

APPENDIX P
FIELD SAMPLING FORMS -
WINTER SEASONAL SAMPLING
EVENT

pg 1 of 2
 1010

SURFACE WATER SAMPLING FORM

Date: 02/24/20 @ 1010 AM Client: MPCA
 Sample Location ID: RC3 Field Staff: AL, MD, AS
 Project Number: 60618753 Weather: 20' Sunny

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): BANK/SHORE IN WATER BODY MANHOLE
 Sample ID: RC3-WAT-BULK-01-022420
 Sample ID (if multidepth): N/A
 Sample Depth: BULK
 Duplicate: No
 Sampling Device (circle): DIPPER GRAB
 MS/MSD: No

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
Summer sample point at culvert frozen dry & snow covered w/ heavy dead vegetation -> off set center sample point by 160' feet d
 Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
dead vegetation. water appears spread out like wetland shallow, non-flowing.

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1010</u>	<u>RC3-WAT-BULK-01-022420</u>	<u>PFAS MLA-110</u>	<u>2 HDPE 500 mL 2 HDPE 60 mL</u>	<u>4</u>	<u>AXYS</u>
<u>1012</u>	<u>RC3-WAT-BULK-01-</u>	<u>Cl, TDS, TOC</u>	<u>1 Plastic 500 mL, 3 40-mL VOA</u>	<u>4</u>	<u>PACE</u>

If foam, location of samples relative to foam (circle): upgradient at (below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 4-5
 Surface water estimated width at sample location (feet): 2 1/2
 Details (if needed): snow/ice

Was Water Flowing? Yes No, not flowing at original location - slight flow down gradient
 Other Details (ripples vs smooth, pools):
 Flow Speed (circle): LOW MODERATE HIGH - first location w/ observed flow

Water clarity and color: clear, slightly murky
 Ice/snow conditions (if applicable): icy thin ice layer and snow cover
 Water surface vegetation (including dead): cattails, none floating
 Bank vegetation: dead tall grass & cattails
 Any other notes of water appearance or odor:

Temperature (°C): 0.47 pH: 7.12 Turbidity: 6.24
 Temp corr cond (umhos/cm): 1.949 Dissolved Oxygen: 51.0
 Foam observed? Yes No

If yes: If yes, sample and describe - color, presence of natural dam: post-turbulence/post ice, caught on banks as frozen bubbles
 Color: bright white (not enough for sample)
 Approximate height and width of pile (inches):
 Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

Time	Sample ID	Analysis and Preservative	Container	Comments
			<u>60-ml HDPE</u>	<u>gallon baggie</u>

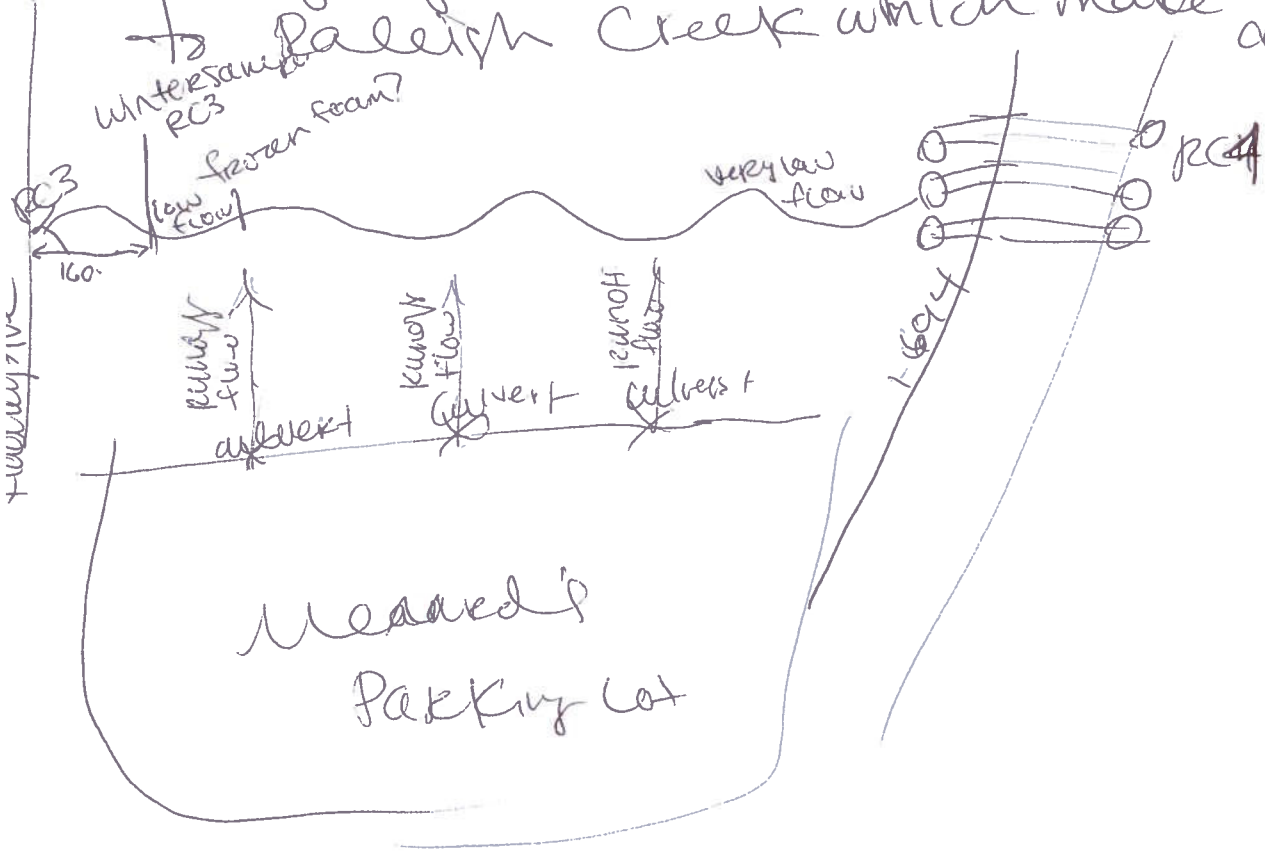
Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change
 Location of photos: Marcy + Amanda + Alex
 Notes:

grab measurement

at snow

later from foam frozen bit w/ organic color
 - possible def. foam
 2012-FOED
 2012-Chewer

Stormwater culverts/drainage systems
 coming from Meared's parking lot
 to Raleigh Creek which make entire
 area like a wetlands



SURFACE WATER SAMPLING FORM

Date: 2/24/20 @ 1235 Client: MPCA
 Sample Location ID: RC4 Field Staff: MGD/AL/AS
 Project Number: 60618753 Weather: Sunny, 30's

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): BANK/SHORE Sample ID: IN WATER BODY
MANHOLE culvert(3) Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: No
 Sampling Device (circle): DIPPER GRAB MS/MSD: No

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
Immediately adjacent (east of) 1-694, three culverts/pipes from
monard's field under highway to
 Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
water sitting on top of ice -> ice melt/runoff (sheen
observed
likely from
road

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>No sample</u>		PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
		Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 7" 13" away from culverts near
 Surface water estimated width at sample location (feet): frozen foam
 Details (if needed):
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools):
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color:
 Ice/snow conditions (if applicable): 1/8" - 3/4" thick
 Water surface vegetation (including dead):
 Bank vegetation: tall grass/vegetation / heavy vegetation (mostly dead)
 Any other notes of water appearance or odor:

Temperature (°C): _____ pH: _____ Turbidity: _____
 Temp corr cond (umhos/cm): _____ Dissolved Oxygen: _____

Foam observed? Yes No
 If yes: If yes, sample and describe - color, presence of natural dam: brown, frozen deflated, multiple
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: also observed some white ice
frozen bubbles w/in ice, possib
 Is there evidence of foam floating down stream (i.e. not in a pile)? foam?

Time	Sample ID	Analysis and Preservative	Container	Comments
			60-ml HDPE	baggie

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change
 Location of photos: Mike's / Amanda phone
 Notes: sheen observed, rainbow-looked petroleumish

SURFACE WATER SAMPLING FORM

Date: 2/24/20 Client: MPCA
 Sample Location ID: RCS Field Staff: AL/MO/AS
 Project Number: 60618753 Weather: sunny / 20-30's

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): (creek) Sample ID: RCS-WAT-BULK-01-022420
 BANK/Shore IN WATER BODY MANHOLE Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: No
 Sampling Device (circle): DIPPER GRAB (net + grab for MS/MSD) No

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
No vegetation on bottom of creek at sample - oxidized soil upgradient/near culvert faster/shallower flow
 Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
center of creek; banks snow covered; parts of creek down gradient = ice + snow covered
more vegetation on actual channel

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1315</u>	<u>RCS-WAT-BULK-01-022420</u>	<u>PFAS MLA-110</u>	<u>2 HDPE 500 mL 2 HDPE 60 mL</u>	<u>4</u>	<u>AXYS</u>
<u>1315</u>	<u>RCS-WAT-BULK-01-022420</u>	<u>Cl, TDS, TOC</u>	<u>1 Plastic 500 mL, 3 40-mL VOA</u>	<u>4</u>	<u>PAGE</u>
<u>1300</u>	<u>RCS-FOAM-01-022420</u>				<u>1 AXYS (small)</u>

If foam, location of samples relative to foam (circle): upgradient at (below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 5" / 6" couldn't sample water downgradient of foam b/c frozen/snow covered
 Surface water estimated width at sample location (feet):
 Details (if needed):

Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools):
 Flow Speed (circle): LOW MODERATE HIGH low to moderate

Water clarity and color: clear
 Ice/snow conditions (if applicable):
 Water surface vegetation (including dead): lake weeds / along banks
 Bank vegetation: all grass cattails

Any other notes of water appearance or odor:
 Temperature (°C): 1.00 pH: 7.27 Turbidity: 6.37
 Temp corr cond (umhos/cm): 3.086 Dissolved Oxygen: 0.49 -49.0
 Foam observed? Yes No

If yes: If yes, sample and describe - color, presence of natural dam: frozen ice (bubbles in ice and
 Color: discolored foam on
 Condensed Volume (approximate) (mL): 100
 Approximate height and width of pile (inches): < 1/8" (brown) ml
 Describe what the foam is accumulating on: ice and against inlets

Is there evidence of foam floating down stream (i.e. not in a pile)? yes - bubbles floating in water

Time	Sample ID	Analysis and Preservative	Container	Comments
<u>1300</u>	<u>RCS-FOAM-01-022420</u>	<u>MLA-110</u>	<u>500-mL 60 mL HDPE</u>	<u>2-gal baggie</u>

Sample Checklist

Picture of Sample Location GPS'd
 Picture of Foam (if applicable) Amanda/Marie Decontaminated tools and glove change

Location of photos:
 Notes: Silty bottom @ surface sample

over top w/ lake weeds + orange parts (oxidized soils)

1315

FIELD OBSERVATION FORM

Date: 02/24/2020 @ 1350 Client: MPCA
 Sample Location ID: RC6 Field Staff: ASAC/MGN
 Project Number: 60618753 Weather: sunny

SURFACE WATER INFORMATION

20's

Location Description	Sample ID: N/A
BANK/Shore IN WATER BODY MANHOLE	Sample ID (if multidepth): N/A
<u>no sample collected</u>	Duplicate: N/A
	MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
snow covered; down gradient of RC6 & south of two retention ponds. two med-sized trees nearby; tall grass & cattails

Foam or ice conditions observed:
~0.5 in. thick ice; no foam

If yes: NO If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)? NO

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient N/A

LOCATION CONDITIONS

Surface water estimated depth (inches): 18 in.

Surface water estimated width at sample location (feet): snow covered / iced over
 Details (if needed): _____

Was Water Flowing? Yes No possibly

Other Details (ripples vs smooth, pools): N/A

Flow Speed (circle): LOW MODERATE HIGH cannot determine, but possibly very low in

Water clarity and color: slight orange tint minor exposed areas downstream

Ice/snow conditions (if applicable): ice + snow cover

Water surface vegetation (including dead): cattails

Bank vegetation: cattails

Any other notes of water appearance or odor: _____

Field Checklist

- Picture of Location Amanda phone
- Picture of Foam (if applicable) N/A

Location of photos: _____

Other Notes: _____

SURFACE WATER SAMPLING FORM

Date: 2/24/20 1650 Client: MPCA
 Sample Location ID: RC7 Field Staff: MGD/HRT
 Project Number: 60618753 Weather: Partly Cloudy

SURFACE WATER SAMPLE INFORMATION

20' S

Location of Sample Collection (circle): NA Sample ID: RC7-WAT-BULK-01-
BANK/Shore **IN WATER BODY** **MANHOLE** Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: No
 Sampling Device (circle): DIPPER GRAB MS/MSD: No

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
frozen, snow covered thin layer of ice beneath snow but creek & pond appeared dry

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
pond may have 6" of water but frozen

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>NA</u>	RC7-WAT-BULK-01-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
	RC7-WAT-BULK-01-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches):
 Surface water estimated width at sample location (feet):
 Details (if needed):
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools):
 Flow Speed (circle): **LOW** **MODERATE** **HIGH**

Water clarity and color:
 Ice/snow conditions (if applicable):
 Water surface vegetation (including dead):
 Bank vegetation:

Any other notes of water appearance or odor:

Temperature (°C): pH: Turbidity:
 Temp corr cond (umhos/cm): Dissolved Oxygen:
 Foam observed? Yes No

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: Condensed Volume (approximate) (mL):
 Approximate height and width of pile (inches):
 Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

Time	Sample ID	Analysis and Preservative	Container	Comments
			60-ml HDPE	baggie

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change

Location of photos: MGD phone

Notes: No water/no foam

SURFACE WATER SAMPLING FORM

Date: 02/24/2020 Client: MPCA
Sample Location ID: RC7A Field Staff: MGD, HT
Project Number: 60618753 Weather: Cool, overcast

@7634 31st St N

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): BANK/SHORE IN WATER BODY MANHOLE
Sample ID: RC7A-WAT-BULK-01-002400
Sample ID (if multidepth): N/A
Sample Depth: BULK
Duplicate: No
Sampling Device (circle): DIPPER GRAB
MS/MSD: No

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
down gradient ~ 200 ft of culverts (2) underneath rail; plenty of snow cover

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
collected ~ 1cm from southern bank; bank bottom primarily orange clay

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1720</u>	<u>RC7A-WAT-BULK-01-002400</u>	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>1720</u>	<u>RC7A-WAT-BULK-01-002400</u>	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient down gradient at confluence

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): ~4-6 in.
Surface water estimated width at sample location (feet): 2.5
Details (if needed):
Was Water Flowing? Yes No
Other Details (ripples vs smooth, pools): ripples
Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: clear
Ice/snow conditions (if applicable): ice shelves present, capped with snow
Water surface vegetation (including dead): twigs, dead plants, small trees
Bank vegetation: dead grass
Any other notes of water appearance or odor: bottom of creek red in color

Temperature (°C): -0.07 pH: 6.63 Turbidity: 5.43 NTU
Temp corr cond (umhos/cm): 1.095 Dissolved Oxygen: 31.04 -1.0 ORP

Foam observed? Yes No
If yes: If yes, sample and describe - color, presence of natural dam: collected on top of ice
Color: brown Condensed Volume (approximate) (mL): ~20 mL
Approximate height and width of pile (inches): < 1 inch thick
Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

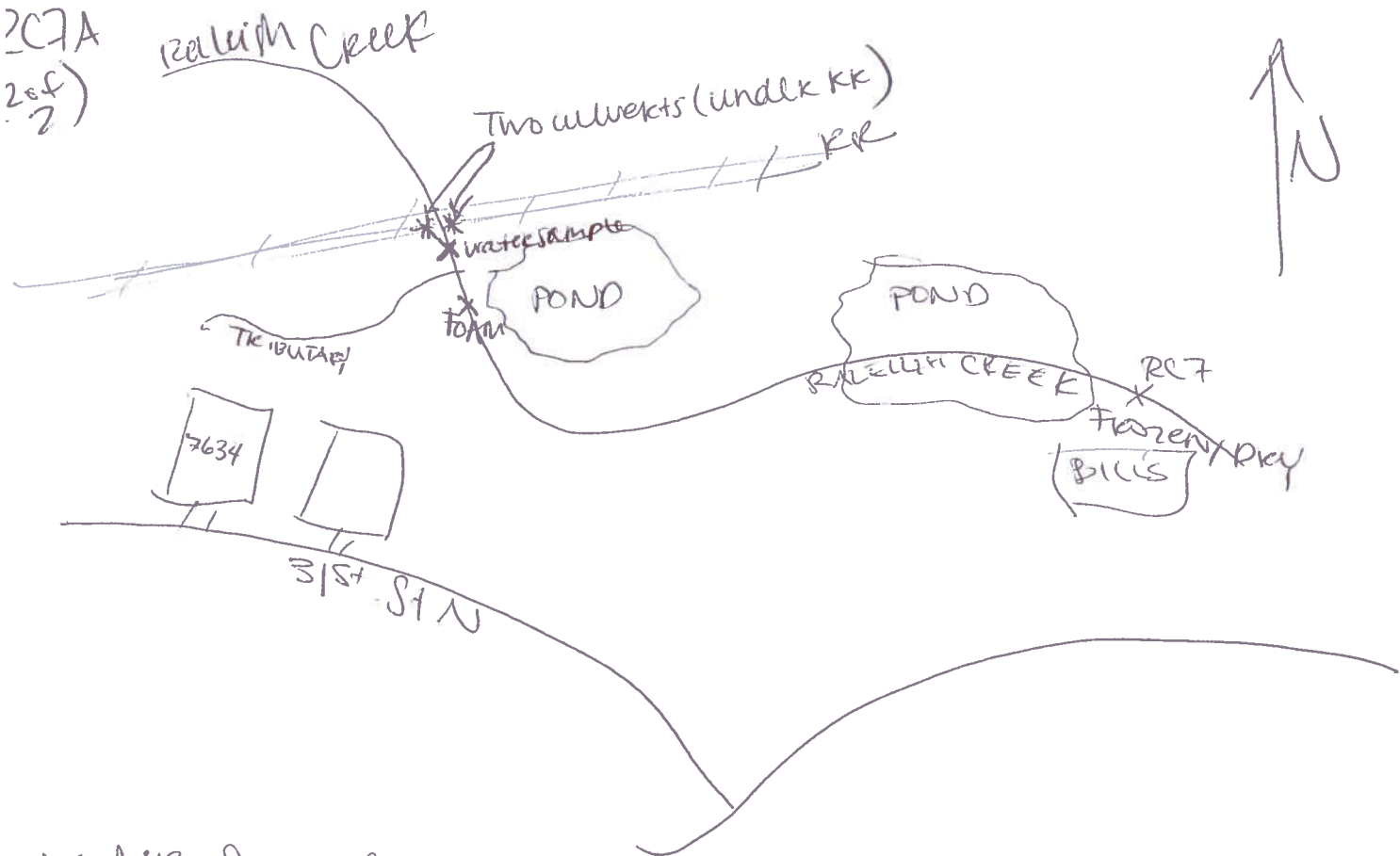
Time	Sample ID	Analysis and Preservative	Container	Comments
<u>1725</u>	<u>RC7A-FOAM-01-002400</u>	<u>MLA-110; NA</u>	<u>60-ml HDPE</u>	<u>21-ml baggie</u>

Sample Checklist
 Picture of Sample Location GPS'd Google Earth
 Picture of Foam (if applicable) Decontaminated tools and glove change

Location of photos: MGD

Notes:
about 1600 feet up gradient of RC7 if you follow creek; ~530 feet apart as "the crow flies"
Final Condensed Volume: ~20 mL

RC7A
2nd
7)



Water Sample

collected upgradient of confluence
 ↓
 upgradient of foam which was
 post confluence

(unknown where ~~the~~ creek dries up
 btwn RC7A ↓ RC7)

FIELD OBSERVATION FORM

Date: 02/24/2020

1745

Client: MPCA

Sample Location ID: RC8

Field Staff: MGD, HT

Project Number: 60618753

Weather: partly sunny, cool

SURFACE WATER INFORMATION

Location Description

BANK/Shore IN WATER BODY MANHOLE Culvert

Sample ID: N/A

Sample ID (if multidepth): N/A

Duplicate: N/A

MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

Culvert, frozen creek (possibly dry); trees around

Foam or ice conditions observed:

Frozen & snow covered

If yes: If yes, sample and describe - color, presence of natural dam:

Color: Condensed Volume (approximate) (mL):

Approximate height and width of pile (inches):

Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches):

Surface water estimated width at sample location (feet):

Details (if needed):

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools):

Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color:

Ice/snow conditions (if applicable):

Water surface vegetation (including dead):

Bank vegetation:

Any other notes of water appearance or odor:

Field Checklist

- Picture of Location MGD
Picture of Foam (if applicable) No foam

Location of photos: MGD

Other Notes:

FIELD OBSERVATION FORM

Date: 02/24/2020
Sample Location ID: RC9
Project Number: 60618753

Client: MPCA

Field Staff: MGD, HT

Weather: cool, overcast (20's - 30's)

SURFACE WATER INFORMATION

Location Description
BANK/SHORE IN WATER BODY MANHOLE

Sample ID: N/A
Sample ID (if multidepth): N/A
Duplicate: N/A
MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

Foam or ice conditions observed:
Frozen + snow covered, ice > 1ft thick, unlikely to have water flowing underneath

If yes: If yes, sample and describe - color, presence of natural dam:
Color: _____ Condensed Volume (approximate) (mL): _____
Approximate height and width of pile (inches): _____
Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?
If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): _____
Surface water estimated width at sample location (feet): _____
Details (if needed): _____
Was Water Flowing? Yes No
Other Details (ripples vs smooth, pools): _____
Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: _____
Ice/snow conditions (if applicable): _____
Water surface vegetation (including dead): _____
Bank vegetation: _____
Any other notes of water appearance or odor: _____

Field Checklist
 Picture of Location no picture
 Picture of Foam (if applicable) no foam

Location of photos: _____
Other Notes: _____

FIELD OBSERVATION FORM

Date: 02/24/2020 1750

Client: MPCA

Sample Location ID: RC10

Field Staff: MGD, HT

Project Number: 60618753

Weather: Cool, overcast 20:5-30

SURFACE WATER INFORMATION

Location Description

Sample ID: N/A

BANK/Shore IN WATER BODY MANHOLE

Sample ID (if multidepth): N/A

Duplicate: N/A

MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

adjacent to (north of) Stillwater Blvd

Foam or ice conditions observed:

Frozen + snow covered; ice > 1ft thick, likely no flowing water underneath

If yes: If yes, sample and describe - color, presence of natural dam:

Color: _____ Condensed Volume (approximate) (mL): _____

Approximate height and width of pile (inches): _____

Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): ~12 inches but frozen

Surface water estimated width at sample location (feet): _____

Details (if needed): _____

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools): _____

Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: _____

Ice/snow conditions (if applicable): ice covered + snow covered along bank

Water surface vegetation (including dead): _____

Bank vegetation: mature trees

Any other notes of water appearance or odor: _____

Field Checklist

- Picture of Location MGD
- Picture of Foam (if applicable) no foam

Location of photos: MGD

Other Notes: _____

FIELD OBSERVATION FORM

Date: 02/25/2020 0950 Client: MPCA
 Sample Location ID: RC11 Field Staff: MGD, HT
 Project Number: 60618753 Weather: cool, sunny 20's-30's

SURFACE WATER INFORMATION

Location Description	Sample ID: <u>N/A</u>
BANK/Shore IN WATER BODY MANHOLE	Sample ID (if multidepth): <u>N/A</u>
	Duplicate: <u>N/A</u>
	MS/MSD: <u>N/A</u>

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
Dry, snow covered; unlikely that water is flowing underneath snow, entire width of channel covered by 3-4" snow

Foam or ice conditions observed:
Dry-snow covered

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): _____

Surface water estimated width at sample location (feet): _____

Details (if needed): _____

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools): _____

Flow Speed (circle): **LOW** **MODERATE** **HIGH**

Water clarity and color: _____

Ice/snow conditions (if applicable): _____

Water surface vegetation (including dead): _____

Bank vegetation: tall grass (cattails); med-sized trees

Any other notes of water appearance or odor: _____

Field Checklist

- Picture of Location
- Picture of Foam (if applicable)

Location of photos: MGD

Other Notes: _____

SURFACE WATER SAMPLING FORM

Date: 02/25/2020 @ 0945 Client: MPCA
 Sample Location ID: RC12 Field Staff: MGD, HT
 Project Number: 60618753 Weather: cool, sunny 20-30's

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): N/A Sample ID: RC7-WAT-BULK-01- no sample, dry
BANK/Shore IN WATER BODY MANHOLE Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: No
 Sampling Device (circle): DIPPER GRAB MS/MSD: No

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
creek, dry & snow covered; many cavities in snow in channel, likely dry underneath

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
benign backyard

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
	RC7-WAT-BULK-01-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
	RC7-WAT-BULK-01-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE

N/A

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient no foam

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches):
 Surface water estimated width at sample location (feet): DRY
 Details (if needed):
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools):
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: NA
 Ice/snow conditions (if applicable): NA snow 1/4" thick
 Water surface vegetation (including dead):
 Bank vegetation: dead grass, med-sized trees
 Any other notes of water appearance or odor:

Temperature (°C): pH: Turbidity: N/A
 Temp corr cond (umhos/cm): Dissolved Oxygen:
 Foam observed? Yes No
 If yes: If yes, sample and describe - color, presence of natural dam: N/A
 Color: Condensed Volume (approximate) (mL):
 Approximate height and width of pile (inches):
 Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

Time	Sample ID	Analysis and Preservative	Container	Comments
			60-ml HDPE	gallon baggie

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) N/A Decontaminated tools and glove change

Location of photos: MGD
 Notes: YSI calibrated 0935

FIELD OBSERVATION FORM

Date: Feb 25 2020 09:00

Client: MPCA

Sample Location ID: RC13

Field Staff: ADG

Project Number: 60618753

Weather: Patches clouds 28°F

UP gradient of bank w/ flood (rain in creek)

SURFACE WATER INFORMATION

Location Description

Sample ID: N/A

BANK/Shore IN WATER BODY MANHOLE

Sample ID (if multidepth): N/A

creek channel

Duplicate: N/A

MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

Frozen snow, no water in channel - dry with mostly snow

Foam or ice conditions observed:

Culverts also dry (no ice)

If yes: No If yes, sample and describe - color, presence of natural dam:

Color:

Condensed Volume (approximate) (mL):

Approximate height and width of pile (inches):

Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): N/A

Surface water estimated width at sample location (feet): N/A

Details (if needed):

Was Water Flowing?

Yes No

Other Details (ripples vs smooth, pools):

Flow Speed (circle): **LOW** **MODERATE** **HIGH**

Water clarity and color: -

Ice/snow conditions (if applicable):

~~None~~ snow present

Water surface vegetation (including dead):

None

Bank vegetation:

Small trees, bare dirt

Any other notes of water appearance or odor:

Field Checklist

Picture of Location

Picture of Foam (if applicable)

AL phone

Location of photos:

Other Notes:

EP22 Lake
EP23 Elm

MP1
VB1

ED1
VB2

Lake Edith
& south of 84

ML1

GL1 (off Kents Ave)

7L1 (Dawn Lake)

913 5

SURFACE WATER SAMPLING FORM

Date: 2/24/20 1800 Client: MPCA
 Sample Location ID: RC14 +0910 Field Staff: AL/AS
 Project Number: 60618753 2/25/20 Weather: Overcast
 (MSD)

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Sample ID: RC14-WAT-BULK-01-02/24/20
BANK/Shore IN WATER BODY MANHOLE - across creek Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: NO
 Sampling Device (circle): DIPPER GRAB MS/MSD: NO

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
wetland / large weeds along bank; post culvert under Stillwater Blvd - pre-confluence w/

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank): Raleigh Creek
bottom of creek not visible

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1800</u>	RC14-WAT-BULK-01-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>1800</u>	RC14-WAT-BULK-01-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): ~2 feet
 Surface water estimated width at sample location (feet): ~8 feet
 Details (if needed):

Was Water Flowing? Yes No, beside slight flow
 Other Details (ripples vs smooth, pools):
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: clear
 Ice/snow conditions (if applicable): minimal snow along bank
 Water surface vegetation (including dead):

Bank vegetation:
 Any other notes of water appearance or odor:

Temperature (°C): 2.77 pH: 7.02 Turbidity: 4.11
 Temp corr cond (umhos/cm): 0.615 Dissolved Oxygen: 47.0

Foam observed? Yes No
 If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

Time	Sample ID	Analysis and Preservative	Container	Comments
			60-ml HDPE	gallon baggie

Sample Checklist

- Picture of Sample Location 7 GPS'd
- Picture of Foam (if applicable) Decontaminated tools and glove change

Location of photos: Amherst park
 Notes: - Again looked Make phone on 2/25 @ 0910 AM

like no flow, but there was a consistent very low flow

FIELD OBSERVATION FORM

Date: 2/24/20 1100

Client: MPCA

Sample Location ID: RC15

Field Staff: A. M. D. / A.

