324	<0.292	<0.324	<0.0811	<0.0933	<0.203	<0.0811	<0.0811	<0.811	<0.608	<0.308	<0.324	<0.324	<0.324

**Table 6-4
Sediment Sampling Event, Sediment PFAS Analytical Results
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Minnesota Pollution Control Agency**

Location ID	Sample ID	Sample Date	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
CAS Number			335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
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
WL2	WL2-SED-0-6-01-081519	8/15/2019	< 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	8/27/2019	< 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	8/14/2019	< 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	8/14/2019	< 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	8/14/2019	< 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	8/14/2019	< 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	WL9-SED-0-6-02-081419 (DUP)	8/14/2019	< 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
WL9	WL9-SED-0-6-03-081419 (MS/MSD)	8/14/2019	< 0.0783	< 0.313	< 0.282	< 0.313	< 0.0783	< 0.09	< 0.196	< 0.0783	< 0.0783	< 0.782	< 0.587	< 0.313	< 0.313	< 0.313	< 0.313	< 0.313
WL10	WL10-SED-0-6-01-081319	8/13/2019	< 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	8/13/2019	< 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	8/14/2019	< 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	8/14/2019	< 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	8/14/2019	< 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	8/14/2019	< 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	8/13/2019	< 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
BP1	BP1-SED-0-6-01-042720	4/27/2020	<0.0796	<0.0796	<0.318	<0.335	<0.318	<0.0796	<0.0916	<0.199	<0.0796	<0.0796	<0.796	<0.597	<0.303	<0.318	<0.318	<0.318
FC1	FC1-SED-0-3-01-042320	4/23/2020	<0.0812	<0.0812	<0.325	<0.292	<0.325	<0.0812	<0.0934	<0.203	<0.0812	<0.0812	<0.812	<0.609	<0.309	<0.325	<0.325	<0.325
GL1	GL1-SED-0-6-01-051220	5/12/2020	<0.0802	<0.0802	<0.321	<0.289	<0.321	<0.0802	<0.0922	<0.2	<0.0802	<0.0802	<0.802	<0.601	<0.305	<0.321	<0.321	<0.321
VB1	VB1-SED-COMP-0-6-01-042720	4/27/2020	<0.08	<0.08	<0.32	<0.288	<0.32	<0.08	<0.092	<0.2	0.081 J	<0.08	<0.8	<0.6	<0.304	<0.32	<0.32	<0.32
VB3	VB3-SED-COMP-0-6-01-042720	4/27/2020	<0.0787	<0.0787	<0.315	<0.325	<0.315	<0.0787	<0.0905	<0.197	<0.0787	<0.0787	<0.787	<0.59	<0.299	<0.315	<0.315	<0.315
VB3	VB3-SED-COMP-0-6-02-042720 (DUP)	4/27/2020	<0.0711	<0.0711	<0.285	<0.288	<0.285	<0.0711	<0.0818	<0.178	<0.0711	<0.0711	<0.711	<0.534	<0.27	<0.285	<0.285	<0.285
VB3	VB3-SED-COMP-0-6-03-042720 (MS/MSD)	4/27/2020	<0.0762	<0.0762	<0.305	<0.274	<0.305	<0.0762	<0.0876	<0.19	<0.0762	<0.0762	<0.762	<0.571	<0.289	<0.305	<0.305	<0.305

Notes:
MPCA - Minnesota Pollution Control Agency
SDCV - Site-specific sediment cleanup values. Cleanup values apply only to sediment collected from locations with water column depth <6.5 feet.
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
MS/MSD - Matrix Spike and Spike Duplicate

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFASs
Long-chain PFASs
Fluorotelomers
FOSA, FASE, FASAs
Replacement Chemistries

Table 6-5a
Sediment Sampling Event, Anions and Total Organic Carbon Sediment Analytical Results
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Location ID	Sample ID	Sample Date	Chloride	Phosphorous	Bromide	Fluoride	Nitrate as N	Nitrite as N	Sulfate	Total Organic Carbon (1)
Raleigh Creek Area										
RC3	RC3-SED-WET-0-6-01-042520	4/25/2020	200	476	<2.0	<1.5	<2.0	<2.0	495	42,600
	RC3-SED-WET-12-18-01-042520	4/25/2020	NA	NA	NA	NA	NA	NA	NA	30,600
RC3A	RC3A-SED-WET-0-6-01-042520	4/25/2020	NA	NA	NA	NA	NA	NA	NA	77,700
RC5	RC5-SED-0-4-01-042420	4/24/2020	NA	NA	NA	NA	NA	NA	NA	27,700
	RC5-SED-4-6-01-042420	4/24/2020	NA	NA	NA	NA	NA	NA	NA	18,200
	RC5-SED-22-26-01-042420	4/24/2020	NA	NA	NA	NA	NA	NA	NA	5,120
	RC5-SED-WET-3-12-01-042420	4/24/2020	NA	NA	NA	NA	NA	NA	NA	64,400
	RC5-SED-WET-12-18-01-042420	4/24/2020	NA	NA	NA	NA	NA	NA	NA	6,030
RC6	RC6-SED-WET-0-6-01-042420	4/24/2020	NA	NA	NA	NA	NA	NA	NA	64,600
	RC6-SED-WET-12-18-01-042420	4/24/2020	NA	NA	NA	NA	NA	NA	NA	21,400
RC12	RC12-SED-0-6-01-042520	4/25/2020	32.9	119	<2.0	<1.5	5.1	<2.0	<2.0	6,370
	RC12-SED-12-18-01-042420	4/24/2020	NA	NA	NA	NA	NA	NA	NA	1,890
	RC12-SED-30-36-01-042420	4/24/2020	NA	NA	NA	NA	NA	NA	NA	1,410
RC16A	RC16A-SED-WET-0-6-01-043020	4/30/2020	NA	502	NA	NA	NA	<2.0	NA	22,200
	RC16A-SED-WET-6-12-01-043020	4/30/2020	NA	NA	NA	NA	NA	NA	NA	27,300
RC17	RC17-SED-BANK-EAST-0-3-01-042320	4/23/2020	56.7	204	2.2	<1.5	<2.0	<2.0	127	19,100
	RC17-BANK-EAST-3-6-01-042320	4/23/2020	NA	NA	NA	NA	NA	NA	NA	19,500
	RC17-SED-BANK-WEST-0-3-01-042320	4/23/2020	NA	NA	NA	NA	NA	NA	NA	17,500
	RC17-BANK-WEST-3-6-01-042320	4/23/2020	NA	NA	NA	NA	NA	NA	NA	12,900
RC18	RC18-SED-COMP-0-3-01-042320	4/23/2020	NA	NA	NA	NA	NA	NA	NA	32,400
RC21	RC21-SED-COMP-0-3-01-042320	4/23/2020	NA	NA	NA	NA	NA	NA	NA	4,920
RC22	RC22-SED-WET-0-6-01-051420	5/14/2020	266	NA	<1.9	<1.4	<1.9	<1.9	68.7	38,100
	RC22-SED-WET-6-12-01-051420	5/14/2020	NA	NA	NA	NA	NA	NA	NA	22,300
RC23	RC23-SED-WET-0-6-01-051420	5/14/2020	NA	NA	NA	NA	NA	NA	NA	30,400
	RC23-SED-WET-6-12-01-051420	5/14/2020	NA	NA	NA	NA	NA	NA	NA	26,200
FC1	FC1-SED-0-3-01-042320	4/23/2020	69.4	NA	NA	NA	NA	NA	8.1	28,700

Table 6-5a
Sediment Sampling Event, Anions and Total Organic Carbon Sediment Analytical Results
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Location ID	Sample ID	Sample Date	Chloride	Phosphorous	Bromide	Fluoride	Nitrate as N	Nitrite as N	Sulfate	Total Organic Carbon (1)
Eagle Point Lake and Lake Elmo Area										
EP16	EP16-SED-0-6-01-042720	4/27/2020	25.3	65.7	<2.0	<1.5	<2.0	<2.0	155	6,470
	EP16-SED-6-18-01-042720	4/27/2020	NA	NA	NA	NA	NA	NA	NA	1,230
	EP16-SED-30-36-01-042720	4/27/2020	NA	NA	NA	NA	NA	NA	NA	1,560
EP17	EP17-SED-0-6-01-042520	4/25/2020	145	317	<1.9	<1.4	<1.9	<1.9	216	33,000
	EP17-SED-WET-0-6-01-042520	4/25/2020	NA	NA	NA	NA	NA	NA	NA	20,600
	EP17-SED-WET-6-12-01-042520	4/25/2020	NA	NA	NA	NA	NA	NA	NA	50,000
EP18	EP18-SED-0-6-01-051220	5/12/2020	109	NA	<2.1	<1.6	<2.1	<2.1	29.2	88,600
EP19	EP19-SED-WET-0-6-01-042520	4/25/2020	NA	NA	NA	NA	NA	NA	NA	9,730
	EP19-SED-WET-6-12-01-042520	4/25/2020	NA	NA	NA	NA	NA	NA	NA	6,670
	EP19-SED-24-30-01-042520	4/25/2020	NA	NA	NA	NA	NA	NA	NA	9,710
	EP19-SED-36-42-01-042520	4/25/2020	NA	NA	NA	NA	NA	NA	NA	4,540
EP20	EP20-SED-WET-0-6-01-042720	4/27/2020	33.8	105	<2.0	<1.5	<2.0	<2.0	247	16,700
	EP20-SED-WET-6-12-01-042720	4/27/2020	NA	NA	NA	NA	NA	NA	NA	8,660
	EP20-SED-24-30-01-042720	4/27/2020	NA	NA	NA	NA	NA	NA	NA	9,150
	EP20-SED-36-42-01-042720	4/27/2020	NA	NA	NA	NA	NA	NA	NA	2,430
EP21A	EP21-SED-FOAM-0-6-01-042320	4/23/2020	35.9	209	<1.9	<1.4	<1.9	<1.9	104	2,690
	EP21-SED-0-6-01-042520	4/25/2020	NA	NA	NA	NA	NA	NA	NA	3,390
EP21B	EP21-SED-BEACH-FOAM-01-050520	5/5/2020	NA	NA	NA	NA	NA	NA	NA	6,900
EP23	EP23-SED-0-6-01-042720	4/27/2020	NA	NA	NA	NA	NA	NA	NA	716
EP24	EP24-SED-0-6-01-042720	4/27/2020	12.9	323	<1.9	<1.4	<1.9	<1.9	250	11,900
BP1	BP1-SED-0-6-01-042720	4/27/2020	<11.7	106	<1.9	<1.5	<1.9	<1.9	71.5	18,700
GL1	GL1-SED-0-6-01-051220	5/12/2020	22.6	NA	<2.0	<1.5	<2.0	<2.0	59.0	18,000
Valley Branch Creek and Afton Area										
VB1	VB1-SED-COMP-0-6-01-042720	4/27/2020	27.1	543	<2.0	<1.5	<2.0	<2.0	805	15,400
VB3	VB3-SED-COMP-0-6-01-042720	4/27/2020	13.9	164	<2.0	<1.5	<2.0	<2.0	61.6	11,900