Project Number: 60618753

Weather: 30's sunny

SURFACE WATER INFORMATION

Location Description

BANK/Shore IN WATER BODY MANHOLE

culvert

Sample ID: N/A

Sample ID (if multidepth): N/A

Duplicate: N/A

MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

clear, not much vegetation on bottom

Foam or ice conditions observed:

snow on hill down to ~~water~~ ^{Beutler Pond; Pond frozen over +}
snow covered except at actual sample location

If yes: If yes, sample and describe - color, presence of natural dam:

Color: Condensed Volume (approximate) (mL):

Approximate height and width of pile (inches):

Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at (below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): 33"

Surface water estimated width at sample location (feet): N/A (pond)

Details (if needed):

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools):

Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: clear

Ice/snow conditions (if applicable): snow covered / frozen over

Water surface vegetation (including dead): none

Bank vegetation: trees

Any other notes of water appearance or odor:

Field Checklist

Picture of Location Amanda/Marke
 Picture of Foam (if applicable)

Location of photos:

Other Notes:

FIELD OBSERVATION FORM

Date: 2/24/20 1030

Client: MPCA

Sample Location: D: RC16 ↓ possible

Field Staff: AL/MAD/AS

Project Number: 60618753

RC16A

Weather: Sunny

30's

SURFACE WATER INFORMATION

Location Description

BANK/SLOPE IN WATER BODY MANHOLE

culvert

Sample ID: N/A

Sample ID (if multidepth): N/A

Duplicate: N/A

MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

wetland vegetation (lake weed), cattails along edges

Foam or ice conditions observed:

at culverts under road south of round about (small commercial strip); snow along banks

If yes:

If yes, sample and describe - color, presence of natural dam:

NO

Color:

Condensed Volume (approximate) (mL):

Approximate height and width of pile (inches):

Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at (below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches):

1' ~~2'~~ ~~3'~~ ~~4'~~ ~~5'~~ ~~6'~~ ~~7'~~ ~~8'~~ ~~9'~~ ~~10'~~ ~~11'~~ ~~12'~~ ~~13'~~ ~~14'~~ ~~15'~~ ~~16'~~ ~~17'~~ ~~18'~~ ~~19'~~ ~~20'~~ ~~21'~~ ~~22'~~ ~~23'~~ ~~24'~~ ~~25'~~ ~~26'~~ ~~27'~~ ~~28'~~ ~~29'~~ ~~30'~~ ~~31'~~ ~~32'~~ ~~33'~~ ~~34'~~ ~~35'~~ ~~36'~~ ~~37'~~ ~~38'~~ ~~39'~~ ~~40'~~ ~~41'~~ ~~42'~~ ~~43'~~ ~~44'~~ ~~45'~~ ~~46'~~ ~~47'~~ ~~48'~~ ~~49'~~ ~~50'~~ ~~51'~~ ~~52'~~ ~~53'~~ ~~54'~~ ~~55'~~ ~~56'~~ ~~57'~~ ~~58'~~ ~~59'~~ ~~60'~~ ~~61'~~ ~~62'~~ ~~63'~~ ~~64'~~ ~~65'~~ ~~66'~~ ~~67'~~ ~~68'~~ ~~69'~~ ~~70'~~ ~~71'~~ ~~72'~~ ~~73'~~ ~~74'~~ ~~75'~~ ~~76'~~ ~~77'~~ ~~78'~~ ~~79'~~ ~~80'~~ ~~81'~~ ~~82'~~ ~~83'~~ ~~84'~~ ~~85'~~ ~~86'~~ ~~87'~~ ~~88'~~ ~~89'~~ ~~90'~~ ~~91'~~ ~~92'~~ ~~93'~~ ~~94'~~ ~~95'~~ ~~96'~~ ~~97'~~ ~~98'~~ ~~99'~~ ~~100'~~ 14"

Surface water estimated width at sample location (feet):

Details (if needed):

Was Water Flowing?

Yes

No

Other Details (ripples vs smooth, pools):

Flow Speed (circle): (LOW) MODERATE HIGH

, all the way to bridge

Water clarity and color:

Ice/snow conditions (if applicable): None except along banks

Water surface vegetation (including dead):

Bank vegetation: Cattails + tall grass dead

Any other notes of water appearance or odor:

creaky; brown at southern culvert (Bell)

Field Checklist

Picture of Location

Picture of Foam (if applicable)

- Amanda ~~from~~ phone + make phone

Location of photos:

Other Notes:

no foam, 1-2 ft deep + consistent flow all the way down

*might be good to take summer soil sample north of Bell? looks like ~~it~~ possible natural dam (labeled RC16A in google earth)

P8 1017

RC17A/17

SURFACE WATER SAMPLING FORM

Date: 02/24/2020 1400 Client: MPCA
Sample Location ID: RC17A Field Staff: AL, AS, MS, MT
Project Number: 60618753 Weather: 32, sunny

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): BANK/SHORE IN-WATER BODY MANHOLE
Sample ID: RC17A-WAT-BULK-01- 022420
Sample ID (if multidepth): RC17-WAT-SML-01-
Sample Depth: BULK Duplicate: YES
Sampling Device (circle) IRPER GRAB GLASS Plate MS/MSD: YES NOTE: Run MS/MSD off of same kit
Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures): creek channel

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
~6in. deep, 7-8 in channel width, collected in opening of channel next to ice shelf; sample location ~1.5ft south of north bank

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
1530	RC17A-WAT-BULK-01- <u>022420</u>	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL		4 AXYS
1530	RC17A-WAT-BULK-01-	CI, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA		4 PACE
1535	RC17A-WAT-BULK-02-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL		4 AXYS
1535	RC17A-WAT-BULK-02-	CI, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA		4 PACE
1540	RC17A-WAT-BULK-03-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	<u>4</u>	4 AXYS
1540	RC17A-WAT-BULK-03-	CI, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA		8 PACE

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient did not collect foam underneath ice shelf

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 6
Surface water estimated width at sample location (feet): 7-8
Details (if needed):

Was Water Flowing? Yes No
Other Details (ripples vs smooth, pools): ripples
Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: clear
Ice/snow conditions (if applicable): ice along banks present, capped with snow
Water surface vegetation (including dead): none
Bank vegetation: small trees
Any other notes of water appearance or odor:

Temperature (°C): 1.53°C pH: 7.63 Turbidity: 4.6 NTU
Temp corr cond (umhos/cm): 0.340 Dissolved Oxygen: 16.76

Foam observed? Yes No underneath ice shelves; did not collect minimal observed
If yes: If yes, sample and describe - color, presence of natural dam:
Color: light tan Condensed Volume (approximate) (mL): accumulation
Approximate height and width of pile (inches): in small amounts at ice but
Describe what the foam is accumulating on: also passing through pipe flow at bottom

Time	Sample ID	Analysis and Preservative	Container	Comments
			60-ml HDPE	baggie

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change

Location of photos: MGD Notes: break 1511 (4x); resume 1514 1542 end

part 144



- 1) 1.89 sec 4) 1.67 sec 7) 2.91 sec 10) 1.15 sec 13) 1.63 sec 16) 1.29 sec 19) 1.60 sec
- 2) 1.46 sec 5) 2.49 sec 8) 1.55 sec 11) 2.38 sec 14) 1.70 sec 17) 2.05 sec 20) 1.43 sec
- 3) 1.95 sec 6) 1.88 sec 9) 2.26 sec 12) 1.35 sec 15) 1.06 sec 18) 1.05 sec

RC17A/RC17

SURFACE MICRO LAYER SAMPLING FORM	
Date: <u>02/24/2020</u>	Client: MPCA
Sample Location ID: RC17A	Field Staff: <u>AL, HL, MD, AS</u>
Project Number: 60618753	Weather: <u>32, sunny</u>

SURFACE MICRO LAYER SAMPLE INFORMATION	
Location of Sample Collection (circle): <u>CREEK/CHANNEL</u> POND LAKE	Sample ID: RC17A-WAT-SML-01- <u>022420</u>
If other, details:	Duplicate: <u>RC17A-WAT-SML-02-</u>
Sampling Device: <u>1 FOOT SAMPLER</u> 1.5 FOOT SAMPLER	MS/MSD: N/A

How does location compare to surface water sample location and foam locations?
same location as surface water location

Samples Collected				
Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Comments
1520	RC17A-WAT-SML-01- RC17A-WAT-SML-01- <u>022420</u>	PFAS MLA-110	2 HDPE 250-mL, 2 HDPE 60-mL	AXYS <u>1 500 mL / FOR</u>
	RC17A-WAT-SML-02-	PFAS MLA-110	2 HDPE 250-mL, 2 HDPE 60-mL	AXYS
	RC17A-WAT-SML-04	PFAS MLA-110	2 HDPE 250-mL, 2 HDPE 60-mL	AXYS

SAMPLE METHOD	
Number of dips: <u>123</u>	
Location of dips relative to each other: <u>same location</u>	
Total sampling time: <u>55 min</u>	
Speed of removing glass: <u>1.77 sec avg.</u>	
Other comments on sampling method:	

Sample Checklist	
<input checked="" type="checkbox"/> Picture of Sample Location <u>MGD</u>	<input type="checkbox"/> GPS'd
<input type="checkbox"/> Picture of Sample	<input type="checkbox"/> Decontaminated tools and glove change
Notes:	

RC17A/RC17

pg 40/44

SURFACE WATER SAMPLING FORM					
Date: 02/24/20		Client: MPCA			
Sample Location ID: RC17		Field Staff: AL/UGS/HKT/AS		Weather: Sunny	
Project Number: 60618753				20's	
SURFACE WATER SAMPLE INFORMATION					
Location of Sample Collection (circle): <u>Creek</u>			Sample ID: RC17-WAT-BULK-01-		
BANK/Shore IN WATER BODY MANHOLE			Sample ID (if multidepth): RC17-WAT-SML-01-		
Sample Depth: BULK			Duplicate: YES		
Sampling Device (circle): DIPPER GRAB GLASS Plate			MS/MSD: YES		
Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures): at start, snow cover + possibly dry					
Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank): - sample had to be collected by 17A					
Samples Collected					
Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
	RC17-WAT-BULK-01-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
	RC17-WAT-BULK-01-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE
	RC17-WAT-BULK-02-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
	RC17-WAT-BULK-02-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE
	RC17-WAT-BULK-03-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	8	AXYS
	RC17-WAT-BULK-03-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	8	PACE
If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient					
SAMPLE POINT CONDITIONS					
Surface water estimated depth (inches):					
Surface water estimated width at sample location (feet):					
Details (if needed):					
Was Water Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No - Frozen/Snow covered					
Other Details (ripples vs smooth, pools):					
Flow Speed (circle): LOW MODERATE HIGH					
Water clarity and color: N/A					
Ice/snow conditions (if applicable):					
Water surface vegetation (including dead):					
Bank vegetation: mature trees					
Any other notes of water appearance or odor:					
Temperature (°C):		pH:		Turbidity:	
Temp corr cond (umhos/cm):		Dissolved Oxygen:			
Foam observed? <input type="checkbox"/> Yes <input type="checkbox"/> No					
If yes: If yes, sample and describe - color, presence of natural dam:					
Color:		Condensed Volume (approximate) (mL):			
Approximate height and width of pile (inches):					
Describe what the foam is accumulating on:					
Is there evidence of foam floating down stream (i.e. not in a pile)?					
Time	Sample ID	Analysis and Preservative	Container	Comments	
			60-ml HDPE	baggie	
Sample Checklist					
<input checked="" type="checkbox"/> Picture of Sample Location		<input type="checkbox"/> GPS'd			
<input type="checkbox"/> Picture of Foam (if applicable)		<input type="checkbox"/> Decontaminated tools and glove change			
Location of photos:					
Notes: Marie phone (Amanda Phone)					

upstream

sample

foam

at start, snow cover + possibly dry

SURFACE WATER SAMPLING FORM

Date: 02/24/20 @ 1700 Client: MPCA
 Sample Location ID: RC21 Field Staff: AL/AJ
 Project Number: 60618753 Weather: 20-30°f

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): BANK Sample ID: RC21-WAT-BULK-01-002420
BANK/SHORE **IN WATER BODY** **MANHOLE** center creek Sample ID (if multidepth): N/A
 Sample Depth: **BULK** Duplicate: NO
 Sampling Device (circle): DIPPER **GRAB** Net/cheese MS/MSD: NO
 Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
post-confluence, cloth (2-pull bag) for dam
rate in creek
 Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
Creek set about 8 feet from bank

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1715</u>	RC21-WAT-BULK-01- <u>002420</u>	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL		4 AXYS
<u>1715</u>	RC21-WAT-BULK-01- <u>002420</u>	CI, TPS, TOC	1 Plastic 500 mL, 3 40-mL VOA		4 PACE

If foam, location of samples relative to foam (circle): upgradient at (below) foam downgradient -about 50 feet

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): unknown
 Surface water estimated width at sample location (feet): 1/2'
 Details (if needed):
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools):
 Flow Speed (circle): LOW **MODERATE** HIGH

Water clarity and color: clear
 Ice/snow conditions (if applicable): Ice along these banks and periodically
 Water surface vegetation (including dead): down stream - foam collecting at
 Bank vegetation: grass, med-sized trees ice "dam" lower side of
 Any other notes of water appearance or odor: some dark color, freshy

Temperature (°C): 2.04 pH: 7.63 Turbidity: accumulated
 Temp corr cond (umhos/cm): 0.616 Dissolved Oxygen: ORP: 64.0 foam = PITCH white

Foam observed? Yes No
 If yes: If yes, sample and describe - color, presence of natural dam: DOWN, organic, some part white
 Color: steady organic smell Condensed Volume (approximate) (mL):
 Approximate height and width of pile (inches): 3-5"
 Describe what the foam is accumulating on: ice dam 250

Is there evidence of foam floating down stream (i.e. not in a pile)? -accumulating as we sampled

Time	Sample ID	Analysis and Preservative	Container	Comments
<u>1720</u>	RC21-FOAM-01- <u>002420</u>		<u>500-mL 60ml HDPE</u>	<u>(2 gal) baggie sample</u>

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change
 Location of photos: Amanda phone

Notes: put cheese cloth in bag to capture, condense

foam left on cloth
 *Water sample was collected first (time I got accidentally switched)

FIELD OBSERVATION FORM

Date: 02/24/2020 Client: MPCA
 Sample Location ID: RC20 Field Staff: MGD, HT
 Project Number: 60618753 Weather: _____

SURFACE WATER INFORMATION

Location Description: _____ Sample ID: N/A
BANK/Shore IN WATER BODY MANHOLE culvert Sample ID (if multidepth): N/A
 Duplicate: _____ N/A
 MS/MSD: _____ N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
Frozen, snow covered, possibly dry under ice

Foam or ice conditions observed: _____

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)? _____

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): _____

Surface water estimated width at sample location (feet): _____

Details (if needed): _____

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools): _____

Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: _____

Ice/snow conditions (if applicable): _____

Water surface vegetation (including dead): _____

Bank vegetation: _____

Any other notes of water appearance or odor: _____

Field Checklist

Picture of Location MGD
 Picture of Foam (if applicable)

Location of photos: MGD

Other Notes: _____

FIELD OBSERVATION FORM

Date: 2/25/20 @ 100AM Client: MPCA
Sample Location ID: EP1 (same loc at EP17) Field Staff: AS/AL
Project Number: 60618753 Weather: Sunny 20°

SURFACE WATER INFORMATION

Location Description: BANK/Shore IN WATER BODY Manhole Sample ID: N/A
Sample ID (if multidepth): N/A
Duplicate: N/A
MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures): NW corner of Lake Pt. Lake, lots of cattails

Foam or ice conditions observed: frozen solid, at least 3" of ice, unclear if ice now much water. cattails along bank

If yes: If yes, sample and describe - color, presence of natural dam:
Color: Condensed Volume (approximate) (mL):
Approximate height and width of pile (inches):
Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?
If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): unknown
Surface water estimated width at sample location (feet):
Details (if needed):
Was Water Flowing? Yes No
Other Details (ripples vs smooth, pools):
Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color:
Ice/snow conditions (if applicable):
Water surface vegetation (including dead): dead cattails etc.
Bank vegetation:
Any other notes of water appearance or odor:

Field Checklist
 Picture of Location - Manda phone
 Picture of Foam (if applicable)

Location of photos:
Other Notes:

u
man

EP17/17A 11 cont.

pg. 2 of 3

SURFACE WATER SAMPLING FORM

Date: 2/25/20 @ 10:15 Client: MPCA
Sample Location ID: EP17 Field Staff: AXYS
Project Number: 60618753 Weather: Sunny 30's

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): Creek Sample ID: EP17-WAT-BULK-01-
BANK/ShORE IN WATER BODY MANHOLE
Sample Depth: BULK Sample ID (if multidepth): N/A
Sampling Device (circle): DUPPER GRAB Duplicate: NO
MS/MSD: NO

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
at actual point over/frozen/snow covered
- about 350' upgradient, low flow (5-7" water
Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
- ice = 1/8" thick bottom = mucky water kept up,
where ice

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
	EP17-WAT-BULK-01-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
	EP17-WAT-BULK-01-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): ~6"
Surface water estimated width at sample location (feet):
Details (if needed):
Was Water Flowing? Yes No
Other Details (ripples vs smooth, pools):
Flow Speed (circle) LOW MODERATE HIGH
Water clarity and color: clear
Ice/snow conditions (if applicable): thin ice + snow all around
Water surface vegetation (including dead):
Bank vegetation:
Any other notes of water appearance or odor:

Temperature (°C): pH: Turbidity:
Temp corr cond (umhos/cm): Dissolved Oxygen:
Foam observed? Yes No
If yes: If yes, sample and describe - color, presence of natural dam:
Color: Condensed Volume (approximate) (mL):
Approximate height and width of pile (inches):
Describe what the foam is accumulating on:
Is there evidence of foam floating down stream (i.e. not in a pile)?

Time	Sample ID	Analysis and Preservative	Container	Comments
			60-ml HDPE	baggie

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change
Location of photos: Amanda phone
Notes:

0
sam

PA/17A/1 cont.

pg. 3 of 3

SURFACE WATER SAMPLING FORM					
Date: <u>2/25/20 @ 1000AM</u>		Client: MPCA			
Sample Location ID: <u>EP17A</u>		Field Staff: <u>AS/AL</u>		Weather: <u>Sunny</u>	
Project Number: 60618753					
SURFACE WATER SAMPLE INFORMATION					
Location of Sample Collection (circle):			Sample ID: EP17-WAT-BULK-01-		
BANK/Shore In Water Body Manhole			Sample ID (if multidepth): N/A		
Sample Depth: <u>BULK</u>			Duplicate: <u>NO</u>		
Sampling Device (circle): <u>DIPPER GRAB</u>			MS/MSD: <u>NO</u>		
Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures): <u>at new bridge across inlet to Eagle Pt. Lake - solid ground at bridge (fill) but N + S of bridge = water</u>					
Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank): <u>15' North of bridge = 28" water under ice & lots of cattails</u> <u>South of bridge (Lake side) = frozen solid, under ice if water</u>					
Samples Collected					
Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>NO</u>	EP17-WAT-BULK-01-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>NO</u>	EP17-WAT-BULK-01-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE
If foam, location of samples relative to foam (circle): <u>upgradient at (below) foam downgradient</u>					
SAMPLE POINT CONDITIONS					
Surface water estimated depth (inches): <u>28" (N of bridge)</u>					
Surface water estimated width at sample location (feet):					
Details (if needed):					
Was Water Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Other Details (ripples vs smooth, pools):					
Flow Speed (circle): <u>LOW MODERATE HIGH</u>					
Water clarity and color:					
Ice/snow conditions (if applicable): <u>N of bridge, ice = 1/2" thick</u>					
Water surface vegetation (including dead):					
Bank vegetation:					
Any other notes of water appearance or odor:					
Temperature (°C):		pH:		Turbidity:	
Temp corr cond (umhos/cm):		Dissolved Oxygen:			
Foam observed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
If yes: <u>NO</u> (yes, sample and describe - color, presence of natural dam):					
Color:		Condensed Volume (approximate) (mL):			
Approximate height and width of pile (inches):					
Describe what the foam is accumulating on:					
Is there evidence of foam floating down stream (i.e. not in a pile)?					
Time	Sample ID	Analysis and Preservative	Container	Comments	
			60-ml HDPE	baggie	
Sample Checklist					
<input checked="" type="checkbox"/> Picture of Sample Location		<input type="checkbox"/> GPS'd			
<input type="checkbox"/> Picture of Foam (if applicable)		<input type="checkbox"/> Decontaminated tools and glove change			
Location of photos: <u>manager phone</u>					
Notes:					

under bridge 15' north of bridge:

EP17 @ bridge - solid ice, cattails, 1/2" of ice.

28" inches of water, mud/organic on bottom

still ice south of bridge. Bridge clearly on

~~solid ice~~ fill

EP17. first creek north of bridge

lots of cattails, frozen soil

joint btm EP17 and 12019

5-7" water, moderate flow

under 8" of ice

-mucky bottom, med to coarse sand

SURFACE WATER SAMPLING FORM

Date: 02/25/20 Client: MPCA
 Sample Location ID: RC18 (collect if cant get RC18) Field Staff: AYAS
 Project Number: 60618753 Weather: sunny 30's

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): culvert Sample ID: RC18-WAT-BULK-01- 022520
 BANK/Shore IN WATER BODY MANHOLE Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: NO
 Sampling Device (circle): DIPPER GRAB MS/MSD: NO
 Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
20' ft from red trap, erosional

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
silty on bottom, sample from south edge of creek east of the culvert

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1045</u>	RC18-WAT-BULK-01- <u>022520</u>	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>1045</u>	RC18-WAT-BULK-01- <u>022520</u>	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 9 1/4"
 Surface water estimated width at sample location (feet):
 Details (if needed):
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools):
 Flow Speed (circle): LOW MODERATE HIGH
 Water clarity and color: clear
 Ice/snow conditions (if applicable): up to 2" ice in parts of creek, snow along banks
 Water surface vegetation (including dead): none
 Bank vegetation: small trees, hummocky, tall grass
 Any other notes of water appearance or odor:
 Temperature (°C): 1.27 pH: 6.97 Turbidity: 375
 Temp corr cond (umhos/cm): 0.828 Dissolved Oxygen: over 50.0
 Foam observed? Yes No
 If yes: If yes, sample and describe - color, presence of natural dam:
 Color: Condensed Volume (approximate) (mL):
 Approximate height and width of pile (inches):
 Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

Time	Sample ID	Analysis and Preservative	Container	Comments
			60-ml HDPE	baggie

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change

Location of photos: AL

Notes:

FIELD OBSERVATION FORM

Date: 2/25/20 1240 Client: MPCA
 Sample Location ID: EP3 (same loc at EP19) Field Staff: As/AL
 Project Number: 60618753 Weather: Sunny, 30's

SURFACE WATER INFORMATION

Location Description: BANK/Shore IN WATER BODY MANHOLE Sample ID: N/A
 Sample ID (if multidepth): N/A
 Duplicate: N/A
 MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
Surrounded by cattails, Lake flowers over and snow covered, some northern trees

Foam or ice conditions observed:

If yes: No If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): unknown

Surface water estimated width at sample location (feet):

Details (if needed):

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools):

Flow Speed (circle): **LOW** **MODERATE** **HIGH**

Water clarity and color:

Ice/snow conditions (if applicable): snow/ice covered lake

Water surface vegetation (including dead):

Bank vegetation: cattails, smaller trees

Any other notes of water appearance or odor: medicinal

Field Checklist

Picture of Location Amanda phone
 Picture of Foam (if applicable)

Location of photos:

Other Notes:

SURFACE WATER SAMPLING FORM

Date: 2/25/20 (240) Client: MPCA
 Sample Location ID: EP19 Field Staff: AS/AL
 Project Number: 60618753 Weather: Sunny, 30's

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): channel Sample ID: EP19-WAT-BULK-01-022520
 BANK/Shore IN WATER BODY MANHOLE Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: NO
 Sampling Device (circle): DIPPER GRAB MS/MSD: NO

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
- organic smell to water, 1 fish (head only?) present on bottom

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
Center (closer to north side) of creek, immediately down gradient of cattail cluster. Down gradient of location = frozen (2 1/4" ice)

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1240</u>	<u>EP19-WAT-BULK-01-022520</u>	<u>PFAS MLA-110</u>	<u>2 HDPE 500 mL 2 HDPE 60 mL</u>	<u>4</u>	<u>AXYS</u>
<u>1240</u>	<u>EP19-WAT-BULK-01-022520</u>	<u>Cl, TDS, TOC</u>	<u>1 Plastic 500 mL, 3 40-mL VOA</u>	<u>4</u>	<u>PACE</u>

If foam, location of samples relative to foam (circle): up gradient at/below foam down gradient frozen possible from organic/brown/si

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 9-12"
 Surface water estimated width at sample location (feet):
 Details (if needed):
 Was Water Flowing? Yes No, very very low if any
 Other Details (ripples vs smooth, pools):
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: clear; ice (thin) organic brown color w/
 Ice/snow conditions (if applicable): SNOW along banks, ice (mm thick) 40" from sample (away from eagle pontilake)
 Water surface vegetation (including dead):
 Bank vegetation: tall grass/cattails
 Any other notes of water appearance or odor: organic color

Temperature (°C): 2-2 pH: 7.03 Turbidity: 8.40
 Temp corr cond (umhos/cm): 0.851 Dissolved Oxygen: 21.0 ug/l

Foam observed? Yes No
 If yes: If yes, sample and describe - color, presence of natural dam: brown/frozen
 Color: NO Condensed Volume (approximate) (mL): N/A
 Approximate height and width of pile (inches): 2 1/2" thick ice
 Describe what the foam is accumulating on: ice (within ice?)
 Is there evidence of foam floating down stream (i.e. not in a pile)? NO

Time	Sample ID	Analysis and Preservative	Container	Comments
			<u>60-ml HDPE</u>	<u>baggie</u>

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of foam (if applicable) Decontaminated tools and glove change
 Location of photos: Amanda phone
 Notes:

FIELD OBSERVATION FORM

Date: 07/25/08 @ 1220

Client: MPCA

Sample Location ID: EP4

Field Staff: AL/FS

Project Number: 60618753

Weather: sunny 30s

SURFACE WATER INFORMATION

Location Description

Sample ID: N/A

BANK/ShORE IN WATER BODY MANHOLE culvert

Sample ID (if multidepth): N/A

under bridge

Duplicate: N/A

MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

northwest culvert, muddy bottom, NW depositional, SE erosional

Foam or ice conditions observed:

ice 1/8" thick on either side (no ice about 15-20 feet out from culvert) on either side

If yes: If yes, sample and describe - color, presence of natural dam:

Color: _____ Condensed Volume (approximate) (mL): _____

Approximate height and width of pile (inches): _____

Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): **upgradient at(below) foam downgradient**

LOCATION CONDITIONS

Surface water estimated depth (inches): 25" NW, 17" SW Southwest east culvert depth

Surface water estimated width at sample location (feet): _____

Details (if needed): _____

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools): _____

Flow Speed (circle): **LOW MODERATE HIGH**

Water clarity and color: murky

Ice/snow conditions (if applicable): some ice along creek snow on banks

Water surface vegetation (including dead): traces of algae on banks, buckthorn

Bank vegetation: fall grass, buckthorn

Any other notes of water appearance or odor: _____

Field Checklist

- Picture of Location AL
- Picture of Foam (if applicable)

Location of photos: _____

Other Notes: _____

FIELD OBSERVATION FORM

Date: 2/25/20 1145 Client: MPCA
Sample Location ID: EP5 Field Staff: AS/AE
Project Number: 60618753 Weather: Sunny

SURFACE WATER INFORMATION

Location Description: BANK/Shore IN WATER BODY MANHOLE Culvert Sample ID: N/A
Sample ID (if multidepth): N/A
Duplicate: N/A
MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
muck, rock at bottom of culvert, water in culvert 30' feet of culvert not frozen

Foam or ice conditions observed:
No foam

If yes: If yes, sample and describe - color, presence of natural dam:
Color: Condensed Volume (approximate) (mL):
Approximate height and width of pile (inches):
Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at (below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): 27" @ center culvert
Surface water estimated width at sample location (feet):
Details (if needed):

Was Water Flowing? Yes No
Other Details (ripples vs smooth, pools):
Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: murky
Ice/snow conditions (if applicable): 1/2" thick ice near banks
Water surface vegetation (including dead): none
Bank vegetation: trees dead, bare wood/cattails
Any other notes of water appearance or odor:

Field Checklist
 Picture of Location
 Picture of Foam (if applicable)

Location of photos: Ammanole

Other Notes:

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FIELD OBSERVATION FORM

Date: 2/25/20 @ 1200

Client: MPCA

Sample Location ID: EP7

Field Staff: AS/A

Weather: Sunny (partly)

Project Number: 60618753

20-30's

SURFACE WATER INFORMATION

Location Description

Sample ID: N/A

BANK/Shore IN Water Body Manhole

Sample ID (if multidepth): N/A

Bridge over wetland/creek

Duplicate: N/A

MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

frozen solid + snow covered - ice thinner around bridge

Foam or ice conditions observed:

See above

If yes: If yes, sample and describe - color, presence of natural dam:

NO

Color: Condensed Volume (approximate) (mL):

Approximate height and width of pile (inches):

Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): unknown, frozen but definitely water under ice

Surface water estimated width at sample location (feet):

Details (if needed):

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools):

Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: unknown

Ice/snow conditions (if applicable): frozen

Water surface vegetation (including dead):

Bank vegetation: med-sized trees

Any other notes of water appearance or odor:

Field Checklist

Picture of Location

Picture of Foam (if applicable)

Amanda Phare

Location of photos:

Other Notes:

SURFACE WATER SAMPLING FORM

Date: 02/25/20 1730 Client: MPCA
 Sample Location ID: EP8 Field Staff: AL/HS
 Project Number: 60618753 Weather: cloudy 20°

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): BANK/SHORE IN WATER BODY (MANHOLE) Sample ID: EP8-WAT-BULK-01-02528
 Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: NO
 Sampling Device (circle): DIPPER GRAB (PAIL) MS/MSD: NO

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
flow is over the weir ~ 10 feet below, water at bottom
 Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
~ 15 feet east from edge point lake at about 20-30' below

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1730</u>	EP8-WAT-BULK-01-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL		4 AXYS
<u>1730</u>	EP8-WAT-BULK-01-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA		4 PACE

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): sample point from water over weir ~ 10'
 Surface water estimated width at sample location (feet):
 Details (if needed):

Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools):
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: cloudy
 Ice/snow conditions (if applicable): snow around manhole & over manhole
 Water surface vegetation (including dead): NA
 Bank vegetation: catclaw brush around
 Any other notes of water appearance or odor:

Temperature (°C): 0.0 pH: 7.20 Turbidity: 8.58
 Temp corr cond (umhos/cm): 0.893 Dissolved Oxygen: 2.22

Foam observed? Yes No

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: Condensed Volume (approximate) (mL):
 Approximate height and width of pile (inches):
 Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

Time	Sample ID	Analysis and Preservative	Container	Comments
			60-ml HDPE	baggie

Sample Checklist
 Picture of Sample Location Alex GPS'd
 Picture of Foam (if applicable) + Decontaminated tools and glove change
 Location of photos: Amanda
 Notes:

SURFACE WATER SAMPLING FORM

Date: 1/24/20 2/25/20 Client: MPCA
 Sample Location ID: EP20 Field Staff: AS/AL
 Project Number: 60618753 Weather: Overcast, 8-30's

2/25/20

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): Outlet Sample ID: EP20-WAT-BULK-01-022520
BANK/Shore **IN WATER BODY** **MANHOLE** Outlet Sample ID (if multidepth): N/A
 Sample Depth: **BULK** Duplicate: **NO**
 Sampling Device (circle): **DIPPER GRAB** MS/MSD: **NO**

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
organic sheen, put near edge (excessive)

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
thin ice down gradient, cattails, sumt organic odor

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1800</u>	EP20-WAT-BULK-01- <u>022520</u>	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>1800</u>	EP20-WAT-BULK-01- <u>022520</u>	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE

If foam, location of samples relative to foam (circle): **upgradient** **at(below) foam** **downgradient**

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 30"
 Surface water estimated width at sample location (feet):
 Details (if needed):
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools):
 Flow Speed (circle): **LOW** **MODERATE** **HIGH**

Water clarity and color: MURKY
 Ice/snow conditions (if applicable): thin/film like ice, sheens observed
 Water surface vegetation (including dead): (Moss, etc, near)
 Bank vegetation: lots of tall grass/cattails
 Any other notes of water appearance or odor: slight organic odor
 Temperature (°C): 5.28 pH: 7.23 Turbidity: 13.7
 Temp corr cond (umhos/cm): 0.928 Dissolved Oxygen: 12.5 (sat)
 Foam observed? Yes No

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

Time	Sample ID	Analysis and Preservative	Container	Comments
			60-ml HDPE	gallon baggie

Sample Checklist
 Picture of Sample Location in photo GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change

Location of photos:
 Notes:

SURFACE WATER SAMPLING FORM

Date: 02/25/2020 1015 Client: MPCA
 Sample Location ID: EP10 Field Staff: MGD, HT
 Project Number: 60618753 Weather: cool, sunny

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): BANK/Shore IN WATER BODY MANHOLE
 Sample ID: EP10-WAT-BULK-01- 022520
 Sample ID (if multidepth): N/A
 Sample Depth: BULK
 Duplicate: YES
 Sampling Device (circle): DIPPER GRAB
 MS/MSD: NO

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
pipe discharging from Lake Elmo; northern culvert/pipe; no foam observed

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
sample collected directly in front of pipe

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1050</u>	EP10-WAT-BULK-01-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>1050</u>	EP10-WAT-BULK-01-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE
<u>1055</u>	EP10-WAT-BULK-02-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>1055</u>	EP10-WAT-BULK-02-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient no foam

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 1.98 feet
 Surface water estimated width at sample location (feet): ~30 feet

Details (if needed):

Was Water Flowing? Yes No only out of EP10 pipe but not EP11
 Other Details (ripples vs smooth, pools): small ripples
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: clear
 Ice/snow conditions (if applicable): only along banks
 Water surface vegetation (including dead):
 Bank vegetation: dead grasses, small shrubs + trees (also dead)
 Any other notes of water appearance or odor:

Temperature (°C): 2.52 pH: 8.05 Turbidity: 2.01 NTU
 Temp corr cond (umhos/cm): 0.257 Dissolved Oxygen: 10.56 mg/L ORP: 73.1

Foam observed? Yes No

If yes: If yes, sample and describe - color, presence of natural dam: N/A
 Color: Condensed Volume (approximate) (mL):
 Approximate height and width of pile (inches):
 Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)? NO

Time	Sample ID	Analysis and Preservative	Container	Comments
<u>N/A</u>			60-ml HDPE	gallon baggie

Sample Checklist
 Picture of Sample Location MGD GPS'd
 Picture of Foam (if applicable) N/A Decontaminated tools and glove change

Location of photos: MGD

Notes:

SURFACE WATER SAMPLING FORM

Date: 02/25/2020 Client: MPCA
 Sample Location ID: EP10 Field Staff: MGD, HT
 Project Number: 60618753 Weather:

1.98 feet deep
 1.0 ft/sec

Creek/Channel/Stream Sketch

Stream Segment Total Width =

Section No.	Dist to Initial Point	Width	Depth	Velocity at 0.6 D	Area	Discharge
	inches	inches	feet	ft/s	ft ²	ft ³ /s
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						

Stream Width	Number of Vertical Measurements	Q = V*A
3' < 9'		
9' < 16'		
16' < 33'		

Notes

Sample Checklist

- Picture of Sample Location GPS'd

Location of photos:

FIELD OBSERVATION FORM

Date: 02/25/2020 LOB Client: MPCA
 Sample Location ID: EP11 Field Staff: MGD, HT
 Project Number: 60618753 Weather: sunny, cool

SURFACE WATER INFORMATION

Location Description: BANK/ShORE IN WATER BODY MANHOLE Sample ID: N/A
 Sample ID (if multidepth): N/A
 Duplicate: N/A
 MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
Diversion pipe that runs along the bottom of Lake Elmo; no foam observed; snow only along banks

Foam or ice conditions observed:
none in the channel / discharge area

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?
 If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient No foam

LOCATION CONDITIONS

Surface water estimated depth (inches): 2.26 feet
 Surface water estimated width at sample location (feet): ~30 feet
 Details (if needed): _____
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): _____
 Flow Speed (circle): LOW MODERATE HIGH None

Water clarity and color: turbid; light brown tint
 Ice/snow conditions (if applicable): only along banks (snow)
 Water surface vegetation (including dead): dead trees
 Bank vegetation: dead grasses + shrubs
 Any other notes of water appearance or odor: _____

Field Checklist
 Picture of Location
 Picture of Foam (if applicable) N/A
 Location of photos: MGD
 Other Notes: No Sample collected

SURFACE WATER SAMPLING FORM

Date: 2/25/20 Client: MPCA
 Sample Location ID: EP16 Field Staff: HT/MD
 Project Number: 60618753 Weather: Sunny, low clouds

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): BANK/SHORE IN WATER BODY MANHOLE Sample ID: EP16-WAT-BULK-01-022520
 Sample Depth: BULK Sample ID (if multidepth): N/A
 Sampling Device (circle): DIPPER GRAB Duplicate: NO
 MS/MSD: NO

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
sample ~ 3 ft from drain inlet, debris in drain cover
small down limbs in stream

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
sample 2 ft from shore, 3 feet from end of channel

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1110</u>	<u>EP16-WAT-BULK-01-022520</u>	<u>PFAS MLA-110</u>	<u>2 HDPE 500 mL 2 HDPE 60 mL</u>	<u>4</u>	<u>AXYS</u>
<u>1110</u>	<u>EP16-WAT-BULK-01-022520</u>	<u>Cl, TDS, TOC</u>	<u>1 Plastic 500 mL, 3 40-mL VOA</u>	<u>4</u>	<u>PACE</u>

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient no foam

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): ~ 1-2 feet (water too turbid to determine)
 Surface water estimated width at sample location (feet): 7 feet

Details (if needed):
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): no ripples but flowing quickly
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: turbid, could see bottom, greenish brown
 Ice/snow conditions (if applicable): snow on banks, no ice cover
 Water surface vegetation (including dead): leaf litter in stream, sticks
 Bank vegetation: trees/bush

Any other notes of water appearance or odor:
 Temperature (°C): 2.23 pH: 7.55 Turbidity: 5.41
 Temp corr cond (umhos/cm): 0.289 Dissolved Oxygen: 10.06 ORP: 37.8

Foam observed? Yes No
 If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)? no

Time	Sample ID	Analysis and Preservative	Container	Comments
<u>NIA</u>			<u>60-ml HDPE</u>	<u>gallon baggie</u>

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) NIA Decontaminated tools and glove change
 Location of photos: MGI

Notes:

FIELD OBSERVATION FORM

Date: 2-25-20
 Sample Location ID: EP13
 Project Number: 60618753

Client: MPCA
 Field Staff: ADG
 Weather: Sunny 35° F

SURFACE WATER INFORMATION

Location Description
BANK SHORE IN WATER BODY MANHOLE

Sample ID: N/A
 Sample ID (if multidepth): N/A
 Duplicate: N/A
 MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
Golf Course Lake (NW golf course lake - connected to channel, see additional notes taken on follow up recon 3/5)
 Foam or ice conditions observed:

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?
 If foam, location of historic sample relative to foam (circle): **upgradient** at(below) foam **downgradient**

LOCATION CONDITIONS

Surface water estimated depth (inches): _____
 Surface water estimated width at sample location (feet): _____
 Details (if needed): _____
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): _____
 Flow Speed (circle): **LOW** **MODERATE** **HIGH**

Water clarity and color: _____
 Ice/snow conditions (if applicable): _____
 Water surface vegetation (including dead): _____
 Bank vegetation: _____
 Any other notes of water appearance or odor: _____

Field Checklist
 Picture of Location
 Picture of Foam (if applicable)
 Location of photos: top of hill looking west

Other Notes:
open water extending from P1007 sewer

SURFACE WATER SAMPLING FORM

Date: 02/25/2020 Client: MPCA
 Sample Location ID: WLB Field Staff: MGD, HT
 Project Number: 60618753 Weather: Cool, Overcast

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle):
BANK/SHORE IN WATER BODY MANHOLE
 Sample ID: WLB-WAT-BULK-01-022520
 Sample ID (if multidepth): N/A
 Sample Depth: BULK
 Duplicate: NO
 Sampling Device (circle): DIPPER GRAB
 MS/MSD: NO

Description of location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
wetlands near culvert, north of church

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
sample collected directly downstream of culvert discharge opening (where culvert flares out)

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>11/10</u>	<u>WLB-WAT-BULK-01-022520</u>	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>11/10</u>	<u>WLB-WAT-BULK-01-022520</u>	CI, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA	4	PACE

If foam, location of samples relative to foam (circle): upgradient at (below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 2.5 feet
 Surface water estimated width at sample location (feet): width of culvert ~ 4.5 feet; wetlands ~ 25-30 feet bank to bank

Details (if needed):
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): minor ripples
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: clear
 Ice/snow conditions (if applicable): snow only along banks and on top of culvert but not in wetland channel
 Water surface vegetation (including dead): dead cattails
 Bank vegetation: " "
 Any other notes of water appearance or odor:

Temperature (°C): 2.12 pH: 7.96 Turbidity: 2.63 NTU
 Temp corr cond (umhos/cm): 0.300 Dissolved Oxygen: 43.20 ORP: -5.3

Foam observed? Yes No
 If yes: If yes, sample and describe - color, presence of natural dam: light brown / tan, organics mixed in
 Color: bright white Condensed Volume (approximate) (mL): with foam
 Approximate height and width of pile (inches): < 3mm
 Describe what the foam is accumulating on: fallen cattails

Is there evidence of foam floating down stream (i.e. not in a pile)? yes

Time	Sample ID	Analysis and Preservative	Container	Comments
<u>11/30</u>	<u>WLB-FOAM-01-022520</u>		60-ml HDPE	baggie

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change

Location of photos: MGD
 Notes: ~2.5 ft deep

02/26/2020
Final condensed volume: 30 mL

foam = bubbles in water
 accumulate

SURFACE WATER SAMPLING FORM

Date: 02/25/2020
 Sample Location ID: WL7
 Project Number: 60618753

Client: MPCA
 Field Staff: MGD, HT
 Weather: cool, overcast

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): BANK/SHOBE IN WATER BODY MANHOLE
 Sample ID: WL7-WAT-BULK-01- 022520
 Sample ID (if multidepth): N/A
 Sample Depth: BULK
 Duplicate: NO
 Sampling Device (circle): DIPPER GRAB
 MS/MSD: NO

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

wetland, next to 10th St (off the shoulder parking)
channel lined completely w/ cattails
 Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
dipper reach within but not quite inside main channel
7-8 feet from bank

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1700</u>	<u>WL7-WAT-BULK-01-022520</u>	<u>PFAS MLA-110</u>	<u>2 HDPE 500 mL 2 HDPE 60 mL</u>		<u>4 AXYS</u>
<u>1700</u>	<u>WL7-WAT-BULK-01-022520</u>	<u>CI, TDS, TOC</u>	<u>1 Plastic 500 mL, 3 40-mL VOA</u>		<u>4 PACE</u>

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient N/A

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): ~1.5-2 feet
 Surface water estimated width at sample location (feet): ~20
 Details (if needed):
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): tiny ripples
 Flow Speed (circle): LOW MODERATE HIGH very low
 Water clarity and color: clear
 Ice/snow conditions (if applicable): snow along banks only but not in channel
 Water surface vegetation (including dead): dead cattails
 Bank vegetation: " "

Any other notes of water appearance or odor:
 Temperature (°C): 2.16 pH: 7.38 Turbidity: 2.47 NTU
 Temp corr cond (umhos/cm): 0.185 Dissolved Oxygen: 26.10 ORP: 45.9

Foam observed? Yes No
 If yes: If yes, sample and describe - color, presence of natural dam: N/A
 Color: Condensed Volume (approximate) (mL):
 Approximate height and width of pile (inches):
 Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)? NO

Time	Sample ID	Analysis and Preservative	Container	Comments
			<u>60-ml HDPE</u>	<u>baggie</u>

Sample Checklist
 Picture of Sample Location MGD GPS'd
 Picture of Foam (if applicable) N/A Decontaminated tools and glove change
 Location of photos: MGD
 Notes:

FIELD OBSERVATION FORM

Date: 2/26/20
 Sample Location ID: WL8
 Project Number: 60618753

Client: MPCA
 Field Staff: AS/AL
 Weather: Sunny, 20-30°

SURFACE WATER INFORMATION

Location Description
BANK/SHORE IN WATER BODY MANHOLE
culvert

Sample ID: N/A
 Sample ID (if multidepth): N/A
 Duplicate: N/A
 MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

cattails + trees along edges; weeds along bottom (silty sand)

Foam or ice conditions observed:

thin ice ~15-20' from culvert/pipe → right next to road

If yes: NO If yes, sample and describe - color, presence of natural dam:

Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): 13-14"

Surface water estimated width at sample location (feet): _____

Details (if needed): _____

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools): _____

Flow Speed (circle): LOW to MODERATE HIGH

Water clarity and color: _____

Ice/snow conditions (if applicable): SNOW + ice about 150' out from culvert; 20' along edge

Water surface vegetation (including dead): _____

Bank vegetation: cattails/wheat + tall grass

Any other notes of water appearance or odor: _____

Field Checklist

- Picture of Location
- Picture of Foam (if applicable)

Location of photos: manhole

Other Notes: _____

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SURFACE WATER SAMPLING FORM

Date: 2-25-20
Sample Location ID: WL9
Project Number: 60618753

Client: MPCA
Field Staff: AG, MGA HT, AS, AL
Weather: Overcast 30's

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle):
BANK/Shore IN WATER BODY MANHOLE
Sample Depth: BULK
Sampling Device (circle): DIPPER GRAB

Sample ID: WL9-WAT-BULK-01-022520
Sample ID (if multidepth): WL9-WAT-SML-01 02520 @ 1500
Duplicate: YES 022520 @ 1515
MS/MSD: YES

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
Down stream at North Pond (channel immediately down gradient)
Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):

Samples Collected

2:25
15:30
15:30

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>3:25</u>	WL9-WAT-BULK-01-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL		4 AXYS
<u>3:25</u>	WL9-WAT-BULK-01-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA		4 PACE
<u>3:25</u>	WL9-WAT-BULK-02-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL		4 AXYS
<u>3:25</u>	WL9-WAT-BULK-02-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA		4 PACE
<u>3:25</u>	WL9-WAT-BULK-03-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL		8 AXYS
<u>3:25</u>	WL9-WAT-BULK-03-	Cl, TDS, TOC	1 Plastic 500 mL, 3 40-mL VOA		8 PACE

If foam, location of samples relative to foam (circle): upgradient at (below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 6 to 9.75" Primary 8.5" DUP
Surface water estimated width at sample location (feet): 81
Details (if needed): increasing creek closer to east side of creek
Was Water Flowing? Yes No
Other Details (ripples vs smooth, pools): ripples
Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: Clear
Ice/snow conditions (if applicable): NO ICE snow on banks, North pond mostly frozen until channel
Water surface vegetation (including dead): None
Bank vegetation: Deciduous undergrowth med to mature trees at sample loca

Any other notes of water appearance or odor:
Temperature (°C): 1.75 0.61 cond pH: 7.65 Turbidity: 1.13
Temp corr cond (umhos/cm): 27.7 .423 Dissolved Oxygen: 14.79 %
Foam observed? Yes No

If yes: If yes, sample and describe - color, presence of natural dam:
Color: _____ Condensed Volume (approximate) (mL): _____
Approximate height and width of pile (inches): _____
Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

Time	Sample ID	Analysis and Preservative	Container	Comments
			60-ml HDPE	baggie

Sample Checklist Amanda Phare
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change

Location of photos:
Notes: Some wind gust during some sampling

A/A ||||| H/M |||||
||||| |||||
3:17 3:22 3:17

SURFACE MICRO LAYER SAMPLING FORM

Date: 7-25-20
 Sample Location ID: WL9
 Project Number: 60618753

Client: MPCA
 Field Staff: AS/AMO/HT/AG
 Weather: Overcast, 30's

SURFACE MICRO LAYER SAMPLE INFORMATION

Location of Sample Collection (circle):
 CREEK/CHANNEL POND LAKE
 If other, details:
 Sampling Device: 1 FOOT SAMPLER 1.5 FOOT SAMPLER

Sample ID: WL9-WAT-SML-01-022520
 Duplicate: NO + 02-022520
 MS/MSD: N/A

How does location compare to surface water sample location and foam locations?
No foam; same location as for water

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Comments
<u>20:15</u>	<u>WL9-WAT-SML-01-022520</u>	<u>PFAS MLA-110</u>	<u>2 HDPE 250-mL, 2 HDPE 60-mL</u>	<u>AXYS - collected AS/AM</u>
	<u>WL9-WAT-SML-02-022520</u>			<u>- collected HT/AG</u>

SAMPLE METHOD

Number of dips: 66
 Location of dips relative to each other: 16 ft same location for each team
 Total sampling time: 27 min
 Speed of removing glass: 2 sec.
 Other comments on sampling method:
Broken glass a ~ 250 mL, stopped sampling

Sample Checklist

- Picture of Sample Location
- GPS'd
- Picture of Sample
- Decontaminated tools and glove change

Notes: Amanda phone

FIELD OBSERVATION FORM

Date: 2/20/20 Client: MPCA
 Sample Location ID: WL10 1500 Field Staff: HT MD
 Project Number: 60618753 Weather: sunny, high 20s

SURFACE WATER INFORMATION

Location Description: Channel Sample ID: N/A
~~BANK/Shore~~ IN WATER BODY MANHOLE Sample ID (if multidepth): N/A
 Duplicate: N/A
 MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
10 feet wide channel, 3 ft deep, no dams, stream is clear of debris

Foam or ice conditions observed:
snow to bank, no ice

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): 2-3 feet

Surface water estimated width at sample location (feet):

Details (if needed):

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools):

Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: can see bottom, brownish tint

Ice/snow conditions (if applicable): snow

Water surface vegetation (including dead): brush to bank

Bank vegetation: small trees

Any other notes of water appearance or odor:

Field Checklist

- Picture of Location
- Picture of Foam (if applicable)

Location of photos: M60

Other Notes:

FIELD OBSERVATION FORM

Date: 2/24/20 Client: MPCA
 Sample Location ID: WL11 1508 Field Staff: M (p) HT
 Project Number: 60618753 Weather: Sunny, 30,

SURFACE WATER INFORMATION

Location Description: BANK/SIDE IN WATER BODY MANHOLE ~~culvert~~ channel culvert Sample ID: N/A
 Sample ID (if multidepth): N/A
 Duplicate: N/A
 MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
just downstream of culvert, smooth flow, very few ripples

Foam or ice conditions observed:
snow to bank ice starts ~200 feet downstream

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?
 If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): 4 feet
 Surface water estimated width at sample location (feet): _____
 Details (if needed): _____
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): _____
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: can't see bottom well, brown tint, medium turbidity
 Ice/snow conditions (if applicable): snow along bank but water open/ice
 Water surface vegetation (including dead): none
 Bank vegetation: few trees (mature)
 Any other notes of water appearance or odor: _____

Field Checklist
 Picture of Location
 Picture of Foam (if applicable)
 Location of photos: MGD
 Other Notes: seal + ducks

SURFACE WATER SAMPLING FORM

Date: 02/20/2020 1345 Client: MPCA
 Sample Location ID: WL12 Field Staff: _____
 Project Number: 60618753 Weather: cold, sunny ~20's °F,

SURFACE WATER SAMPLE INFORMATION slightly windy

Location of Sample Collection (circle): _____ Sample ID: WL12-WAT-BULK-01- 022620
BANK/Shore IN WATER BODY MANHOLE Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: NO
 Sampling Device (circle): DIPPER GRAB MS/MSD: NO

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
open channel "outlet" of Middle Pond; bottom littered with fallen branches
 Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
collected sample ~4-5 feet from bank; approx. 50-60 feet south of Middle Pond

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1350</u>	<u>WL12-WAT-BULK-01-022620</u>	<u>PFAS MLA-110</u>	<u>2 HDPE 500 mL 2 HDPE 60 mL</u>	<u>4</u>	<u>AXYS</u>
<u>1350</u>	<u>WL12-WAT-BULK-01-022620</u>	<u>Cl, TDS, TOC</u>	<u>1 Plastic 500 mL, 3 40-mL VOA</u>	<u>4</u>	<u>PACE</u>

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient no foam

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): ~2.5-3 feet @ center of channel
 Surface water estimated width at sample location (feet): ~30-40 feet from bank to bank
 Details (if needed): _____
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): ripples
 Flow Speed (circle): LOW MODERATE HIGH very low to stagnant
 Water clarity and color: clear
 Ice/snow conditions (if applicable): ice in Middle Pond + slightly in channel along edges
 Water surface vegetation (including dead): _____
 Bank vegetation: dead grasses + small trees
 Any other notes of water appearance or odor: _____
 Temperature (°C): 1.09 pH: 7.52 Turbidity: 1.83 NTU
 Temp corr cond (umhos/cm): 0.291 Dissolved Oxygen: 16.46 ORP: 19.4
 Foam observed? Yes No

If yes: If yes, sample and describe - color, presence of natural dam: _____
 Color: _____ Condensed Volume (approximate) (mL): N/A
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)? no foam

Time	Sample ID	Analysis and Preservative	Container	Comments
<u>N/A</u>			<u>60-ml HDPE</u>	<u>gallon baggie</u>

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) N/A Decontaminated tools and glove change

Location of photos: UGD
 Notes: called property owner just before arriving; possible beaver dam on eastern bank?

FIELD OBSERVATION FORM

Date: 2/24/20 1430 Client: MPCA
 Sample Location ID: WL13 Field Staff: MD HT
 Project Number: 60618753 Weather: SUNNY HIGH 20

SURFACE WATER INFORMATION

Location Description: BANK/SHORE IN WATER BODY MANHOLE Sample ID: N/A
 Sample ID (if multidepth): N/A
 Duplicate: N/A
 MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
wide channel ~40ft ice melts expanding into channel, snow to bank
smooth flow (no ripples) some downed branches, some leaves under ice

Foam or ice conditions observed: channel fully open, ice along sides, snow to banks snow drifts ~2 feet

If yes: NO If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): 3-4ft
 Surface water estimated width at sample location (feet): 40ft
 Details (if needed): _____

Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): smooth
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: course bottom, brownish color

Ice/snow conditions (if applicable):

Water surface vegetation (including dead):

Bank vegetation: brush to bank but very little in

Any other notes of water appearance or odor:

Field Checklist

- Picture of Location
- Picture of Foam (if applicable)

Location of photos: MGD

Other Notes:

FIELD OBSERVATION FORM

Date: 2/20/20 1440 Client: MPCA
 Sample Location ID: WL14 Field Staff: MD HI
 Project Number: 60618753 Weather: SUNNY HIGH 45

SURFACE WATER INFORMATION

Location-Description: BANK/Shore IN WATER BODY MANHOLE Sample ID: N/A
 Sample ID (if multidepth): N/A
 Duplicate: N/A
 MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
Open channel to pond, some leaves/small debris building up on edge of 1st pond bank

Foam or ice conditions observed:
ice starts 100 feet from pond into channel, some thin ice along pond bank

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

NO LOCATION CONDITIONS

Surface water estimated depth (inches):

Surface water estimated width at sample location (feet):

Details (if needed):

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools): smooth

Flow Speed (circle): LOW MODERATE (HIGH)

Water clarity and color: clear to hazy, brownish

Ice/snow conditions (if applicable): Snow on banks, thin ice along edge of bank

Water surface vegetation (including dead): none

Bank vegetation: grass to bank; mature trees

Any other notes of water appearance or odor:

Field Checklist

Picture of Location

Picture of Foam (if applicable)

Location of photos: MEID

Other Notes:

SURFACE WATER SAMPLING FORM

Date: 2/26/20 1450 Client: MPCA
 Sample Location ID: WL15 Field Staff: AS/AL
 Project Number: 60618753 Weather: 20's sunny

- moved location about 20 feet south/down gradient of original location for ease of access

Location of Sample Collection (circle): _____ Sample ID: WL15-WAT-BULK-01-022620
 BANK/Shore IN WATER BODY MANHOLE - in creek Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: NO

Sampling Device (circle) DIPPER GRAB MS/MSD: NO
 Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
pond

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
Sandy bottom, flow possibly blocked where we sampled
thin ice along banks and down stream
water level lower than usual (you can see ice banks)

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
	<u>WL15-WAT-BULK-01-022620</u>	<u>PFAS MLA-110</u>	<u>2 HDPE 500 mL 2 HDPE 60 mL</u>	<u>4</u>	<u>AXYS</u>
	<u>WL15-WAT-BULK-01-022620</u>	<u>Cl, TDS, TOC</u>	<u>1 Plastic 500 mL, 3 40-mL VOA</u>	<u>4</u>	<u>PACE</u>

405
700

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): ~24"

Surface water estimated width at sample location (feet): _____

Details (if needed): _____

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools): _____

Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: very clear, snow melt?