Notes:

All results are shown in parts per million (ppm) or milligrams per kilogram (mg/kg)
(1) Stated value is a lab-determined mean of two Total Organic Carbon measurements
<0.0002 - Concentration is less than laboratory reportable limit
NA - Parameter not analyzed

Table 6-5b
Sediment Sampling Event, Cations and CEC Sediment Analytical Results
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Location ID	Sample ID	Date	pH	Buffer Index	Organic Matter (OM%)	Soluble Salts (1)	Bray-I Phosphorus	Olsen Phosphorus	Potassium	Calcium	Magnesium	Sodium	Zinc	CEC Summation (2)
Raleigh Creek Area														
RC3	RC3-SED-WET-0-6-01-042520	4/25/2020	7.1	7.4	6.9	0.2	55.0	14.0	46	1234	198	139	8.0	8.5
	RC3-SED-WET-12-18-01-042520	4/25/2020	8.0	7.4	3.3	0.2	16.0	6.0	49	1122	190	541	5.2	9.6
RC3A	RC3A-SED-WET-0-6-01-042520	4/25/2020	6.6	6.8	11.2	0.6	28.0	24.0	22	1980	293	431	9.6	16.3
RC5	RC5-SED-0-4-01-042420	4/24/2020	6.4	7.0	3.1	0.2	22.0	30.0	39	1203	178	163	4.0	8.3
	RC5-SED-4-6-01-042420	4/24/2020	7.0	7.2	1.8	0.1	26.0	16.0	39	1265	189	162	3.2	8.7
	RC5-SED-22-26-01-042420	4/24/2020	7.6	7.4	0.8	0.2	22.0	12.0	30	748	125	158	0.6	5.5
	RC5-SED-WET-3-12-01-042420	4/24/2020	7.0	7.1	11.5	0.2	5.0	38.0	40	1983	291	137	11.3	13.0
RC6	RC5-SED-WET-12-18-01-042420	4/24/2020	7.0	7.2	1.4	0.2	10.0	13.0	57	1490	308	111	2.2	10.6
	RC6-SED-WET-0-6-01-042420	4/24/2020	6.3	6.8	19.7	0.5	13.0	11.0	79	1869	329	272	9.6	15.4
	RC6-SED-WET-6-12-01-042420	4/24/2020	7.0	7.1	4.2	0.3	28.0	22.0	80	2262	408	279	11.6	16.1
RC12	RC12-SED-0-6-01-042520	4/25/2020	7.8	7.6	0.9	0.2	26.0	12.0	36	903	156	128	2.4	6.4
	RC12-SED-12-18-01-042420	4/24/2020	7.8	7.5	0.9	0.2	4.0	5.0	81	1486	343	188	0.2	11.3
	RC12-SED-30-36-01-042420	4/24/2020	7.8	7.3	1.0	0.2	3.0	4.0	102	1942	477	203	0.2	14.8
RC16A	RC16A-SED-WET-0-6-01-043020	4/30/2020	6.3	6.6	5.5	0.2	13	34	76	1288	191	94	1.5	12.6
	RC16A-SED-WET-6-12-01-043020	4/30/2020	6.4	6.5	5.4	0.2	136	74	97	1530	222	165	1.3	15.4
RC17	RC17-SED-BANK-EAST-0-3-01-042320	4/23/2020	7.7	7.4	3	0.1	11	6	107	1278	264	150	1.6	9.5
	RC17-SED-BANK-EAST-3-6-01-042320	4/23/2020	7.4	7.5	2.9	0.1	16	10	65	1410	262	115	2.6	9.9
	RC17-SED-BANK-WEST-0-3-01-042320	4/23/2020	7.5	7.4	2.4	0.1	16	8	63	1320	256	120	1.9	9.4
	RC17-SED-BANK-WEST-3-6-01-042320	4/23/2020	7.3	7.5	2	0.1	20	12	62	1248	248	102	1.7	8.9
RC18	RC18-SED-COMP-0-3-01-042320	4/23/2020	7.1	7.5	3.1	0.2	22	11	54	969	176	105	2.1	6.9
RC21	RC21-SED-COMP-0-3-01-042320	4/23/2020	7.8	7.6	0.8	0.1	15	8	55	1006	214	94	0.9	7.3
RC22	RC22-SED-0-6-01-051420	5/14/2020	6.7	6.8	6.7	0.5	3	33	73	2175	368	209	6.2	17
	RC22-SED-6-12-01-051420	5/14/2020	7	7	4.7	0.3	10	34	76	2198	398	209	6.6	15.4
RC23	RC23-SED-0-6-01-051420	5/14/2020	7.4	7	5.8	0.5	14	21	168	3663	348	239	2.4	22.6
	RC23-SED-6-12-01-051420	5/14/2020	6.7	6.9	4.3	0.4	27	25	134	2404	255	173	3.7	16.2
FC1	FC1-SED-0-3-01-042320	4/23/2020	6.5	7	4.4	0.2	18	17	72	1639	286	113	1.8	11.2
Eagle Point Lake and Lake Elmo Area														
EP16	EP16-SED-0-6-01-042720	4/27/2020	7.4	7.6	0.9	0.2	12	6	27	549	120	53	0.7	4
	EP16-SED-6-18-01-042720	4/27/2020	7.7	7.6	0.4	0.1	12	6	40	470	118	67	0.4	3.7
EP17	EP17-SED-0-6-01-042520	4/25/2020	6.1	6.5	9.6	0.2	24	12	28	1308	246	139	2.2	14.2
	EP17-SED-WET-0-6-01-042520	4/25/2020	6	6.8	12.4	0.2	14	7	34	1154	208	139	1.9	10.2
EP18	EP17-SED-WET-6-12-01-042520	4/25/2020	6.2	6.7	6.8	0.1	18	7	36	1441	263	133	2.1	13
	EP18-SED-30-36-01-042720	4/27/2020	7.6	7.6	0.3	0.1	13	6	29	386	95	56	0.4	3
EP19	EP18-SED-0-6-01-051220	5/12/2020	6.2	6.7	15.2	0.4	22	6	86	1383	241	107	2	12.6
	EP19-SED-WET-0-6-01-042520	4/25/2020	6.9	7.5	0.8	0.1	14	6	18	399	76	51	0.5	2.9
	EP19-SED-WET-6-12-042520	4/25/2020	6.7	7.4	0.6	0.1	16	5	19	334	65	62	0.3	2.5
	EP19-SED-24-30-01-042520	4/25/2020	6.5	7.5	0.7	0.2	10	4	18	313	63	68	0.3	2.4
EP20	EP19-SED-36-40-01-042520	4/25/2020	7	7.6	0.3	0.2	12	5	22	300	64	50	0.2	2.3
	EP20-SED-WET-0-6-01-042720	4/27/2020	7.8	7.6	1.2	0.3	10	5	28	1590	113	61	1.1	9.2
EP21A	EP21-SED-FOAM-0-6-01-042320	4/23/2020	8.4	7.6	0.7	0.2	6	4	58	1752	249	37	0.1	11.1
	EP21-SED-WET-6-12-01-042720	4/27/2020	7.7	7.6	1.1	0.2	16	6	26	1490	100	56	1.1	8.6
	EP21-SED-0-6-01-042520	4/25/2020	8.2	7.6	0.5	0.1	5	3	25	958	135	54	0.3	6.2
EP21B	EP21-SED-BEACH-FOAM-01-050520	5/5/2020	7.7	7.5	0.2	0.1	10	4	15	337	60	13	3.2	2.3
EP22	EP22-SED-24-30-01-042720	4/27/2020	7.8	7.6	0.7	0.1	21	7	29	1346	99	62	0.5	7.9
EP23	EP23-SED-36-42-01-042720	4/27/2020	7.8	7.5	0.9	0.2	19	8	25	1182	86	53	0.6	6.9
	EP23-SED-0-6-01-042720	4/27/2020	8	7.6	0.2	0.1	14	6	24	584	69	101	1	4
EP24	EP24-SED-0-6-01-042720	4/27/2020	7.3	7.4	5.8	0.1	10	6	32	2422	280	100	1	14.9
BP1	BP1-SED-0-6-01-042720	4/27/2020	6.8	7.4	1.4	0.1	17	7	44	646	98	36	1.6	4.3
GL1	GL1-SED-0-6-01-051220	5/12/2020	5.7	6.6	2.2	0.1	21	13	99	630	114	46	1.8	8.5

Table 6-5b
Sediment Sampling Event, Cations and CEC Sediment Analytical Results
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Location ID	Sample ID	Date	pH	Buffer Index	Organic Matter (OM%)	Soluble Salts (1)	Bray-I Phosphorus	Olsen Phosphorus	Potassium	Calcium	Magnesium	Sodium	Zinc	CEC Summation (2)
Valley Branch Creek and Afton Area														
VB1	VB1-SED-COMP-0-6-01-042720	4/27/2020	6.7	7.3	1.4	0.3	63	23	39	758	147	73	6	5.4
VB3	VB3-SED-COMP-0-6-01-042720	4/27/2020	7.8	7.5	1.6	0.2	20	11	38	1323	214	45	0.8	8.7

Notes:
 All results are shown in parts per million (ppm) or milligrams per kilogram (mg/kg), except pH and Buffer Index
 CEC = Cation Exchange Capacity
 (1) Soluble Salts are shown in millimhos per centimeter (mmhos/cm)
 (2) CEC Summation is shown in milliequivalents/100 grams (me/100 g)