Ice/snow conditions (if applicable): very thin ice intermittent in channel

Water surface vegetation (including dead): along banks (~1/2" thick)

Bank vegetation: trees

Any other notes of water appearance or odor: _____

Temperature (°C): 1.29 pH: 7.32 Turbidity: 0.98

Temp corr cond (umhos/cm): 0.766 Dissolved Oxygen: 1.2

Foam observed? Yes No

If yes: If yes, sample and describe - color, presence of natural dam:

NO Color: _____ Condensed Volume (approximate) (mL): _____

Approximate height and width of pile (inches): _____

Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)? _____

Time	Sample ID	Analysis and Preservative	Container	Comments
<u>N/A</u>			<u>60-ml HDPE</u>	<u>baggie</u>

Sample Checklist

- Picture of Sample Location GPS'd
- Picture of Foam (if applicable) Decontaminated tools and glove change

Location of photos: Amanda phone

Notes: _____

FIELD OBSERVATION FORM

Date: 01/25/20 1515 Client: MPCA
 Sample Location ID: WL17 0225126 Field Staff: AL/HS
 Project Number: 60618753 Weather: Sunny 20's

SURFACE WATER INFORMATION

Location Description: BANK/ShORE IN WATER BODY MANHOLE Sample ID: N/A
 Sample ID (if multidepth): N/A
 Duplicate: N/A
 MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
2' wide (1/2" thick) gradient of southward
edge of ice along W side of stream; 16" of 1/2" thick ice on east
 Foam or ice conditions observed: side of channel

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____
 Is there evidence of foam floating down stream (i.e. not in a pile)? _____
 If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): 2-4ft
 Surface water estimated width at sample location (feet): _____
 Details (if needed): _____
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): smooth
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: clear
 Ice/snow conditions (if applicable): snow on bank, thin ice on bank edges (6"-12")
 Water surface vegetation (including dead): *res (most to mature) - NO surface vegetation.
 Bank vegetation: we
 Any other notes of water appearance or odor: _____

Field Checklist
 Picture of Location AS
 Picture of Foam (if applicable)
 Location of photos: AS + Amanda phone
 Other Notes: _____



SURFACE WATER SAMPLING FORM

Date: 2/26/20 Client: MPCA
Sample Location ID: WL18 Field Staff: AJA
Project Number: 60618753 Weather: Sunny 20°

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Sample ID: WL18-WAT-BULK-01-022620
BANK/Shore IN WATER BODY (MANHOLE) Sample ID (if multidepth): N/A
Sample Depth: BULK Duplicate: NO
Sampling Device (circle): DIPPER GRAB MS/MSD: NO

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
manhole down hill bottom up gradient manhole + down
Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
yellowish trees / shrubs / snow covered + ice outfall

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
	<u>WL18-WAT-BULK-01-022620</u>	<u>PFAS MLA-110</u>	<u>2 HDPE 500 mL 2 HDPE 60 mL</u>	<u>4</u>	<u>AXYS</u>
	<u>WL18-WAT-BULK-01-022620</u>	<u>Cl, TDS, TOC</u>	<u>1 Plastic 500 mL, 3 40-mL VOA</u>	<u>4</u>	<u>PACE</u>

6/5
6/5

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient N/A

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): _____
Surface water estimated width at sample location (feet): _____
Details (if needed): _____
Was Water Flowing? Yes No
Other Details (ripples vs smooth, pools): _____
Flow Speed (circle): LOW MODERATE HIGH
Water clarity and color: clear - ice / frozen water fall next to manhole
Ice/snow conditions (if applicable): 1 ft snow over manhole
Water surface vegetation (including dead): N/A
Bank vegetation: trees around manhole
Any other notes of water appearance or odor: _____

CG-TEST-022620 (Target 1)

Temperature (°C): 0.48 pH: 7.02 Turbidity: 1.7
Temp corr cond (umhos/cm): 0.524 Dissolved Oxygen: 0.724 101.0

Foam observed? Yes No
If yes: If yes, sample and describe - color, presence of natural dam:
Color: _____ Condensed Volume (approximate) (mL): _____
Approximate height and width of pile (inches): _____
Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

Time	Sample ID	Analysis and Preservative	Container	Comments
			<u>60-ml HDPE</u>	<u>baggie</u>

Sample Checklist
 Picture of Sample Location AL GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change
Location of photos: AL

Notes:

EQ-SQUEEGE-022620 EQ-DIPPER-022620
@ 1650, Two 500-ml 1700
EQ-SQUEEGE-022620 EQ-ZIP BAG-022620
@ 1715 (2-pkg)
1730

SURFACE WATER SAMPLING FORM

Date: 12/26/2020 Client: MPCA
 Sample Location ID: VB1 Field Staff: HT MD
 Project Number: 60618753 Weather: cool, overcast

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Sample ID: VB1-WAT-BULK-01-
BANK/Shore IN WATER BODY MANHOLE Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: NO
 Sampling Device (circle): DIPPER GRAB MS/MSD: NO

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
Frozen, snow covered; sample not collected eroded banks
downed branches

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
frozen in culverts

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
	VB1-WAT-BULK-01-	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
	<u>VB1-WAT-BULK-01-</u>	<u>Cl, TDS, TOC</u>	<u>1 Plastic 500 mL, 3 40-mL VOA</u>	<u>4</u>	<u>PACE</u>

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): _____
 Surface water estimated width at sample location (feet): _____
 Details (if needed): _____
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): _____
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: _____
 Ice/snow conditions (if applicable): _____
 Water surface vegetation (including dead): _____
 Bank vegetation: _____
 Any other notes of water appearance or odor: _____

Temperature (°C): _____ pH: _____ Turbidity: _____
 Temp corr cond (umhos/cm): _____ Dissolved Oxygen: _____
 Foam observed? Yes No

If yes: If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?

Time	Sample ID	Analysis and Preservative	Container	Comments
			<u>60-ml HDPE</u>	<u>baggie</u>

Sample Checklist
 Picture of Sample Location GPS'd
 Picture of Foam (if applicable) Decontaminated tools and glove change

Location of photos: HT
 Notes: _____

SURFACE WATER SAMPLING FORM

Date: 02/26/2020 Client: MPCA
 Sample Location ID: VB2 Field Staff: MGD, HT
 Project Number: 60618753 Weather: cold, overcast

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): BANK/SHORE IN WATER BODY MANHOLE Sample ID: VB2-WAT-BULK-01- 022620
 Sample ID (if multidepth): N/A
 Sample Depth: BULK Duplicate: NO
 Sampling Device (circle): DIPPER GRAB MS/MSD: NO

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):
creek channel

Sample location with regards to surface and channel bottom (sample depth, distance from bottom, distance from bank):
sampled ~ 2-3 feet from eastern bank; bottom of stream gravelly + sandy

Samples Collected

Time	Sample ID	Analysis and Preservative	Containers (Type, Quantity, Volume)	Bottle Count	Comments
<u>1550</u>	<u>VB2-WAT-BULK-01-022620</u>	<u>PFAS MLA-110</u>	<u>2 HDPE 500 mL 2 HDPE 60 mL</u>	<u>4</u>	<u>AXYS</u>
<u>1550</u>	<u>VB2-WAT-BULK-01-022620</u>	<u>Cl, TDS, TOC</u>	<u>1 Plastic 500 mL, 3 40-mL VOA</u>	<u>4</u>	<u>PACE</u>

If foam, location of samples relative to foam (circle): upgradient at(below) foam downgradient no foam

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 3-4 in.
 Surface water estimated width at sample location (feet): ~18-20 feet
 Details (if needed):

Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): rapids upstream, underneath roadway
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: clear
 Ice/snow conditions (if applicable): snow along banks only
 Water surface vegetation, (including dead):
 Bank vegetation: dead grasses
 Any other notes of water appearance or odor:

Temperature (°C): 2.27 pH: 7.73 Turbidity: 1.03 NTU
 Temp corr cond (umhos/cm): 0.339 Dissolved Oxygen: 36.18 ORP: 20.9

Foam observed? Yes No
 If yes: If yes, sample and describe - color, presence of natural dam: no foam
 Color: Condensed Volume (approximate) (mL):
 Approximate height and width of pile (inches):
 Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)? no

Time	Sample ID	Analysis and Preservative	Container	Comments
			<u>60-ml HDPE</u>	<u>baggie</u>

Sample Checklist
 Picture of Sample Location MGD GPS'd Google Earth
 Picture of Foam (if applicable) N/A Decontaminated tools and glove change

Location of photos: MGD
 Notes: parked in front of 1205 mailbox on ~~east~~ northbound side shoulder; used traffic cones

FIELD OBSERVATION FORM

Date: 2/25/20 0945 Client: MPCA
 Sample Location ID: 862 RCI Field Staff: ADG
 Project Number: 60618753 Weather: Sunny 30°F

SURFACE WATER INFORMATION

Location Description: Lake Olson Sample ID: N/A
 BANK/Shore IN WATER BODY MANHOLE Sample ID (if multidepth): N/A
 Duplicate: N/A
 MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

Just off Hidden Beach Trail Lake frozen + snow covered
 Foam or ice conditions observed:

If yes: NO If yes, sample and describe - color, presence of natural dam:
 Color: _____ Condensed Volume (approximate) (mL): _____
 Approximate height and width of pile (inches): _____
 Describe what the foam is accumulating on: _____

Is there evidence of foam floating down stream (i.e. not in a pile)?
 If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): N/A
 Surface water estimated width at sample location (feet): N/A
 Details (if needed): _____
 Was Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): N/A
 Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color: N/A
 Ice/snow conditions (if applicable): Frozen lake, snow covered
 Water surface vegetation (including dead): _____
 Bank vegetation: Mature trees
 Any other notes of water appearance or odor: _____

Field Checklist
 Picture of Location
 Picture of Foam (if applicable)
 Location of photos: YES
 Other Notes: Drive By

FIELD OBSERVATION FORM

Date: 2-25-26 1000

Client: MPCA

Sample Location ID: RCZ

Field Staff: AGD

Project Number: 60618753

Weather: Sunny, 20°

SURFACE WATER INFORMATION

Location Description: Outlet from Lake Jane

Sample ID: N/A

BANK/Shore: IN WATER BODY MANHOLE

Sample ID (if multidepth): N/A

Duplicate: N/A

MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

frozen + snow covered

Foam or ice conditions observed:

If yes: If yes, sample and describe - color, presence of natural dam:

NO

Color: Condensed Volume (approximate) (mL):

Approximate height and width of pile (inches):

Describe what the foam is accumulating on:

Is there evidence of foam floating down stream (i.e. not in a pile)?

If foam, location of historic sample relative to foam (circle): upgradient at(below) foam downgradient

LOCATION CONDITIONS

Surface water estimated depth (inches): N/A

Surface water estimated width at sample location (feet):

Details (if needed):

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools):

Flow Speed (circle): LOW MODERATE HIGH

Water clarity and color:

Ice/snow conditions (if applicable): Frozen, Snow Covered

Water surface vegetation (including dead):

Bank vegetation:

Any other notes of water appearance or odor:

Field Checklist

- Picture of Location
Picture of Foam (if applicable)

Location of photos: NO PHOTOS

Other Notes:

DRIVE BY-ONLY - From distance appears Frozen, Snow Covered

Goose Lake

FIELD OBSERVATION FORM

Date and Time: 2/25/20 1030

Client: MPCA

Sample Location ID: GL-1

Field Staff: AGD

Project Number: 60618753

Weather: Sunny 30's

SURFACE WATER INFORMATION

Location Description

Sample ID: N/A

BANK/Shore Creek Center in Water Body Manhole Culvert

Sample ID (if multidepth): N/A

Duplicate: N/A

MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

Goose Lake - corner of Keats + 8th St. N - Canoe Launch @ pavilion

Snow or ice conditions observed (winter - include location, thickness, etc):

Lake frozen + snow covered

LOCATION CONDITIONS

Surface water estimated depth (inches): unkn

Surface water estimated width at sample location (feet):

Details (if needed):

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools):

Flow Speed (circle): **LOW** **MODERATE** **HIGH**

Water clarity and color:

Water surface vegetation (including dead):

Bank vegetation:

Any other notes of water appearance or odor:

Foam Observed? Yes No

If yes: Frozen or Fresh:

Color:

Approximate height and width of pile (inches):

Why does it appear to be accumulating (dam, bend, etc):

Obvious source of turbulence/disturbance that created foam?

Describe what the foam is accumulating on:

Is it continuing to reaccumulate?

Is there evidence of foam floating down stream (i.e. not in a pile)?

Location of historic sample relative to foam (circle): **upgradient of foam** **at(below) foam** **downgradient of foam**

Field Checklist

Picture of Location (required)

Picture of Foam (if applicable)

Location of photos: AGD

Other Notes:

Golf Course

FIELD OBSERVATION FORM

Date and Time: 2/25/20 1300

Client: MPCA

Sample Location ID: COL-1

Field Staff: AGO

Project Number: 60618753

Weather: Sunny, 30's

SURFACE WATER INFORMATION

Location Description

BANK/Shore Creek Center in Water Body Manhole Culvert

Sample ID: N/A

Sample ID (if multidepth): N/A

Duplicate: N/A

MS/MSD: N/A

Description of Location (dams, wetland, depositional v.s. erosional area, litter, proximity to roads or structures):

Golf course lake (unnamed); frozen & snow covered except southwest (ducks)

Snow or ice conditions observed (winter - include location, thickness, etc):

See above. Immediately west of golf course parking lot and south of putting green

LOCATION CONDITIONS

Surface water estimated depth (inches): unkn.

Surface water estimated width at sample location (feet):

Details (if needed):

Was Water Flowing? Yes No

Other Details (ripples vs smooth, pools):

Flow Speed (circle): **LOW** **MODERATE** **HIGH**

Water clarity and color: clear

Water surface vegetation (including dead):

Bank vegetation:

Any other notes of water appearance or odor:

Foam Observed? Yes No

If yes: Frozen or Fresh:

Color:

Approximate height and width of pile (inches):

Why does it appear to be accumulating (dam, bend, etc):

Obvious source of turbulence/disturbance that created foam?

Describe what the foam is accumulating on:

Is it continuing to reaccumulate?

Is there evidence of foam floating down stream (i.e. not in a pile)?

Location of historic sample relative to foam (circle): **upgradient of foam** **at(below) foam** **downgradient of foam**

Field Checklist

Picture of Location (required)

Picture of Foam (if applicable)

Location of photos: AGO

Other Notes:

APPENDIX P
FIELD SAMPLING FORMS -
SEDIMENT SAMPLING EVENT

OBSERVATION FORM	
Date and Time: 1100 4/30/20	Client: MPCA
Sample Location ID: PC100A	Field Staff: AS/A
Project Number: 60618753	Weather: Sunny/70's
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): post culvert under road	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): south of road about 40 feet down gradient from culvert	
Heavy rain within last 7 days or evidence of flooding? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Water Flowing? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Other Details (ripples vs smooth, pools):	
Following a high rain event?	
Flow Speed (circle): LOW L-M MODERATE M-H HIGH	
Water clarity and color:	
Ice/snow conditions (if applicable):	
Any other notes of water appearance or odor:	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake): 75% silty, 25% organics, grass/cattails/"muck"	
Primary Soil Classification (%g, %s, %m, %c): @ 6, most med clay, stiff	
Primary description (grain size/grading and % if coarse; plasticity if fine): @ 12, dry high clay, v. stiff	
Secondary soils: -organics atop at 5/6 inches	
Moisture and Color and Odor: sediment has odor, water 90c nit	
Biomass/muck observed in sediment? Thickness of muck layer:	
Other notes:	
Ecological Observations	
Surrounding Vegetation? Grass & Cattails	Fish or invertebra observed?
Shaded or Unshaded? Unshaded	Birds observed? Ducks/Geese
Wetland (y/n)? Yes	Other evidence of wildlife observed?
"Creek weed"	(scat, tracks/prints, worms)
Overhanging vegetation? No	Land use (circle nearby)
Floating vegetation? No	House structures
Bank vegetation? Cattails	Mowed Grass <u>kill it - of way</u>
Vegetation alive or dead? both - decomposing at bottom	Cropland
Bank slope, height: 2' / 90°	Park/Trails
Trash or debris? Plastic bottles & bags	Commercial/Industrial - Road/round
Signs of human use? telephone poles, round about	Beach <u>drives + steep mall</u>
Foam Observations (if applicable)	
Foam observed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Old or Fresh? <u>some older</u> organic Color: foam tan/white	
Approximate height and width of pile (inches) or just bubbles: thin, "wrinkly"	
Organic matter? Yes <u>in foam</u>	
Why does it appear to be accumulating (dam, bend, etc): cattails/wetland "lumps"	
Obvious source of turbulence/disturbance that created foam? culvert & shallow spots, water pushing over	
Is it continuing to reaccumulate? Yes	
Is there foam floating down stream? Yes	

Top:

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): RC16A Location ID: RC16A
 CREEK CHANNEL POND LAKE
 BANK WETLAND BEACH OTHER
 Sample Type Details (if needed):
 Sampler:
 Duplicate Taken: Yes No
 MS/MSD Taken: Yes No

Sample(s) Depth: 0-6, 6-12 wetland
 Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB
 Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
Wetland sample in channel - sand "wave" of wetland "ump"

Depositional or erosional environment? depositional
 Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
from ~20' feet down gradient on N side
 Was this collected following a high rain event? If so, describe flow/water differences:
Yes - deeper water, flow about same

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
Center of creek, north (depositional side of wetland "ump")
 Surface water estimated depth (inches): 1 1/2 feet
 Surface water estimated width at sample location (feet): 10-12 feet
 Sample location relative to channel bottom and distance from bank:

Primary Soil Classification (%g, %s, %m, %c) ~6" of just grass roots
 Primary description (grain size/grading and % if coarse; plasticity if fine)
0-6: 75% low med plat clay silt 25% roots + grass dark brown
 Secondary soils: silt
6-12: moist med-high plat clay (OO) 12-18: dry high plastic, very stiff clay
 Moisture and Color and Odor: organic brown-rotten Thickness of muck layer:
roots present steamy C-top brown to clay

Other Notes:
0-6 - steamy decomposition / fishy? odor

Samples Collected

SAMPLE ID: RC16A-SED-WET-0-6-043020 Date / Time: 1130
 SAMPLE ID (if multiple depths): RC16-SED-WET-6-12-043020 Date / Time: 1200
RC16A-SED-WET-0-6-02-043020 Date / Time: 1145
~~RC16A-SED-WET-6-12-043020~~ Date / Time:
 DUP SAMPLE ID (if applicable): Date / Time:
 MS/MSD SAMPLE ID (if applicable): Date / Time:

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
Y	Y	0-6, 6-12	PFAS MLA-110	1 HDPE 250-mL	1	AXYS
		0-6	TOPA MLA-100	1 HDPE 250-mL	1	AXYS
Y		0-6, 6-12	TOC	4 oz Amber Jar	1	PACE
Y		0-6, 6-12	CEC	Paper Bag	1	MVLT
Y		0-6	Anions	8 oz Amber Jar	1	Pace
		12-18 6-12	Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist
 Picture of Sample Location (required) Amanda Phone GPS'd
 Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change
 Location of photos:

OBSERVATION FORM

Date and Time: 4/25/20 - 0815
 Sample Location ID: RC3 + RC3A Client: MPCA
 Project Number: 60618753 Field Staff: AL/AT/AS/HT Weather: swirly, 50's

Waterbody Description

Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):
Rain Creek at Menards; RC3A - 300 feet east of RC3

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):
see DRK where the creek goes stagnant and widens

Heavy rain within last 7 days or evidence of flooding?
 Water Flowing? Yes No RC3A - low to no flow

Other Details (ripples vs smooth, pools):
 Following a high rain event? no
 Flow Speed (circle): LOW L-M MODERATE M-H HIGH stagnant in some areas

Water clarity and color: clear

Ice/snow conditions (if applicable):

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):
at wetland "lump" depositional side, bottom fully covered w/ mossy dead grass

Primary Soil Classification (%g, %s, %m, %c):
and silt/fluff

Primary description (grain size/grading and % if coarse; plasticity if fine)

Secondary soils:

Moisture and Color and Odor:

Biomass/muck observed in sediment? Yes Thickness of muck layer:
 Other notes: moss w/ bioseen on top of water ^{ORAL} gradient of sample pt

Ecological Observations

Surrounding Vegetation? wetland Fish or invertebra observed? Minnows

Shaded or Unshaded: Unshaded Birds observed?

Wetland (y/n)? Y Other evidence of wildlife observed? pop - beaver?

Bottom Vegetation: moss + creek weed (scat, tracks/prints, worms) bugs

Overhanging vegetation? Land use (circle nearby)

Floating vegetation? moss/dead grass House

Bank vegetation? cattails/grass Mowed Grass

Vegetation alive or dead? mostly dead except moss Cropland

Bank slope, height: N/A Park/Trails

Trash or debris? cups/cans/highway trash Commercial/Industrial Menards P. lot

Signs of human use? retention pond + culvert Beach

Foam Observations (if applicable)

Foam observed? Yes No

Old or Fresh: Fresh Color:

Approximate height and width of pile (inches) or just bubbles: just big bright white bubbles

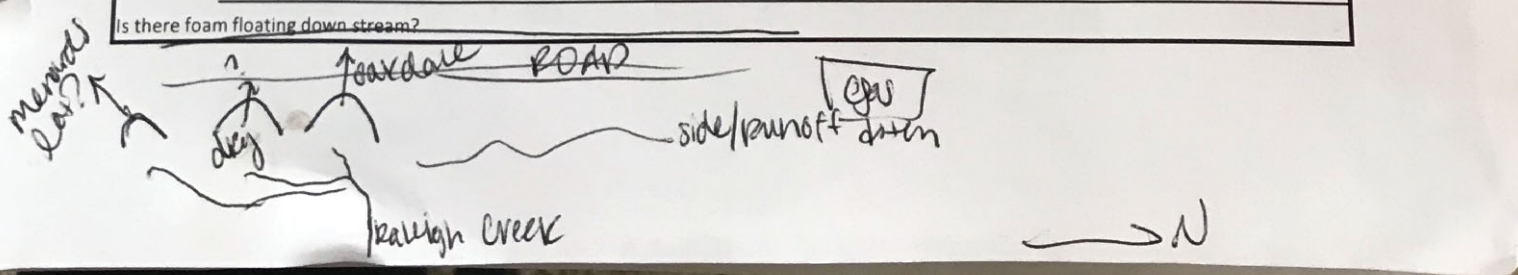
Organic matter? moss/grass

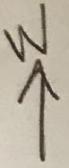
Why does it appear to be accumulating (dam, bend, etc):

Obvious source of turbulence/disturbance that created foam? eddy

Is it continuing to reaccumulate?

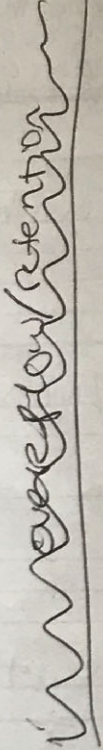
Is there foam floating down stream?





Menards

Wald - concrete



post / cattails



patent creek

wetlands

gas station

0-6 = grass
 → 12 = organics

SEDIMENT SAMPLE INFORMATION							
Location of Sample Collection (circle):				Location ID: RC3 + RC3A			
CREEK/CHANNEL POND LAKE				Sample Type Details (if needed):			
BANK WETLAND BEACH OTHER				Sampler: AS			
Sample(s) Depth: 0-6 (3), 12-18 (3), 0-6 (3A)				Duplicate Taken: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB				MS/MSD Taken: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):							
- 18-24: clayey sand (f+m), greenish, trace organic							
Depositional or erosional environment? - greenish silt, clay (coarse)							
Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?							
Was this collected following a high rain event? If so, describe flow/water differences:							
SAMPLE POINT CONDITIONS							
Location within water body (center of creek, bank, bottom of pond/lake):							
center of creek - wetland "lump"							
Surface water estimated depth (inches): 3: 8" 3A: 2"							
Surface water estimated width at sample location (feet): 3: 1.5 feet 3A: 7 feet							
Sample location relative to channel bottom and distance from bank:							
Primary Soil Classification (%g, %s, %m, %c) 0-6: silt, 15% coarse sand, 25% grass +							
Primary description (grain size/grading and % if coarse; plasticity if fine) - odore wood							
Secondary soils: 12-18: sandy clay (60% clay, 30% m-coarse sand, 10% wood)							
Moisture and Color and Odor: brown/black until 18 - some greenish clay							
Biomass/muck observed in sediment? Yes Thickness of muck layer:							
Other Notes: Organic order							
Samples Collected							
SAMPLE ID: RC3-SED-WET-0-6-042520				Date / Time: 4/25/20 0900			
SAMPLE ID (if multiple depths): RC3-SED-WET-0-6-12-18-01-042520				Date / Time: 4/25/20 0915			
RC3A-SED-WET-0-6-01-042520				Date / Time: 0930			
DUP SAMPLE ID (if applicable):				Date / Time:			
MS/MSD SAMPLE ID (if applicable):				Date / Time:			
Planned Analysis (check if collected)							
Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab	
Y		0-6/12-18 + 3A 0-6	PFAS MLA-110 (3A)	1 HDPE 250-mL	1	AXYS	
		only 3A 0-6	TOPA MLA-100 (3A)	1 HDPE 250-mL	1	AXYS	
Y		0-6/12-18 + 3A 0-6	TOC (3A)	4 oz Amber Jar	1	PACE	
Y		0-6/12-18	CEC (3A)	Paper Bag	1	MVLT	
Y		only 3A 0-6/12-18	Anions (3A)	8 oz Amber Jar	1	Pace	
			Grain Size	Half Gallon Baggie	1	Interpoll	
Sample Checklist							
Picture of Sample Location (required) Amanda's				<input type="checkbox"/> GPS'd			
Picture of Foam (before, collected, and bottled) turn on				<input type="checkbox"/> Decontaminated tools and glove change			
Location of photos: Phone							

3A on
 → bank

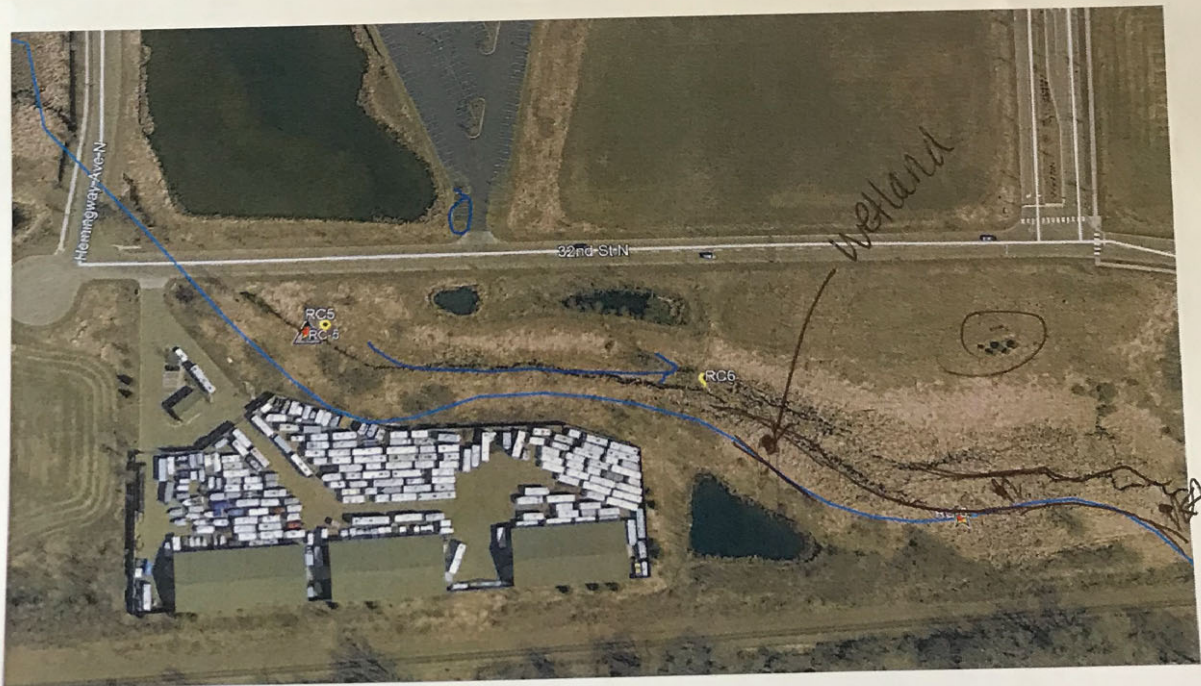
↳ Draw GPS'd

0-6: clay, ^(20%) low plasticity, 20% med to coarse subangular sand, 10% roots + grasses
brown/black

6-12: clay, low to med plasticity (25%), ~~10%~~ 5-10% med sand,
5% roots, black-gray

RC5 (RC4 and RC6)

No access needed - park in circled spot, try to follow 5 down to where it dries up. Look for foam, sample downgradient at least five feet first
Check RC6 both new and old



OBSERVATION FORM
 Date and Time: 4/24/20
 Sample Location ID: PCS
 Project Number: 60618753
 Client: MPCA
 Field Staff:
 Weather:

Waterbody Description
 Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):
 Creek

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):
 Culvert to the E about 75 ft

Heavy rain within last 7 days or evidence of flooding?
 Water Flowing? Yes No
 Other Details (ripples vs smooth, pools):
 Following a high rain event? No
 Flow Speed (circle): LOW (L-M) MODERATE M-H HIGH

Water clarity and color: Clear
 Ice/snow conditions (if applicable): No
 Any other notes of water appearance or odor:

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):
~~Pond~~ on north side, in channel, second or south side bank to
 Primary Soil Classification (%g, %s, %m, %c)
 Primary description (grain size/grading and % if coarse; plasticity if fine):
 0-2/3 = muck 2/3" - 1 foot clay; 15% sand, 15% gravel; 1-2 feet:
 Secondary soils: clayey sand

Moisture and Color and Odor: tan; dark brown all the way
 Biomass/muck observed in sediment? Thickness of muck layer: 2-2 3/4" clay
 Other notes: sand w/ gravel