Table 6-5c
Sediment Sampling Event, Grain Size Analysis Results
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	RC12		RC16A		EP21A	
	RC12-SED-COMP-0-6-01-042420		RC16A-SED-WET-6-12-01-043020		EP21-SED-FOAM-0-6-01-042320	
	4/24/2020		4/30/2020		4/23/2020	
Coarse Sieve Analysis Results:	Diameter (um)	Passing (%)	Diameter (um)	Passing (%)	Diameter (um)	Passing (%)
3" Sieve	76200	100.00	76200	100.00	76200	100.00
2" Sieve	50800	100.00	50800	100.00	50800	100.00
1 1/2" Sieve	38100	100.00	38100	100.00	38100	100.00
1" Sieve	25400	100.00	25400	100.00	25400	100.00
3/4" Sieve	19000	100.00	19000	100.00	19000	100.00
3/8" Sieve	9500	89.69	9500	99.28	9500	97.43
#4 Sieve	4760	77.97	4760	98.97	4760	94.90
#10 Sieve	2000	70.17	2000	98.08	2000	91.71
Fine Sieve Analysis Results:						
#40 Sieve	425	56.13	425	96.30	425	83.27
#60 Sieve	250	37.19	250	94.52	250	74.94
#140 Sieve (0.105mm)	105	21.50	105	92.57	105	64.30
#200 Sieve (0.074mm)	74	19.65	74	92.25	74	62.34
Hydrometer Analysis Results:						
2 Minutes	32.00	13.84	31.00	82.51	30.00	46.30
5 Minutes	21.00	11.58	20.00	73.34	20.00	40.20
15 Minutes	12.00	9.01	13.00	59.59	12.00	32.28
30 Minutes	9.00	8.04	9.00	50.42	9.00	28.02
60 Minutes	6.30	7.08	6.70	41.25	6.20	24.37
250 Minutes	3.10	5.47	3.50	28.42	3.20	18.88
1440 Minutes	1.30	4.18	1.50	20.17	1.30	14.62
% Rock	0.00		0.00		0.00	
% Gravel	0.00		0.00		0.00	
Coarse	0.00		0.00		0.00	
Fine	22.00		1.00		5.10	
Total	22.00		1.00		5.10	
% Sand	7.80		0.90		3.20	
Coarse	7.80		0.90		3.20	
Medium	14.00		1.80		8.40	
Fine	36.50		4.00		20.90	
Total	58.30		6.70		32.60	
% Fines	14.20		63.80		43.50	
Silt	14.20		63.80		43.50	
Clay	5.50		28.40		18.90	
Total	19.60		92.30		62.30	
Specific Gravity	2.66		2.25		2.50	

Notes:
um = micrometers
mm = millimeters

Table 6-6
Sediment Sampling Event, Sediment Co-located Surface Water Quality Analytical Results
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Location ID	Sample ID	Sample Date	Alkalinity (1)	Chloride	Bromide	Phosphorous	Fluoride	Nitrate as N	pH	Sulfate	Total Dissolved Solids
RC22	RC22-WAT-BULK-01-051420	5/14/2020	166.0	NA	NA	NA	NA	NA	7.8	NA	648
RC23	RC23-WAT-BULK-01-051420	5/14/2020	132.0	NA	NA	NA	NA	NA	7.7	NA	606
EP18	EP18-WAT-BULK-01-051220	5/12/2020	95.4	91.6	<0.080	<0.10	<0.10	<0.020	7.8	2.5	275
EP21B	EP21-WAT-BULK-01-050520	5/5/2020	161	38.0	<0.080	<0.10	<0.10	<0.020	8.0	5.3	239
GL1	GL1-WAT-BULK-01-051220	5/12/2020	32.6	35.3	<0.080	<0.10	<0.10	<0.020	7.2	<2.0	122

Notes:

All results are shown in milligrams per liter (mg/L) or parts per million (ppm) except pH which is unitless.

(1) Alkalinity is reported as total CaCO₃

(2) Turbidity is reported in Nephelometric Turbidity Units (NTU)

NA - Parameter not analyzed

DUP - duplicate sample

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Table 6-6
Sediment Sampling Event, Sediment Co-located Surface Water Quality Analytical Results
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Location ID	Sample ID	Sample Date	Total Organic Carbon	Total Suspended Solids	Turbidity (2)	Iron	Magnesium	Potassium	Calcium	Zinc	Sodium
RC22	RC22-WAT-BULK-01-051420	5/14/2020	6.4	<10.0	2	NA	NA	NA	NA	NA	NA
RC23	RC23-WAT-BULK-01-051420	5/14/2020	7.1	<10.0	2.2	NA	NA	NA	NA	NA	NA
EP18	EP18-WAT-BULK-01-051220	5/12/2020	7.6	<10.0	2.1	0.196	11.2	2.15	32.9	<0.0050	53.1
EP21B	EP21-WAT-BULK-01-050520	5/5/2020	4.4	<10.0	1.8	<0.05	17.9	1.78	44.3	<0.0050	18.3
GL1	GL1-WAT-BULK-01-051220	5/12/2020	10.6	22	10.5	0.162	3.11	3.7	8.67	<0.0050	27.4

Notes:

All results are shown in milligrams per liter (mg/L) or parts per million (ppm) except pH which is unitless.

(1) Alkalinity is reported as total CaCO₃

(2) Turbidity is reported in Nephelometric Turbidity Units (NTU)

NA - Parameter not analyzed

DUP - duplicate sample

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Table 6-7a
Sediment Sampling Event, RC Sediment Ecological Risk Screening Comparison
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Location ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	PFNS	
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1	
Benthic Aquatic Life ESV (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	220	NV	
Wildlife (µg/kg)			1,600	NV	1800	NV	6	10	NV	NV	NV	NV	NV	730	NV	NV	NV	1.4	NV	
RC1	RC1-SED-0-6-01-081519	8/15/2019	< 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	8/15/2019	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	8/12/2019	< 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	< 0.078	< 0.078	
	RC3-SED-0-6-02-081219 (DUP)	8/12/2019	< 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	< 0.0852	< 0.0852	
	RC3-SED-WET-0-6-042520	4/25/2020	2.28	0.282 J	0.497	0.618	7.73	0.148 J	0.803	0.116 J	0.349	0.178	0.155 J	0.173	0.255	0.813	0.562	140	0.151	
RC3A	RC3A-SED-WET-0-6-01-042520	4/25/2020	0.619 J	< 0.156	0.238	0.181	2.54	< 0.0781	0.323	< 0.0781	0.193	0.087 J	< 0.0781	< 0.0781	0.094 J	0.409	0.217	58.5	< 0.0781	
RC4	RC4-SED-0-6-01-081219	8/12/2019	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	8/12/2019	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	
	RC5-SED-0-4-01-042420	4/24/2020	0.612 J	< 0.151	0.088 J	< 0.0756	0.664	< 0.0756	0.2	< 0.0756	0.118 J	< 0.0756	< 0.0756	< 0.0756	< 0.0756	0.12 J	< 0.0756	24	0.097 J	
	RC5-SED-4-6-01-042420	4/24/2020	0.481 J	< 0.154	0.083 J	< 0.0768	0.653	< 0.0768	0.194	< 0.0768	< 0.0768	< 0.0768	< 0.0768	< 0.0768	< 0.0768	0.108 J	< 0.0768	24.1	< 0.0768	
	RC5-SED-22-26-01-042420	4/24/2020	0.402 J	< 0.156	< 0.0781	< 0.0781	0.173	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	< 0.0781	3.25	< 0.0781	
	RC5-SED-WET-3-12-01-042420	4/24/2020	2.54	0.25 J	0.341	0.353	5.13	0.174	1.32	0.336	0.394	< 0.0792	0.083 J	< 0.0792	0.098 J	0.445	0.451	159	0.362	
RC6	RC6-SED-0-6-01-081219	8/12/2019	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	
RC6	RC6-SED-WET-0-6-01-042420	4/24/2020	3.05	0.423 J	0.943	1.06	14.9	0.303	1.54	0.434	1.4	0.377	0.269	0.331	0.406	1.81	1.27	261 D	0.608	
	RC6-SED-WET-12-18-01-042420	4/24/2020	1.26	0.158 J	0.382	0.371	4.11	0.087 J	0.579	0.131 J	0.35	< 0.0778	< 0.0778	0.123 J	0.114 J	0.485	0.298	77.1	0.256	
RC7	RC7-SED-0-6-01-081219	8/12/2019	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	8/12/2019	< 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	8/12/2019	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	8/12/2019	< 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	8/12/2019	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	8/12/2019	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	
	RC12-SED-COMP-0-6-01-042420	4/24/2020	0.895	0.187 J	0.163	0.164	1.98	< 0.0796	0.275	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	0.123 J	0.081 J	
	RC12-SED-0-6-01-042520	4/25/2020	0.36 J	< 0.16	0.102 J	0.09 J	1.17	< 0.0799	0.186	< 0.0799	< 0.0799	< 0.0799	< 0.0799	< 0.0799	< 0.0799	< 0.0799	< 0.0799	12	< 0.0799	
	RC12-SED-12-18-01-042420	4/24/2020	0.431 J	< 0.159	0.12 J	0.089 J	0.624	< 0.0795	0.126 J	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	6.69	< 0.0795	
RC13	RC13-SED-0-6-01-081219	8/12/2019	< 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	8/12/2019	< 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	8/12/2019	< 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	8/12/2019	< 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	
RC16A	RC16A-SED-WET-0-6-01-043020	4/30/2020	< 0.314	< 0.157	0.105 J	< 0.0785	0.359	< 0.0785	0.359	< 0.0785	< 0.0785	< 0.0785	< 0.0785	< 0.0785	< 0.0785	< 0.0785	< 0.0785	0.792	< 0.0785	
	RC16A-SED-WET-0-6-02-043020 (DUP)	4/30/2020	< 0.319	< 0.159	< 0.0797	< 0.0797	0.107 J	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	< 0.0797	0.623	< 0.0797	
	RC16A-SED-WET-6-12-01-043020	4/30/2020	0.33 J	< 0.158	< 0.0791	< 0.0791	0.142 J	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	0.683	< 0.0791	
RC17	RC17-SED-0-6-01-081219	8/12/2019	< 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	< 0.0755	1.29	< 0.0755
	RC17-SED-0-6-02-081219 (DUP)	8/12/2019	< 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	< 0.0772	0.864	< 0.0772
	RC17-SED-BANK-EAST-0-3-01-042320	4/23/2020	0.824	< 1.63	0.084 J	< 0.0816	0.425	0.084 J	0.214	0.118 J	0.085 J	< 0.0816	< 0.0816	< 0.0816	< 0.0816	< 0.0816	< 0.0816	< 0.0816	9.92	< 0.0816
	RC17-SED-BANK-EAST-3-6-01-042320	4/23/2020	1.16	0.192 J	0.123 J	0.083 J	0.857	< 0.077	0.181	0.104 J	0.093 J	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	< 0.077	11.8	< 0.077
	RC17-SED-BANK-WEST-0-3-01-042320	4/23/2020	0.627 J	< 0.0811	< 0.0811	< 0.0811	0.416	< 0.0811	0.084 J	0.083 J	< 0.0811	< 0.0811	< 0.0811	< 0.0811	< 0.0811	< 0.0811	< 0.0811	< 0.0811	5.31	< 0.0811
RC18	RC18-SED-0-6-01-081319	8/13/2019	< 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	< 0.074	0.086 J	< 0.074	14	
RC19	RC19-SED-0-6-01-081319	8/13/2019	< 0.325	< 0.163																

Table 6-7a
Sediment Sampling Event, RC Sediment Ecological Risk Screening Comparison
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	Sample Date	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
CAS Number			335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
Benthic Aquatic Life ESV (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
Wildlife (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
RC1	RC1-SED-0-6-01-081519	8/15/2019	< 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	8/15/2019	< 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	8/12/2019	< 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)	8/12/2019	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
	RC3-SED-WET-0-6-042520	4/25/2020	1.12	0.777	< 0.32	< 0.288	< 0.32	14.1	0.314	4.6	0.141 J	16.8	< 0.799	1.48	< 0.304	< 0.32	< 0.32	< 0.32
RC3A	RC3A-SED-WET-12-18-042520	4/25/2020	0.566	0.664	< 0.313	< 0.281	< 0.313	34	0.451	3.34	0.213	6.52	< 0.781	2.31	< 0.297	< 0.313	< 0.313	< 0.313
RC4	RC4-SED-0-6-01-081219	8/12/2019	1.78	0.749	< 0.33	< 0.297	< 0.33	50.2	2.97	2.83	0.49	16.2	< 0.826	0.854 J	< 0.314	< 0.33	< 0.33	< 0.33
RC5	RC5-SED-0-6-01-081219	8/12/2019	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-SED-0-6-01-042420	4/24/2020	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
	RC5-SED-4-6-01-042420	4/24/2020	0.323	0.098 J	< 0.302	1.01 J	< 0.302	2.47	0.313	0.576	0.091 J	3.98	< 0.756	< 0.567	< 0.287	< 0.302	< 0.302	< 0.302
	RC5-SED-22-26-01-042420	4/24/2020	0.08 J	< 0.0768	< 0.307	< 0.276	< 0.307	3.89	0.414	0.405	< 0.0768	3.25	< 0.768	< 0.576	< 0.292	< 0.307	< 0.307	< 0.307
	RC5-SED-WET-3-12-01-042420	4/24/2020	< 0.0781	< 0.0781	< 0.312	< 0.281	< 0.312	0.881	0.347	0.744	< 0.0781	0.636	< 0.781	< 0.585	< 0.297	< 0.312	< 0.312	< 0.312
RC6	RC5-SED-WET-12-18-01-042420	4/24/2020	1.31	0.235	< 0.317	< 0.285	< 0.317	5.07	0.122 J	< 0.198	0.125 J	1.53	< 0.792	< 0.594	< 0.301	< 0.317	< 0.317	< 0.317
	RC5-SED-WET-12-18-01-042420	4/24/2020	0.121 J	< 0.0768	< 0.307	< 0.276	< 0.307	1.38	0.189	< 0.192	< 0.0768	0.46	< 0.768	< 0.576	< 0.292	< 0.307	< 0.307	< 0.307
	RC6-SED-0-6-01-081219	8/12/2019	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	RC5-SED-WET-3-12-01-042420	4/24/2020	4.83	2.51	< 0.485	< 0.437	< 0.485	10.2	1.3	1.13	0.635	23.4	< 1.21	1.06 J	< 0.461	< 0.485	< 0.485	< 0.485
	RC5-SED-WET-12-18-01-042420	4/24/2020	1.04	0.58	< 0.311	< 0.28	< 0.311	13.8	2.75	0.919	0.792	13.96	< 0.778	< 0.584	< 0.296	< 0.311	< 0.311	< 0.311
RC8	RC7-SED-0-6-01-081219	8/12/2019	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
RC9	RC8-SED-0-6-01-081219	8/12/2019	< 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
RC10	RC9-SED-0-6-01-081219	8/12/2019	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
RC11	RC10-SED-0-6-01-081219	8/12/2019	< 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
RC12	RC11-SED-0-6-01-081219	8/12/2019	< 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-SED-0-6-01-081219	8/12/2019	< 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
	RC12-SED-COMP-0-6-01-042420	4/24/2020	< 0.0796	< 0.0796	< 0.318	< 0.286	< 0.318	0.948	< 0.0915	< 0.199	< 0.0796	0.261	< 0.796	< 0.597	< 0.302	< 0.318	< 0.318	< 0.318
	RC12-SED-0-6-01-042520	4/25/2020	< 0.0799	< 0.0799	< 0.32	< 0.288	< 0.32	0.199 J	< 0.0919	< 0.2	< 0.0799	0.223	< 0.799	< 0.6	< 0.304	< 0.32	< 0.32	< 0.32
	RC12-SED-12-18-01-042420	4/24/2020	< 0.0795	< 0.0795	< 0.318	< 0.286	< 0.318	0.54	< 0.0915	< 0.199	< 0.0795	< 0.0795	< 0.795	< 0.596	< 0.302	< 0.318	< 0.318	< 0.318
RC13	RC12-SED-30-36-01-042420	4/24/2020	< 0.0783	< 0.0783	< 0.313	< 0.282	< 0.313	0.31	< 0.0901	< 0.196	< 0.0783	< 0.0783	< 0.783	< 0.588	< 0.298	< 0.313	< 0.313	< 0.313
RC14	RC13-SED-0-6-01-081219	8/12/2019	< 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
RC15	RC14-SED-0-6-01-081219	8/12/2019	< 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
RC16	RC15-SED-0-6-01-081219	8/12/2019	< 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
RC16A	RC16-SED-0-6-01-081219	8/12/2019	< 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
	RC16A-SED-WET-0-6-01-043020	4/30/2020	< 0.0785	< 0.0785	< 0.314	< 0.283	< 0.314	< 0.0785	< 0.0903	< 0.196	< 0.0785	< 0.0785	< 0.785	< 0.589	< 0.298	< 0.314	< 0.314	< 0.314
	RC16A-SED-WET-0-6-02-043020 (DUP)	4/30/2020	< 0.0797	< 0.0797	< 0.319	< 0.287	< 0.319	< 0.0797	< 0.0917	< 0.199	0.107 J	0.096 J	< 0.797	< 0.598	< 0.303	< 0.319	< 0.319	< 0.319
RC17	RC16A-SED-WET-6-12-01-043020	4/30/2020	< 0.0791	< 0.0791	< 0.317	0.385 J	< 0.317	< 0.0791	< 0.091	< 0.198	< 0.0791	< 0.0791	< 0.791	< 0.593	< 0.301	< 0.317	< 0.317	< 0.317
	RC17-SED-0-6-01-081219	8/12/2019	< 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)	8/12/2019	< 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
	RC17-SED-BANK-EAST-0-3-01-042320	4/23/2020	0.103 J	< 0.0816	< 0.326	< 0.294	< 0.326	0.393	< 0.0938	< 0.204	< 0.0816	0.223	< 0.816	< 0.612	< 0.31	< 0.326	< 0.326	< 0.326
	RC17-SED-BANK-EAST-3-6-01-042320	4/23/2020	0.15 J	< 0.077	< 0.308	< 0.277	< 0.308	0.474	< 0.0885	< 0.192	< 0.077	0.126 J	< 0.77	< 0.577	< 0.292	< 0.308	< 0.308	< 0.308
RC17-SED-BANK-WEST-0-3-01-042320	4/23/2020	0.131 J	< 0.0811	< 0.325	< 0.292	< 0.325	0.182 J	< 0.0933	< 0.203	< 0.0811	0.127 J	< 0.811	< 0.609	< 0.308	< 0.325	< 0.325	< 0.325	
RC18	RC17-SED-BANK-WEST-3-6-01-042320	4/23/2020	0.121 J	< 0.0795	< 0.318	< 0.286	< 0.318	0.21 J	< 0.0915	< 0.199	< 0.0795	0.09 J	< 0.795	< 0.597	< 0.302	< 0.318	< 0.318	< 0.318
RC19	RC18-SED-0-6-01-081319	8/13/2019	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				