Ecological Observations

Surrounding Vegetation? cuttals, grasses Fish or invertebra observed? Minnow
 Shaded or Unshaded: unshaded Birds observed? yes
 Wetland (y/n)? y Other evidence of wildlife observed? works
 (scat, tracks/prints, worms)

Overhanging vegetation? no	Land use (circle nearby)
Floating vegetation? trace grasses	House
Bank vegetation? grass	Mowed Grass
Vegetation alive or dead? grasses alive	Cropland
Bank slope, height:	Park/Trails
Trash or debris? No	Commerical/Industrial
Signs of human use? nearby road	Beach

Foam Observations (if applicable)

Foam observed? Yes No
 Old or Fresh? Old bubbles, accumulating on the banks
 Approximate height and width of pile (inches) or just bubbles:
 Organic matter? yes weeds + grass - dead + alive
 Why does it appear to be accumulating (dam, bend, etc): grass on edges + banks
 Obvious source of turbulence/disturbance that created foam? shallow water running over rocks -> turbulence
 Is it continuing to reaccumulate? yes
 Is there foam floating down stream? yes

0-4 (wam) 22-26 @ 1030
 4-6 1015

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): PCS Location ID: _____
 CREEK/CHANNEL POND LAKE Sample Type Details (if needed): _____
 BANK WETLAND BEACH OTHER Sampler: _____
 Sample(s) Depth: _____ Duplicate Taken: Yes No
 Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB MS/MSD Taken: Yes No
 Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank): _____

Depositional or erosional environment? _____
 Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample? _____
 Was this collected following a high rain event? If so, describe flow/water differences: _____

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake): _____
 Surface water estimated depth (inches): 3' 10"
 Surface water estimated width at sample location (feet): 7.5"
 Sample location relative to channel bottom and distance from bank: Wetland/Bank
 Primary Soil Classification (%g, %s, %m, %c) 0-4 (60% clay, 30% organic (roots, decaying plant matter)) low silt, sticky, dark
 Primary description (grain size, grading and % if coarse; plasticity if fine) U-6 clay (65%), low plasticity, 15% fine silt sand (detrital organic (roots))
 Secondary soils: 1' 10" - 2' 2" clayey sand w/ gravel dark backfill material
 Moisture and Color and Odor: organic odor 60% f-m silt, 25% clay, 15% med g sand
 Biomass/muck observed in sediment? SRM, 1/6, 1/8, 1/4, 1/2, 3/4, 1" muck brown
 Other Notes: _____

Samples Collected

SAMPLE ID: <u>PCS-SED-0-4-01-042420</u>	Date / Time: <u>1000</u>
SAMPLE ID (if multiple depths): <u>PCS-SED-4-6-01-042420</u>	Date / Time: <u>1015</u>
<u>PCS-22-26-01-042420</u>	Date / Time: <u>1030</u>
<u>PCS-SED-12-01-042420</u>	Date / Time: <u>1100</u>
<u>PCS-SED-WET-12-18-01-042420</u>	Date / Time: <u>1120</u>
DUP SAMPLE ID (if applicable): _____	Date / Time: _____
MS/MSD SAMPLE ID (if applicable): _____	Date / Time: _____

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
		<u>All</u>	PFAS MLA-110	1 HDPE 250-mL	1	AXYS
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
		<u>All</u>	TOC	4 oz Amber Jar	1	PACE
		<u>All</u>	CEC	Paper Bag	1	MVLT
			Anions	8 oz Amber Jar	1	Pace
			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist
 Picture of Sample Location (required) GPS'd
 Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change
 Location of photos: _____

3/2
Northern Bank samples

Wetland/Bank
10 ft sand trace of gravel
dark backfill material
SRM, 1/6, 1/8, 1/4, 1/2, 3/4, 1" muck brown

1.5 ft to 2 ft more sandy less clay

continued on back

RCS wetland/Bank/depositional

0-3" - top soil/grass roots

3"-12" - no odor (low pH) clay, very soft, 15% fine sand,

15% roots (grass), trace worm, 25% silt, dark brown (more brown than channel)

RCS-SED-WET-3-12-01-042420
1045

12"-18" Clay, medium plasticity, silty clay, ~~soft~~ soft, drier than 3-12"

~~medium sand~~ medium sand, trace roots (1%)

15

RCS-SED-WET-12-18-01-042420

~~RC6~~
RC6 - wetland

OBSERVATION FORM

Date and Time: 6/24/20 Client: MPCA
 Sample Location ID: RC6 - wetland Field Staff: ~~DL~~
 Project Number: 60618753 Weather: sunny 50s

Waterbody Description

Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):
 wetland does have a main channel but also webs out significantly

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):
 depositional, ~~main~~ area is primarily lumps of reeds w/ channels between.

Heavy rain within last 7 days or evidence of flooding? No

Water Flowing? Yes No

Other Details (ripples vs smooth, pools): smooth ~~ripples~~ except for a few ripples

Following a high rain event? No

Flow Speed (circle): LOW L-M MODERATE M-H HIGH

Water clarity and color: brownish brown tint but can see 1/2 inches down

Ice/snow conditions (if applicable): No

Any other notes of water appearance or odor: no

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):
~~secondary~~ off of secondary channel

Primary Soil Classification (%g, %s, %m, %c)

Primary description (grain size/grading and % if coarse; plasticity if fine)

Secondary soils:

Moisture and Color and Odor:

Biomass/muck observed in sediment? Thickness of muck layer:

Other notes:

Ecological Observations

Surrounding Vegetation? reeds + grasses Fish or invertebra observed? YES

Shaded or ~~unshaded~~? Birds observed? YES

Wetland (yn)? Other evidence of wildlife observed? worms

(scat, tracks/prints, worms)

Overhanging vegetation? NO

Floating vegetation? NO

Bank vegetation? YES

Vegetation alive or dead? both

Bank slope, height: very little bank

Trash or debris? NO

Signs of human use? NO

Land use (circle nearby)

House 7100 feet

Mowed Grass NO

Cropland NO

Park/Trails NO

Commerical/Industrial YES 7100 ft

Beach

Foam Observations (if applicable)

Foam observed? Yes No

Old or Fresh: Color:

Approximate height and width of pile (inches) or just bubbles:

Organic matter?

Why does it appear to be accumulating (dam, bend, etc):

Obvious source of turbulence/disturbance that created foam?

Is it continuing to reaccumulate?

Is there foam floating down stream?

0-6
26-32

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Location ID: R6 wetland

CREEK/CHANNEL _____ POND _____ LAKE _____ Sample Type Details (if needed): _____

BANK WETLAND BEACH _____ OTHER _____ Sampler: ALG

Sample(s) Depth: 0-6, 12-18 Duplicate Taken: Yes No

Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
off main channel in wetland

Depositional or erosional environment? depositional

Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?

Was this collected following a high rain event? If so, describe flow/water differences:

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake): _____

Surface water estimated depth (inches): _____

Surface water estimated width at sample location (feet): _____

Sample location relative to channel bottom and distance from bank: _____

Primary Soil Classification (%g, %s, %m, %c) 0-6": 15% roots/grass, 85% silt (0-12")

Primary description (grain size/grading and % if coarse; plasticity if fine)
0-6": silt, nothing else 12-18": clay, low plasticity, 10% fine sand, 10-15% organic soft

Secondary soils: _____

Moisture and Color and Odor: 0-6": dark brown 12-18": medium to dark brown

Biomass/muck observed in sediment? 0-6": yes, roots/grass Thickness of muck layer: inches

Other Notes: has roots (medium brown is more organics)

Samples Collected

SAMPLE ID: ~~R6-18~~ Date / Time: 1140

SAMPLE ID (if multiple depths): R6-SEP-WET-0-6-01-042420 Date / Time: 04/24/20 1120

R6-SEP-WET-12-18-01-042420 Date / Time: 04/24/20 1140

Date / Time: _____

Date / Time: _____

DUP SAMPLE ID (if applicable): _____ Date / Time: _____

MS/MSD SAMPLE ID (if applicable): _____ Date / Time: _____

Planned Analysis (check if collected)

Collected (y/p)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
		<u>ALG</u>	PFAS MLA-110	1 HDPE 250-mL	1	AXYS
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>		<u>ALL</u>	TOC	4 oz Amber Jar	1	PACE
<input checked="" type="checkbox"/>		<u>ALL</u>	CEC	Paper Bag	1	MVLT
			Anions	8 oz Amber Jar	1	Pace
			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos: _____

No sample

OBSERVATION FORM

Date and Time: 4/28/2010 1130 Client: MPCA
Sample Location ID: RCT Field Staff: JM HT
Project Number: 60618753 Weather: sunny HCS

Waterbody Description

Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):
creek w/ overflow from pond nearby flowing

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):
erosional creek channel downed trees in channel

Heavy rain within last 7 days or evidence of flooding? NO

Water Flowing? Yes No

Other Details (ripples vs smooth, pools): Pools w/ ripples

Following a high rain event?

Flow Speed (circle): LOW L-M MODERATE M-H HIGH

Water clarity and color: Clear slight brown color

Ice/snow conditions (if applicable):

Any other notes of water appearance or odor:

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):

Primary Soil Classification (%g, %s, %m, %c) 30% 71 inch cobble, 35% gravel 15% gravel

Primary description (grain size/grading and % if coarse; plasticity if fine)
cobble 30% c sand, 20% m sand, 5% s silt

Secondary soils: 25% silt

Moisture and Color and Odor: brown

Biomass/muck observed in sediment? NO Thickness of muck layer:

Other notes:

Ecological Observations

Surrounding Vegetation? trees mature Fish or invertebra observed?

Shaded or Unshaded: Shaded Birds observed? YES

Wetland (y/n)? adjacent to riparian Other evidence of wildlife observed? war frogs

(scat, tracks/prints, worms)

Overhanging vegetation? YES Land use (circle nearby)

Floating vegetation? algae on rocks House

Bank vegetation? YES, shrubs, grass Mowed Grass

Vegetation (alive or dead)? alive or dead Cropland

Bank slope, height: 3-4 feet 90° angle Park/Trails

Trash or debris? treated wood, tire, tarp Commerical/Industrial

Signs of human use? YES Beach

Foam Observations (if applicable)

Foam observed? Yes No minimal

Old or Fresh? just after small Color: white foams on log,

Approximate height and width of pile (inches) or just bubbles: rapids, collection layer

Organic matter? NO

Why does it appear to be accumulating (dam, bend, etc): log

Obvious source of turbulence/disturbance that created foam? rock turbulence

Is it continuing to reaccumulate? YES

Is there foam floating down stream? NO

566
F50W

no sample

OBSERVATION FORM	
Date and Time: 4/23/2020 1100	Client: MPCA
Sample Location ID: 207a	Field Staff: JM HT
Project Number: 60618753	Weather: sunny 40s
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): creek flowing from culvert on right side when facing	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): some boulders, rock dams just up stream of where side channel flows in side channel has very few trees	
Heavy rain within last 7 days or evidence of flooding? <input checked="" type="checkbox"/> No	
Water Flowing? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Other Details (ripples vs smooth, pools): smooth very few ripples	
Following a high rain event?	
Flow Speed (circle): LOW (L-M) MODERATE M-H HIGH	
Water clarity and color: clear slight brown/grey color	
Ice/snow conditions (if applicable): none	
Any other notes of water appearance or odor: water 1.5 feet deep	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake): large rocks in stream	
Primary Soil Classification (%g, %s, %m, %c) 40% 60% 30% fine sand, 50% medium sand	
Primary description (grain size/grading and % if coarse; plasticity if fine) 10% coarse	
Secondary soils: silt	
Moisture and Color and Odor: none dark brown	
Biomass/muck observed in sediment? none organic in soil Thickness of muck layer:	
Other notes: some floating algae	
Ecological Observations	
Surrounding Vegetation? small trees bushes Fish or invertebra observed? minnows	
Shaded or Unshaded: partial Birds observed?	
Wetland (y/n)? off of main channel Other evidence of wildlife observed? birds	
(scat, tracks/prints, worms) duck foot prints	
Overhanging vegetation? <input checked="" type="checkbox"/> No	Land use (circle nearby) <input checked="" type="checkbox"/> House <input checked="" type="checkbox"/> Mowed Grass
Floating vegetation? <input checked="" type="checkbox"/> No	
Bank vegetation? <input checked="" type="checkbox"/> No	<input type="checkbox"/> Cropland
Vegetation (alive or dead)?	<input type="checkbox"/> Park/Trails
Bank slope, height: 90% 20 ft	<input type="checkbox"/> Commercial/Industrial
Trash or debris? <input checked="" type="checkbox"/> No	<input type="checkbox"/> Beach
Signs of human use? <input checked="" type="checkbox"/> No	
Foam Observations (if applicable)	
Foam observed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No not very small	
Old or Fresh: <input checked="" type="checkbox"/> Fresh	Color:
Approximate height and width of pile (inches) or just bubbles: at a new culvert down stream, near rocks	
Organic matter? <input checked="" type="checkbox"/> No	
Why does it appear to be accumulating (dam, bend, etc): rocks near doesn't travel down stream	
Obvious source of turbulence/disturbance that created foam? flowing from culvert	
Is it continuing to reaccumulate?	
Is there foam floating down stream? <input checked="" type="checkbox"/> No	

7

OBSERVATION FORM	
Date and Time: 4/23/20	Client: MPCA
Sample Location ID: PC21	Field Staff: AT/HT/AL/AS/JM
Project Number: 60618753	Weather: sunny 40°
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): Creek	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): down gradient of confluence	
Heavy rain within last 7 days or evidence of flooding?	
Water Flowing? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Other Details (ripples vs smooth, pools): Following a high rain event? <u>Ripple</u>	
Flow Speed (circle): <u>LOW</u> L-M MODERATE M-H HIGH moderate up	
Water clarity and color: <u>clear</u>	
Ice/snow conditions (if applicable): <u>none</u>	
Any other notes of water appearance or odor:	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake):	
Primary Soil Classification (%g, %s, %m, %c) <u>70% gravel, 30% sand</u>	
Primary description (grain size/grading and % if coarse; plasticity if fine) <u>50% med to coarse (< 5% fine)</u>	
Secondary soils: <u>30% med to coarse sand</u>	
Moisture and Color and Odor: <u>brown</u>	
Biomass/muck observed in sediment? <u>roots in bank</u> Thickness of muck layer: <u>N/A</u>	
Other notes: <u>Flow from confluence, no flow from</u>	
Ecological Observations	
Surrounding Vegetation? <u>Small/med trees</u>	Fish or invertebra observed? <u>Crawfish</u>
Shaded or Unshaded: <u>No</u>	Birds observed? <u>Ducks in water</u>
Wetland (y/n)? <u>No</u>	Other evidence of wildlife observed? <u>prints (muskrat)</u>
<u>moss on rocks on bottom</u> (scat, tracks/prints, worms)	
Overhanging vegetation? <u>small trees</u>	Land use (circle nearby)
Floating vegetation? <u>algae</u>	House
Bank vegetation? <u>roots, small trees</u>	<u>Mowed Grass</u>
Vegetation alive or dead? <u>alive</u>	Cropland
Bank slope, height: <u>4', west to 90°, east to 45° + 1-2'</u>	<u>Park/Trails + baseball field</u>
Trash or debris?	Commerical/Industrial
Signs of human use? <u>baseball + golf ball</u>	Beach
Foam Observations (if applicable)	
Foam observed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Old or Fresh? <u>Fresh</u>	Color: <u>white bright</u>
Approximate height and width of pile (inches) or just bubbles: <u>bubbles + 2-3" tall fluffy foam</u>	
Organic matter? <u>catching on moss, and along banks tiny roots</u>	
Why does it appear to be accumulating (dam, bend, etc): <u>small "waterfall" (2 of them) due to shallow</u>	
Obvious source of turbulence/disturbance that created foam? <u>shallow water to shallow rocks</u>	
Is it continuing to reaccumulate? <u>yes over rocks</u>	
Is there foam floating down stream? <u>yes</u>	

down gradient

0

↳ generating/accumulating up gradient of sediment sample

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Location ID: PC21

CREEK/CHANNEL POND LAKE
 BANK WETLAND BEACH OTHER

Sample Type Details (if needed):
 Sampler: James

Sample(s) Depth: 0-3" Duplicate Taken: Yes No

Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel/off channel / coincident with water sample / bank):
Composite sample

Depositional or erosional environment? Unknown

Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
There will be water

Was this collected following a high rain event? If so, describe flow/water differences:

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
center (0-3") banks (0-4")

Surface water estimated depth (inches): 24"

Surface water estimated width at sample location (feet): 4.5'

Sample location relative to channel bottom and distance from bank:

Primary Soil Classification (%g, %s, %m, %c) 15% fine gravel, 60% sand

Primary description (grain size/grading and % if coarse; plasticity if fine)
Poorly graded, sub-sanded, UVR 4/3

Secondary soils:
5-10% roots, 15% silt

Moisture and Color and Odor: BROWN

Biomass/muck observed in sediment? _____ Thickness of muck layer: _____

Other Notes:

Samples Collected

SAMPLE ID: PC21-SED-COMP-0-3-01-042320 Date / Time: 4/23/20 0950

SAMPLE ID (if multiple depths):
PC21-FOAM-01-042320 Date / Time: 4/23/20 1020
PC21-WAT-BULK-01-042320 | 400 Date / Time: 4/23/20 1400
PFAS

DUP SAMPLE ID (if applicable): _____ Date / Time: _____

MS/MSD SAMPLE ID (if applicable): _____ Date / Time: _____

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<input checked="" type="checkbox"/>			PFAS MLA-110	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>			TOC	4 oz Amber Jar	1	PACE
<input checked="" type="checkbox"/>			CEC	Paper Bag	1	MVLT
			Anions	8 oz Amber Jar	1	Pace
			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos: Amanda + Hanna

NOT from
 Ball's
 Creek

FOAM

→ on moss + roots on banks; bank foam condenses
 * grabbed 2m 3 spots
 moss / roots foam stays ^{thin} immediate

OBSERVATION FORM	
Date and Time: 4/21/20 - 4/25/20	Client: MPCA
Sample Location ID: PC12	Field Staff: HT JM
Project Number: 60618753	Weather: Sunny 100s
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): Creek, currently dry	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): banks are eroded, do have depositional areas, gravel substrate, does have large rocks,	
Heavy rain within last 7 days or evidence of flooding?	
Water Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Other Details (ripples vs smooth, pools):	
Following a high rain event?	
Flow Speed (circle): LOW L-M MODERATE M-H HIGH	
Water clarity and color:	
Ice/snow conditions (if applicable):	
Any other notes of water appearance or odor:	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake): See sediment form	
Primary Soil Classification (%g, %s, %m, %c)	
Primary description (grain size/grading and % if coarse; plasticity if fine) <i>Sample Area: 0 Sand (20% S, 5% M, 30% C), 30% Gravel (33% S, 33% M, 33% C) 10% Cobble river rock</i> General River Bottom: F-C sand 30%, 70% cobbles 76" in diameter	
Secondary soils: River bank: F-C sand 70%, 30% gravel	
Moisture and Color and Odor: Dry	
Biomass/muck observed in sediment? No Thickness of muck layer: None	
Other notes:	
Ecological Observations	
Surrounding Vegetation? YES grasses, bushes	Fish or invertebra observed? NO
Shaded or Unshaded? half unshaded	Birds observed? YES
Wetland (y/n)? NO	Other evidence of wildlife observed? (scat, tracks/prints, worms) turkey prints
Overhanging vegetation? SOME large trees	Land use (circle nearby)
Floating vegetation? NO	House 7100 ft
Bank vegetation? YES → grass	Mowed Grass
Vegetation alive or dead? both	Cropland
Bank slope, height: 90% 3 feet, some undercut	Park/Trails
Trash or debris? NO	Commerical/Industrial
Signs of human use? NO	Beach
Foam Observations (if applicable)	
Foam observed? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Old or Fresh:	Color:
Approximate height and width of pile (inches) or just bubbles:	
Organic matter?	
Why does it appear to be accumulating (dam, bend, etc):	
Obvious source of turbulence/disturbance that created foam?	
Is it continuing to reaccumulate?	
Is there foam floating down stream?	

4/24-25/20

SEDIMENT SAMPLE INFORMATION						
Location of Sample Collection (circle):	Location ID: RC 12					
CREEK/CHANNEL <u>dry</u> POND LAKE	Sample Type Details (if needed): 3 depths, Top depth is 3 pt compst					
BANK WETLAND BEACH OTHER	Sampler: JM HT/AG HT/AG					
Sample(s) Depth: 0-6	Duplicate Taken: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Sampling Device (circle): SHOVEL <u>AUGER</u> SLUDGE GRAB	MS/MSD Taken: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank): sample taken at top to 6 inches is 3 pt, bank sample was taken just below vegetation						
Depositional or erosional environment? Middle of channel, slight depositional						
Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample? no						
Was this collected following a high rain event? If so, describe flow/water differences: no flow						
SAMPLE POINT CONDITIONS						
Location within water body (center of creek, bank, bottom of pond/lake): center of channel + banks						
Surface water estimated depth (inches): 0						
Surface water estimated width at sample location (feet): 3 feet						
Sample location relative to channel bottom and distance from bank: middle (1.5 feet from each side)						
Primary Soil Classification (%g, %s, %m, %c) 0-6 inches: sand fc (30% oc, w, 40% M, 20% c)						
Primary description (grain size/grading and % if coarse; plasticity if fine) w/ clay layer at about 6-7 inches some clay, some gravel, some silt						
Secondary soils: 6-12" clay medium plasticity, firm 30-36" clay high plasticity, stiff (95%) 5% s-m sand 25% very fine sand						
Moisture and Color and Odor: brown						
Biomass/muck observed in sediment? none Thickness of muck layer:						
Other Notes:						
Samples Collected						
SAMPLE ID: RC 12-Sed-Comp-0-6-01-042420	Date / Time: 4-24-20/1350					
SAMPLE ID (if multiple depths): RC 12-Sed-0-6-01-042420	Date / Time:					
RC 12-Sed-12-18-01-042420	Date / Time: 4-24-20/1400					
RC 12-Sed-30-36-01-042420	Date / Time: 4-24-20/1430					
BUP SAMPLE ID (if applicable):	Date / Time:					
MS/MSD SAMPLE ID (if applicable): RC 12-Sed-0-6-01-042520	Date / Time: 4/25/20 1015					
Planned Analysis (check if collected)						
Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
y		0-6, 12-18, 30-36	PFAS MLA-110	1 HDPE 250-ml	33	AXYS
y		0-6	TOPA MLA-100	1 HDPE 250-ml	1	AXYS
y		0-6, 12-18, 30-36	TOC	4 oz Amber Jar	15	PACE
y		0-6, 12-18, 30-36	CEC	Paper Bag	33	MVLT
x		0-6	Anions	8 oz Amber Jar	1	Pace
y		0-6	Grain Size	Half Gallon Baggie	1	Interpoll
Sample Checklist						
<input checked="" type="checkbox"/> Picture of Sample Location (required)			<input type="checkbox"/> GPS'd			
<input type="checkbox"/> Picture of Foam (before, collected, and bottled)			<input type="checkbox"/> Decontaminated tools and glove change			
Location of photos:						

0-6, 4/25 (non-comp): PFAS, TOPA, CEC, TOC, Anions
 0-6, 4/24 (comp): PFAS, Grain Size (need to run CEC)
 CEC, TOC
 TOPA

OBSERVATION FORM

Date and Time: 4/23/00 Client: MPCA
 Sample Location ID: RL17 Field Staff: ASH, ALC
 Project Number: 60618753 Weather: Sunny, 50's

Waterbody Description

Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):
Raleigh Creek

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):
at dead end, ~~100~~ 50 feet south of road

Heavy rain within last 7 days or evidence of flooding? no

Water Flowing? Yes No

Other Details (ripples vs smooth, pools):

Following a high rain event?

Flow Speed (circle): LOW L-M MODERATE M-H HIGH

Water clarity and color: clear

Ice/snow conditions (if applicable): none

Any other notes of water appearance or odor:

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):

Primary Soil Classification (%g, %s, %m, %c)

Primary description (grain size/grading and % if coarse; plasticity if fine)

70% fine to med gravel ~ 70% f-s m sand 1" below

Secondary soils:

20% silt 5% algae seaweed 15% coarse sand

Moisture and Color and Odor:

Biomass/muck observed in sediment? roots/algae Thickness of muck layer: almost no

Other notes:

Ecological Observations

Surrounding Vegetation? Residential, PMU Fish or invertebra observed?

Shaded or Unshaded: Not shaded Birds observed?

Wetland (y/n)? Other evidence of wildlife observed? worm

(scat, tracks/prints, worms)

Overhanging vegetation? med trees Land use (circle nearby)

Floating vegetation? none House

Bank vegetation? staweed bottom + banks Mowed Grass

Vegetation alive or dead? lots of roots (alive) Cropland

Bank slope, height: E: 2', 90° W: 2', 90° Park/Trails Trail

Trash or debris? none Commerical/Industrial

Signs of human use? trail w/ fence, dead end Beach

Foam Observations (if applicable)

Foam observed? Yes No

Old or Fresh? bubbles, negligible Color: white

Approximate height and width of pile (inches) or just bubbles: accumulation

Organic matter? yes, accumulation on sticks/roots that have

Why does it appear to be accumulating (dam, bend, etc): moss/crawweed

Obvious source of turbulence/disturbance that created foam?

Is it continuing to reaccumulate?

Is there foam floating down stream?

to dead stream

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle):

CREEK/CHANNEL POND LAKE
 BANK WETLAND BEACH OTHER

Location ID: RC17, east bank

Sample Type Details (if needed):

Sampler: AHS

Sample(s) Depth: 0-3 and 3-6

Duplicate Taken: Yes No

Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB

MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):

EAST BANK - depositional "seaweed" accumulation along trees + roots

Depositional or erosional environment? depositional
 Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?

Was this collected following a high rain event? If so, describe flow/water differences:

No

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):

east bank - depositional

Surface water estimated depth (inches): 6"

Surface water estimated width at sample location (feet):

Sample location relative to channel bottom and distance from bank: 2/3 above water line

Primary Soil Classification (%g, %s, %m, %c) 0-3: 55% silt = "muck" NO plasticity

Primary description (grain size/grading and % if coarse; plasticity if fine) 3-6: clay, low

Secondary soils:

0-3: 30% fine m sand, 30% silt, 25% fine gravel 3-6: 30% sub-fine sand; 10% roots + wood

Moisture and Color and Odor: dark brown / darker brown

Biomass/muck observed in sediment?

Thickness of muck layer:

Other Notes:

foam

Samples Collected

SAMPLE ID: RC17-SED-BANK-EAST-03-042320 Date / Time: 4/23/20 1100

SAMPLE ID (if multiple depths): Date / Time: 4/23/20 1100

RC17-SED-BANK-EAST-03-6-01-042320 Date / Time: 4/23/20 1130

Date / Time: _____

DUP SAMPLE ID (if applicable): Date / Time: _____

MS/MSD SAMPLE ID (if applicable): Date / Time: _____

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<u>0-3</u>		<u>03-6</u>	PFAS MLA-110	1 HDPE 250-mL	1	AXYS
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<u>0-3</u>		<u>3-6</u>	TOC	4 oz Amber Jar	1	PACE
<u>0-3</u>		<u>3-6</u>	CEC	Paper Bag	1	MVLT
<u>0-3</u>		<u>3</u>	Anions <u>0-3 only</u>	8 oz Amber Jar	1	Pace
			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) GPS'd
 Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change
 Location of photos: Amanda

OBSERVATION FORM

Date and Time: 4/24/20 1:50 Client: MPCA
 Sample Location ID: PC 18/Upgradient Field Staff:
 Project Number: 60618753 Orange trail Weather:

Waterbody Description

Waterbody Type (Creek, pond, lake, piped/manhole, culvert, channel, wetland, other):

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):
1) Foam, orange trail
2) SED. after red trail

Heavy rain within last 7 days or evidence of flooding? NO; yes at red trail (or possibly due to snow melt?)

Water Flowing? Yes No
 Other Details (ripples vs smooth, pools): ripples
 Following a high rain event? NO
 Flow Speed (circle): LOW L-M MODERATE (M-H) HIGH shallow water on rocks = turbulent

Water clarity and color: clear
 Ice/snow conditions (if applicable): NO
 Any other notes of water appearance or odor:

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):
 Primary Soil Classification (%g, %s, %m, %c) clay on bank center (30% sand, 60% gravel, 10% roots)
 Primary description (grain size/grading and % if coarse; plasticity if fine)

Secondary soils:
 Moisture and Color and Odor:

Biomass/muck observed in sediment? Thickness of muck layer:
 Other notes:

Ecological Observations

Surrounding Vegetation? grassy slope, large trees Fish or invertebra observed? NO
 Shaded or Unshaded: partly shaded Birds observed? yes
 Wetland (y/n)? no Other evidence of wildlife observed?
 (scat, tracks/prints, worms)

Overhanging vegetation? <u>tree branches, no leaves</u>	Land use (circle nearby)
Floating vegetation? <u>some twigs</u>	
Bank vegetation? <u>grassy</u>	House
Vegetation alive or dead? <u>alive (dead leaves) - cut bank</u>	Mowed Grass
Bank slope, height: <u>Bank is 1.5m, 1.5m wide at top</u>	Cropland
Trash or debris? <u>no</u>	Part Trails <input checked="" type="checkbox"/>
Signs of human use? <u>orange trail nearby</u>	Commercial/Industrial
	Beach

Foam Observations (if applicable)

Foam observed? Yes No up gradient of red/water
 Old or Fresh: fresh Color: white to dark brown + orange
 Approximate height and width of pile (inches) or just bubbles: thin plus bubbles
 Organic matter? Roots, oxidation
 Why does it appear to be accumulating (dam, bend, etc): bend/root dam
 Obvious source of turbulence/disturbance that created foam? culvert at orange trail
 Is it continuing to reaccumulate? yes, most coming from shallow flow at culvert; minimal bubbles up gradient
 Is there foam floating down stream? NO on other side of culvert

orange trail crossing

fresh foam

fresh foam, white w/ orange streaks
 viscous, fluffy, actively oxidizing
 kind of dry (1 ft long) - sticky

old foam, sticky, thin, dark brown (orange
 with roots, spider 2 ft long)

RC18 - red trail

center! 60% SA gravel, 30% coarse SR sand, 10% med sand
8" deep,

E bank 30% grass/bank vegetation, twigs/leaves,
organic 1" in, 2-3" sandy clay, (30% F, R sand), 60% clay, (10% roots)
12" deep, depositional bank

low to no flow, no bubbles

east bank - decomposing leaves & live dead

grass

W. bank - live & dead grass; twig roots

RC18-WAT-BUCK-01-042320 1245

SEDIMENT SAMPLE INFORMATION						
Location of Sample Collection (circle):				Location ID: <u>RC-18</u>		
<input checked="" type="checkbox"/> CREEK/CHANNEL <input type="checkbox"/> POND <input type="checkbox"/> LAKE <input checked="" type="checkbox"/> BANK <input type="checkbox"/> WETLAND <input type="checkbox"/> BEACH <input type="checkbox"/> OTHER				Sample Type Details (if needed):		
Sample(s) Depth: <u>0, 8", 0</u>				Sampler: <u>ATL</u>		
Sampling Device (circle): <input checked="" type="checkbox"/> SHOVEL <input type="checkbox"/> AUGER <input type="checkbox"/> SLUDGE <input type="checkbox"/> GRAB				Duplicate Taken: <input type="checkbox"/> Yes <input type="checkbox"/> No		
Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):				MS/MSD Taken: <input type="checkbox"/> Yes <input type="checkbox"/> No		
<u>comp sample - post red trail</u>						
Depositional or erosional environment? <u>both, east = erosional / west = depositional</u>						
Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample? <u>Yes - foam up gradient, water to be coincident</u>						
Was this collected following a high rain event? If so, describe flow/water differences: <u>NO</u>						
SAMPLE POINT CONDITIONS						
Location within water body (center of creek, bank, bottom of pond/lake): <u>bank 20 to day 20 to river grass, eroded 3ft deep down, guts, trace of sand</u>						
Surface water estimated depth (inches): <u>8"</u>						
Surface water estimated width at sample location (feet): <u>15</u>						
Sample location relative to channel bottom and distance from bank: <u>0, 7.5, 0</u>						
Primary Soil Classification (%g, %s, %m, %c) <u>50% clay, 20% sand, 10% gravel, 15% organics</u>						
Primary description (grain size/grading and % if coarse; plasticity if fine) <u>P6, low plasticity</u>						
Secondary soils:						
Moisture and Color and Odor: <u>dark brown, no odor</u>						
Biomass/muck observed in sediment? <u>yes on banks</u>				Thickness of muck layer: <u>at least 3' on banks</u>		
Other Notes: <u>have no muck in center</u>						
Samples Collected						
SAMPLE ID: <u>RC18</u>				Date / Time: <u>4/23/20 1400</u>		
SAMPLE ID (if multiple depths):				Date / Time:		
				Date / Time:		
				Date / Time:		
DUP SAMPLE ID (if applicable): <u>na</u>				Date / Time:		
MS/MSD SAMPLE ID (if applicable): <u>na</u>				Date / Time:		
Planned Analysis (check if collected)						
Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<input checked="" type="checkbox"/>			PFAS MLA-110	1 HDPE 250-mL	1	AXYS
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>			TOC	4 oz Amber Jar	1	PACE
			CEC	Paper Bag	1	MVLT
			Anions	8 oz Amber Jar	1	Pace
			Grain Size	Half Gallon Baggie	1	Interpoll
Sample Checklist						
<input checked="" type="checkbox"/> Picture of Sample Location (required)				<input type="checkbox"/> GPS'd		
<input type="checkbox"/> Picture of Foam (before, collected, and bottled)				<input type="checkbox"/> Decontaminated tools and glove change		
Location of photos: <u>Amade</u>						

add to other side of obs. form

RC18-FOAM-FRESH-01-042320 1300, PFAS one-gallon
 RC18-FOAM-OLD-01-042320 1315, PFAS one-gallon
~~RC18-SEN-01-042320~~ ~~1419-01-042320~~
 RC18-SEN-comp-01-042320

OBSERVATION FORM

Date and Time: 4/23/20 1430 Client: MPCA
Sample Location ID: FE1 Field Staff: AEL/ATH
Project Number: 60618753 Weather: Partly cloudy (60)

Waterbody Description

Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): pond

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):

Pond, lots of bank vegetation, first 40' grasses + sticks

Heavy rain within last 7 days or evidence of flooding?

Water Flowing? Yes No
Other Details (ripples vs smooth, pools): ripples
Following a high rain event? no
Flow Speed (circle): LOW L-M MODERATE M-H HIGH

Water clarity and color:

Ice/snow conditions (if applicable):

Any other notes of water appearance or odor: slightly murky / possibly some organic odor

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):

at deep 2.5 deep grass / sticks on bottom

Primary Soil Classification (%g, %s, %m, %c) 20% g, 20% s, 20% m, 20% c

Primary description (grain size/grading and % if coarse; plasticity if fine)
red plastic

Secondary soils:

Moisture and Color and Odor: dark brown

Biomass/muck observed in sediment? yes Thickness of muck layer: 1/2"

Other notes:

Ecological Observations

Surrounding Vegetation? flatland grasses Fish or invertebra observed? no

Shaded or Unshaded: unshaded Birds observed? yes

Wetland (y/n)? no Other evidence of wildlife observed? no finger hairs

(scat, tracks/prints, worms)

Overhanging vegetation? some trees, no leaves

Land use (circle nearby)

Floating vegetation? grasses, floaty algae

House

Bank vegetation? grasses, trees, sumac

Mowed Grass

Vegetation alive or dead? dead grasses, alive trees

Cropland

Bank slope, height: 0-1' deep

Park/Trails

Trash or debris? no

Commercial/Industrial

Signs of human use? no - some tables nearby

Beach

Foam Observations (if applicable)

Foam observed? Yes No

Old or Fresh: Color:

Approximate height and width of pile (inches) or just bubbles:

Organic matter?

Why does it appear to be accumulating (dam, bend, etc):

Obvious source of turbulence/disturbance that created foam?

Is it continuing to reaccumulate?

Is there foam floating down stream?

FE1-5611-06-01-042320 @1445

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): FEJ Location ID: FEJ-SED-0-3-01-0423

CREEK/CHANNEL POND LAKE

BANK WETLAND BEACH OTHER in bank Sampler: ABL

Sample(s) Depth: 0-3" Duplicate Taken: Yes No

Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):

Depositional or erosional environment? depositional

Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
no

Was this collected following a high rain event? If so, describe flow/water differences:
no

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
100ft NW of NW point towards the NW

Surface water estimated depth (inches): 2.5' deep

Surface water estimated width at sample location (feet): 250ft

Sample location relative to channel bottom and distance from bank:
7ft

Primary Soil Classification (%g, %s, %m, %c) TOP clay, 20% organics (Hays, clayey muck)

Primary description (grain size, grading and % if coarse; plasticity if fine)
med. plasticity dark brown

Secondary soils: slightly than the muck layer into more dry clays

Moisture and Color and Odor:

Biomass/muck observed in sediment? yes Thickness of muck layer: 2.5"

Other Notes:

Samples Collected

SAMPLE ID: FEJ-SED-0-3-01-0423 Date / Time: 4/23/20 1445

SAMPLE ID (if multiple depths): Date / Time:

Date / Time:

Date / Time:

DUP SAMPLE ID (if applicable): Date / Time:

MS/MSD SAMPLE ID (if applicable): Date / Time:

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<input checked="" type="checkbox"/>			PFAS MLA-110	1 HDPE 250-mL	1	AXYS
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>			TOC	4 oz Amber Jar	1	PACE
<input checked="" type="checkbox"/>			CEC	Paper Bag	1	MVLT
			Anions	8 oz Amber Jar	1	Pace
			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) ABL GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos: ABL

OBSERVATION FORM

Date and Time: 4/25/00 12:00 Client: MPCA
 Sample Location ID: EPI7 Field Staff: AT, A, DT, A Weather: sunny 60's
 Project Number: 60618753

Waterbody Description

Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):
 Pigeon creek enters the wetlands on edge of Eagle Point Lake stream widens then
 narrows then widens again into lake

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):
 cattails up to main channel have grasses in between cattails and trees
 depositional area. signs of flooding up to trees

Heavy rain within last 7 days or evidence of flooding?

Water Flowing? Yes No

Other Details (ripples vs smooth, pools): very small ripples but mostly smooth

Following a high rain event? NO

Flow Speed (circle): LOW L-M MODERATE M-H HIGH

Water clarity and color: clear

Ice/snow conditions (if applicable):

Any other notes of water appearance or odor: N/A

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):

C cattails for about 35' feet - submerged cattails in water

Primary Soil Classification (%g, %s, %m, %c) - bottom is clay for all

Primary description (grain size/grading and % if coarse; plasticity if fine)

Secondary soils:

Organic matter (50% in water / 35% in lake) - bottom is organic

Moisture and Color and Odor: Organic

Biomass/muck observed in sediment?

Thickness of muck layer:

Other notes:

Ecological Observations

Surrounding Vegetation? cattails near water Fish or invertebra observed?

Shaded or Unshaded: shaded at edge of flooding Grasses and trees Birds observed? yes

Wetland (y/n)? yes Other evidence of wildlife observed? yes, deer track

Bottom: grass + algae (in lake) (scat, tracks/prints, worms)

Overhanging vegetation? NO

Land use (circle nearby)

Floating vegetation? NO algae

House

Bank vegetation? yes

Mowed Grass

Vegetation alive or dead? both

Cropland

Bank slope, height: no bank, gentle slope

Park/Trails

Trash or debris? NO

Commercial/Industrial

Signs of human use? minimal

Beach

Foam Observations (if applicable)

Foam observed? Yes No

Old or Fresh:

Color:

Approximate height and width of pile (inches) or just bubbles:

Organic matter?

Why does it appear to be accumulating (dam, bend, etc):

Obvious source of turbulence/disturbance that created foam?

Is it continuing to reaccumulate?

Is there foam floating down stream?

2.54 5/2
104 net/2

SEDIMENT SAMPLE INFORMATION							
Location of Sample Collection (circle):				Location ID: <u>EPI7 - wetland</u>			
CREEK/CHANNEL	POND	LAKE <u>/wetland</u>		Sample Type Details (if needed):			
BANK	WETLAND	BEACH	OTHER	Sampler: <u>AHS</u>			
Sample(s) Depth: <u>0-6" 6-12"</u>				Duplicate Taken: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Sampling Device (circle): <u>SHOVEL</u> <u>AUGER</u> SLUDGE GRAB				MS/MSD Taken: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank): <u>cattails still in water but not above water</u>							
Depositional or erosional environment?							
Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample? <u>There will be a water</u>							
Was this collected following a high rain event? If so, describe flow/water differences:							
SAMPLE POINT CONDITIONS							
Location within water body (center of creek, bank, bottom of pond/lake): <u>1) 25' into cattails @ 6" water 2) 10' east of edge of cattails @ 2' feet deep</u>							
Surface water estimated depth (inches): <u>9</u>							
Surface water estimated width at sample location (feet): <u>20-30 ft</u>							
Sample location relative to channel bottom and distance from bank: <u>green/black brown/black</u>							
Primary Soil Classification (%g, %s, %m, %c) <u>0-6: 40% clay, hmp. 6-12: 70% clay, med, soft</u>							
Primary description (grain size/grading and % if coarse; plasticity if fine) <u>0-6 (reg): 60% med. clay, soft</u>							
Secondary soils: <u>0-6: 50% roots + wood + cattail leaves + 50% fines sand 6-12: 15% roots, grass 50% fine (s) med sand</u>							
Moisture and Color and Odor: <u>organic - all these but wts in top 1% fine gravel</u>							
Biomass/muck observed in sediment? <u>See above</u> Thickness of muck layer: <u>0-6: 35% roots + prnts (reg) 5% fine sand</u>							
Other Notes:							
Samples Collected							
SAMPLE ID: <u>EPI7-SED-WET-0-6-01-042520</u>				Date / Time: <u>12:00 4/25/20</u>			
SAMPLE ID (if multiple depths): <u>EPI7-SED-WET-6-12-042520</u>				Date / Time: <u>12:15 4/25/20</u>			
<u>EPI7-SED-0-6-01-042520</u>				Date / Time: <u>12:30 4/25/20</u>			
				Date / Time: <u>12:45</u>			
DUP SAMPLE ID (if applicable):				Date / Time:			
MS/MSD SAMPLE ID (if applicable):				Date / Time:			
Planned Analysis (check if collected)							
Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab	
<u>0-6</u>		<u>6-12 / 0-6 (reg)</u>	PFAS MLA-110	1 HDPE 250-mL	1	AXYS	
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS	
<u>0-6</u>		<u>6-12 / 0-6 (reg)</u>	TOC	4 oz Amber Jar	1	PACE	
<u>0-6</u>		<u>6-12 / 0-6 (reg)</u>	CEC	Paper Bag	1	MVLT	
		<u>0-6 (reg)</u>	Anions	8 oz Amber Jar	1	Pace	
			Grain Size	Half Gallon Baggie	1	Interpoll	
Sample Checklist							
<input checked="" type="checkbox"/> Picture of Sample Location (required)				<input checked="" type="checkbox"/> GPS'd <u>Amanda</u>			
<input checked="" type="checkbox"/> Picture of Foam (before, collected, and bottled)				<input checked="" type="checkbox"/> Decontaminated tools and glove change			
Location of photos: <u>Amanda, Alex, Hana</u>							

OBSERVATION FORM	
Date and Time: <u>1300 4/25/20</u>	Client: <u>MPCA</u>
Sample Location ID: <u>EP19</u>	Field Staff: <u>HT, AS, AT, AL</u>
Project Number: <u>60618753</u>	Weather: <u>Sunny 70's</u>
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): <u>"pinch point" downgradient of couple ft. lake (all photos, EP lake to the right, f. S.)</u>	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):	
Heavy rain within last 7 days or evidence of flooding? <input checked="" type="checkbox"/> No	
Water Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Other Details (ripples vs smooth, pools):	
Following a high rain event?	
Flow Speed (circle): <u>LOW</u> L-M MODERATE M-H HIGH	
Water clarity and color: <u>clear</u>	
Ice/snow conditions (if applicable): <u>N/A</u>	
Any other notes of water appearance or odor: <u>N/A</u>	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake): <u>center of "water body" 150' west of lake</u>	
Primary Soil Classification (%g, %s, %m, %c)	
Primary description (grain size/grading and % if coarse; plasticity if fine) <u>f-s.c (230/30/30) sand; 10% fine gravel, submerged cattails</u>	
Secondary soils: <u>fine sand</u>	
Moisture and Color and Odor:	
Biomass/muck observed in sediment? Thickness of muck layer:	
Other notes:	
Ecological Observations	
Surrounding Vegetation? Fish or invertebra observed?	
Shaded or Unshaded: <u>Unshaded</u> Birds observed? <u>Blue heron, wren, shore bird</u>	
Wetland (y/n)? <u>yes</u> Other evidence of wildlife observed? <u>Big nest for shore bird</u>	
<u>Bottom veg: cattails, moss, algae</u> (scat, tracks/prints, worms)	
Overhanging vegetation? <u>grass, lake weed (alive)</u> and use (circle nearby)	
Floating vegetation? House	
Bank vegetation? <u>Cattails + grass</u> <u>Mowed Grass</u>	
Vegetation alive or dead? <u>both</u> <u>Cropland</u>	
Bank slope, height: <u>Park/Trails</u>	
Trash or debris? Commercial/Industrial	
Signs of human use? <u>Man-made bird nest</u> Beach	
Foam Observations (if applicable)	
Foam observed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <u>- frozen foam observed daily 02/2020 events</u>	
Old or Fresh? Color:	
Approximate height and width of pile (inches) or just bubbles:	
Organic matter?	
Why does it appear to be accumulating (dam, bend, etc):	
Obvious source of turbulence/disturbance that created foam?	
Is it continuing to reaccumulate?	
Is there foam floating down stream?	

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): WATER BODY
 CREEK CHANNEL POND LAKE
 BANK WETLAND BEACH OTHER
 Location ID: EP19
 Sample Type Details (if needed):
 Sampler: AS
 Sample(s) Depth:
 Duplicate Taken: Yes No
 Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB
 MS/MSD Taken: Yes No
 Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
channel immediately after edge pt. lake down gradient of first "wave" of cattails 150 feet from lake
 Depositional or erosional environment?
 Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
corresponding water sample to come
 Was this collected following a high rain event? If so, describe flow/water differences:
NO

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
channel
 Surface water estimated depth (inches): 0 feet
 Surface water estimated width at sample location (feet): 30'
 Sample location relative to channel bottom and distance from bank:
0-6 30/30/30 - very wet, brown
 Primary Soil Classification (%g, %s, %m, %c) S&C sand (w/c); 5% clay 15% fine RA gravel
 Primary description (grain size/grading and % if coarse; plasticity if fine) 45% gravel
 Secondary soils: 6-12: S.A. 0-6 36-42: f-c sand (30/30/20) 10% fine 17% coarse s
 Moisture and Color and Odor: 24-30: 30% f 30% m sand 10% c sand 10% fine 10% gravel, moist brown
 Biomass/muck observed in sediment? Thickness of muck layer: 45% coll ae (1") roots
subgravel
brown

very wet

Samples Collected

SAMPLE ID:	<u>EP19-SED-WE1-</u> <u>0-6-01-042520</u>	Date / Time:	<u>1315</u> <u>PFAS, CEC, TOC</u>
SAMPLE ID (if multiple depths):	<u>" 6-12-01-042520</u>	Date / Time:	<u>1330</u>
	<u>EP19-SED-24-30-01-042520</u>	Date / Time:	<u>1345</u>
	<u>EP19-SED-36-42-01-042520</u>	Date / Time:	<u>1400</u>
DUP SAMPLE ID (if applicable):		Date / Time:	
MS/MSD SAMPLE ID (if applicable):		Date / Time:	

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<u>y</u>		<u>all</u>	PFAS MLA-110	1 HDPE 250-mL	1	AXYS
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<u>y</u>		<u>all</u>	TOC	4 oz Amber Jar	1	PACE
<u>y</u>		<u>all</u>	CEC	Paper Bag	1	MVLT
			Anions	8 oz Amber Jar	1	Pace
			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) Amade GPS'd
 Picture of Foam (before, collected, and bottled) none Decontaminated tools and glove change
 Location of photos:

OBSERVATION FORM	
Date and Time: 4/27/20 0915	Client: MPCA
Sample Location ID: 626	Field Staff:
Project Number: 60618753	Weather:
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): post culvert	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): Post-dam, water very murky, no flow, dead catfish (small) excessive muck at bottom	
Heavy rain within last 7 days or evidence of flooding?	
Water Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Other Details (ripples vs smooth, pools):	
Following a high rain event? no	
Flow Speed (circle)	LOW L-M MODERATE M-H HIGH
Water clarity and color: murky	
Ice/snow conditions (if applicable): no	
Any other notes of water appearance or odor: no odor	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake):	
Primary Soil Classification (%g, %s, %m, %c)	
Primary description (grain size/grading and % if coarse; plasticity if fine)	
Secondary soils: 1-1 1/2" fine sand gravel	
Moisture and Color and Odor:	
Biomass/muck observed in sediment?	Thickness of muck layer:
Other notes:	
Ecological Observations	
Surrounding Vegetation? cattails/med trees	Fish or invertebra observed? cattails catfish (dead alive)
Shaded or Unshaded: unshaded	Birds observed? Sandhill crane
Wetland (y/n)?	Other evidence of wildlife observed? (scat, tracks/prints, worms)
bottom vegetation: cattails (7' tall)	
Overhanging vegetation? none	Land use (circle nearby)
Floating vegetation? float/submerged mat	House
Bank vegetation? tall grass	Mowed Grass
Vegetation alive or dead? alive + dead	Cropland
Bank slope, height: ~1 foot (south side) ~90°	Park/Trails
Trash or debris? none	Commerical/Industrial
Signs of human use? park	Beach
Foam Observations (if applicable)	
Foam observed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Old or Fresh:	Color:
Approximate height and width of pile (inches) or just bubbles:	
Organic matter?	
Why does it appear to be accumulating (dam, bend, etc):	
Obvious source of turbulance/disturbance that created foam?	
Is it continuing to reaccumulate?	
Is there foam floating down stream?	

SEDIMENT SAMPLE INFORMATION							
Location of Sample Collection (circle): <u>EP20</u>				Location ID:			
CREEK/CHANNEL		POND		LAKE		Sample Type Details (if needed):	
BANK		WETLAND		BEACH		OTHER <u>POST-dam</u>	
Sample(s) Depth:				Sampler: <u>AMS</u>			
Sampling Device (circle): <u>SHOVEL</u> <u>AUGER</u> <u>SLUDGE</u> <u>GRAB</u>				Duplicate Taken: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):				MS/MSD Taken: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
<u>Immediately upgradient of cattails</u>							
Depositional or erosional environment? <u>Depositional</u>							
Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?							
Was this collected following a high rain event? If so, describe flow/water differences:							
SAMPLE POINT CONDITIONS							
Location within water body (center of creek, bank, bottom of pond/lake):							
<u>beyond culvert (20 feet)</u>							
Surface water estimated depth (inches): <u>1 foot</u>							
Surface water estimated width at sample location (feet):							
Sample location relative to channel bottom and distance from bank:							
<u>0-6 70% clay, low to med plastic, 15% coarse, med sand, 15% fine round gravel, 27% organics (grass)</u>							
Primary Soil Classification (%g, %s, %m, %c)							
Primary description (grain size/grading and % if coarse; plasticity if fine)							
<u>6-12 50% clay, compact, 5% organics (grass), 20% coarse sand, 15% fine gravel</u>							
Secondary soils:							
<u>24-30 50% clay, low plastic, 20% coarse sand, 20% fine round gravel, 5% med gravel</u>							
Moisture and Color and Odor: <u>No odor</u>							
Biomass/muck observed in sediment? Thickness of muck layer:							
<u>36-42 70% clay, 20% coarse sand, 15% fine subgravel, 5% organics (grass)</u>							
Other Notes: <u>5% med, subgravel, 5% organics (grass)</u>							
Samples Collected							
SAMPLE ID: <u>EP20-SEP-WET-0-6-01-042720</u>				Date / Time: <u>0930</u>			
SAMPLE ID (if multiple depths): <u>EP20-SEP-WET-6-12-01-042720</u>				Date / Time: <u>0945</u>			
<u>EP20-SEP-24-30-01-042720</u>				Date / Time: <u>1000</u>			
<u>EP20-SEP-36-42-01-042720</u>				Date / Time: <u>1015</u>			
DUP SAMPLE ID (if applicable):				Date / Time:			
MS/MSD SAMPLE ID (if applicable):				Date / Time:			
Planned Analysis (check if collected)							
Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab	
<input checked="" type="checkbox"/>		<u>all</u>	PFAS MLA-110	1 HDPE 250-mL	1	AXYS	
<input checked="" type="checkbox"/>			TOPA MLA-100	1 HDPE 250-mL	1	AXYS	
<input checked="" type="checkbox"/>		<u>all</u>	TOC	4 oz Amber Jar	1	PACE	
<input checked="" type="checkbox"/>		<u>all</u>	CEC	Paper Bag	1	MVLT	
<input checked="" type="checkbox"/>		<u>0-6</u>	Anions	8 oz Amber Jar	1	Pace	
			Grain Size	Half Gallon Baggie	1	Interpoll	
Sample Checklist							
<input checked="" type="checkbox"/> Picture of Sample Location (required)				<input checked="" type="checkbox"/> GPS'd			
<input checked="" type="checkbox"/> Picture of Foam (before, collected, and bottled)				<input type="checkbox"/> Decontaminated tools and glove change			
Location of photos: <u>Amanda Phone</u>							

OBSERVATION FORM	
Date and Time: 4/23/20	Client: MPCA
Sample Location ID: EP 21	Field Staff: JM HT
Project Number: 60618753	Weather: sunny 40s
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): Lake Elmo	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): Near canoe landing	
Heavy rain within last 7 days or evidence of flooding? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Water Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Other Details (ripples vs smooth, pools): smooth, small waves	
Following a high rain event?	
Flow Speed (circle): <u>LOW</u> L-M MODERATE M-H HIGH	
Water clarity and color: clear	
Ice/snow conditions (if applicable): NO	
Any other notes of water appearance or odor:	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake):	
Primary Soil Classification (%g, %s, %m, %c) 15% sand 85% clay 3% silt	
Primary description (grain size/grading and % if coarse; plasticity if fine) of 15% (60% fine, 40% coarse) high plasticity 5% coarse	
Secondary soils:	
Moisture and Color and Odor: grey	
Biomass/muck observed in sediment? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Thickness of muck layer:	
Other notes: leaves further out in lake sand layer was about an inch thick clay consistency	
Ecological Observations	
Surrounding Vegetation? tall trees & shrubs	Fish or invertebra observed? no
Shaded or Unshaded: partially	Birds observed? YES
Wetland (y/n)? <input checked="" type="checkbox"/> no	Other evidence of wildlife observed? birds no
(scat, tracks/prints, worms)	
Overhanging vegetation? some	Land use (circle nearby)
Floating vegetation? NO	House
Bank vegetation? YES	Mowed Grass
Vegetation alive or dead? both	Cropland
Bank slope, height: 4, mms	<u>Park/Trails</u> ← park lawn
Trash or debris? no	Commerical/Industrial
Signs of human use? YES	<u>Beach</u>
Foam Observations (if applicable)	
Foam observed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Old or Fresh: Fresh	Color:
Approximate height and width of pile (inches) or just bubbles: 1 inch, 5 inches wide	
Organic matter? no slight color	
Why does it appear to be accumulating (dam, bend, etc): reach	
Obvious source of turbulence/disturbance that created foam? small waves	
Is it continuing to reaccumulate? minimal	
Is there foam floating down stream? NA	

OBSERVATION FORM	
Date and Time: 4/23/20 1200	Client: MPCA
Sample Location ID: Lake Elmo EP21	Field Staff: JM HT
Project Number: 60618753	Weather: Sunny 57°F
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): Lake Elmo	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): East side lake Elmo	
Heavy rain within last 7 days or evidence of flooding? NO	
Water Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Lake	
Other Details (ripples vs smooth, pools):	
Following a high rain event?	
Flow Speed (circle): LOW L-M MODERATE M-H HIGH	
Water clarity and color: Clear	
Ice/snow conditions (if applicable): N/A	
Any other notes of water appearance or odor:	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake): bank of Lake Elmo	
Primary Soil Classification (%g, %s, %m, %c) (Sand) 5% silt, 40% med, 5% coarse, 50% silt	
Primary description (grain size/grading and % if coarse; plasticity if fine)	
Secondary soils:	
Moisture and Color and Odor: brown - light brown, no odor	
Biomass/muck observed in sediment? None Thickness of muck layer:	
Other notes: Did not encounter clay below sand, checked top 2 inches	
Ecological Observations	
Surrounding Vegetation? Yes	Fish or invertebra observed? Water bugs
Shaded or Unshaded: Both	Birds observed? None
Wetland (y/n)? Y (lake)	Other evidence of wildlife observed? Dead frog, clams
(scat, tracks/prints, worms)	
Overhanging vegetation? Trees overhang	Land use (circle nearby)
Floating vegetation? None	House
Bank vegetation? Grass, woods, cattails, rock embankments	Mowed Grass
Vegetation alive or dead? Alive	Cropland
Bank slope, height: 1-2ft	Park/Trails
Trash or debris? tire, plastic	Commerical/Industrial
Signs of human use? Yes, docks & boats along ice	Beach
Foam Observations (if applicable)	
Foam observed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Old or Fresh: looks old	Color: Light brown
Approximate height and width of pile (inches) or just bubbles: bubbles	
Organic matter? Yes	
Why does it appear to be accumulating (dam, bend, etc): caught in leaves/organics @ interface	
Obvious source of turbulence/disturbance that created foam? No	
Is it continuing to reaccumulate? No	
Is there foam floating down stream? N/A (lake)	

Notes:
- Resident said very little foam on east side ever observed

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): EP21 Location ID: 4/23/20

CREEK/CHANNEL POND LAKE Sample Type Details (if needed): Beach, both under foam

BANK WETLAND BEACH OTHER Sampler: JM HT

Sample(s) Depth: 0-6 Duplicate Taken: Yes No

Sampling Device (circle) SHOVEL AUGER SLUDGE GRAB MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
At canoe launch on Lake Elmo samples were taken at foam was observed to south of stairs (foam + sed-foam) and sed to north of stairs

Depositional or erosional environment? Depositional

Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
yes -> water and foam

Was this collected following a high rain event? If so, describe flow/water differences:
no

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
beach at water/air interface

Surface water estimated depth (inches): 2"

Surface water estimated width at sample location (feet):

Sample location relative to channel bottom and distance from bank:
40% fine, 35% medium, 5% coarse

Primary Soil Classification (%g, %s, %m, %c) 15% sand, 85% clay

Primary description (grain size/grading and % if coarse; plasticity if fine)
high plasticity

Secondary soils:
some roots

Moisture and Color and Odor: gray

Biomass/muck observed in sediment? no much but some roots Thickness of muck layer:
sand layer ~1 inch

Other Notes:
gray color

Samples Collected

SAMPLE ID: EP21-SED-FOAM-01-042320 Date / Time: 4/23/20 1246

SAMPLE ID (if multiple depths): EP21-SED-01-042320 Date / Time: 4/23/20 1230

~~EP21-WAT-01-042320~~ EP21-WAT-BULK01-042320 Date / Time: 4/23/20 1300

EP21-FOAM-01-042320 Date / Time: 4/23/20 1226

DUP SAMPLE ID (if applicable): PF21 Date / Time:

MS/MSD SAMPLE ID (if applicable): only Date / Time:

recollect
4/25 to
get
CEC +
TOC

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<u>Y</u>		<u>flashed</u>	PFAS MLA-110	1 HDPE 250-mL	1	AXYS
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<u>Y</u>		<u>flashed</u>	TOC	4 oz Amber Jar	1	PACE
<u>Y</u>		<u>flashed</u>	CEC	Paper Bag	1	MVLT
<u>Y</u>		<u>flashed</u>	Anions	8 oz Amber Jar	1	Pace
<u>Y</u>		<u>flashed</u>	Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos:

OBSERVATION FORM	
Date and Time: <u>4/24/20</u>	Client: <u>MPCA</u>
Sample Location ID: <u>EP21</u>	Field Staff: <u>ASIA/AT</u>
Project Number: <u>60618753</u>	Weather: <u>57° sunny</u>
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): <u>Exposed Lake Elmo - 37.5 feet east from causeway</u>	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): <u>causes</u>	
Heavy rain within last 7 days or evidence of flooding? <u>No</u>	
Water Flowing? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Other Details (ripples vs smooth, pools): <u>Ripples during jet ski wake</u>	
Following a high rain event?	
Flow Speed (circle): <u>(LOW)</u> L-M MODERATE M-H HIGH	
Water clarity and color: <u>Murky to clear</u>	
Ice/snow conditions (if applicable):	
Any other notes of water appearance or odor:	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake):	
Primary Soil Classification (%g, %s, %m, %c) <u>(30%) (70% fine) silt sand, 10% silt/cl</u>	
Primary description (grain size/grading and % if coarse; plasticity if fine)	
Secondary soils:	
Moisture and Color and Odor:	
Biomass/muck observed in sediment? <u>changes only</u>	
Thickness of muck layer:	
Other notes:	
Ecological Observations	
Surrounding Vegetation?	Fish or invertebra observed?
Shaded or Unshaded:	Birds observed? <u>Bird</u>
Wetland (y/n)?	Other evidence of wildlife observed? (scat, tracks/prints, worms)
Overhanging vegetation?	Land use (circle nearby)
Floating vegetation?	House
Bank vegetation?	Mowed Grass
Vegetation alive or dead?	Cropland
Bank slope, height:	Park/Trails
Trash or debris?	Commerical/Industrial
Signs of human use?	Beach
Foam Observations (if applicable)	
Foam observed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Old or Fresh:	Color:
Approximate height and width of pile (inches) or just bubbles:	
Organic matter?	
Why does it appear to be accumulating (dam, bend, etc):	
Obvious source of turbulence/disturbance that created foam?	
Is it continuing to reaccumulate?	
Is there foam floating down stream?	