Table 6-7b
Sediment Sampling Event, EP Sediment Ecological Risk Screening Comparison
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Location ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	PFNS	
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1	
Benthic Aquatic Life ESV (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	220	NV	
Wildlife (µg/kg)			1600	NV	1800	NV	6	10	NV	NV	NV	NV	NV	730	NV	NV	NV	1.4	NV	
EP1	EP1-SED-0-6-01-082719	8/27/2019	< 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	< 0.0681	
EP2	EP2-SED-0-6-01-082719	8/27/2019	< 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	< 0.0801	
EP3	EP3-SED-0-6-01-082719	8/27/2019	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	< 0.129	
EP4	EP4-SED-0-6-01-081319	8/13/2019	< 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	< 0.0716	
EP5	EP5-SED-0-6-01-081319	8/13/2019	< 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	< 0.0762	
EP7	EP7-SED-0-6-01-081319	8/13/2019	< 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	< 0.0727	
EP9	EP9-SED-0-6-01-082719	8/27/2019	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	< 0.171	
	EP9-SED-0-6-02-082719 (DUP)	8/27/2019	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	< 0.165	
	EP9-SED-0-6-03-082719 (MS/MSD)	8/27/2019	1.25 J	< 0.349	< 0.174	< 0.174	1.46	< 0.174	< 0.174	< 0.174	< 0.174	< 0.174	< 0.174	< 0.174	< 0.174	< 0.174	< 0.174	4.48	< 0.174	
EP12	EP12-SED-0-6-01-081319	8/13/2019	< 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	< 0.0798	
	EP12-SED-0-6-02-081319 (DUP)	8/13/2019	< 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	< 0.076	
	EP12-SED-0-6-03-081319 (MS/MSD)	8/13/2019	< 0.303	< 0.151	< 0.0757	< 0.0757	< 0.0757	< 0.0757	< 0.0757	< 0.0757	< 0.0757	< 0.0757	< 0.0757	< 0.0757	< 0.0757	< 0.0757	< 0.0757	0.76	< 0.0757	
EP13	EP13-SED-0-6-01-081519	8/15/2019	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	< 0.118	
EP14	EP14-SED-0-6-01-082719	8/27/2019	< 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	< 0.0779	
EP15	EP15-SED-0-6-01-082719	8/27/2019	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	< 0.0934	
EP16	EP16-SED-0-6-01-042720	4/27/2020	0.387 J	< 0.158	< 0.0791	< 0.0791	0.122 J	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	1.23	< 0.0791	
	EP16-SED-0-6-02-042720 (DUP)	4/27/2020	0.395 J	< 0.16	< 0.0801	< 0.0801	0.113 J	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	< 0.0801	1.3	< 0.0801	
	EP16-SED-0-6-03-042720 (MS/MSD)	4/27/2020	0.36 J	< 0.158	< 0.0791	< 0.0791	0.126 J	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	< 0.0791	1.34	< 0.0791	
	EP16-SED-6-18-01-042720	4/27/2020	< 0.318	< 0.159	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	< 0.0796	0.301	< 0.0796	
	EP16-SED-30-36-01-042720	4/27/2020	< 0.317	< 0.159	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	0.376	< 0.0793	
EP17	EP17-SED-0-6-01-042520	4/25/2020	0.626 J	< 0.172	0.159 J	0.164 J	2.66	0.11 J	0.602	< 0.086	< 0.086	< 0.086	< 0.086	0.137 J	0.146 J	0.609	0.377	73.1	< 0.086	
	EP17-SED-WET-0-6-01-042520	4/25/2020	1.98	< 0.292	0.203 J	0.216 J	2.92	0.192 J	0.804	0.254 J	< 0.146	< 0.146	< 0.146	< 0.146	< 0.146	0.551	0.284	90.7	0.207 J	
	EP17-SED-WET-6-12-01-042520	4/25/2020	0.39 J	< 0.143	0.142 J	0.101 J	1.75	< 0.0713	0.218	< 0.0713	< 0.0713	< 0.0713	< 0.0713	< 0.0713	0.089 J	0.378	0.215	34.3	< 0.0713	
EP19	EP19-SED-WET-0-6-01-042520	4/25/2020	0.52 J	< 0.158	< 0.0793	< 0.0793	0.425	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	< 0.0793	0.089 J	< 0.0793	7.54	< 0.0793
	EP19-SED-WET-6-12-01-042520	4/25/2020	0.289 J	< 0.141	< 0.0703	< 0.0703	0.376	< 0.0703	< 0.0703	< 0.0703	< 0.0703	< 0.0703	< 0.0703	< 0.0703	< 0.0703	< 0.0703	< 0.0703	6.51	< 0.0703	
	EP19-SED-24-30-01-042520	4/25/2020	0.47 J	< 0.161	< 0.0806	< 0.0806	0.383	< 0.0806	< 0.0806	< 0.0806	< 0.0806	< 0.0806	< 0.0806	< 0.0806	< 0.0806	< 0.0806	< 0.0806	8.27	< 0.0806	
	EP19-SED-36-42-01-042520	4/25/2020	< 0.324	< 0.162	< 0.081	< 0.081	0.146 J	< 0.081	< 0.081	< 0.081	< 0.081	< 0.081	< 0.081	< 0.081	< 0.081	< 0.081	< 0.081	2.14	< 0.081	
EP20	EP20-SED-WET-6-12-01-042720	4/27/2020	< 0.311	< 0.156	< 0.0778	< 0.0778	0.109 J	< 0.0778	< 0.0778	< 0.0778	< 0.0778	< 0.0778	< 0.0778	< 0.0778	< 0.0778	< 0.0778	< 0.0778	3	< 0.0778	
	EP20-SED-24-30-01-042720	4/27/2020	0.331 J	< 0.154	< 0.0772	< 0.0772	0.104 J	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	< 0.0772	3.1	< 0.0772	
	EP20-SED-36-42-01-042720	4/27/2020	< 0.304	< 0.152	< 0.0761	< 0.0761	0.093 J	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	< 0.0761	2.67	< 0.0761	
EP21	EP21-SED-0-6-01-042520	4/25/2020	< 0.301	< 0.15	< 0.0752	< 0.0752	< 0.0752	< 0.0752	< 0.0752	< 0.0752	< 0.0752	< 0.0752	< 0.0752	< 0.0752	< 0.0752	< 0.0752	< 0.0752	1.12	< 0.0752	
	EP21-SED-FOAM-0-6-01-042320	4/23/2020	0.464 J	< 0.159	< 0.0795	< 0.0795	0.095 J	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	< 0.0795	0.619	< 0.0795	
	EP21-SED-BEACH-FOAM-01-050520	5/5/2020	< 0.389	< 0.195	< 0.0973	< 0.0973	0.117 J	< 0.0973	< 0.0973	< 0.0973	< 0.0973	< 0.0973	< 0.0973	< 0.0973	< 0.0973	< 0.0973	< 0.0973	2.45	< 0.0973	
EP23	EP23-SED-0-6-01-042720	4/27/2020	< 0.317	< 0.158	< 0.0792	< 0.0792	< 0.0792	< 0.0792	< 0.0792	< 0.0792	< 0.0792	< 0.0792	< 0.0792	< 0.0792	< 0.0792	< 0.0792	< 0.0792	0.812	< 0.0792	
EP24	EP24-SED-0-6-01-042720	4/27/2020	3.61	< 0.162	< 0.0811	< 0.0811	0.108 J	< 0.0811	< 0.0811	< 0.0811	< 0.0811	< 0.0811	< 0.0811	< 0.0811	< 0.0811	< 0.0811	< 0.0811	0.165	< 0.0811	

Notes:

All results are shown in parts per billion (ppb) or µg/kg
 Result is in exceedance of Wildlife ESVs
 Result is in exceedance of Benthic Aquatic Life ESVs
Bold - Result is above the laboratory minimum reporting limit.
< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample
NV - No Ecological Screening Value (ESV)
J - Estimated concentration
MS/MSD - Matrix Spike and Spike Duplicate

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

[1] Refer to Appendix B Table 1 for ESVs. No toxic effects level for benthic invertebrates (NPCA, 2008).

[2] Refer to Appendix B Table 1 for ESVs. Aquatic risk-based screening level for wildlife. Selected level is the lowest of the values derived by Devine, et al (2020) for the muskrat, little brown bat, river otter, mink, red-winged blackbird, tree swallow, and brown pelican.

Sources:

Divine, C., Frenchmeyer, M., Dally, K., Osborn, E., Anderson, P., Zodrow, J. 2020. Approach for Assessing PFAS Risk to Threatened and Endangered Species. Final Report. SERDP Project ER18-1653. March.
Norwegian Pollution Control Authority (NPCA). 2008. Screening of Polyfluorinated Compounds at Four Fire Training Facilities in Norway. (TA-2444/200

Table 6-7b
Sediment Sampling Event, EP Sediment Ecological Risk Screening Comparison
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
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Location ID	Sample ID	Sample Date	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
CAS Number			335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
Benthic Aquatic Life ESV (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
Wildlife (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
EP1	EP1-SED-0-6-01-082719	8/27/2019	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	8/27/2019	< 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	8/27/2019	< 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	8/13/2019	< 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	8/13/2019	< 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	8/13/2019	< 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	8/27/2019	< 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)	8/27/2019	< 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
	EP9-SED-0-6-03-082719 (MS/MSD)	8/27/2019	< 0.174	< 0.174	< 0.697	< 0.628	< 0.697	< 0.174	< 0.2	< 0.436	< 0.174	< 0.174	< 1.74	< 1.31	< 0.697	< 0.697	< 0.697	< 0.697
EP12	EP12-SED-0-6-01-081319	8/13/2019	< 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)	8/13/2019	< 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
	EP12-SED-0-6-03-081319 (MS/MSD)	8/13/2019	< 0.0757	< 0.0757	< 0.303	< 0.273	< 0.303	< 0.0757	< 0.0871	< 0.189	< 0.0757	< 0.0757	< 0.757	< 0.568	< 0.303	< 0.303	< 0.303	< 0.303
EP13	EP13-SED-0-6-01-081519	8/15/2019	< 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	8/27/2019	< 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	8/27/2019	< 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
EP16	EP16-SED-0-6-01-042720	4/27/2020	< 0.0791	< 0.0791	< 0.316	< 0.285	< 0.316	< 0.0791	< 0.091	< 0.198	< 0.0791	< 0.0791	< 0.791	< 0.593	< 0.301	< 0.316	< 0.316	< 0.316
	EP16-SED-0-6-02-042720 (DUP)	4/27/2020	< 0.0801	< 0.0801	< 0.32	< 0.288	< 0.32	< 0.0801	< 0.0921	< 0.2	< 0.0801	< 0.0801	< 0.801	< 0.6	< 0.304	< 0.32	< 0.32	< 0.32
	EP16-SED-0-6-03-042720 (MS/MSD)	4/27/2020	< 0.0791	< 0.0791	< 0.316	< 0.285	< 0.316	< 0.0791	< 0.091	< 0.198	< 0.0791	< 0.0791	< 0.791	< 0.593	< 0.301	< 0.316	< 0.316	< 0.316
	EP16-SED-6-18-01-042720	4/27/2020	< 0.0796	< 0.0796	< 0.318	< 0.286	< 0.318	< 0.0796	< 0.0915	< 0.199	< 0.0796	< 0.0796	< 0.795	< 0.597	< 0.302	< 0.318	< 0.318	< 0.318
EP17	EP16-SED-30-36-01-042720	4/27/2020	< 0.0793	< 0.0793	< 0.317	< 0.285	< 0.317	< 0.0793	< 0.0912	< 0.198	< 0.0793	< 0.0793	< 0.793	< 0.595	< 0.301	< 0.317	< 0.317	< 0.317
	EP17-SED-0-6-01-042520	4/25/2020	< 0.086	< 0.086	< 0.344	< 0.31	< 0.344	0.416	< 0.0989	< 0.215	0.09 J	0.27	< 0.86	< 0.645	< 0.327	< 0.344	< 0.344	< 0.344
	EP17-SED-WET-0-6-01-042520	4/25/2020	0.273 J	< 0.146	< 0.585	< 0.526	< 0.585	1.35	< 0.168	< 0.365	< 0.146	1.04	< 1.46	< 1.1	< 0.555	< 0.585	< 0.585	< 0.585
EP19	EP17-SED-WET-6-12-01-042520	4/25/2020	< 0.0713	< 0.0713	< 0.285	< 0.257	< 0.285	0.23 J	< 0.0819	< 0.178	< 0.0713	< 0.0713	< 0.713	< 0.534	< 0.271	< 0.285	< 0.285	< 0.285
	EP19-SED-WET-0-6-01-042520	4/25/2020	< 0.0793	< 0.0793	< 0.317	< 0.285	< 0.317	0.125 J	< 0.0911	< 0.198	< 0.0793	0.123 J	< 0.792	< 0.594	< 0.301	< 0.317	< 0.317	< 0.317
	EP19-SED-WET-6-12-01-042520	4/25/2020	< 0.0703	< 0.0703	< 0.281	< 0.253	< 0.281	0.119 J	< 0.0808	< 0.176	< 0.0703	0.102 J	< 0.703	< 0.527	< 0.267	< 0.281	< 0.281	< 0.281
	EP19-SED-24-30-01-042520	4/25/2020	< 0.0806	< 0.0806	< 0.322	< 0.29	< 0.322	0.132 J	< 0.0927	< 0.201	< 0.0806	0.108 R J	< 0.806	< 0.604	< 0.306	< 0.322	< 0.322	< 0.322
EP20	EP19-SED-36-42-01-042520	4/25/2020	< 0.081	< 0.081	< 0.324	< 0.292	< 0.324	< 0.081	< 0.0931	< 0.202	< 0.081	< 0.081	< 0.81	< 0.607	< 0.308	< 0.324	< 0.324	< 0.324
	EP20-SED-WET-6-12-01-042720	4/27/2020	< 0.0778	< 0.0778	< 0.311	< 0.28	< 0.311	< 0.0778	< 0.0895	< 0.194	< 0.0778	< 0.0778	< 0.778	< 0.583	< 0.296	< 0.311	< 0.311	< 0.311
	EP20-SED-24-30-01-042720	4/27/2020	< 0.0772	< 0.0772	< 0.309	< 0.278	< 0.309	< 0.0772	< 0.0888	< 0.193	< 0.0772	< 0.0772	< 0.772	< 0.579	< 0.293	< 0.309	< 0.309	< 0.309
EP21	EP20-SED-36-42-01-042720	4/27/2020	< 0.0761	< 0.0761	< 0.304	< 0.274	< 0.304	< 0.0761	< 0.0875	< 0.19	< 0.0761	< 0.0761	< 0.761	< 0.571	< 0.289	< 0.304	< 0.304	< 0.304
	EP21-SED-0-6-01-042520	4/25/2020	< 0.0752	< 0.0752	< 0.301	< 0.271	< 0.301	< 0.0752	< 0.0864	< 0.188	< 0.0752	< 0.0752	< 0.752	< 0.564	< 0.286	< 0.301	< 0.301	< 0.301
	EP21-SED-FOAM-0-6-01-042320	4/23/2020	< 0.0795	< 0.0795	< 0.318	< 0.312	< 0.318	< 0.0795	< 0.0914	< 0.199	< 0.0795	< 0.0795	< 0.795	< 0.596	< 0.302	< 0.318	< 0.318	< 0.318
EP23	EP21-SED-BEACH-FOAM-01-050520	5/5/2020	< 0.0973	< 0.0973	< 0.389	< 0.375	< 0.389	< 0.0973	< 0.112	< 0.243	< 0.0973	< 0.0973	< 0.973	< 0.73	< 0.37	< 0.389	< 0.389	< 0.389
EP24	EP23-SED-0-6-01-042720	4/27/2020	< 0.0792	< 0.0792	< 0.317	< 0.285	< 0.317	< 0.0792	< 0.0911	< 0.198	< 0.0792	< 0.0792	< 0.792	< 0.594	< 0.301	< 0.317	< 0.317	< 0.317
EP24	EP24-SED-0-6-01-042720	4/27/2020	< 0.0811	< 0.0811	< 0.324	< 0.292	< 0.324	< 0.0811	< 0.0933	< 0.203	< 0.0811	< 0.0811	< 0.811	< 0.608	< 0.308	< 0.324	< 0.324	< 0.324

Notes:

All results are shown in parts per billion (ppb) or µg/kg

Result is in exceedance of Wildlife ESVs

Result is in exceedance of Benthic Aquatic Life ESVs

Bold - Result is above the laboratory minimum reporting limit.

< 0.0002 - Concentration is less than laboratory reportable limit

DUP - duplicate sample

NV - No Ecological Screening Value (ESV)

J - Estimated concentration

MS/MSD - Matrix Spike and Spike Duplicate

[1] Refer to Appendix B Table 1 for ESVs. No toxic effects level for benthic invertebrates (NPCA, 2008).

[2] Refer to Appendix B Table 1 for ESVs. Aquatic risk-based screening level for wildlife. Selected level is the lowest of the values derived by Devine, et al (2020) for the muskrat, little brown bat, river otter, mink, red-winged blackbird, tree swallow, and brown pelican.

Sources:
 Divine, C., Frenchmeyer, M., Dally, K., Osborn, E., Anderson, P., Zodrow, J. 2020. Approach for Assessing PFAS Risk to Threatened and Endangered Species. Final Report. SERDP Project ER18-1653. March.
 Norwegian Pollution Control Authority (NPCA). 2008. Screening of Polyfluorinated Compounds at Four Fire Training Facilities in Norway. (TA-2444/2008).

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFASs
Long-chain PFASs
Fluorotelomers
FOSA, FASE, FASAs
Replacement Chemistries

Table 6-7c
Sediment Sampling Event, WL Sediment Ecological Risk Screening Comparison
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	PFNS
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1
Benthic Aquatic Life ESV (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	220	NV
Wildlife (µg/kg)			1600	NV	1800	NV	6	10	NV	NV	NV	NV	NV	730	NV	NV	NV	1.4	NV
WL2	WL2-SED-0-6-01-081519	8/15/2019	< 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	< 0.0714
WL3	WL3-SED-0-6-01-082719	8/27/2019	< 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	< 0.0746
WL5	WL5-SED-0-6-01-081419	8/14/2019	< 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	< 0.0759
WL6	WL6-SED-0-6-01-081419	8/14/2019	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	< 0.0762
WL7	WL7-SED-0-6-01-081419	8/14/2019	< 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	< 0.0689
WL9	WL9-SED-0-6-01-081419	8/14/2019	< 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	< 0.074
	WL9-SED-0-6-02-081419 (DUP)	8/14/2019	< 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	< 0.0741
	WL9-SED-0-6-03-081419 (MS/MSD)	8/14/2019	< 0.313	< 0.156	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	< 0.0783	0.61	< 0.0783
WL10	WL10-SED-0-6-01-081319	8/13/2019	< 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	< 0.0665
WL11	WL11-SED-0-6-01-081319	8/13/2019	< 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	< 0.0775
WL12	WL12-SED-0-6-01-081419	8/14/2019	< 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	< 0.0739
WL13	WL13-SED-0-6-01-081419	8/14/2019	< 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	< 0.0781
WL14	WL14-SED-0-6-01-081419	8/14/2019	< 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	< 0.075
WL15	WL15-SED-0-6-01-081419	8/14/2019	< 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	< 0.0793
WL17	WL17-SED-0-6-01-081319	8/13/2019	< 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	< 0.0738

Notes:

All results are shown in parts per billion (ppb) or µg/kg
 Result is in exceedance of Wildlife ESVs
 Result is in exceedance of Benthic Aquatic Life ESVs
Bold - Result is above the laboratory minimum reporting limit.
< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample
NV - No Ecological Screening Value (ESV)
J - Estimated concentration
MS/MSD - Matrix Spike and Spike Duplicate

 Short-chain PFCAs
 Long-chain PFCAs
 Short-chain PFSA
 Long-chain PFSA
 Fluorotelomers
 FOSA, FASE, FASAA
 Replacement Chemistries

[1] Refer to Appendix B Table 1 for ESVs. No toxic effects level for benthic invertebrates (NPCA, 2008).
[2] Refer to Appendix B Table 1 for ESVs. Aquatic risk-based screening level for wildlife. Selected level is the lowest of the values derived by Devine, et al (2020) for the muskrat, little brown bat, river otter, mink, red-winged blackbird, tree swallow, and brown pelican.

Sources:

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Norwegian Pollution Control Authority (NPCA). 2008. Screening of Polyfluorinated Compounds at Four Fire Training Facilities in Norway. (TA-2444/2008).

Table 6-7c
Sediment Sampling Event, WL Sediment Ecological Risk Screening Comparison
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	Sample Date	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
CAS Number			335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
Benthic Aquatic Life ESV (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
Wildlife (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
WL2	WL2-SED-0-6-01-081519	8/15/2019	< 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	8/27/2019	< 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	8/14/2019	< 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	8/14/2019	< 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	8/14/2019	< 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	8/14/2019	< 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)	8/14/2019	< 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
	WL9-SED-0-6-03-081419 (MS/MSD)	8/14/2019	< 0.0783	< 0.0783	< 0.313	< 0.282	< 0.313	< 0.0783	< 0.09	< 0.196	< 0.0783	< 0.0783	< 0.782	< 0.587	< 0.313	< 0.313	< 0.313	< 0.313
WL10	WL10-SED-0-6-01-081319	8/13/2019	< 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	8/13/2019	< 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	8/14/2019	< 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	8/14/2019	< 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	8/14/2019	< 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	8/14/2019	< 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	8/13/2019	< 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:

All results are shown in parts per billion (ppb) or µg/kg

 Result is in exceedance of Wildlife ESVs

 Result is in exceedance of Benthic Aquatic Life ESVs

Bold - Result is above the laboratory minimum reporting limit.

< 0.0002 - Concentration is less than laboratory reportable limit

DUP - duplicate sample

NV - No Ecological Screening Value (ESV)

J - Estimated concentration

MS/MSD - Matrix Spike and Spike Duplicate

[1] Refer to Appendix B Table 1 for ESVs. No toxic effects level for benthic invertebrates (NPCA, 2008).

[2] Refer to Appendix B Table 1 for ESVs. Aquatic risk-based screening level for wildlife. Selected level is the lowest of the values derived by Devine, et al (2020) for the muskrat, little brown bat, river otter, mink, red-winged blackbird, tree swallow, and brown pelican.

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Norwegian Pollution Control Authority (NPCA). 2008. Screening of Polyfluorinated Compounds at Four Fire Training Facilities in Norway. (TA-2444/2008).

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFASs
Long-chain PFASs
Fluorotelomers
FOSA, FASE, FASAAAs
Replacement Chemistries

Table 6-7d
Sediment Sampling Event, VB Sediment Ecological Risk Screening Comparison
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	PFNS	
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1	
Benthic Aquatic Life ESV (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	220	NV	
Wildlife (µg/kg)			1600	NV	1800	NV	6	10	NV	NV	NV	NV	NV	730	NV	NV	NV	1.4	NV	
VB1	VB1-SED-COMP-0-6-01-042720	4/27/2020	<0.32	<0.16	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
VB3	VB3-SED-COMP-0-6-01-042720	4/27/2020	1.49	0.191 J	0.117 J	<0.0787	0.781	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	<0.0787	1.37	<0.0787	
VB3	VB3-SED-COMP-0-6-02-042720 (DUP)	4/27/2020	0.74	<0.142	<0.0711	<0.0711	0.408	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	<0.0711	0.862	<0.0711	
VB3	VB3-SED-COMP-0-6-03-042720 (MS/MSD)	4/27/2020	0.787	<0.152	<0.0762	<0.0762	0.329	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	<0.0762	0.852	<0.0762	

Notes:

All results are shown in parts per billion (ppb) or µg/kg

 Result is in exceedance of Wildlife ESVs

 Result is in exceedance of Benthic Aquatic Life ESVs

Bold - Result is above the laboratory minimum reporting limit.

< 0.0002 - Concentration is less than laboratory reportable limit

DUP - duplicate sample

NV - No Ecological Screening Value (ESV)

J - Estimated concentration

MS/MSD - Matrix Spike and Spike Duplicate

[1] Refer to Appendix B Table 1 for ESVs. No toxic effects level for benthic invertebrates (NPCA, 2008).

[2] Refer to Appendix B Table 1 for ESVs. Aquatic risk-based screening level for wildlife. Selected level is the lowest of the values derived by Devine, et al (2020) for the muskrat, little brown bat, river otter, mink, red-winged blackbird, tree swallow, and brown pelican.

Sources:

Divine, C., Frenchmeyer, M., Dally, K., Osborn, E., Anderson, P., Zodrow, J. 2020. Approach for Assessing PFAS Risk to Threatened and Endangered Species. Final Report. SERDP Project ER18-1653. March.

Norwegian Pollution Control Authority (NPCA). 2008. Screening of Polyfluorinated Compounds at Four Fire Training Facilities in Norway. (TA-2444/2008).

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSA
Long-chain PFSA
Fluorotelomers
FOSA, FASE, FASAAs
Replacement Chemistries

Table 6-7d
Sediment Sampling Event, VB Sediment Ecological Risk Screening Comparison
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	Sample Date	PFDS	PFDOS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	N-MEFOSA	N-ETFOSA	MEFOSA A	ETFOSAA	N-MEFOSE	N-ETFOSE	HFPO-DA	ADONA	9CL-PF3ONS	11CL-PF3OUDS
CAS Number			335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
Benthic Aquatic Life ESV (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
Wildlife (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
VB1	VB1-SED-COMP-0-6-01-042720	4/27/2020	<0.08	<0.08	<0.32	<0.288	<0.32	<0.08	<0.092	<0.2	0.081 J	<0.08	<0.8	<0.6	<0.304	<0.32	<0.32	<0.32
VB3	VB3-SED-COMP-0-6-01-042720	4/27/2020	<0.0787	<0.0787	<0.315	<0.325	<0.315	<0.0787	<0.0905	<0.197	<0.0787	<0.0787	<0.787	<0.59	<0.299	<0.315	<0.315	<0.315
VB3	VB3-SED-COMP-0-6-02-042720 (DUP)	4/27/2020	<0.0711	<0.0711	<0.285	<0.288	<0.285	<0.0711	<0.0818	<0.178	<0.0711	<0.0711	<0.711	<0.534	<0.27	<0.285	<0.285	<0.285
VB3	VB3-SED-COMP-0-6-03-042720 (MS/MSD)	4/27/2020	<0.0762	<0.0762	<0.305	<0.274	<0.305	<0.0762	<0.0876	<0.19	<0.0762	<0.0762	<0.762	<0.571	<0.289	<0.305	<0.305	<0.305

Notes:

All results are shown in parts per billion (ppb) or µg/kg

 Result is in exceedance of Wildlife ESVs

 Result is in exceedance of Benthic Aquatic Life ESVs

Bold - Result is above the laboratory minimum reporting limit.

< 0.0002 - Concentration is less than laboratory reportable limit

DUP - duplicate sample

NV - No Ecological Screening Value (ESV)

J - Estimated concentration

MS/MSD - Matrix Spike and Spike Duplicate

[1] Refer to Appendix B Table 1 for ESVs. No toxic effects level for benthic invertebrates (NPCA, 2008).

[2] Refer to Appendix B Table 1 for ESVs. Aquatic risk-based screening level for wildlife. Selected level is the lowest of the values derived by Devine, et al (2020) for the muskrat, little brown bat, river otter, mink, red-winged blackbird, tree swallow, and brown pelican.

Sources:



Divine, C., Frenchmeyer, M., Dally, K., Osborn, E., Anderson, P., Zodrow, J. 2020. Approach for Assessing PFAS Risk to Threatened and Endangered Species. Final Report. SERDP Project ER18-1653. March.








Norwegian Pollution Control Authority (NPCA). 2008. Screening of Polyfluorinated Compounds at Four Fire Training Facilities in Norway. (TA-2444/2008).

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

Table 6-7e
Sediment Sampling Event, Other Locations Sediment Ecological Risk Screening Comparison
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	Sample Date	PFBA	PFPEA	PFHXA	PFHPA	PFOA	PFNA	PFDA	PFUNA	PFDOA	PFTRDA	PFTEDA	PFBS	PFPEs	PFHxS	PFHPS	PFOS	PFNS	
CAS Number			375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	375-73-5	2706-91-4	355-46-4	375-92-8	1763-23-1	68259-12-1	
Benthic Aquatic Life ESV (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	220	NV	
Wildlife (µg/kg)			1600	NV	1800	NV	6	10	NV	NV	NV	NV	NV	730	NV	NV	NV	1.4	NV	
GL1	GL1-SED-0-6-01-051220	5/12/2020	<0.321	<0.16	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	<0.0802	0.121 J	<0.0802
BP1	BP1-SED-0-6-01-042720	4/27/2020	<0.318	<0.159	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	<0.0796	0.18	<0.0796
FC1	FC1-SED-0-3-01-042320	4/23/2020	0.463 J	<0.162	<0.0812	<0.0812	0.145 J	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	<0.0812	0.854	<0.0812

Notes:
All results are shown in parts per billion (ppb) or µg/kg
 Result is in exceedance of Wildlife ESVs
 Result is in exceedance of Benthic Aquatic Life ESVs
Bold - Result is above the laboratory minimum reporting limit.
< 0.0002 - Concentration is less than laboratory reportable limit
DUP - duplicate sample
NV - No Ecological Screening Value (ESV)
J - Estimated concentration
MS/MSD - Matrix Spike and Spike Duplicate

 Short-chain PFCAs
 Long-chain PFCAs
 Short-chain PFSAAs
 Long-chain PFSAAs
 Fluortelomers
 FOSA, FASE, FASAAAs
 Replacement Chemistries

[1] Refer to Appendix B Table 1 for ESVs. No toxic effects level for benthic invertebrates (NPCA, 2008).
[2] Refer to Appendix B Table 1 for ESVs. Aquatic risk-based screening level for wildlife. Selected level is the lowest of the values derived by Devine, et al (2020) for the muskrat, little brown bat, river otter, mink, red-winged blackbird, tree swallow, and brown pelican.

Sources:
Divine, C., Frenchmeyer, M., Dally, K., Osborn, E., Anderson, P., Zodrow, J. 2020. Approach for Assessing PFAS Risk to Threatened and Endangered Species. Final Report. SERDP Project ER18-1653. March.
Norwegian Pollution Control Authority (NPCA). 2008. Screening of Polyfluorinated Compounds at Four Fire Training Facilities in Norway. (TA-2444/2008).

Table 6-7e
Sediment Sampling Event, Other Locations Sediment Ecological Risk Screening Comparison
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency

Location ID	Sample ID	Sample Date	PFDS	PFDOS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	N-MEFOSA	N-ETFOSA	MEFOSA A	ETFOSAA	N-MEFOSE	N-ETFOSE	HFPO-DA	ADONA	9CL-PF3ONS	11CL-PF3OUDS
CAS Number			335-77-3	79780-39-5	757124-72-4	27619-97-2	39108-34-4	754-91-6	31506-32-8	4151-50-2	2355-31-9	2991-50-6	24448-09-7	1691-99-2	13252-13-6	919005-14-4	756426-58-1	763051-92-9
Benthic Aquatic Life ESV (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
Wildlife (µg/kg)			NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
GL1	GL1-SED-0-6-01-051220	5/12/2020	<0.0802	<0.0802	<0.321	<0.289	<0.321	<0.0802	<0.0922	<0.2	<0.0802	<0.0802	<0.802	<0.601	<0.305	<0.321	<0.321	<0.321
BP1	BP1-SED-0-6-01-042720	4/27/2020	<0.0796	<0.0796	<0.318	<0.335	<0.318	<0.0796	<0.0916	<0.199	<0.0796	<0.0796	<0.796	<0.597	<0.303	<0.318	<0.318	<0.318
FC1	FC1-SED-0-3-01-042320	4/23/2020	<0.0812	<0.0812	<0.325	<0.292	<0.325	<0.0812	<0.0934	<0.203	<0.0812	<0.0812	<0.812	<0.609	<0.309	<0.325	<0.325	<0.325

Notes:

All results are shown in parts per billion (ppb) or µg/kg

Result is in exceedance of Wildlife ESVs

Result is in exceedance of Benthic Aquatic Life ESVs

Bold - Result is above the laboratory minimum reporting limit.

< 0.0002 - Concentration is less than laboratory reportable limit

DUP - duplicate sample

NV - No Ecological Screening Value (ESV)

J - Estimated concentration

MS/MSD - Matrix Spike and Spike Duplicate

[1] Refer to Appendix B Table 1 for ESVs. No toxic effects level for benthic invertebrates (NPCA, 2008).

[2] Refer to Appendix B Table 1 for ESVs. Aquatic risk-based screening level for wildlife. Selected level is the lowest of the values derived by Devine, et al (2020) for the muskrat, little brown bat, river otter, mink, red-winged blackbird, tree swallow, and brown pelican.

tree swallow, and brown pelican.

Sources:

Divine, C., Frenchmeyer, M., Dally, K., Osborn, E., Anderson, P., Zodrow, J. 2020. Approach for Assessing PFAS Risk to Threatened and Endangered Species. Final Report. SERDP Project ER18-1653. March.

Norwegian Pollution Control Authority (NPCA). 2008. Screening of Polyfluorinated Compounds at Four Fire Training Facilities in Norway. (TA-2444/2008).

Short-chain PFCAs
Long-chain PFCAs
Short-chain PFSA
Long-chain PFSA
Fluortelomers
FOSA, FASE, FASAs
Replacement Chemistries

**Table 6-8
Comparison of Maximum PFAS Concentrations to Ecological Screening Values in Sediment
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency**

SURFACE WATER EVALUATION								
Analyte	CAS Number	Surface Water ESVs		Raleigh Creek	Eagle Point Lake & Lake Elmo Area	West Lakeland Storage Sites Area	St Croix River and Valley Branch	
		Aquatic Life (chronic) (ug/L)	Wildlife (ug/L)	Maximum Detect (ug/L)	Maximum Detect (ug/L)	Maximum Detect (ug/L)	Maximum Detect (ug/L)	
PFBA	375-22-4	470 [2]	660 [3]	0.904	0.988	0.471	0.229	
PFPEA	2706-90-3	140 [2]	--	0.105	0.0168	0.0135	0.00776	
PFHXA	307-24-4	2300 [2]	210 [3]	0.225	0.0163	0.0149	0.00382	
PFHPA	375-85-9	870 [2]	--	0.173	0.0097	0.00772	0.00216	
PFOA	335-67-1	537 [1]	4.4 [3]	1.68	0.078	0.0758	0.0177	
PFNA	375-95-1	120 [2]	2.2 [3]	0.00949	0.00147	0.00121	ND	
PFDA	335-76-2	140 [2]	--	0.0148	0.00209	0.00118	ND	
PFUNA	2058-94-8	49 [2]	--	0.000847	ND	ND	ND	
PFDOA	307-55-1	72 [2]	--	ND	ND	ND	ND	
PFTRDA	72629-94-8	--	--	ND	ND	ND	ND	
PFTEA	376-06-7	--	--	ND	ND	ND	ND	
PFBS	375-73-5	3400 [2]	640 [3]	0.0614	0.00489	0.00438	0.00249	
PFPEs	2706-91-4	--	--	0.0688	0.00338	0.0026	0.000935	
PFHxS	355-46-4	--	--	0.171	0.00932	0.0103	0.00369	
PFHPS	375-92-8	--	--	0.0536	0.748	0.00179	ND	
PFOS	1763-23-1	0.56 [1]	0.075 [3]	3.9	0.288	0.185	0.0377	
PFNS	68259-12-1	--	--	0.00195	ND	ND	ND	
PFDS	335-77-3	--	--	0.00179	ND	ND	ND	
PFDOS	79780-39-5	--	--	ND	ND	ND	ND	
4:2 FTS	757124-72-4	--	--	ND	ND	ND	ND	
6:2 FTS	27619-97-2	--	--	0.0137	ND	0.0587	ND	
8:2 FTS	39108-34-4	--	--	ND	ND	ND	ND	
PFOSA	754-91-6	--	--	0.123	0.00135	ND	ND	
N-MEFOSA	31506-32-8	--	--	ND	ND	ND	ND	
N-ETFOSA	4151-50-2	--	--	0.00386	ND	ND	ND	
MEFOSAA	2355-31-9	--	--	0.00124	ND	ND	ND	
ETFOSAA	2991-50-6	--	--	0.478	0.000755	ND	ND	
N-MEFOSE	24448-09-7	--	--	ND	ND	ND	ND	
N-ETFOSE	1691-99-2	--	--	0.0182	ND	ND	ND	
HFPO-DA	13252-13-6	--	--	ND	ND	ND	ND	
ADONA	919005-14-4	--	--	ND	ND	ND	ND	
9CL-PF3ONS	756426-58-1	--	--	ND	ND	ND	ND	
11CL-PF3OUDS	763051-92-9	--	--	ND	ND	ND	ND	

Notes:

Result is in exceedance of Wildlife ESV	ug/L - micrograms per liter
concentration Result is in exceedance of Wildlife and Aquatic Life ESVs	ug/kg - micrograms per kilogram
Result is in exceedance of Acute & Chronic Aquatic Life ESVs	

-- No Ecological Screening Value
ESV - Ecological Screening Value
ND - Not detected

- 1 - Hazardous Concentration 1% (HC1) (Conder, et al., 2019).
- 2 - Chronic recommended water quality (RWQ) risk-based screening level (RBSL)(Divine, et al., 2020).
- 3 - Aquatic risk-based screening level for wildlife. Selected level is the lowest of the values derived by Divine, et al (2020) for the muskrat, little brown bat, river otter, mink, red-winged blackbird, tree swallow, and brown pelican.
- 4 - No toxic effects level for benthic invertebrates (NPCA, 2008).
- 5 - Foam-based ESVs are not available so surface water ESVs were used. Chronic ESVs are consistent with surface water ESVs in this table. Acute ESVs are acute RWQ RBSLs (Divine, et al., 2020).
- 6 - Dataset includes one sample from the West Lakeland Storage Sites Area. See Appendix B for individual sample data.

Sources:

Conder, J., Arblaster, J., Larson, E., Brown, J., Higgins, C. 2019. Guidance for Assessing the Ecological Risks of PFAS to Threatened and Endangered Species at Aqueous Film Forming Foam-Impacted Sites. SERDP Project ER18-1614. July.
Divine, C., Frenchmeyer, M., Dally, K., Osborn, E., Anderson, P., Zodrow, J. 2020. Approach for Assessing PFAS Risk to Threatened and Endangered Species. Final Report. SERDP Project ER18-1653. March.
Norwegian Pollution Control Authority (NPCA). 2008. Screening of Polyfluorinated Compounds at Four Fire Training Facilities in Norway. (TA-2444/2008).

**Table 6-8
Comparison of Maximum PFAS Concentrations to Ecological Screening Values in Sediment
Six-Month Investigation Progress Report (November 11, 2019 - May 15, 2020)
Project 1007
Minnesota Pollution Control Agency**

Analyte	SEDIMENT EVALUATION						FOAM EVALUATION		
	CAS Number	Sediment ESVs		Raleigh Creek	Eagle Point Lake & Lake Elmo Area	West Lakeland Storage Sites Area	Foam ESV		Raleigh Creek [6]
		Benthic Aquatic Life (ug/kg)	Wildlife (ug/kg)	Maximum Detect (ug/kg)	Maximum Detect (ug/kg)	Maximum Detect (ug/kg)	Acute (ug/L)	Chronic (ug/L)	Maximum Detect (ug/L)
PFBA	375-22-4	--	1600 [3]	10.6	5.21	1.49	4200	470	0.51
PFPEA	2706-90-3	--	--	0.51	ND	0.191	1200	140	0.0438
PFHXA	307-24-4	--	1800 [3]	1.65	0.203	0.117	8800	2300	0.0924
PFHPA	375-85-9	--	--	1.09	0.273	ND	7800	870	0.0905
PFOA	335-67-1	--	6 [3]	24.2	6.97	0.781	53000	537	175
PFNA	375-95-1	--	10 [3]	0.303	0.192	0.11	1100	120	14.7
PFDA	335-76-2	--	--	1.54	0.804	ND	1200	140	96.5
PFUNA	2058-94-8	--	--	0.434	0.254	0.074	440	49	3.63
PFDOA	307-55-1	--	--	1.4	ND	ND	640	72	1.17
PFTRDA	72629-94-8	--	--	0.377	ND	ND	--	--	0.00653
PFTEA	376-06-7	--	--	0.269	ND	ND	--	--	ND
PFBS	375-73-5	--	730 [3]	0.356	0.208	ND	17000	3400	0.0205
PFPEs	2706-91-4	--	--	0.585	0.298	ND	--	--	0.0233
PFHxS	355-46-4	--	--	2.76	1.29	ND	--	--	1.13
PFHPS	375-92-8	--	--	2.64	0.56	ND	--	--	24.9
PFOS	1763-23-1	220 [4]	1.4 [3]	261	90.7	4.81	570	0.56	13800
PFNS	68259-12-1	--	--	0.773	0.207	ND	--	--	12.6
PFDS	335-77-3	--	--	4.83	0.273	ND	--	--	3.16
PFDOS	79780-39-5	--	--	2.51	ND	ND	--	--	ND
4:2 FTS	757124-72-4	--	--	ND	ND	ND	--	--	ND
6:2 FTS	27619-97-2	--	--	2.4	4.53	ND	--	--	592
8:2 FTS	39108-34-4	--	--	ND	ND	ND	--	--	ND
PFOSA	754-91-6	--	--	50.2	1.43	ND	--	--	270
N-MEFOSA	31506-32-8	--	--	2.97	ND	ND	--	--	5.31
N-ETFOSA	4151-50-2	--	--	4.6	ND	ND	--	--	54.1
MEFOSAA	2355-31-9	--	--	0.792	0.09	0.081	--	--	2.1
ETFOSAA	2991-50-6	--	--	23.4	1.74	0.081	--	--	263
N-MEFOSE	24448-09-7	--	--	ND	ND	ND	--	--	ND
N-ETFOSE	1691-99-2	--	--	2.31	ND	ND	--	--	ND
HFPO-DA	13252-13-6	--	--	ND	ND	ND	--	--	ND
ADONA	919005-14-4	--	--	ND	ND	ND	--	--	ND
9CL-PF3ONS	756426-58-1	--	--	ND	ND	ND	--	--	ND
11CL-PF3OUDS	763051-92-9	--	--	ND	ND	ND	--	--	ND

Notes:

concentration	Result is in exceedance of Wildlife ESV	ug/L - micrograms per liter
	Result is in exceedance of Wildlife and Aquatic Life ESVs	ug/kg - micrograms per kilogram
	Result is in exceedance of Acute & Chronic Aquatic Life ESVs	

-- No Ecological Screening Value
ESV - Ecological Screening Value
ND - Not detected

- 1 - Hazardous Concentration 1% (HC1) (Conder, et al., 2019).
- 2 - Chronic recommended water quality (RWQ) risk-based screening level (RBSL)(Divine, et al., 2020).
- 3 - Aquatic risk-based screening level for wildlife. Selected level is the lowest of the values derived by Devine, et al (2020) for the muskrat, little brown bat, river otter, mink, red-winged blackbird, tree swallow, and brown pelican.
- 4 - No toxic effects level for benthic invertebrates (NPCA, 2008).
- 5 - Foam-based ESVs are not available so surface water ESVs were used. Chronic ESVs are consistent with surface water ESVs in this table. Acute ESVs are acute RWQ RBSLs (Divine, et al., 2020).
- 6 - Dataset includes one sample from the West Lakeland Storage Sites Area. See Appendix B for individual sample data.

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