Fresh foam - quantity/storage.

Topa Foam:

SE

SML Sampling Form - ~~EP-21~~ EP-21 4/24/20

Location: LEPR-Boat Launch

A. Lanning
A. Senjem
D. Takara

ID: ~~2018/Orange boat~~
EP-21

Corresponding Sample? EP-21-WAT-BULK-01-042420
- foam - 2 sediment from 4/23/20

Sample Time on Chain of Custody

Sample ID (2): EP-21-WAT-BULK-01-042420 (1425)
EP-21-WAT-SML-01-042420 (1515)

Bottle Count/Volume: PFAS
4 / 500, 500, 60, 60
1 / 500

Surface Water Depth & Width: 2.5 feet deep/width N/A

Flow/Wind Direction: 3 mph North

Number of Dps (tally): 150

Start Time 14:36 (w/ 9 min break) End Time: 15:36

51 minutes

Speed of mass removal: 2 sec

Personnel/Other Notes: Wave-runners/boat started up @ 15:10 causing more wave action. Loon on Lake nearby.

- Amanda Phone (pics)

2:36 - 2:56
3:05 - 3:36

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): EP21 (again) Location ID: EP21 - 4/25/20 1000

CREEK/CHANNEL POND LAKE beach Sample Type Details (if needed):

BANK WETLAND BEACH OTHER Sampler: AT/AL

Sample(s) Depth: Duplicate Taken: Yes No

Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
Cause Lauren, "beach" but mostly clay

Depositional or erosional environment? Wave zone

Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
Foam, sediment, but 1/2 SML

Was this collected following a high rain event? If so, describe flow/water differences:
No

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
3 feet into water - tidal zone not really apparent

Surface water estimated depth (inches): 2

Surface water estimated width at sample location (feet): N/A

Sample location relative to channel bottom and distance from bank:

Primary Soil Classification (%g, %s, %m, %c)

Primary description (grain size/grading and % if coarse; plasticity if fine) Sandy clay 60% m clay
20% m -> c sand; 5% f subsoil gravel

Secondary soils: bottom 2" = clay/dry, not part of soil 5% coarse, subsoil gravel (1.5")
5% roots/grass/wood

Moisture and Color and Odor: brown

Biomass/muck observed in sediment? Thickness of muck layer:

Other Notes:

Samples Collected

SAMPLE ID: EP21-SED-0-6-01-042520 Date / Time: 1030

SAMPLE ID (if multiple depths): Date / Time:

Date / Time:

Date / Time:

DUP SAMPLE ID (if applicable): Date / Time:

MS/MSD SAMPLE ID (if applicable): Date / Time:

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<input checked="" type="checkbox"/>			PFAS MLA-110	1 HDPE 250-mL	1	AXYS
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>			TOC	4 oz Amber Jar	1	PACE
<input checked="" type="checkbox"/>			CEC	Paper Bag	1	MVLT
			Anions	8 oz Amber Jar	1	Pace
			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) Amanda GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos:

OBSERVATION FORM	
Date and Time: 4/27/20 1230	Client: MPCA
Sample Location ID: ED23	Field Staff: HT/AS
Project Number: 60618753	Weather: (60) sunny
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): large lake	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): depositional, houses near by, beach area (boat docks, fire pits, lawn chairs, some marsh area to south along lakeshore (reeds))	
Heavy rain within last 7 days or evidence of flooding? NO	
Water Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Other Details (ripples vs smooth, pools): very smooth, no wind	
Following a high rain event? no	
Flow Speed (circle): (LOW) LOW L-M MODERATE M-H HIGH	
Water clarity and color: very clear, slight brown color	
Ice/snow conditions (if applicable): none	
Any other notes of water appearance or odor: none no odor	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake):	
Primary Soil Classification (%g, %s, %m, %c) 45% 90 m sand, 25% coarse sand 10% organic	
Primary description (grain size/grading and % if coarse; plasticity if fine) 20% gravel	
Secondary soils:	
Moisture and Color and Odor: brown smell	
Biomass/muck observed in sediment? Thickness of muck layer: N/A all sand to 6 inches	
Other notes:	
Ecological Observations	
Surrounding Vegetation? lawns, trees	Fish or invertebra observed? none at beach fish
Shaded or Unshaded: unshaded	Birds observed? yes
Wetland (y/n)? N	Other evidence of wildlife observed? (scat, tracks/prints, worms) Sand flies, lars
Overhanging vegetation? NO	Land use (circle nearby)
Floating vegetation? NO	House
Bank vegetation? NO	Mowed Grass
Vegetation alive or dead? -	Cropland
Bank slope, height: Slope down to lake very gradual	Park/Trails
Trash or debris? yes	Commerical/Industrial
Signs of human use? yes	Beach
Foam Observations (if applicable)	
Foam observed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Old or Fresh:	Color:
Approximate height and width of pile (inches) or just bubbles:	
Organic matter?	
Why does it appear to be accumulating (dam, bend, etc):	
Obvious source of turbulence/disturbance that created foam?	
Is it continuing to reaccumulate?	
Is there foam floating down stream?	

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): EP23 Location ID: EP23

CREEK/CHANNEL _____ POND _____ LAKE (X) Sample Type Details (if needed): Beach sand

BANK _____ WETLAND _____ BEACH (X) OTHER _____ Sampler: HT/AS

Sample(s) Depth: _____ Duplicate Taken: Yes No

Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
Beach sand at north side of lake Elmo, grabbed about 4 inches away and below water line to depth of 6 inches sample taken midway

Depositional or erosional environment? depositional

Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
no

Was this collected following a high rain event? If so, describe flow/water differences:
no

between two heart dikes

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
Beach, at interface of water

Surface water estimated depth (inches): -

Surface water estimated width at sample location (feet): -

Sample location relative to channel bottom and distance from bank: -

Primary Soil Classification (%g, %s, %m, %c) sand m-c, poorly graded, sub angular - sub rounded

Primary description (grain size/grading and % if coarse; plasticity if fine) 55% m, 35% c, trace (2.5%) organics

Secondary soils: 5% fine gravel

Moisture and Color and Odor: moist, no color

Biomass/muck observed in sediment? seaweed like material Thickness of muck layer: _____

Other Notes: _____

Samples Collected

SAMPLE ID: EP23-SED-0-6-01-042300 Date / Time: 4/23/20 1236

SAMPLE ID (if multiple depths): 27 Date / Time: _____

Date / Time: _____

Date / Time: _____

DUP SAMPLE ID (if applicable): _____ Date / Time: _____

MS/MSD SAMPLE ID (if applicable): _____ Date / Time: _____

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<input checked="" type="checkbox"/>			PFAS MLA-110	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>			TOC	4 oz Amber Jar	1	PACE
<input checked="" type="checkbox"/>			CEC	Paper Bag	1	MVLT
<input checked="" type="checkbox"/>			Anions	8 oz Amber Jar	1	Pace
<input checked="" type="checkbox"/>			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos: _____

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Location ID: ~~EP24~~ EP24

CREEK/CHANNEL _____ POND _____ LAKE (X) Sample Type Details (if needed): _____

BANK _____ WETLAND _____ BEACH _____ OTHER _____ Sampler: HT

Sample(s) Depth: 0-6" Duplicate Taken: Yes No

Sampling Device (circle): SHOVEL _____ AUGER (X) SLUDGE GRAB _____ MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
sunfish lake about 30 feet from water edge. Lake was high
went past flooded tree line Northwest side of lake

Depositional or erosional environment? depositional

Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
NO

Was this collected following a high rain event? If so, describe flow/water differences:
NO

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
about 30 feet from shore close to bank relative to lake (not center of lake)

Surface water estimated depth (inches): about 3 feet

Surface water estimated width at sample location (feet): _____

Sample location relative to channel bottom and distance from bank:
30 feet

Primary Soil Classification (%g, %s, %m, %c) 70% clay, 28% organics, trace fine-medium sand 10%

Primary description (grain size/grading and % if coarse; plasticity if fine)
clay low plasticity, soft

Secondary soils: _____

Moisture and Color and Odor: organic odor very dark brown - almost black

Biomass/muck observed in sediment? some reeds/grass/leaves Thickness of muck layer: about 2 inches

Other Notes: grass on bank was flooded slightly so went past tree

Samples Collected

SAMPLE ID: EP24-SED-0-6-01-012720 Date / Time: 2/27/20 11:30

SAMPLE ID (if multiple depths): _____ Date / Time: _____

_____ Date / Time: _____

_____ Date / Time: _____

_____ Date / Time: _____

DUP SAMPLE ID (if applicable): _____ Date / Time: _____

MS/MSD SAMPLE ID (if applicable): _____ Date / Time: _____

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<u>Y</u>			PFAS MLA-110	1 HDPE 250-mL	1	AXYS
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<u>Y</u>			TOC	4 oz Amber Jar	1	PACE
<u>Y</u>			CEC	Paper Bag	1	MVLT
<u>Y</u>			Anions	8 oz Amber Jar	1	Pace
<u>Y</u>			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos: _____

OBSERVATION FORM	
Date and Time: 4/27/20 1130	Client: MPCA
Sample Location ID: EP 24 Sunfish Lake	Field Staff: HT AS
Project Number: 60618753	Weather: 60% sunny
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): Lake	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): near trails but no roads/parking lots depositional area trees mostly surrounding lake	
Heavy rain within last 7 days or evidence of flooding? NO but lake was high, trees slightly submerged at water	
Water Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Other Details (ripples vs smooth, pools): smooth	
Following a high rain event? NO	
Flow Speed (circle): (NO) LOW L-M MODERATE M-H HIGH	
Water clarity and color: very turbid see less than 6 inches, brown color	
Ice/snow conditions (if applicable): none	
Any other notes of water appearance or odor: organic odor	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake): 30 feet from edge	
Primary Soil Classification (%g, %s, %m, %c) 30% organic, 30% silt, 40 clay	
Primary description (grain size/grading and % if coarse; plasticity if fine) silty, trace grasses	
Secondary soils:	
Moisture and Color and Odor: organic odor very dark, almost black	
Biomass/muck observed in sediment? YES Thickness of muck layer: 2 inches	
Other notes: Grass visible above water to about 15 feet out (floodings)	
Ecological Observations	
Surrounding Vegetation: trees, shrubs, grass	Fish or invertebra observed? YES, tadpoles snails
Shaded or Unshaded: partially, near lake edge	Birds observed? YES
Wetland (y/n)? no but marsh across bank	Other evidence of wildlife observed? (scat, tracks/prints, worms) scat on trails
Overhanging vegetation? YES	Land use (circle nearby)
Floating vegetation? NO	
Bank vegetation? YES	Mowed Grass → trails
Vegetation alive or dead? alive	Cropland
Bank slope, height: very little slope, no distinguishable bank	Park/Trails
Trash or debris? NO	Commerical/Industrial
Signs of human use? trails	Beach
Foam Observations (if applicable)	
Foam observed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Old or Fresh:	Color:
Approximate height and width of pile (inches) or just bubbles:	
Organic matter?	
Why does it appear to be accumulating (dam, bend, etc):	
Obvious source of turbulence/disturbance that created foam?	
Is it continuing to reaccumulate?	
Is there foam floating down stream?	

OBSERVATION FORM

Date and Time: 4/23/20 11:00AM Client: MPCA
Sample Location ID: BPI Field Staff: _____
Project Number: 60618753 Weather: sunny 15°, no clouds

Waterbody Description

Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):
pond

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):
upgradient of BS13 - Brown Pond bank near Barn

Heavy rain within last 7 days or evidence of flooding?
Water Flowing? Yes No

Other Details (ripples vs smooth, pools): ripples - wind associated
Following a high rain event? NO
Flow Speed (circle): LOW L-M MODERATE M-H HIGH

Water clarity and color: clear water

Ice/snow conditions (if applicable): NA

Any other notes of water appearance or odor: NO

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):
bottom of pond

Primary Soil Classification (%g, %s, %m, %c) 70% low-med. plast. clay 15% med-coarse sand 5% gravel

Primary description (grain size/grading and % if coarse; plasticity if fine)
low med. plast. clay, med-coarse sand, gravel, organics roots

Secondary soils:

Moisture and Color and Odor: brown, no odor

Biomass/muck observed in sediment? _____ Thickness of muck layer: _____

Other notes:

Ecological Observations

Surrounding Vegetation? full mature trees Fish or invertebra observed? minnows

Shaded or Unshaded: NOT shaded (is in culvert) Birds observed? ducks, birds

Wetland (y/n)? NO Other evidence of wildlife observed?
(scat, tracks/prints, worms)

Overhanging vegetation? tree branches Land use (circle nearby)

Floating vegetation? fallen branches, tree droppings House ~~BARN~~ barn

Bank vegetation? tree limbs and grass Mowed Grass

Vegetation alive or dead? alive Cropland

Bank slope, height: NA Park/Trails

Trash or debris? yes, cups + plastic Commerical/Industrial

Signs of human use? Beach

Foam Observations (if applicable)

Foam observed? Yes No

Old or Fresh: _____ Color: _____

Approximate height and width of pile (inches) or just bubbles: _____

Organic matter? _____

Why does it appear to be accumulating (dam, bend, etc): _____

Obvious source of turbulence/disturbance that created foam? _____

Is it continuing to reaccumulate? _____

Is there foam floating down stream? _____

70% gravel
leaves, sticks
70% org.

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Location ID: BP1

CREEK/CHANNEL POND LAKE
 BANK WETLAND BEACH OTHER

Sample(s) Depth: 43.5 feet Duplicate Taken: Yes No

Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
20ft. from edge of pond near tree clearing

Depositional or erosional environment? depositional? riples - wind associated
 Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
NO - water in future

Was this collected following a high rain event? If so, describe flow/water differences:

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
Edge of pond just past tree line

Surface water estimated depth (inches): 42 inches depth

Surface water estimated width at sample location (feet): NA

Sample location relative to channel bottom and distance from bank:
20 ft. from water edge

Primary Soil Classification (%g, %s, %m, %c)
 Primary description (grain size/grading and % if coarse; plasticity if fine)
top inch fluff, sand below 20% organics ^{twigs/} ~~moss~~ / grass / leaves

Secondary soils:

Moisture and Color and Odor:

Biomass/muck observed in sediment? Thickness of muck layer:

Other Notes:

Samples Collected

SAMPLE ID: BP1-SED-0-6-01-042720 Date / Time: 4/27/20 11:00AM

SAMPLE ID (if multiple depths): _____ Date / Time: _____

_____ Date / Time: _____

_____ Date / Time: _____

_____ Date / Time: _____

DUP SAMPLE ID (if applicable): _____ Date / Time: _____

MS/MSD SAMPLE ID (if applicable): _____ Date / Time: _____

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
			<u>PFAS MLA-110</u>	1 HDPE 250-mL	1	AXYS
			<u>TOPA MLA-100</u>	1 HDPE 250-mL	1	AXYS
			<u>TOC</u>	4 oz Amber Jar	1	PACE
			<u>CEC</u>	Paper Bag	1	MVLT
			<u>Anions</u>	8 oz Amber Jar	1	Pace
			<u>Grain Size</u>	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos: Seth Knox

OBSERVATION FORM	
Date and Time: 4/27/20 @ 1400	Client: MPCA
Sample Location ID: EPIV	Field Staff: HT, AS, AL, KR
Project Number: 60618753	Weather: 75° partly cloudy
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): 670 ft course - down gradient lake Elmo up gradient of B56	
Heavy rain within last 7 days or evidence of flooding? N	
Water Flowing? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Other Details (ripples vs smooth, pools): Smooth - some pooling	
Following a high rain event? N	
Flow Speed (circle): LOW (L-M) MODERATE M-H ^{slow} HIGH	
Water clarity and color: clear in some areas - otherwise very murky - Stagnant	
Ice/snow conditions (if applicable): N	
Any other notes of water appearance or odor: pollen floating on top of water water rushing down culvert	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake): 4 feet from bank	
Primary Soil Classification (%g, %s, %m, %c) 10% silt - 70% sand 20% algae	
Primary description (grain size/grading and % if coarse; plasticity if fine) sand w/ algae - some silt algae + worms	
Secondary soils:	
Moisture and Color and Odor: no odor	
Biomass/muck observed in sediment? Thickness of muck layer:	
Other notes:	
Ecological Observations	
Surrounding Vegetation? Mature trees, saplings	Fish or invertebra observed? N
Shaded or Unshaded: 50/50	Birds observed? Y
Wetland (y/n)? N	Other evidence of wildlife observed? N
(scat, tracks/prints, worms)	
Overhanging vegetation? branches / trees	Land use (circle nearby)
Floating vegetation? N	House (abandon)
Bank vegetation? grass	Mowed Grass
Vegetation alive or dead? decomp. leaves, branches	Cropland
Bank slope, height: 8 in height 45°	Park/Trails
Trash or debris? rake	Commerical/Industrial
Signs of human use? telephone pole - wooden human structure	Beach
Foam Observations (if applicable)	
Foam observed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Old or Fresh:	Color:
Approximate height and width of pile (inches) or just bubbles:	
Organic matter?	
Why does it appear to be accumulating (dam, bend, etc):	
Obvious source of turbulence/disturbance that created foam?	
Is it continuing to reaccumulate?	
Is there foam floating down stream?	

EP16-SED-6-18-01-042720

<5% nobs + frags, <5% clay, 95% fine sands
* less moisture than previous (first) sample

EP16-SED-30-36-01-042720

80% fine sands 20% coarse sands
drier than previous 2 samples

OBSERVATION FORM	
Date and Time: 4/27/20 1200	Client: MPCA
Sample Location ID: VBI	Field Staff:
Project Number: 60618753	Weather:
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): culvert, close to road, residential area - wooded	
Heavy rain within last 7 days or evidence of flooding?	
Water Flowing? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Other Details (ripples vs smooth, pools): smooth	
Following a high rain event? NO	
Flow Speed (circle): LOW L-M MODERATE M-H HIGH high flow at waterfall	
Water clarity and color: clear - red tinge	
Ice/snow conditions (if applicable): NA	
Any other notes of water appearance or odor:	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake):	
Primary Soil Classification (%g, %s, %m, %c) 40% 20%	
Primary description (grain size/grading and % if coarse; plasticity if fine) top half in. - fluff w/ leaves & twigs - coarse sand with fine gravel	
Secondary soils:	
Moisture and Color and Odor: organic odor	
Biomass/muck observed in sediment? Thickness of muck layer:	
Other notes: Bank - sandy clay (15% sand)	
Ecological Observations	
Surrounding Vegetation? med. trees, shrubs	
fish or invertebra observed? NO	
Shaded or Unshaded: Birds observed? yes	
Wetland (y/n)? Other evidence of wildlife observed? birds	
(scat, tracks/prints, worms)	
Overhanging vegetation? branches	Land use (circle nearby)
Floating vegetation? NO	House
Bank vegetation? dead moss	Mowed Grass
Vegetation alive or dead? dead leaves, branches	Cropland
Bank slope, height: slope 0 height - 1 in.	Park/Trails
Trash or debris? yes - cans, bike tires	Commerical/Industrial
Signs of human use? road / culvert	Beach
Foam Observations (if applicable)	
Foam observed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Old or Fresh: (circled)	Color:
Approximate height and width of pile (inches) or just bubbles: bubble and "fuffy" inch	third
Organic matter? dry white w/ brown on top	
Why does it appear to be accumulating (dam, bend, etc): old foam: thin, organic	
Obvious source of turbulence/disturbance that created foam? waterfall upgradient	
Is it continuing to reaccumulate? yes	
Is there foam floating down stream? NO	

2 in. deep
- black
binders
still sand
but 15%
clay

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): CREEK/CHANNEL POND LAKE
 Location ID: VBI
 Sample Type Details (if needed): comp
 BANK WETLAND BEACH OTHER
 Sampler: AL
 Sample(s) Depth: bank-bottom-bank Duplicate Taken: Yes No
 Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
creek sample - 15 feet from culvert - 50ft up gradient from foam

Depositional or erosional environment?
 Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
Yes - foam - sed. sample up gradient will be water
 Was this collected following a high rain event? If so, describe flow/water differences:
NA

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
bank - bottom - bank
 Surface water estimated depth (inches): 3 inches
 Surface water estimated width at sample location (feet): 1 foot width
 Sample location relative to channel bottom and distance from bank:
15 feet from culvert down gradient
 Primary Soil Classification (%g, %s, %m, %c) 60% clay 15% coarse sand 10% gravel 5% org.
 Primary description (grain size/grading and % if coarse; plasticity if fine)
clay - low med plast. - gravel coarse - organics leaves twigs sticks 70% med - sub angular gravel
 Secondary soils:

Moisture and Color and Odor: organic odor
 Biomass/muck observed in sediment? _____ Thickness of muck layer: _____

Other Notes:

Samples Collected

SAMPLE ID: VBI-SED-COMP-0-6-01-042720 Date / Time: 4/27/20 12:00 PM
 SAMPLE ID (if multiple depths): _____ Date / Time: _____
 _____ Date / Time: _____
 _____ Date / Time: _____
 _____ Date / Time: _____
 DUP SAMPLE ID (if applicable): _____ Date / Time: _____
 MS/MSD SAMPLE ID (if applicable): _____ Date / Time: _____

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
		✓	PFAS MLA-110	1 HDPE 250-mL	1	AXYS
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
		✓	TOC	4 oz Amber Jar	1	PACE
		✓	CEC	Paper Bag	1	MVLT
		✓	Anions	8 oz Amber Jar	1	Pace
			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) AL phone GPS'd
 Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change
 Location of photos: photos on Amanda's phone

OBSERVATION FORM	
Date and Time: <u>4/27/20 12:30</u>	Client: <u>MPCA</u>
Sample Location ID: <u>VB3</u>	Field Staff: _____
Project Number: <u>60618753</u>	Weather: <u>sunny, no clouds 70°</u>
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): _____	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): <u>Culvert, close to road, residential region</u>	
Heavy rain within last 7 days or evidence of flooding? <u>NO</u>	
Water Flowing? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Other Details (ripples vs smooth, pools): <u>ripples</u>	
Following a high rain event? <u>NO</u>	
Flow Speed (circle): <u>LOW</u> L-M MODERATE <u>M-H</u> HIGH	
Water clarity and color: <u>clear</u>	
Ice/snow conditions (if applicable): <u>NA</u>	
Any other notes of water appearance or odor: <u>slight organic odor</u>	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake): <u>center of creek</u>	
Primary Soil Classification (%g, %s, %m, %c) _____	
Primary description (grain size/grading and % if coarse; plasticity if fine): <u>fine-coarse sands + top inch coarse sub round sub ang. gravel</u>	
Secondary soils: _____	
Moisture and Color and Odor: <u>brown north bank - dark brown cent-right</u>	
Biomass/muck observed in sediment? _____ Thickness of muck layer: _____	
Other notes: <u>banks - south bank - 85% clay medium plasticity 5% grass + roots</u> <u>North - 70% clay 20% silt 10% roots and sticks</u>	
Ecological Observations	
Surrounding Vegetation? <u>mature trees, grass</u>	Fish or invertebra observed? <u>NO</u>
Shaded or Unshaded: <u>50/50</u>	Birds observed? <u>yes</u>
Wetland (y/n)? <u>N</u>	Other evidence of wildlife observed? <u>NO</u>
(scat, tracks/prints, worms)	
Overhanging vegetation? <u>N</u>	Land use (circle nearby)
Floating vegetation? <u>N</u>	
Bank vegetation? <u>MOSS</u>	<u>House</u>
Vegetation alive or dead? <u>dead branches, twigs</u>	<u>Mowed Grass</u>
Bank slope, height: <u>South - 3ft. 90° North 2in 90°</u>	<u>Cropland</u>
Trash or debris? <u>NO</u>	<u>Park/Trails</u>
Signs of human use? <u>road - residential - erosion control net</u>	<u>Commerical/Industrial</u>
	<u>Beach</u>
Foam Observations (if applicable)	
Foam observed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Old or Fresh? <u>Old</u>	Color: <u>white / yellow</u>
Approximate height and width of pile (inches) or just bubbles: <u>height - 1-3 inches width - ~7 inches</u>	
Organic matter? <u>yes - twigs, branches, leaves</u>	
Why does it appear to be accumulating (dam, bend, etc): <u>twigs, branches, bends</u>	
Obvious source of turbulence/disturbance that created foam? <u>moving water</u>	
Is it continuing to reaccumulate? <u>yes</u>	
Is there foam floating down stream? <u>small amounts</u>	

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Location ID: **VB3**

CREEK/CHANNEL POND LAKE Sample Type Details (if needed): _____

BANK WETLAND BEACH OTHER Sampler: **AL**

Sample(s) Depth: **bank - sed - bank** Duplicate Taken: Yes No

Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
upgradient from river - south of 94

Depositional or erosional environment? _____

Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
foam sample collected previously downgradient

Was this collected following a high rain event? If so, describe flow/water differences: **NO**

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
bank - sed - bank

Surface water estimated depth (inches): **8 in - 1 foot**

Surface water estimated width at sample location (feet): **8 feet**

Sample location relative to channel bottom and distance from bank:
bank - sed - bank

Primary Soil Classification (%g, %s, %m, %c) **100% sand 20% clay 15% gravel, 5%**

Primary description (grain size/grading and % if coarse; plasticity if fine)
sand - fine to coarse, clay - med. plasticity - gravel ^{fine} subround,

Secondary soils: _____

Moisture and Color and Odor: **dark brown - slight organic odor** Thickness of muck layer: _____

Biomass/muck observed in sediment?
twigs, sticks, leaves

Other Notes: **center creek - 60% coarse sand 30% fine-med. sand**

organics
twigs, sticks

10% silt

Samples Collected

SAMPLE ID: **VB3-SED-COMP-142720** Date / Time: **4/27/20 12:30 PM**

SAMPLE ID (if multiple depths): **0-6-01** Date / Time: _____

Date / Time: _____

Date / Time: _____

DUP SAMPLE ID (if applicable): **VB3-SED-COMP-02-042720** Date / Time: **4/27/20 12:35 PM**

MS/MSD SAMPLE ID (if applicable): **VB3-SED-COMP-03-042720** Date / Time: **4/27/20 12:40 PM**

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
✓	✓		PFAS MLA-110	1 HDPE 250-mL	1	AXYS
			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
✓			TOC	4 oz Amber Jar	1	PACE
✓			CEC	Paper Bag	1	MVLT
✓			Anions	8 oz Amber Jar	1	Pace
			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required)

Picture of Foam (before, collected, and bottled)

Location of photos: **Seth's phone**

GPS'd

Decontaminated tools and glove change

OBSERVATION FORM

Date and Time: 5/12/20 Client: MPCA
 Sample Location ID: EP18 Field Staff: Ab, CK, HT
 Project Number: 60618753 Weather: 50s sunny

Waterbody Description

Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):
lake ~~wetland~~ cattails around

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):
Park surrounding cattails in entire area along lake

Heavy rain within last 7 days or evidence of flooding? NO

Water Flowing? Yes No

Other Details (ripples vs smooth, pools): some wind and ripples

Following a high rain event? NO

Flow Speed (circle): LOW L-M MODERATE M-H HIGH

Water clarity and color: green color turbidity can't see very deep ~2 feet

Ice/snow conditions (if applicable): NO

Any other notes of water appearance or odor: NO

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):
can't see bottom

Primary Soil Classification (%g, %s, %m, %c) and Description (grain size/grading if coarse; plasticity if fine):

Secondary soils:

Moisture and Color and Odor: grey color, organic odor

Biomass/muck observed in sediment?

Other notes:

Ecological Observations

Surrounding Vegetation? cattails, trees ferns Fish or invertebra observed?

Shaded or ~~unshaded~~ along stream Birds observed?

Wetland (Y/N)? Other evidence of wildlife observed?

Bottom Vegetation? yes, algae (scat, tracks/prints, worms)

Overhanging vegetation? NO Land use (circle nearby)

Floating vegetation? NO House

Bank vegetation? yes Mowed Grass

Vegetation alive or dead? alive Cropland

Each bank slope/height? not visible through cattails Park/Trails

Trash or debris? now Commerical/Industrial

Signs of human use? trails Beach

Foam Observations (if applicable)

Foam observed? Yes No

Old or Fresh: Color:

Approximate height and width of pile (inches) or just bubbles:

Organic matter?

Why does it appear to be accumulating (dam, bend, etc):

Obvious source of turbulence/disturbance that created foam?

Is it continuing to reaccumulate?

Is there foam floating down stream?

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Location ID: EP 18

BANK/ShORE CREEK CENTER IN WATER BODY Sample Type Details (if needed): _____

MANHOLE CULVERT CHANNEL Sampler: DAG

Sample Depth: BULK EPI SML (on other form) Duplicate Taken: Yes No

Sampling Device (circle): DIPPER GRAB PAIL MS/MSD Taken: Yes No

Is there a corresponding sediment sample? If yes, where is it relative to surface water sample?
yes w/in 20 feet (wind blowing)

Was this collected following a high rain event? If so, describe flow/water differences:
no

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 5 feet

Surface water estimated width at sample location (feet): 50 feet from edge of cattails

Sample location relative to channel bottom and distance from bank: ↓

Field Water Quality Parameters

Temperature (°C): 13.76 pH: 8.01 Turbidity: 1.84

Temp corr cond (umhos/cm): 0.476 Dissolved Oxygen: 12.40 ORP: -30.4

Samples Collected

SAMPLE ID: EP18-WAT-BULK-01-051220 Date / Time: 5/12/20 11:15

SAMPLE ID (if multiple depths): _____ Date / Time: _____

DUP SAMPLE ID (if applicable): _____ Date / Time: _____

MS/MSD SAMPLE ID (if applicable): _____ Date / Time: _____

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depth (y/n)	Analysis	Containers (Type Volume)	Count	Lab
<u>y</u>			PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>y</u>			TOPA MLA-100	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>y</u>			TOC	40-mL VOA	3	PACE
<u>y</u>			Water Quality	1 L plastic	1	PACE
<u>y</u>			Anions	250 mL plastic	1	PACE
<u>y</u>			N+N, Total P	250 mL plastic, H2SO4	1	PACE
<u>y</u>			Metals	250 mL plastic, HNO3	1	PACE

Foam (if applicable)

Foam sampled? Yes No

Location of samples relative to foam (circle): upgradient at (below) foam downgradient

Sampling Device (circle): Grab Cheese Cloth 1-Gallon Bag 2-Gallon Bag

Describe what was sampled (how much and in what part of foam was sampled): _____

Describe how foam responded to collection (Did it regenerate? Did it condense during collection?): _____

Any other media collected associated with foam (underlying sediment, bulk water, epi, SML): _____

Time	Sample ID	Analysis	Time to Condense	Starting Volume	Final Volume

Sample Checklist

Picture of Sample Location (required) GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos: _____

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): EPIS Location ID: EPIS

CREEK/CHANNEL POND (LAKE) Sample Type Details (if needed): sediment 0-4

BANK WETLAND BEACH OTHER Sampler: AG

Sample(s) Depth: 0-4 Duplicate Taken: Yes No

Sampling Device (circle): SHOVEL (AUGER) SLUDGE GRAB MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
lake near shore, closest location to BS 3 in lake
about 50 feet from cattails

Depositional or erosional environment? Depositional W/L lake

Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
water → w/in 20 feet based on boat drifts

Was this collected following a high rain event? If so, describe flow/water differences:
no

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
about 50 feet from edge of cattails in about 5 feet distance

Surface water estimated depth (inches): 5 feet

Surface water estimated width at sample location (feet): NA

Sample location relative to channel bottom and distance from bank:
NA

Primary Soil Classification (%g, %s, %m, %c) 90% silt, 10% clay, 10% organics no plasticity

Primary description (grain size/grading and % if coarse; plasticity if fine) no sand

Secondary soils:

Moisture and Color and Odor: organic odor, grey color

Biomass/muck observed in sediment? some muck but not a muck layer or is very thin Thickness of muck layer:

Other Notes:

Samples Collected

SAMPLE ID: EPIS-SED-0-4-01-051220 Date / Time: 5/12/06 1130

SAMPLE ID (if multiple depths): Date / Time:

Date / Time:

Date / Time:

DUP SAMPLE ID (if applicable): Date / Time:

MS/MSD SAMPLE ID (if applicable): Date / Time:

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<input checked="" type="checkbox"/>			PFAS MLA-110	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		TOC	4 oz Amber Jar	1	PACE
<input checked="" type="checkbox"/>			CEC	Paper Bag	1	MVLT
<input checked="" type="checkbox"/>			Anions	8 oz Amber Jar	1	Pace
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos:

OBSERVATION FORM

Date and Time: 5/12/00
 Sample Location ID: 651
 Project Number: 60618753

Client: MPCA
 Field Staff: HT, AB, CK
 Weather: SUNNY 40S

Waterbody Description

Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):

~~pond~~ lake

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):

depositional lake road passes close by trees submerged along bank, trees along majority of bank & low shrubs

Heavy rain within last 7 days or evidence of flooding? NO

Water Flowing? Yes No

Other Details (ripples vs smooth, pools): very small ripples from wind

Following a high rain event? NO

Flow Speed (circle): LOW L-M MODERATE M-H HIGH

Water clarity and color: very turbid brown color

Ice/snow conditions (if applicable): none

Any other notes of water appearance or odor:

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):

not visible -> see sediment form for sediment classification

Primary Soil Classification (%g, %s, %m, %c) and Description (grain size/grading if coarse; plasticity if fine):

Secondary soils:

Moisture and Color and Odor: odor

Biomass/muck observed in sediment? no biomass observed

Other notes:

Ecological Observations

Surrounding Vegetation? trees, bushes Fish or invertebra observed? NO

Shaded or Unshaded: shaded close to edge Birds observed? YES

Wetland (y/n)? n Other evidence of wildlife observed? -

Bottom Vegetation? n (scat, tracks/prints, worms) -

Overhanging vegetation? trees

Floating vegetation? NO

Bank vegetation? trees/shrub

Vegetation alive or dead? alive

Each bank slope/height? 5 feet 70° slope down to lake

Trash or debris? minimal

Signs of human use? small docks

Land use (circle nearby)

House 7100 feet

Mowed Grass NO

Cropland NO

Park/Trails NO

Commerical/Industrial NO

Beach NO

Foam Observations (if applicable)

Foam observed? Yes No

Old or Fresh:

Color:

Approximate height and width of pile (inches) or just bubbles:

Organic matter?

Why does it appear to be accumulating (dam, bend, etc):

Obvious source of turbulence/disturbance that created foam?

Is it continuing to reaccumulate?

Is there foam floating down stream?

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Location ID: 6L1

BANK/ShORE CREEK CENTER IN WATER BODY Sample Type Details (if needed): At water

MANHOLE CULVERT CHANNEL _____ Sampler: A6

Sample Depth: BULK EPI SML (on other form) Duplicate Taken: N Yes No

Sampling Device (circle): DIPPER GRAB PAIL Swanence MS/MSD Taken: Yes No

Is there a corresponding sediment sample? If yes, where is it relative to surface water sample?
yes within 10 feet (did drift slightly as sampled)

Was this collected following a high rain event? If so, describe flow/water differences:
no

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 10-12 feet

Surface water estimated width at sample location (feet): NA

Sample location relative to channel bottom and distance from bank: 50 feet

Field Water Quality Parameters

Temperature (°C): 13.04 pH: 8.68 Turbidity: 4.67 NTU

Temp corr cond (umhos/cm): 0.188 Dissolved Oxygen: 14.4% ORP: -49.5

Samples Collected

SAMPLE ID: 6L1-WAT-BULK-01-051220 Date / Time: 5/12/20 1015

SAMPLE ID (if multiple depths): _____ Date / Time: _____

DUP SAMPLE ID (if applicable): _____ Date / Time: _____

MS/MSD SAMPLE ID (if applicable): _____ Date / Time: _____

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depth (y/n)	Analysis	Containers (Type Volume)	Count	Lab
<input checked="" type="checkbox"/>			PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
			TOPA MLA-100	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<input checked="" type="checkbox"/>			TOC	40-mL VOA	3	PACE
<input checked="" type="checkbox"/>			Water Quality	1 L plastic	1	PACE
<input checked="" type="checkbox"/>			Anions	250 mL plastic	1	PACE
<input checked="" type="checkbox"/>			N+N, Total P	250 mL plastic, H2SO4	1	PACE
<input checked="" type="checkbox"/>			Metals	250 mL plastic, HNO3	1	PACE

Foam (if applicable)

Foam sampled? Yes No

Location of samples relative to foam (circle): upgradient at(below) foam downgradient

Sampling Device (circle): Grab Cheese Cloth 1-Gallon Bag 2-Gallon Bag

Describe what was sampled (how much and in what part of foam was sampled):

Describe how foam responded to collection (Did it regenerate? Did it condense during collection?):

Any other media collected associated with foam (underlying sediment, bulk water, epi, SML):

Time	Sample ID	Analysis	Time to Condense	Starting Volume	Final Volume

Sample Checklist

Picture of Sample Location (required) GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos:

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): Goose Lake Location ID: GL1

CREEK/CHANNEL POND LAKE Sample Type Details (if needed):

BANK WETLAND BEACH OTHER Sampler: ALB

Sample(s) Depth: 0-10 feet Duplicate Taken: Yes No

Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
Lake canceled past first point from dock
about 200 feet from shore, water was approximately 10 feet deep

Depositional or erosional environment? deposition of

Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
yes within 10 feet of sample

Was this collected following a high rain event? If so, describe flow/water differences:
NO

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
bottom of lake near shore

Surface water estimated depth (inches): 10 feet

Surface water estimated width at sample location (feet): NA

Sample location relative to channel bottom and distance from bank:
50 feet

Primary Soil Classification (%g, %s, %m, %c) 70% silt, 20% clay, 10% sand

Primary description (grain size/grading and % if coarse; plasticity if fine)
low plasticity

Secondary soils:

Moisture and Color and Odor: grey color, slight organic odor

Biomass/muck observed in sediment? NO organic material Thickness of muck layer:

Other Notes:

Samples Collected

SAMPLE ID: GL1-SED-06-01-051220 Date / Time: 5/12/20 1000

SAMPLE ID (if multiple depths): Date / Time:

Date / Time:

Date / Time:

DUP SAMPLE ID (if applicable): Date / Time:

MS/MSD SAMPLE ID (if applicable): Date / Time:

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PFAS MLA-110	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>			TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>			TOC	4 oz Amber Jar	1	PACE
<input checked="" type="checkbox"/>			CEC	Paper Bag	1	MVLT
<input checked="" type="checkbox"/>			Anions	8 oz Amber Jar	1	Pace
<input checked="" type="checkbox"/>			Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos: Hawver

OBSERVATION FORM	
Date and Time: 5/14/20 5/14/20	Client: MPCA
Sample Location ID: RC23	Field Staff: AS, HT, ALG
Project Number: 60618753	Weather: overcast 50s

Waterbody Description

Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other):
small stormwater pond approx 200 feet x 300 feet oval

General description of location (dams, depositional v.s. erosional area, proximity to roads or structures):
Depositional, approx 400-500 feet from location
ponds are connected today, were not yesterday

Heavy rain within last 7 days or evidence of flooding? not heavy rain but light over night

Water Flowing? Yes No

Other Details (ripples vs smooth, pools): smooth

Following a high rain event? no

Flow Speed (circle): LOW L-M MODERATE M-H HIGH

Water clarity and color: green color, can see bottom but is turbid

Ice/snow conditions (if applicable): none

Any other notes of water appearance or odor: slight odor

Water Body Bottom - Sediment Description (if visible)

Location within water body (center of creek, bank, bottom of pond/lake):

Primary Soil Classification (%g, %s, %m, %c) and Description (grain size/grading if coarse; plasticity if fine):
silt, 50% muck w/ decaying organic matter, 25% sand/fine

Secondary soils:

Moisture and Color and Odor: or same odor

Biomass/muck observed in sediment? yes

Other notes:

Ecological Observations

Surrounding Vegetation? grass + trees Fish or invertebra observed? no

Shaded or Unshaded: unshaded Birds observed? yes

Wetland (y/n)? yes Other evidence of wildlife observed? dragonflies, ducks, water bugs

Bottom Vegetation? some dead leaves + branches (scat, tracks/prints, worms)

Overhanging vegetation? yes, trees - but not where we sampled Land use (circle nearby)

Floating vegetation? algae House is near

Bank vegetation? tall grasses Mowed Grass

Vegetation alive or dead? bushes mostly alive Cropland

Each bank slope/height? 0' Park/Trails

Trash or debris? some lumber, etc. Commercial/Industrial

Signs of human use? some kids toys nearby, litter Beach

Foam Observations (if applicable)

Foam observed? Yes No

Old or Fresh: Color:

Approximate height and width of pile (inches) or just bubbles:

Organic matter?

Why does it appear to be accumulating (dam, bend, etc):

Obvious source of turbulence/disturbance that created foam?

Is it continuing to reaccumulate?

Is there foam floating down stream?

some plastic + metal parts elsewhere as well

vegetation in area east of the pond was patchy, alive/dead grasses

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Location ID: **RC22-**

CREEK/CHANNEL **POND** LAKE _____ Sample Type Details (if needed): _____

BANK **WETLAND** BEACH OTHER _____ Sampler: **AS**

Sample(s) Depth: **0-6, 6-12** Duplicate Taken: Yes No

Sampling Device (circle): **SHOVEL** **AUGER** SLUDGE GRAB _____ MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
Wetland Pond Potential end of start of highly 1 dry area

Depositional or erosional environment? **depositional**

Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
no foam, water in same location

Was this collected following a high rain event? If so, describe flow/water differences:
not high rain event, but a little rain last night. rocks in center of the creek shows water level decreasing

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
center of Pond, bottom of

Surface water estimated depth (inches): **20"**

Surface water estimated depth at sample location (feet): **2.5' x 3.0'**

Sample location relative to channel bottom and distance from bank:
100ft from bank towards center

Primary Soil Classification (%g, %s, %m, %c) **AS**

Primary description (grain size/grading and % if coarse; plasticity if fine)
see back

Secondary soils: _____

Moisture and Color and Odor: **W**

Biomass/muck observed in sediment? **yes in 0-6** Thickness of muck layer: **3"**

Other Notes: _____

Samples Collected

SAMPLE ID: **RC22-SPD-0-6-01-051420** ~~SPAT~~ Date / Time: **5/14/2015**

SAMPLE ID (if multiple depths): **WET** Date / Time: _____

RC22-SPD-0-12-01-051420 Date / Time: **5/14/2015**

Date / Time: _____

DUP SAMPLE ID (if applicable): _____ Date / Time: _____

MS/MSD SAMPLE ID (if applicable): _____ Date / Time: _____

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PFAS MLA-110	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		TOPA MLA-100	1 HDPE 250-mL	1	AXYS
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		TOC	4 oz Amber Jar	1	PACE
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		CEC	Paper Bag	1	MVLT
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Anions ano-d	8 oz Amber Jar	1	Pace
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Grain Size	Half Gallon Baggie	1	Interpoll

Sample Checklist

Picture of Sample Location (required) **YAD** GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos: _____

**0-6
nc-k**

0-6: silt (50%), ^{dearly} organic matter (40%), 10% fine sand

very soft, low plasticity ~~some~~ some base, fudys "buttery" - Hanna dark brown
organic odor

6-12: Sandy Clay, clay (75%) low-to medium plasticity
more "sturdy", soft, 20% fine sand, SR

true dearily organics (5%) ~~test~~ brown

12-18: Sandy clay (60%) medium plasticity, soft

40% f-m SR sand, 10% med. sand, brown

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): _____ Location ID: RC22

BANK/ShORE CREEK CENTER IN WATER BODY Sample Type Details (if needed): _____

MANHOLE CULVERT CHANNEL Sampler: HS

Sample Depth: BULK EPI SML (on other form) Duplicate Taken: Yes No

Sampling Device (circle): DIPPER GRAB PAIL MS/MSD Taken: Yes No

Is there a corresponding sediment sample? If yes, where is it relative to surface water sample?
yes, same spot

Was this collected following a high rain event? If so, describe flow/water differences:
no, but some rain yesterday

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 20"

Surface water estimated width at sample location (feet): ~~150x250~~ 150x250

Sample location relative to channel bottom and distance from bank: 25' from bank south

Field Water Quality Parameters

Temperature (°C): 11.09 pH: 9.53 Turbidity: 1.89

Temp corr cond (umhos/cm): 1.179 Dissolved Oxygen: 10.83 0.470 1-32.9

Samples Collected

SAMPLE ID: RC22-WAT-BULK-01-051420 Date / Time: 5/14/20 0950

SAMPLE ID (if multiple depths): _____ Date / Time: _____

DUP SAMPLE ID (if applicable): n/a! Date / Time: _____

MS/MSD SAMPLE ID (if applicable): _____ Date / Time: _____

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depth (y/n)	Analysis	Containers (Type Volume)	Count	Lab
y	n	n	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
y	n	n	TOPA MLA-100	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
y	n	n	TOC	40-mL VOA	3	PACE
y	n	n	Water Quality	1 L plastic	1	PACE
y	n	n	Anions	250 mL plastic	1	PACE
n	n	n	N+N, Total P	250 mL plastic, H2SO4	1	PACE

Foam (if applicable)

Foam sampled? Yes No

Location of samples relative to foam (circle): upgradient at (below) foam downgradient

Sampling Device (circle): Grab Cheese Cloth 1-Gallon Bag 2-Gallon Bag

Describe what was sampled (how much and in what part of foam was sampled): _____

Describe how foam responded to collection (Did it regenerate? Did it condense during collection?): _____

Any other media collected associated with foam (underlying sediment, bulk water, epi, SML): _____

Time	Sample ID	Analysis	Time to Condense	Starting Volume	Final Volume

Sample Checklist

Picture of Sample Location (required) HT GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos: _____

OBSERVATION FORM	
Date and Time: <u>8/14/20 1100</u>	Client: <u>MPCA</u>
Sample Location ID: <u>RC23</u>	Field Staff: <u>AS, HT, AG</u>
Project Number: <u>60618753</u>	Weather: <u>Sunny 70s</u>
Waterbody Description	
Waterbody Type (creek, pond, lake, piped/manhole, culvert, channel, wetland, other): <u>pond</u>	
General description of location (dams, depositional v.s. erosional area, proximity to roads or structures): <u>RC23 is fed by small channel from RC22, depositional</u>	
Heavy rain within last 7 days or evidence of flooding?	
Water Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Other Details (ripples vs smooth, pools): <u>ripples</u>	
Following a high rain event? <u>slight</u>	
Flow Speed (circle): <u>LOW</u> L-M MODERATE M-H HIGH	
Water clarity and color: <u>clear, slight</u>	
Ice/snow conditions (if applicable):	
Any other notes of water appearance or odor: <u>organic smell on bank edges and when sediment is stirred up</u>	
Water Body Bottom - Sediment Description (if visible)	
Location within water body (center of creek, bank, bottom of pond/lake): <u>50' South of North bank</u>	
Primary Soil Classification (%g, %s, %m, %c)	
Primary description (grain size/grading and % if coarse; plasticity if fine): <u>70% organic live plants + decaying organic, 20% clay/silt + 10% fine sand</u>	
Secondary soils:	
Moisture and Color and Odor: <u>dark brown</u>	
Biomass/muck observed in sediment? <u>Yes</u> Thickness of muck layer: <u>1"</u>	
Other notes:	
Ecological Observations	
Surrounding Vegetation? <u>grasses, trees</u>	Fish or invertebra observed? <u>about 10' of shells in mud around the pond</u>
Shaded or Unshaded: <u>Unshaded</u>	Birds observed? <u>Yes</u>
Wetland (y/n)? <u>Yes</u>	Other evidence of wildlife observed? <u>ducks in pond, egret bird</u>
Overhanging vegetation? <u>minimal trees</u>	Land use (circle nearby)
Floating vegetation? <u>algae - 5-10% of pond covered</u>	<input checked="" type="radio"/> House nearby
Bank vegetation? <u>grasses</u>	<input type="radio"/> Mowed Grass
Vegetation alive or dead? <u>grasses mostly alive</u>	<input type="radio"/> Cropland
Bank slope, height: <u>0</u>	<input type="radio"/> Park/Trails
Trash or debris? <u>some plastic/metal in channel below</u>	<input type="radio"/> Commercial/Industrial
Signs of human use? <u>some kids toys, hand saw, two ladders</u>	<input type="radio"/> Beach
Foam Observations (if applicable)	
Foam observed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Old or Fresh:	Color:
Approximate height and width of pile (inches) or just bubbles:	
Organic matter?	
Why does it appear to be accumulating (dam, bend, etc):	
Obvious source of turbulence/disturbance that created foam?	
Is it continuing to reaccumulate?	
Is there foam floating down stream?	

SED 1120 0-6
 1130 6-12
 VHT

SURFACE WATER SAMPLE INFORMATION

Location of Sample Collection (circle): IN WATER BODY Location ID: RC 23

BANK/Shore: CREEK CENTER Sample Type Details (if needed):

MANHOLE: CULVERT CHANNEL Sampler: As

Sample Depth: BULK EPI SML (on other form) Duplicate Taken: Yes No

Sampling Device (circle): DIPPER GRAB PAIL MS/MSD Taken: Yes No

Is there a corresponding sediment sample? If yes, where is it relative to surface water sample?
yes, same spot, 5ft closer to N bank maybe

Was this collected following a high rain event? If so, describe flow/water differences:
no, some rain the day before though

SAMPLE POINT CONDITIONS

Surface water estimated depth (inches): 26"

Surface water estimated width at sample location (feet): 300' x 150'

Sample location relative to channel bottom and distance from bank: 50' in from N bank

Field Water Quality Parameters

Temperature (°C): 13.31 pH: 9.20 Turbidity: 1.54

Temp corr cond (umhos/cm): 1.099 Dissolved Oxygen: 11.08 0.21 - 0.97

Samples Collected

SAMPLE ID: RC23-WAT-BULK-01-05/11/20 Date / Time: 5/11/20 1110

SAMPLE ID (if multiple depths): Date / Time:

DUP SAMPLE ID (if applicable): Date / Time:

MS/MSD SAMPLE ID (if applicable): Date / Time:

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depth (y/n)	Analysis	Containers (Type Volume)	Count	Lab
<u>y</u>	<u>n</u>	<u>n</u>	PFAS MLA-110	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>y</u>	<u>n</u>	<u>n</u>	TOPA MLA-100	2 HDPE 500 mL 2 HDPE 60 mL	4	AXYS
<u>y</u>	<u>n</u>	<u>n</u>	TOC	40-mL VOA	3	PACE
<u>y</u>	<u>n</u>	<u>n</u>	Water Quality	1 L plastic	1	PACE
<u>y</u>	<u>n</u>	<u>n</u>	Anions	250 mL plastic	1	PACE
<u>y</u>	<u>n</u>	<u>n</u>	N+N, Total P	250 mL plastic, H2SO4	1	PACE

Foam (if applicable)

Foam sampled? Yes No

Location of samples relative to foam (circle): upgradient at(below) foam downgradient

Sampling Device (circle): Grab Cheese Cloth 1-Gallon Bag 2-Gallon Bag

Describe what was sampled (how much and in what part of foam was sampled):

Describe how foam responded to collection (Did it regenerate? Did it condense during collection?):

Any other media collected associated with foam (underlying sediment, bulk water, epi, SML):

Time	Sample ID	Analysis	Time to Condense	Starting Volume	Final Volume

Sample Checklist

Picture of Sample Location (required) HT GPS'd

Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change

Location of photos:

SEDIMENT SAMPLE INFORMATION

Location of Sample Collection (circle): POND Location ID: RC23
 CREEK/CHANNEL POND LAKE
 BANK WETLAND BEACH OTHER
 Sample(s) Depth: 0-6, 6-12 Sampler: HS
 Sampling Device (circle): SHOVEL AUGER SLUDGE GRAB Duplicate Taken: Yes No
 MS/MSD Taken: Yes No

Details on sample location (wetland sample, in channel / off channel / coincident with water sample / bank):
In pond
 Depositional or erosional environment? depositional
 Is there a corresponding water and/or foam sample? If so where is it relative to the sediment sample?
Yes No 5ft south of sediment in pond
 Was this collected following a high rain event? If so, describe flow/water differences:
No, some rain before though the day before

SAMPLE POINT CONDITIONS

Location within water body (center of creek, bank, bottom of pond/lake):
near center of pond
 Surface water estimated depth (inches): 2.6"
 Surface water estimated width at sample location (feet): 300' x 150'
 Sample location relative to channel bottom and distance from bank:
50' south of N bank
 Primary Soil Classification (%g, %s, %m, %c)
 Primary description (grain size/grading and % if coarse; plasticity if fine)
 Secondary soils:

Moisture and Color and Odor: still have organic in 0-6
 Biomass/muck observed in sediment? yes Thickness of muck layer: 1"

Other Notes:

Samples Collected

SAMPLE ID: RC23-SED-WET-0-6-01-051420	Date / Time: <u>5/11/20 1120</u>
SAMPLE ID (if multiple depths):	Date / Time:
<u>RC23-SED-WET-0-6-01-051420</u>	<u>5/11/20 1120</u>
<u>RC23-SED-WET-6-12-01-051420</u>	<u>5/11/20 1130</u>
DUP SAMPLE ID (if applicable):	Date / Time:
MS/MSD SAMPLE ID (if applicable):	Date / Time:

Planned Analysis (check if collected)

Collected (y/n)	Dup/MSD (y/n)	Other Depths (specify depth)	Analysis	Containers (Type Volume)	Count	Lab
y	n	n	PFAS MLA-110	1 HDPE 250-mL	1	AXYS
y	n	n	TOPA MLA-100	1 HDPE 250-mL	1	AXYS
y	n	n	TOC	4 oz Amber Jar	1	PACE
y	n	n	CEC	Paper Bag	1	MVLT
n	n	n	Anions <u>NO</u>	8 oz Amber Jar	1	Pace
n	n	n	Grain Size	Half Gallon Baggie	1	Interpoll

same for 0-6 +6-12

Sample Checklist
 Picture of Sample Location (required) HT GPS'd
 Picture of Foam (before, collected, and bottled) Decontaminated tools and glove change
 Location of photos: