Silver Creek Project

Partnering for Water Quality

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Agenda

- Welcome
- Introductions
- Overview
  - Goals of the pilot and what has led up to today
  - Accomplishments in 2018
  - Water Quality Monitoring Results
  - Break
  - Special Projects
  - Demonstration Farm Update
  - Outagamie County Update
  - Fox Wolf Watershed Alliance Update
  - Silver Creek Next Steps
  - Full Scale Adaptive Management Evaluations and Next Steps in 2019

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Goals of the Silver Creek Pilot Project

- Assess the ability to collaborate with a diverse group of partners
- Test the willingness of landowners and growers to participate in a volunteer/incentive-based program
- Measure water quality response after conservation practice installation
- Evaluate the capacity of partners to assist
- Estimate overall cost of Adaptive Management
- Develop a framework for full scale Adaptive Management

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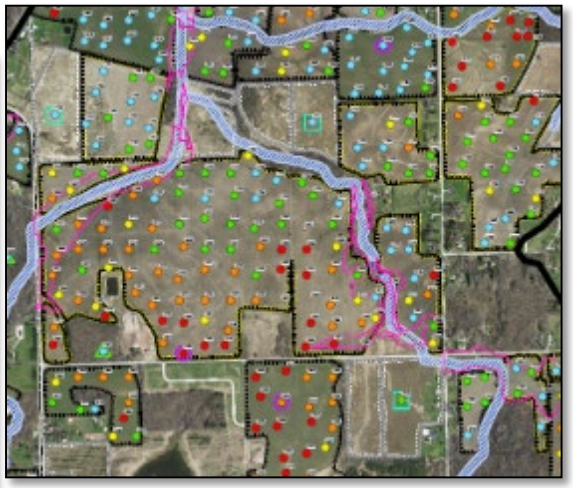
Silver Creek Pilot Project – From the Beginning

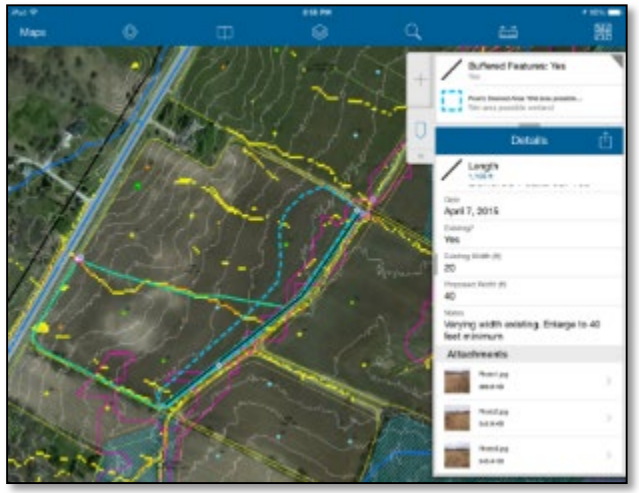
2014 – Project Kickoff

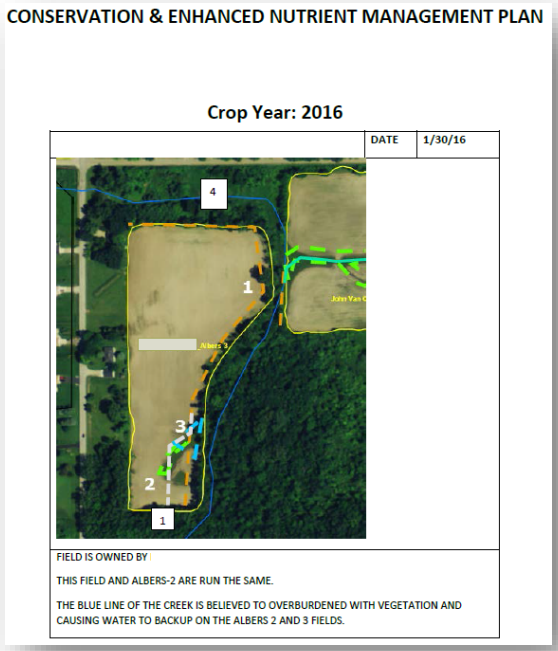
- Developed project partners
- Water quality sampling
- Soil sampling
- Stream surveys



2015 – Watershed Inventory

- Comprehensive field evaluations
- Arc GIS tablet application
- Conservation planning meetings
- Developed conservation and enhanced nutrient mgmt. plans





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Silver Creek Pilot Project – 2016, 2017, 2018

- Water quality monitoring
- Field planning
- Cost share agreements
- Best Management Practices (BMPs) installation
  - Filter strips (buffers)
  - Critical area plantings
  - Grassed waterways
  - Cover crops
  - Residue management
  - Low disturbance manure application
  - Etc.
- Verification of installed BMPs

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2018 …. By The Numbers

- Conservation and Enhanced Nutrient Management Plans
  - Over 1500 acres
- Cost Share Agreements
  - 9 Operational BMP Contracts
- 89% of cropland was not tilled in 2018
  - 78% of cropland used no-till
  - 11% of cropland in alfalfa, pasture, wetland, CRP or other
- Winter Cover in Fields
  - 82% of cropland covered by either alfalfa, cover crops, winter wheat, forage, pasture, or grass
    - 2017 – 85%
    - 2016 – 70%
    - 2015 – 30%

2018 Cover Summary	Acres
Cover Crops	300
Alfalfa	598
Winter wheat	147
Grass	188
TOTAL COVER	1233
TOTAL CROPPED ACRES:	1506

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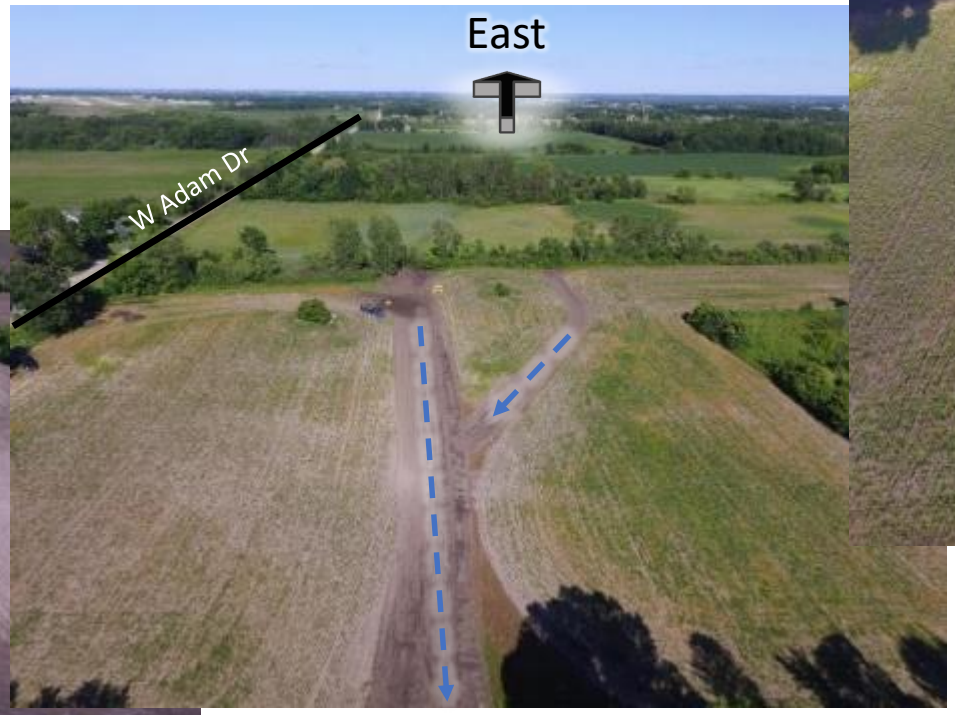
Timeline of Project #1

June 30, 2016



June 28, 2016

May 31, 2016

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Timeline of Project #1

Aug. 26, 2016

Oct. 4, 2016

Nov 29, 2016

NEW Water
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Timeline of Project #1

Dec 1, 2017

July 30, 2018

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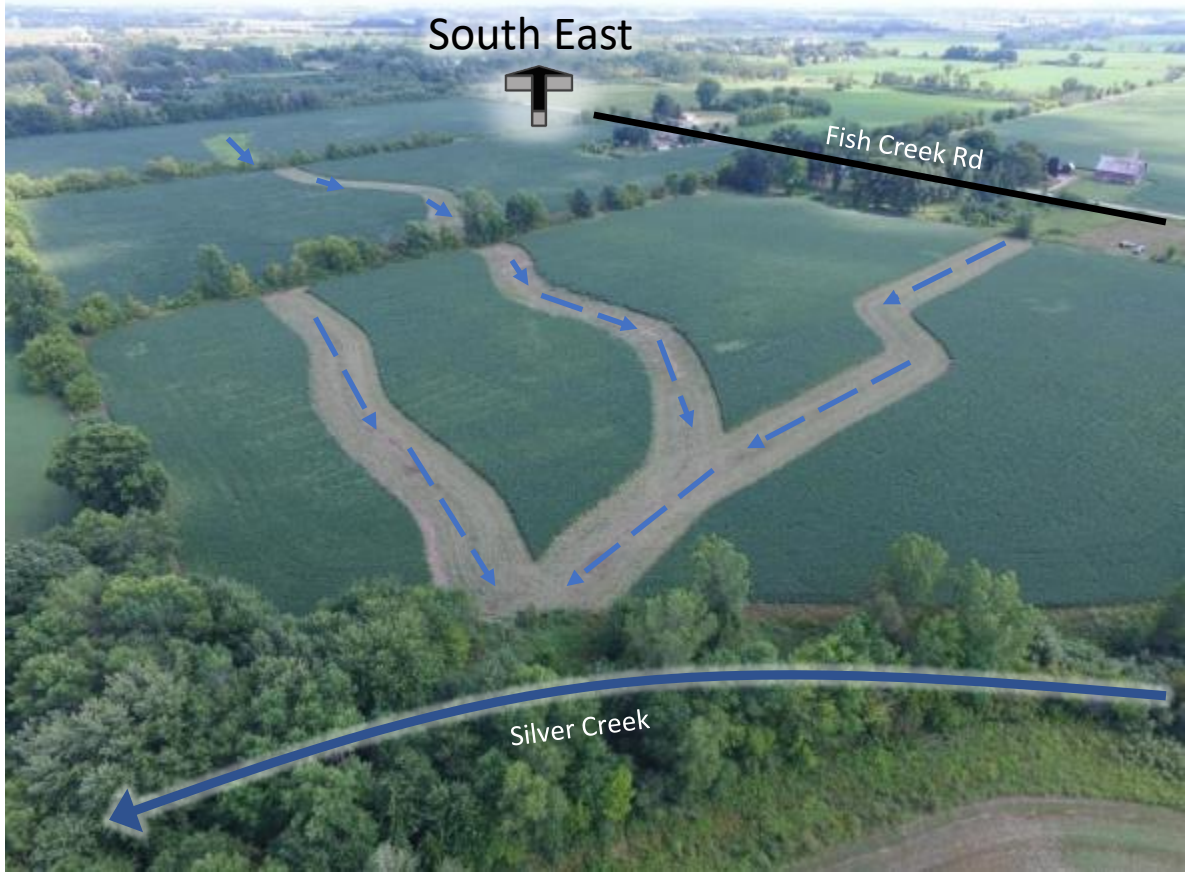
Timeline of Project #2



Aug. 16, 2016

Aug 31, 2016

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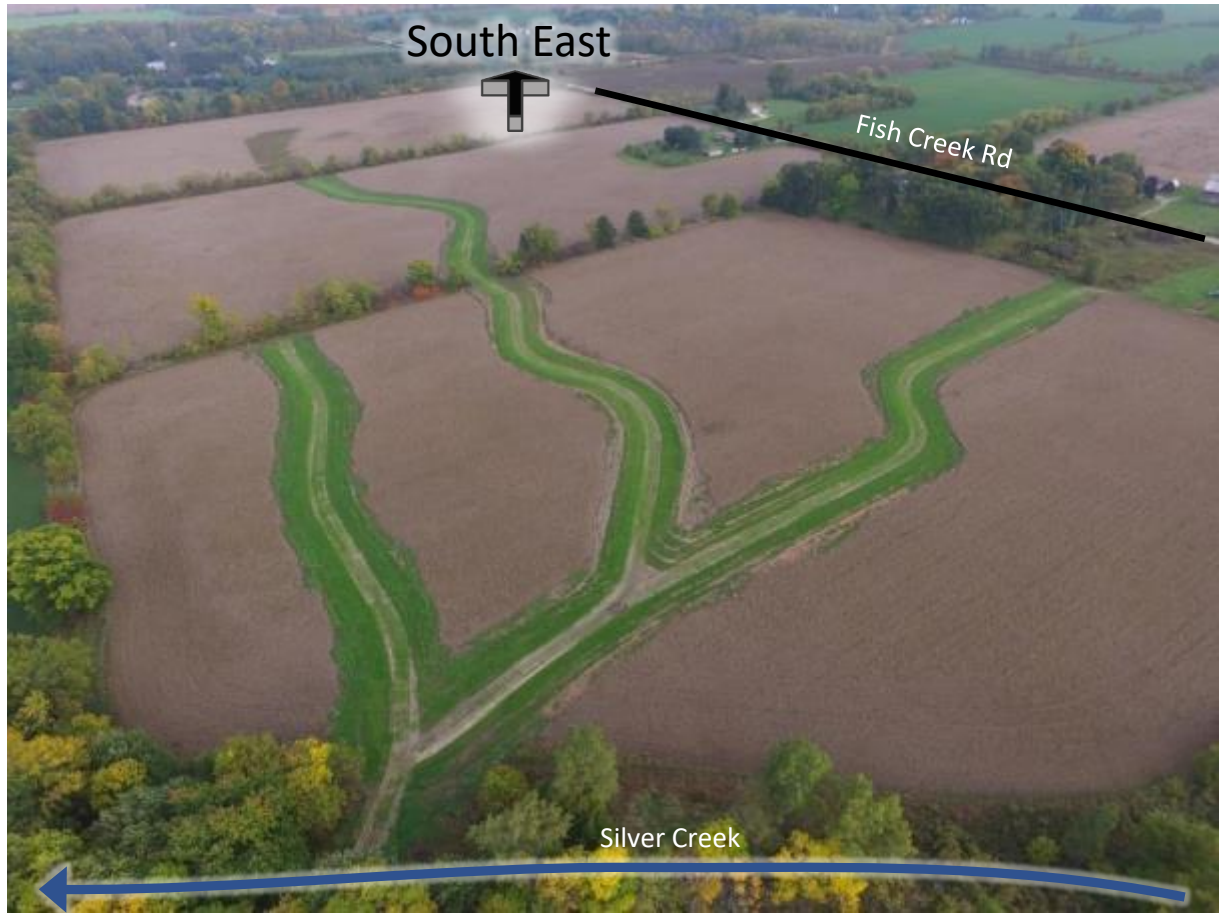
Timeline of Project #2



Oct. 4, 2016

Nov. 29, 2016

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Timeline of Project #2

June 13, 2017

Oct 9, 2017

NEW Water
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Timeline of Project #2

Dec 1, 2017

July 30, 2018

NEW Water
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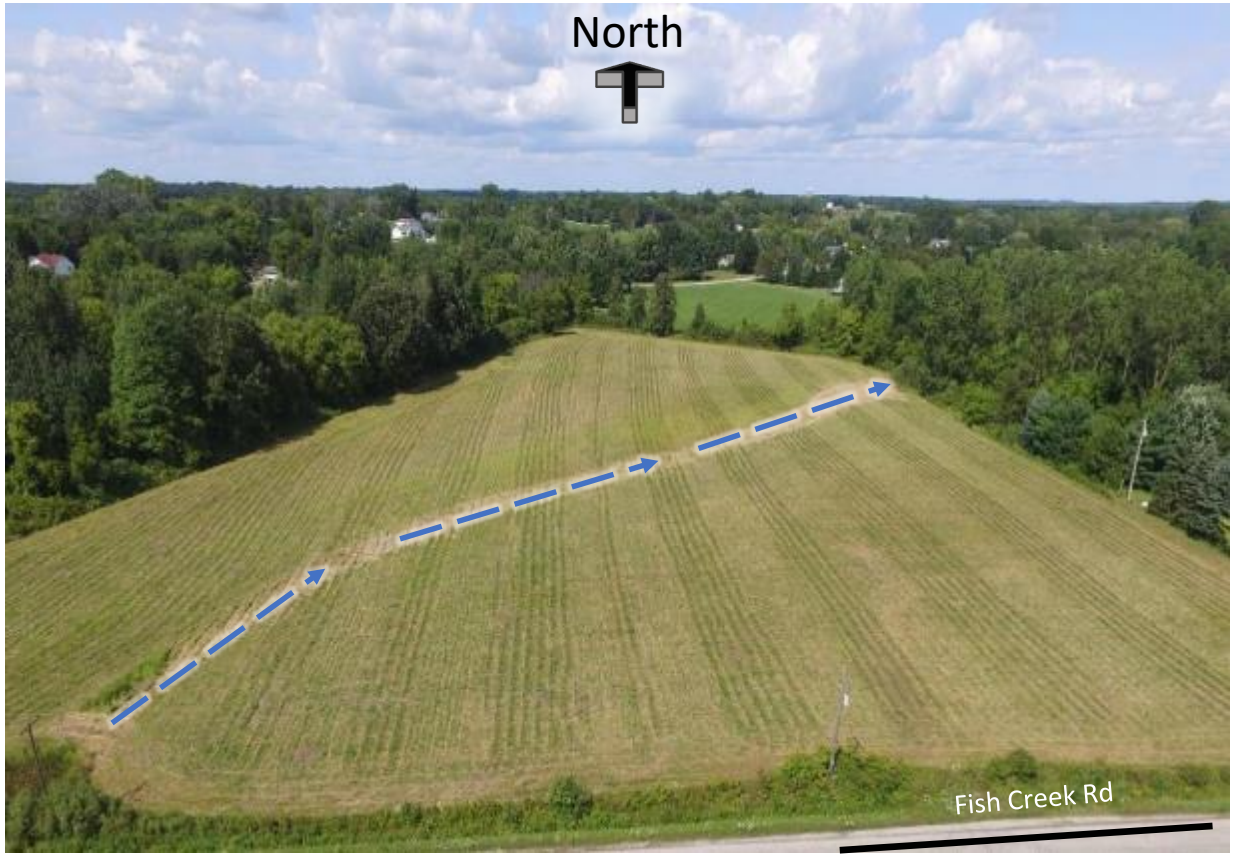
Timeline of Project #3

Mar. 27, 2017



Aug. 23, 2017

NEW Water
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Timeline of Project #3

Sept. 19, 2017

Dec 1, 2017

NEW Water
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Timeline of Project #3

July 30, 2018

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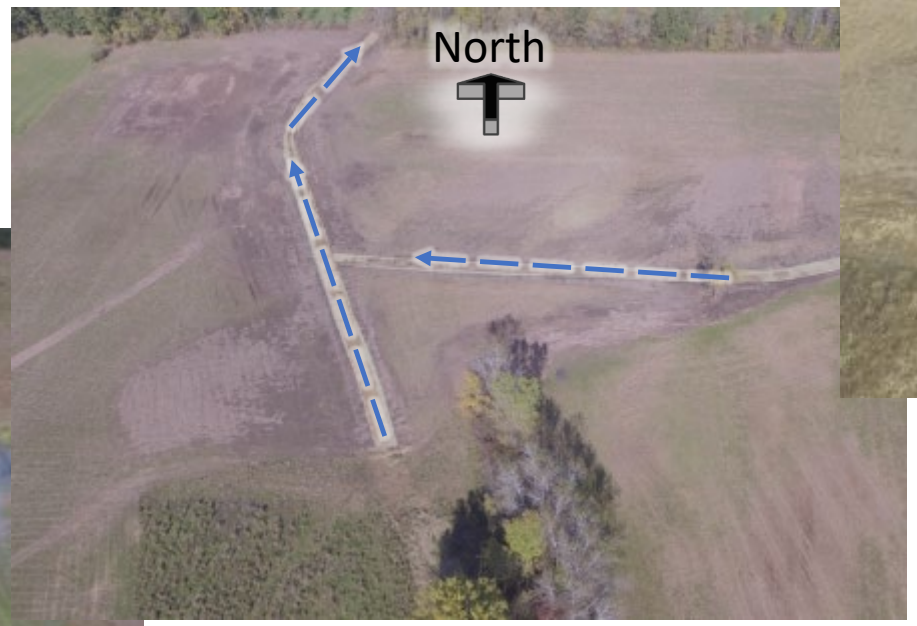
Timeline of Project #4

Sept. 29, 2017



Oct. 9, 2017

Dec 1, 2017

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Timeline of Project #4

July 30, 2018

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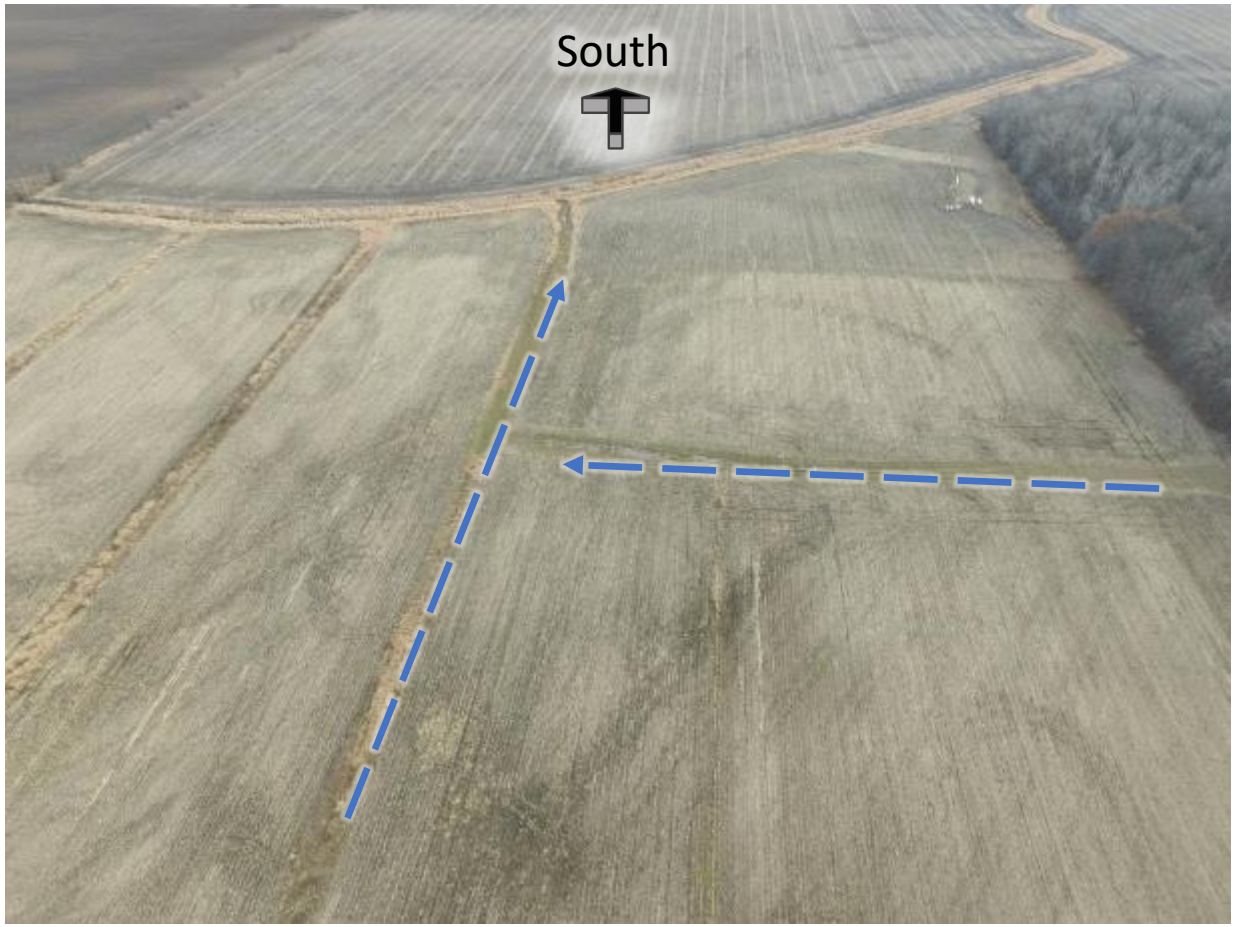
Timeline of Project #5

Dec 1, 2017



Dec 1, 2017

NEW Water
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Timeline of Project #5

July 30, 2018

NEW Water
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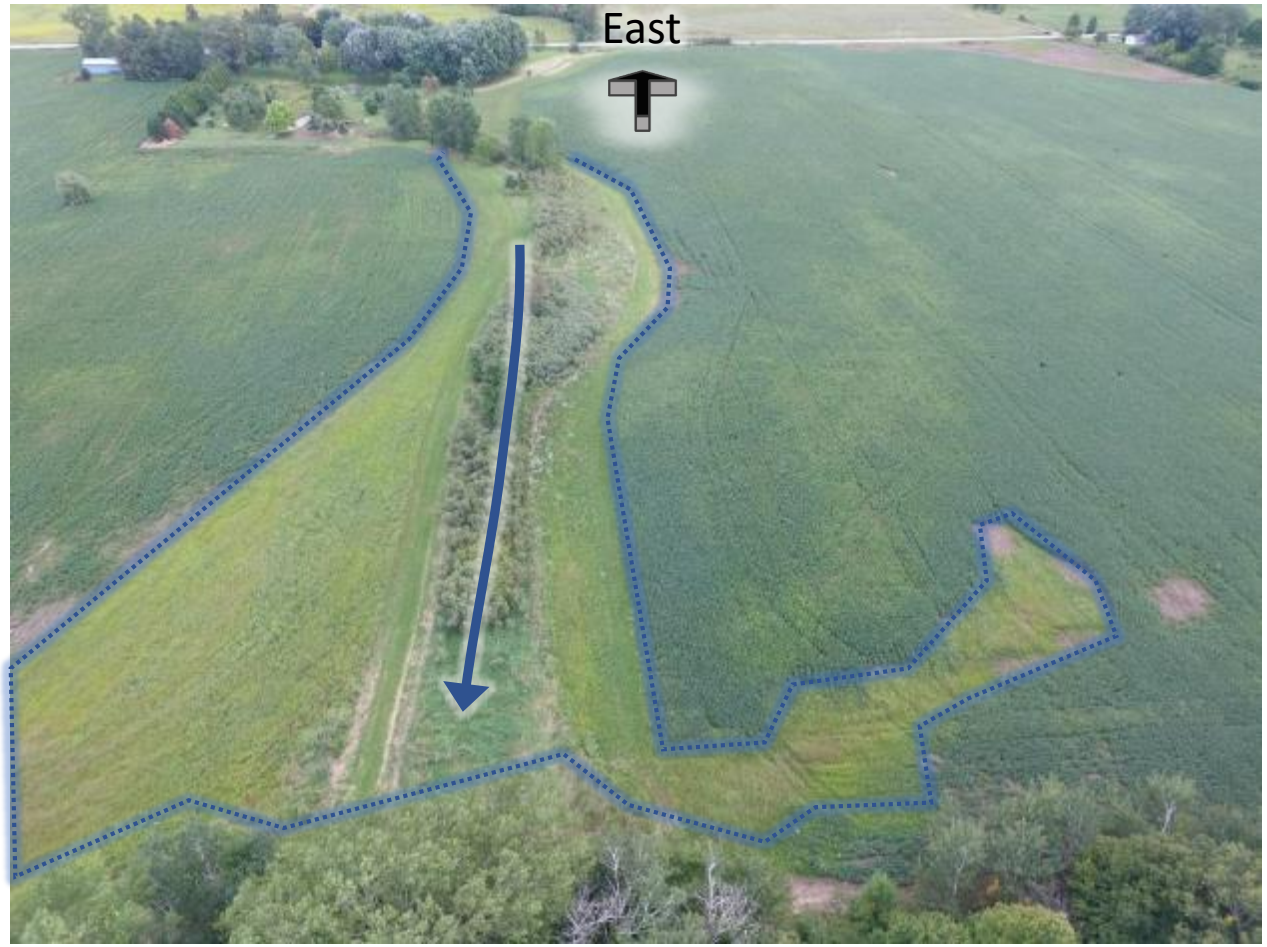
Filter Strips Projects



Aug. 23, 2017

Dec 1, 2017

NEW Water
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Filter Strips Projects

June 5, 2018

NEW Water
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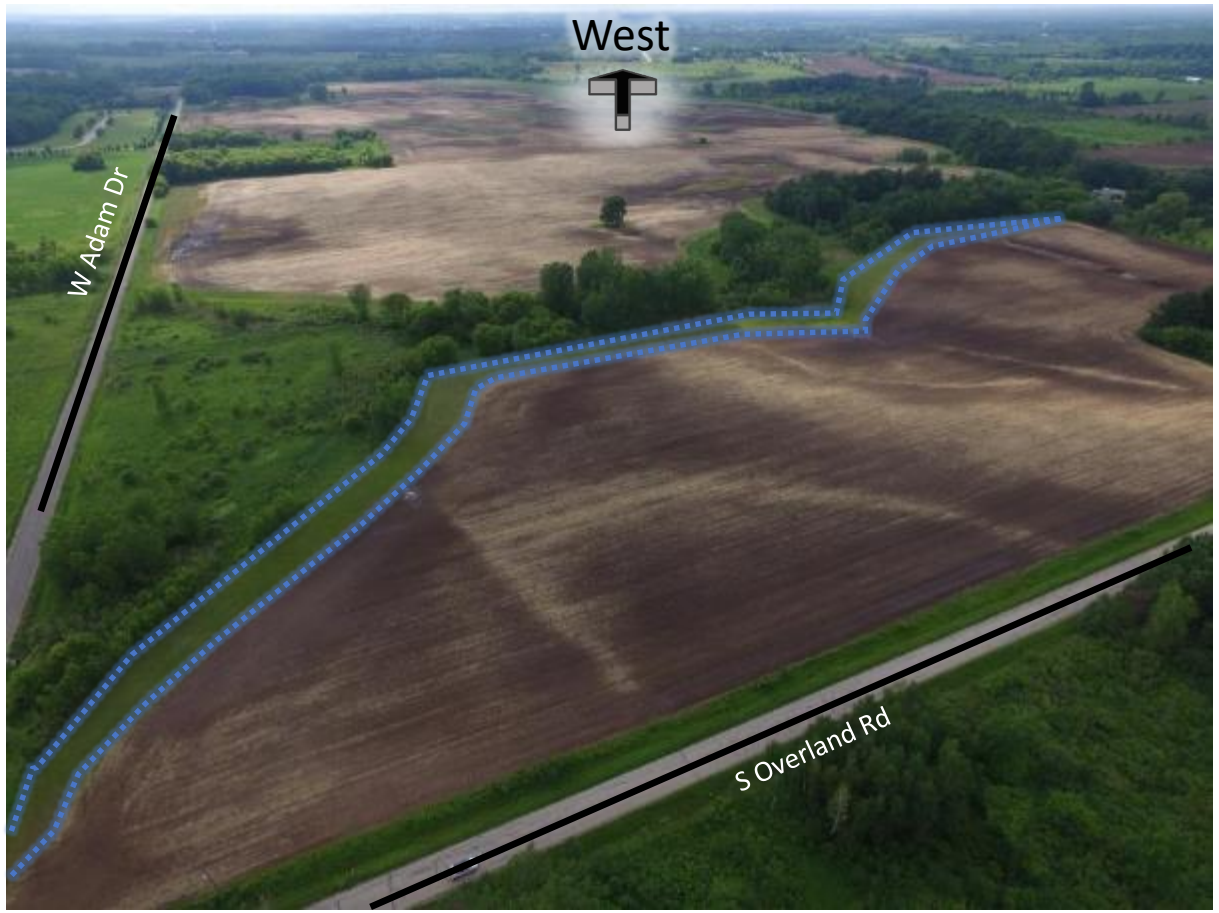
Filter Strips Projects



June 13, 2017

Dec 1, 2017

NEW Water
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Filter Strips Projects

June 5, 2018

NEW Water
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Water and Sediment Control Basins (WASCOB)

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Water and Sediment Control Basins (WASCOB)

June 13, 2017

Oct. 9, 2017

Dec. 1, 2017

NEW Water
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Water and Sediment Control Basins (WASCOB)

June 5, 2018

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Interseeder Experiences

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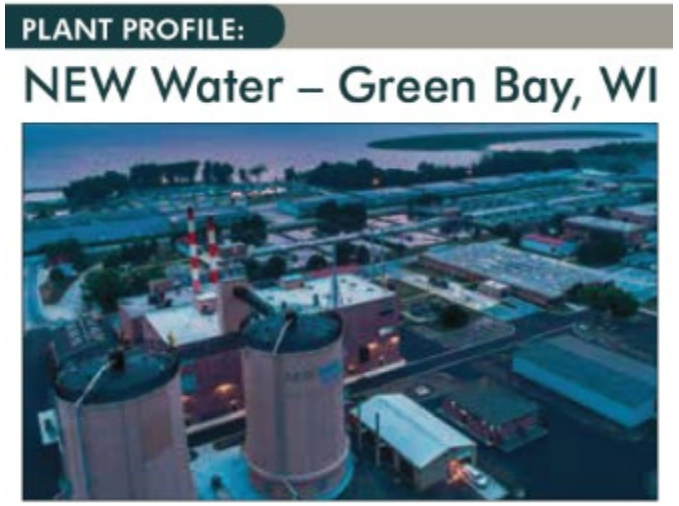
Outreach

- 4th Annual Student Monitoring Event

- AGATE Magazine

- Central States Water Environment Association Magazine



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Landowner/Grower Appreciation Luncheon

December 4, 2018

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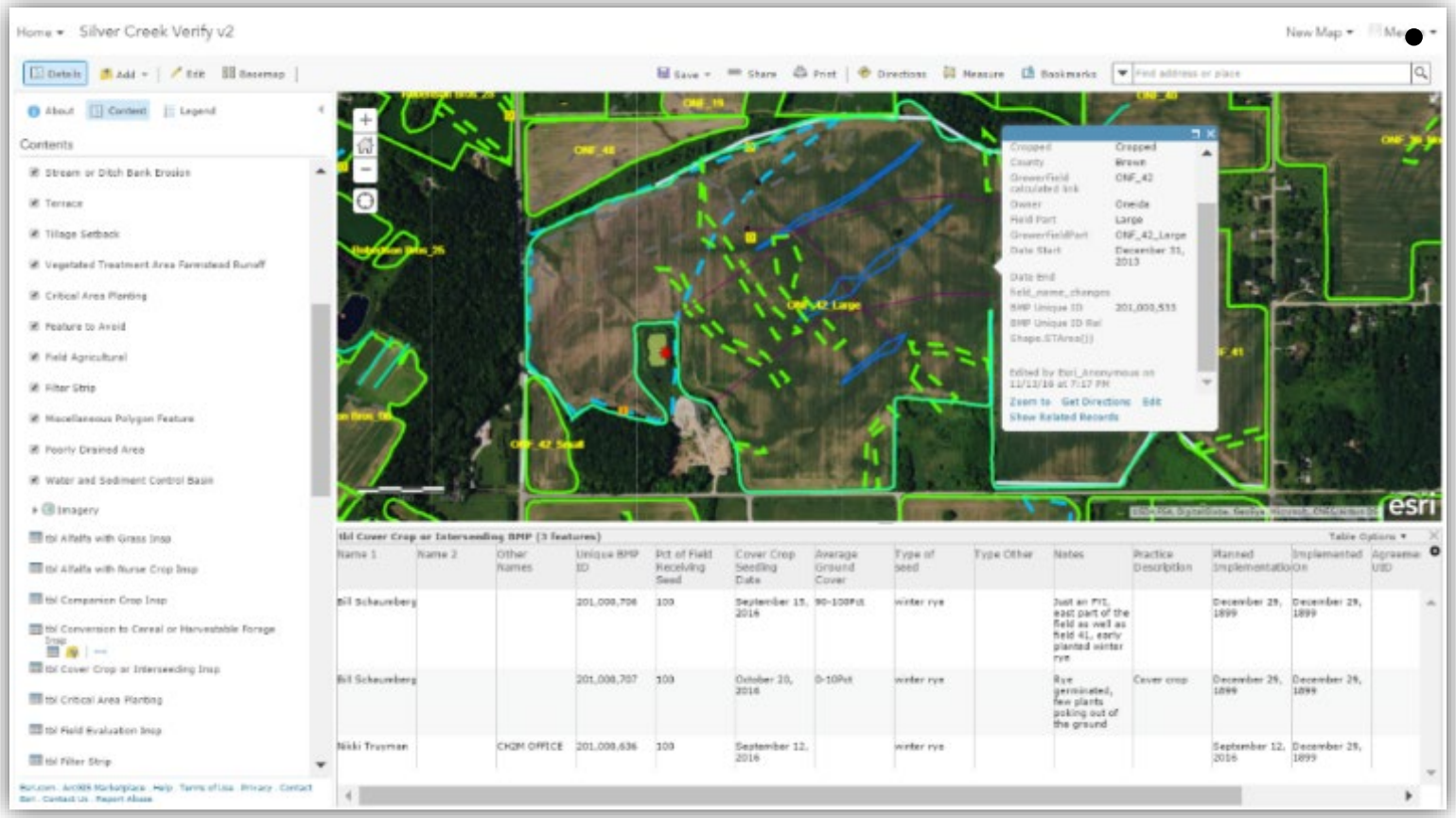
Collector App - Verification

- Verify practices before, during, and post-construction/implementation
- Inspection tables utilized
  - Structural practices
    - Pre-construction, During Construction 100% Complete, and Maintenance inspections
  - Operational practices
    - BMP table related to field boundary
    - Inspection table related to BMP table



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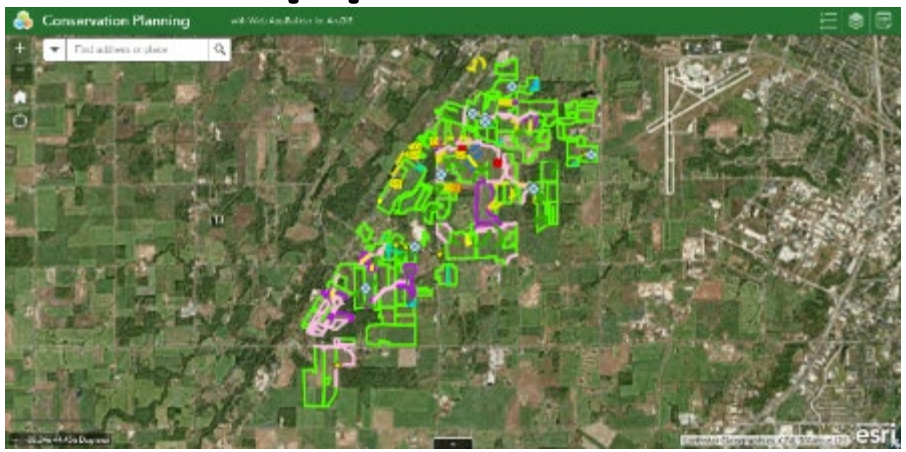
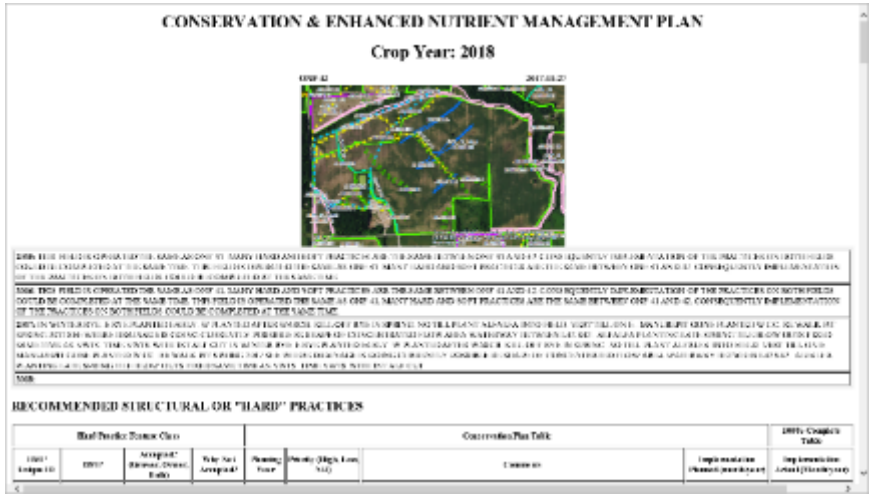
Collector App - Verification

Conservation & Enhanced Nutrient Management Plan available in AGOL as HTML link





CONSERVATION & ENHANCED NUTRIENT MANAGEMENT PLAN

Crop Year: 2018

RECOMMENDED STRUCTURAL OR "HARD" PRACTICES

Select a field boundary and scroll to the list of attachments to find the Conservation Plan Report

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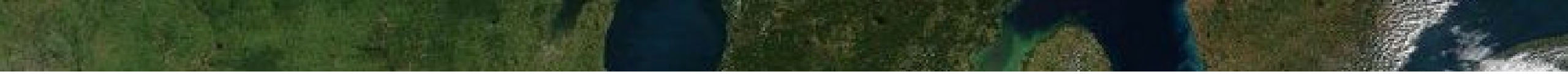

Demonstration and Value of Application

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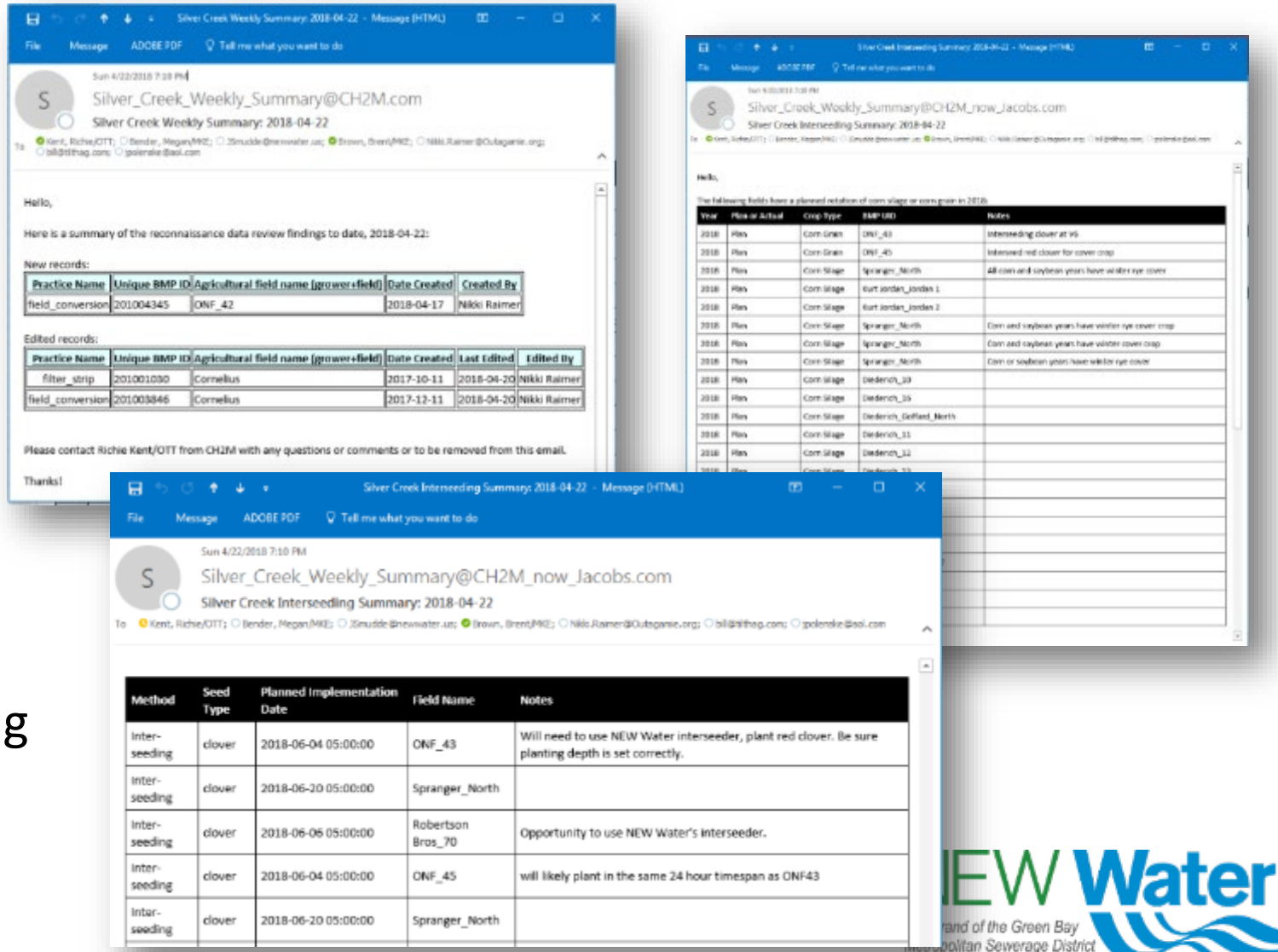
App Support of Workflow and Future Uses

- Create workflow triggers
  - Rainfall
  - Biannual inspections
  - Interseeding opportunities
  - Incomplete entries on inspections and conservation plans
  - 100% complete inspections
  - Cost Share Payment
  - Dashboard for routine reporting



Silver Creek Weekly Summary: 2018-04-22 - Message (HTML)

Silver_Creek_Weekly_Summary@CH2M.com

Silver Creek Weekly Summary: 2018-04-22

Hello,

Here is a summary of the reconnaissance data review findings to date, 2018-04-22:

New records:

Practice Name	Unique BMP ID	Agricultural field name (grower+field)	Date Created	Created By
field_conversion	201004345	ONF_42	2018-04-17	Nikki Raimer

Edited records:

Practice Name	Unique BMP ID	Agricultural field name (grower+field)	Date Created	Last Edited	Edited By
filter_strip	201001030	Cornelius	2017-10-11	2018-04-20	Nikki Raimer
field_conversion	201003846	Cornelius	2017-12-11	2018-04-20	Nikki Raimer

Please contact Richie Kent/OTT from CH2M with any questions or comments or to be removed from this email.

Thanks!

Silver_Creek_Weekly_Summary@CH2M_now_Jacobs.com

Silver Creek Interseeding Summary: 2018-04-22

Hello,

The following fields have a planned rotation of corn silage or corn grain in 2018:

Year	Plan or Actual	Crop Type	BMP UID	Notes
2018	Plan	Corn Grain	ONF_43	Interseeding clover at V6
2018	Plan	Corn Grain	ONF_45	Interseed red clover for cover crop
2018	Plan	Corn Silage	Spranger_North	All corn and soybean years have winter rye cover
2018	Plan	Corn Silage	Kurt Jordan_Jordan 1	
2018	Plan	Corn Silage	Kurt Jordan_Jordan 2	
2018	Plan	Corn Silage	Spranger_North	Corn and soybean years have winter rye cover crop
2018	Plan	Corn Silage	Spranger_North	Corn and soybean years have winter cover crop
2018	Plan	Corn Silage	Spranger_North	Corn or soybean years have winter rye cover
2018	Plan	Corn Silage	Diederich_10	
2018	Plan	Corn Silage	Diederich_16	
2018	Plan	Corn Silage	Diederich_Golfland_North	
2018	Plan	Corn Silage	Diederich_11	
2018	Plan	Corn Silage	Diederich_12	

Silver Creek Interseeding Summary: 2018-04-22 - Message (HTML)

Silver_Creek_Weekly_Summary@CH2M_now_Jacobs.com

Silver Creek Interseeding Summary: 2018-04-22

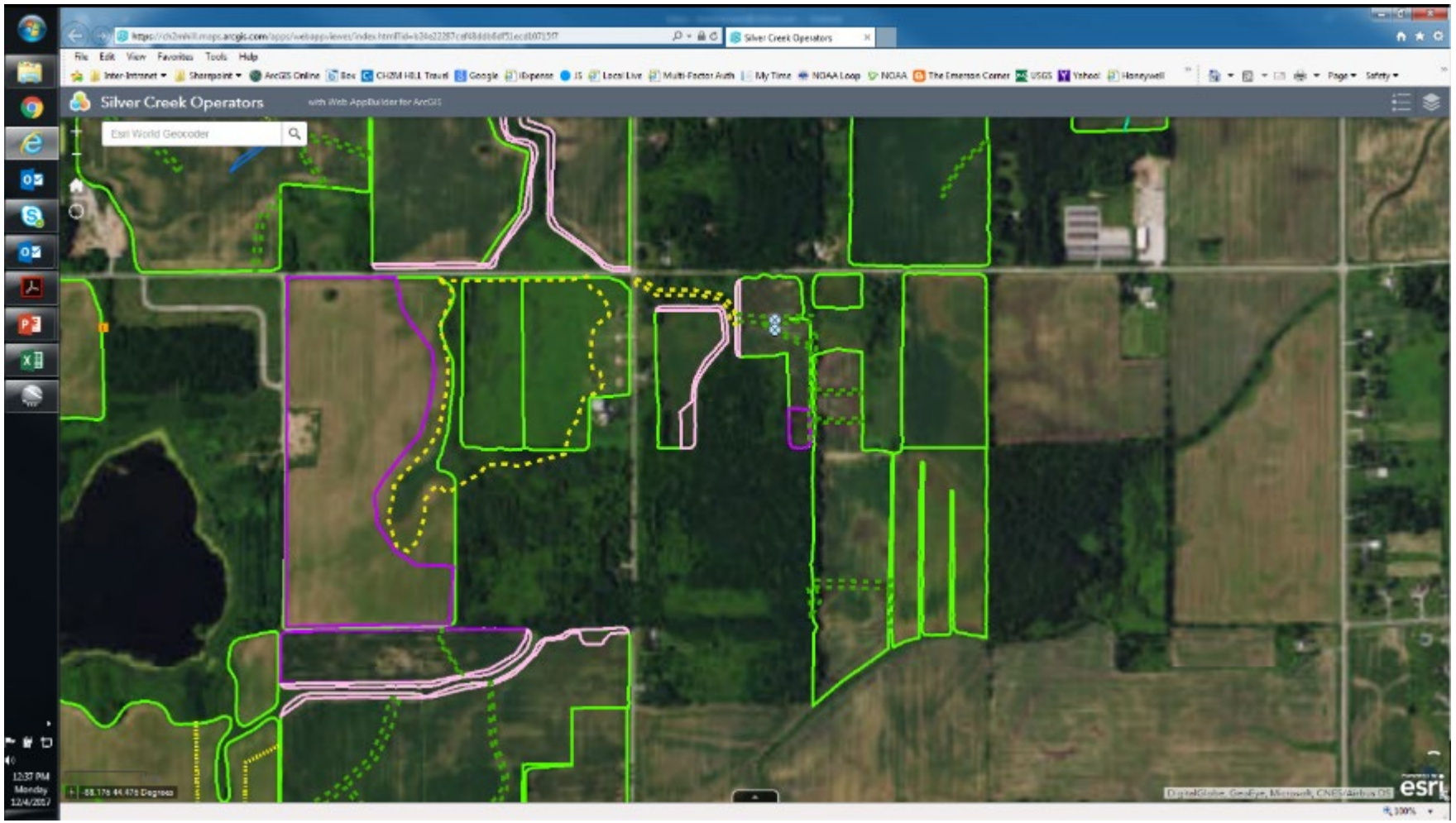
Method	Seed Type	Planned Implementation Date	Field Name	Notes
Inter-seeding	clover	2018-06-04 05:00:00	ONF_43	Will need to use NEW Water interseeder, plant red clover. Be sure planting depth is set correctly.
Inter-seeding	clover	2018-06-20 05:00:00	Spranger_North	
Inter-seeding	clover	2018-06-06 05:00:00	Robertson Bros_70	Opportunity to use NEW Water's interseeder.
Inter-seeding	clover	2018-06-04 05:00:00	ONF_45	will likely plant in the same 24 hour timespan as ONF43
Inter-seeding	clover	2018-06-20 05:00:00	Spranger_North	

NEW Water

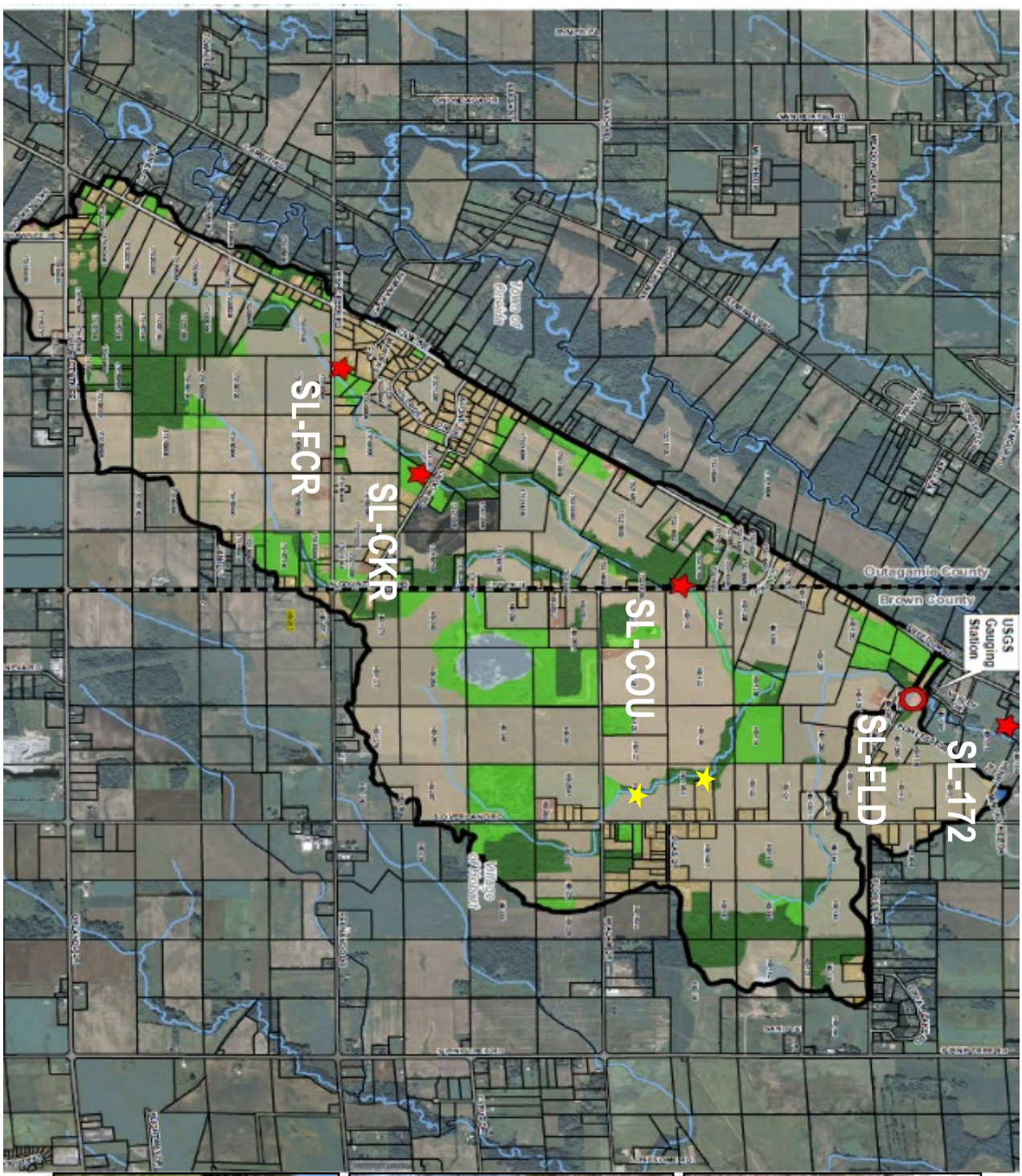
Metropolitan Sewerage District

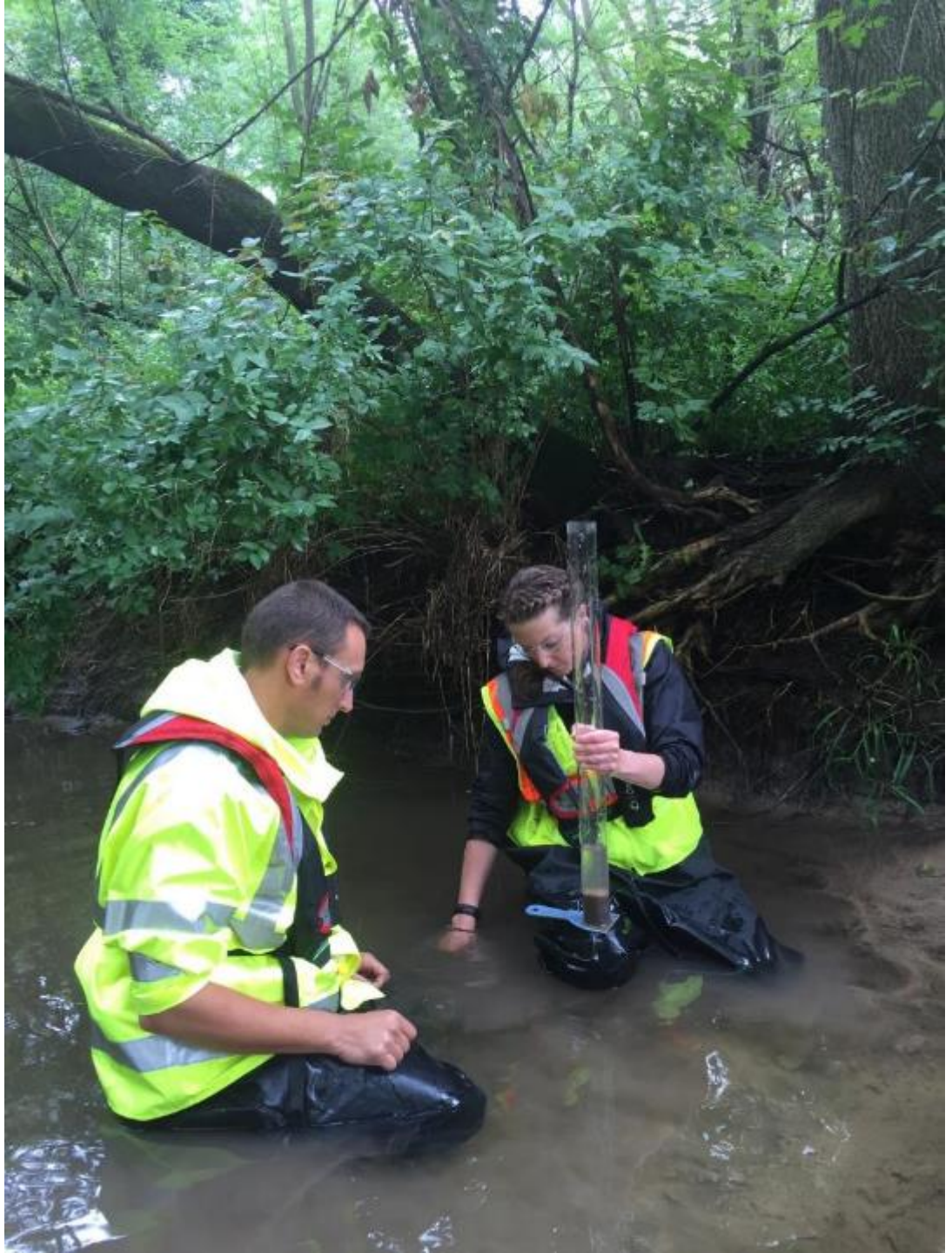
Live Map Showing Conservation Practices v2.0

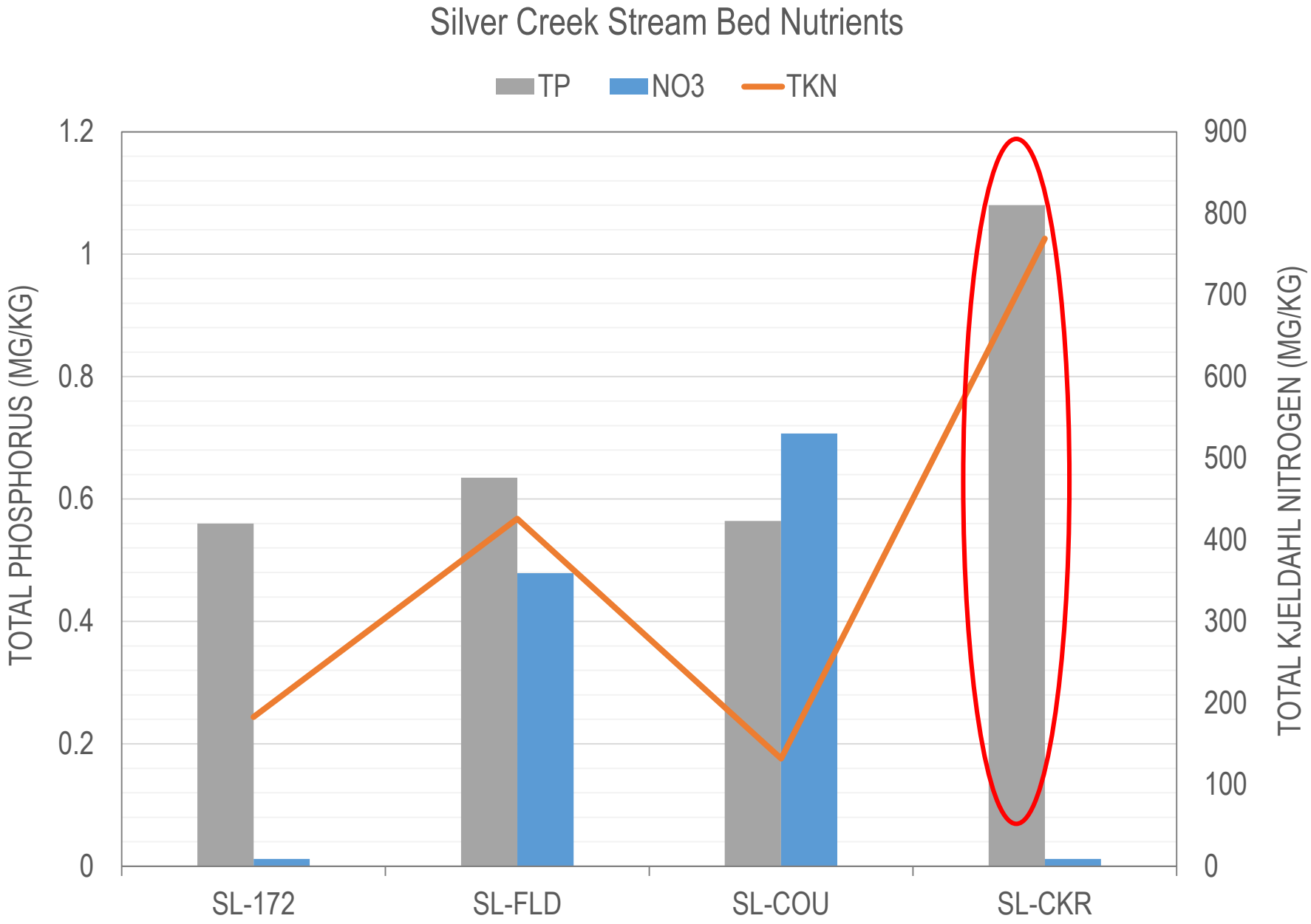
https://ch2mhill.maps.arcgis.com/apps/webappviewer/index.html?id=b24e22287cef48ddb6df51ecd10715f7
or
https://tinyurl.com/yaxewbrt



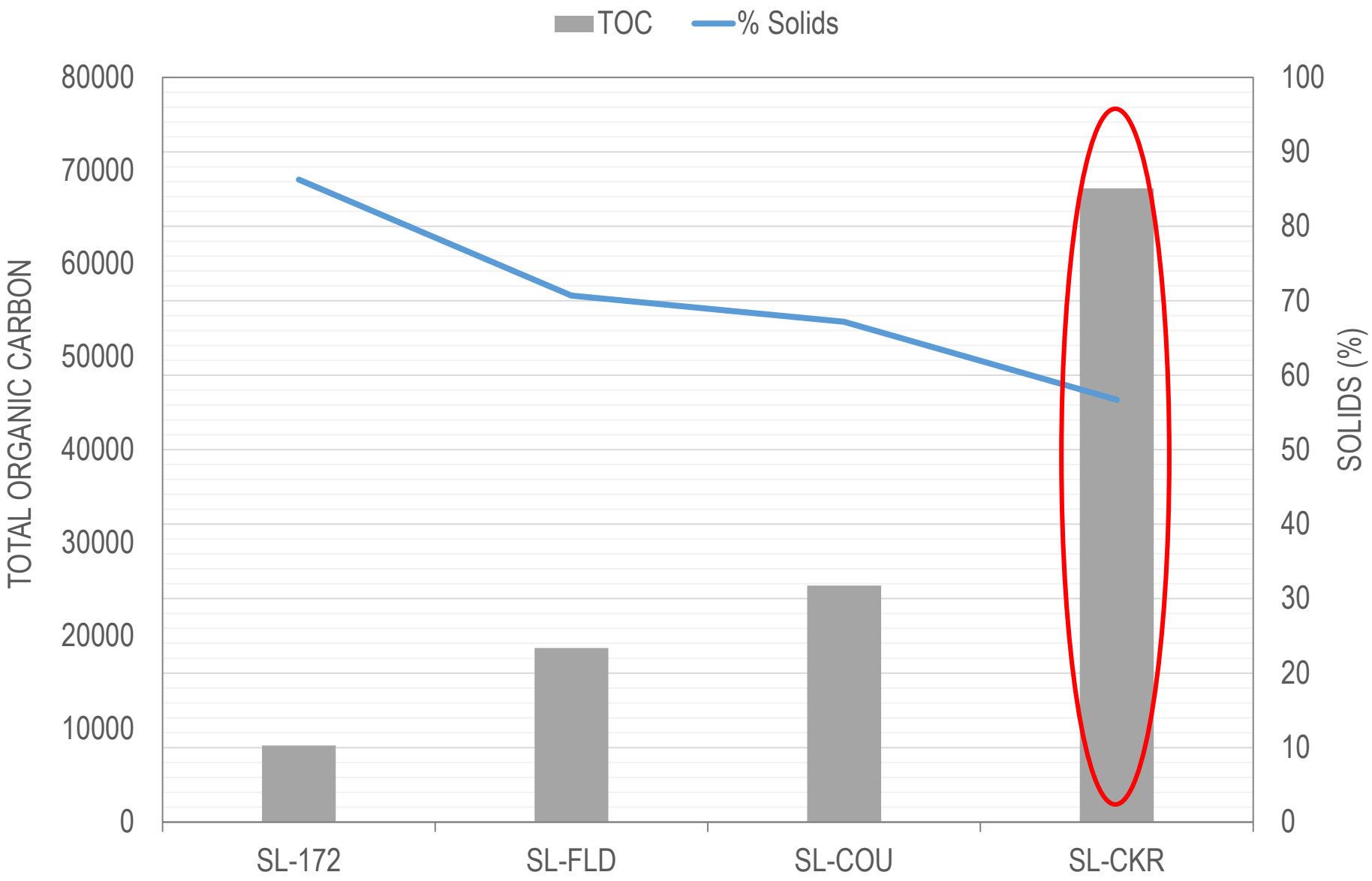
Silver Creek Project:
Water Quality Review

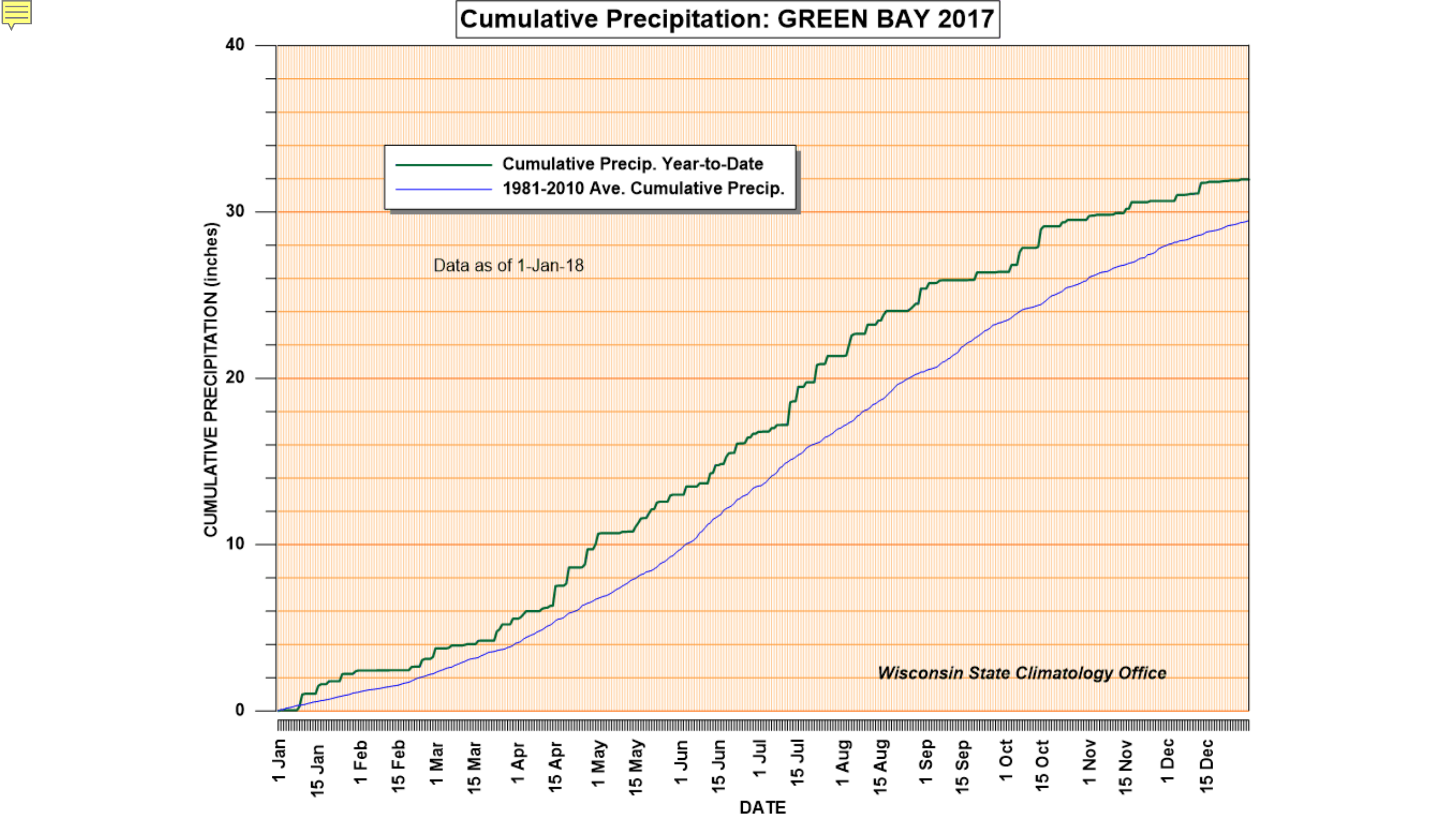




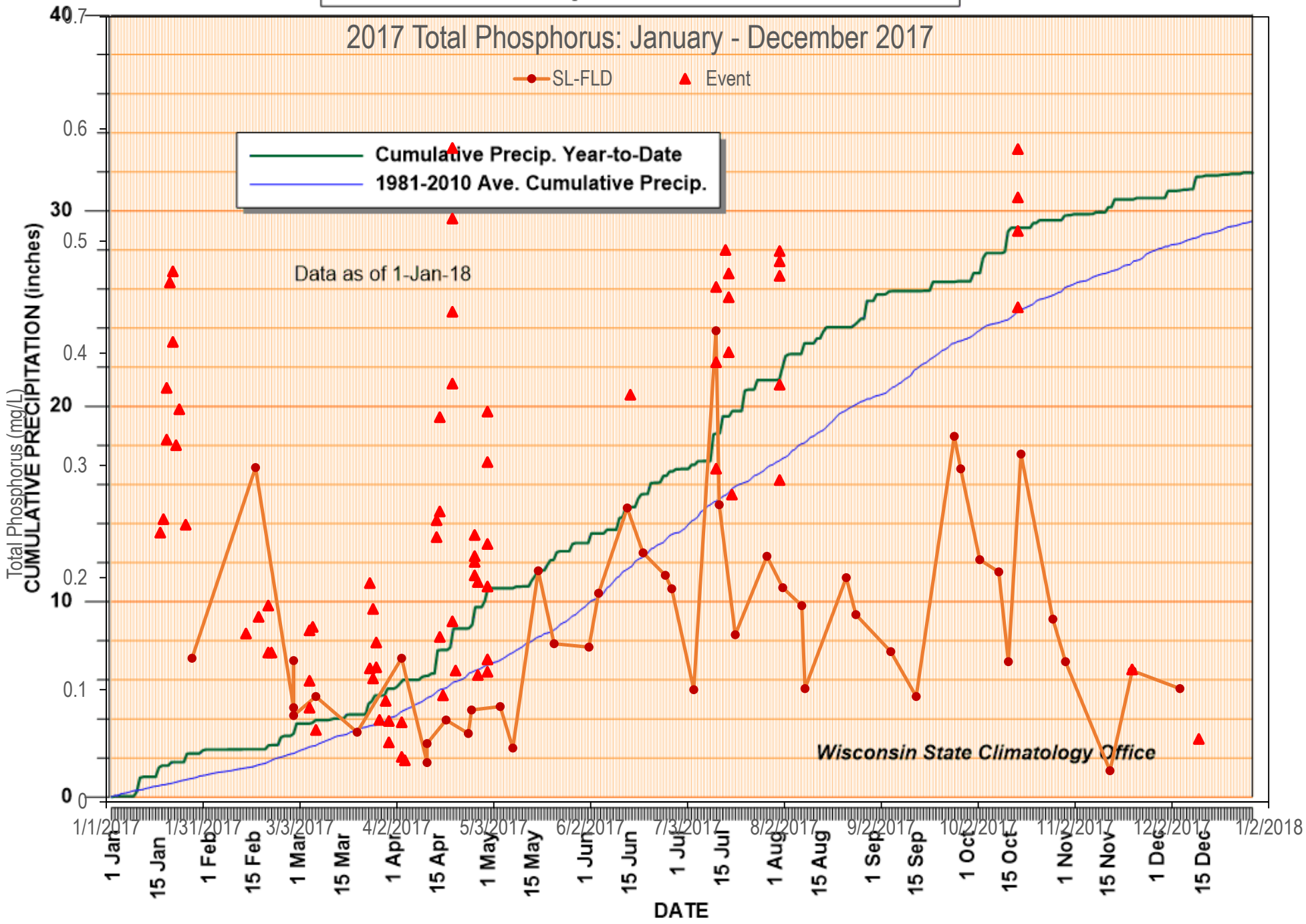

Silver Creek Stream Bed Nutrients
TP
NO3
TKN
TOTAL PHOSPHORUS (MG/KG)
TOTAL KJELDAHL NITROGEN (MG/KG)
1.2
1
0.8
0.6
0.4
0.2
0
900
800
700
600
500
400
300
200
100
0
SL-172
SL-FLD
SL-COU
SL-CKR

Silver Creek Stream Bed Solids



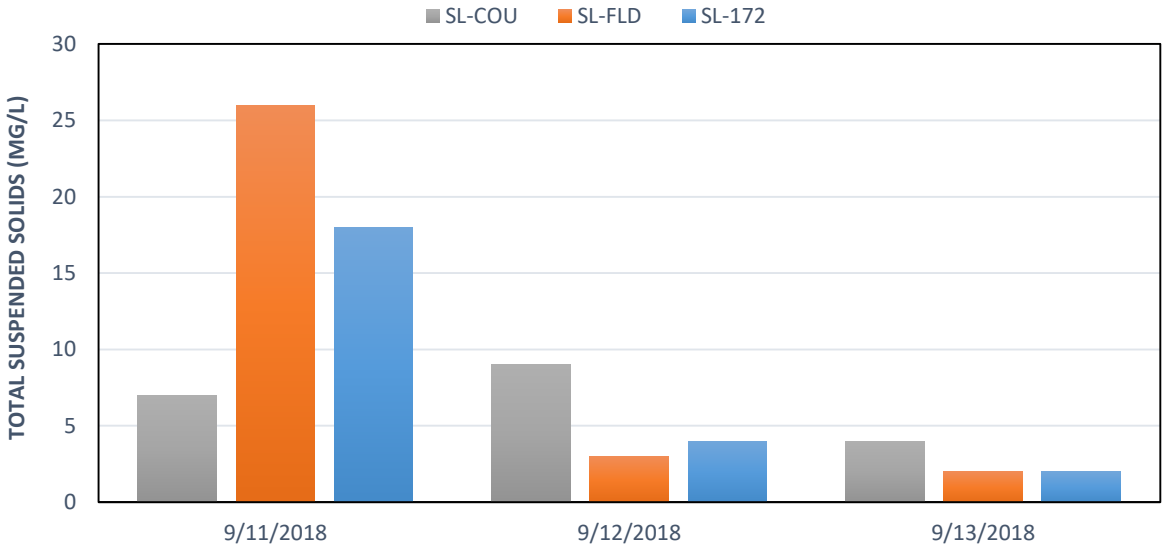

Cumulative Precipitation: GREEN BAY 2017
Cumulative Precip. Year-to-Date
1981-2010 Ave. Cumulative Precip.
Data as of 1-Jan-18
Wisconsin State Climatology Office
CUMULATIVE PRECIPITATION (inches)
0
10
20
30
40
1 Jan
15 Jan
1 Feb
15 Feb
1 Mar
15 Mar
1 Apr
15 Apr
1 May
15 May
1 Jun
15 Jun
1 Jul
15 Jul
1 Aug
15 Aug
1 Sep
15 Sep
1 Oct
15 Oct
1 Nov
15 Nov
1 Dec
15 Dec
DATE

Cumulative Precipitation: GREEN BAY 2017

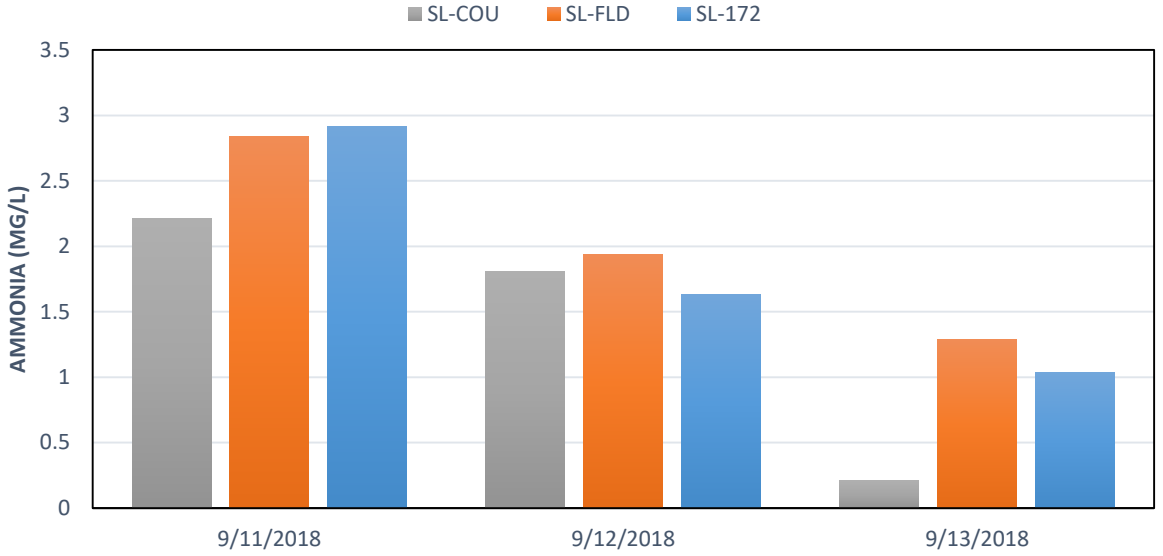



Silver Creek WDNR May-October Median Water Quality
2014
2015
2016
2017
2018
WQ Std
Total Phosphorus (mg/L)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Upstream
Downstream
SL - FCR
SL - CKR
SL - COU
SL - FLD Event
SL - FLD grab
SL - 172
Total Suspended Solids (mg/L)
35
30
25
20
15
10
5
0
Upstream
Downstream
SL - FCR
SL - CKR
SL - COU
SL - FLD Event
SL - FLD grab
SL - 172

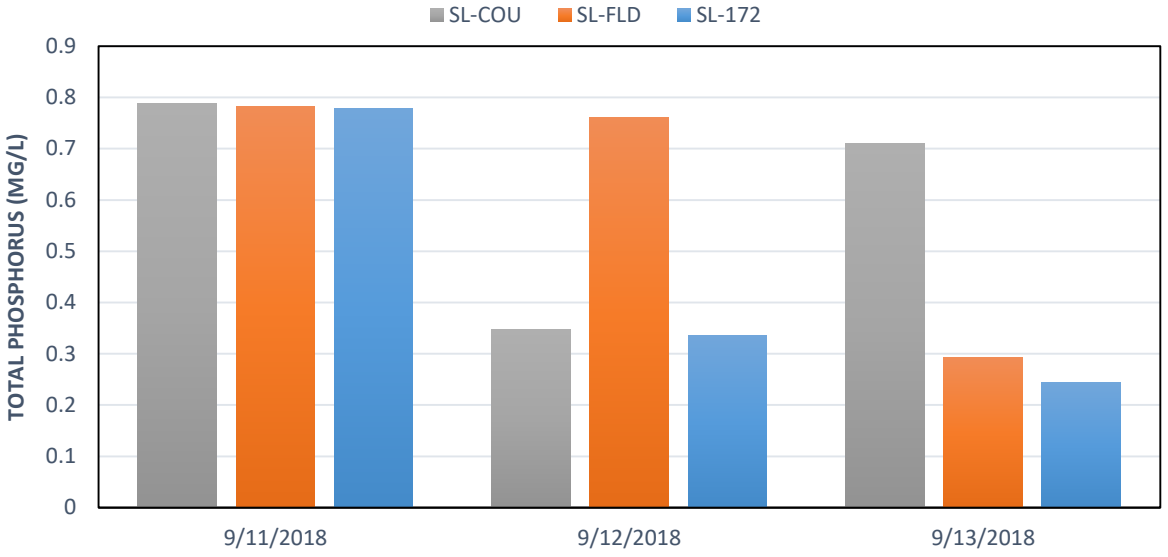
2018 September Manure Spill: TSS



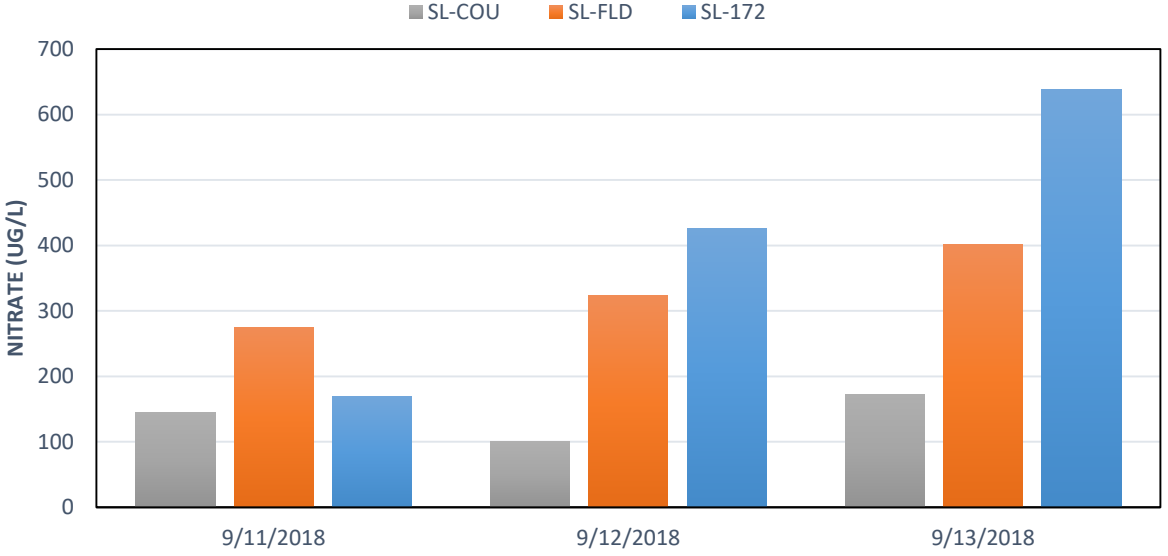
2018 September Manure Spill: NH3



2018 September Manure Spill: TP

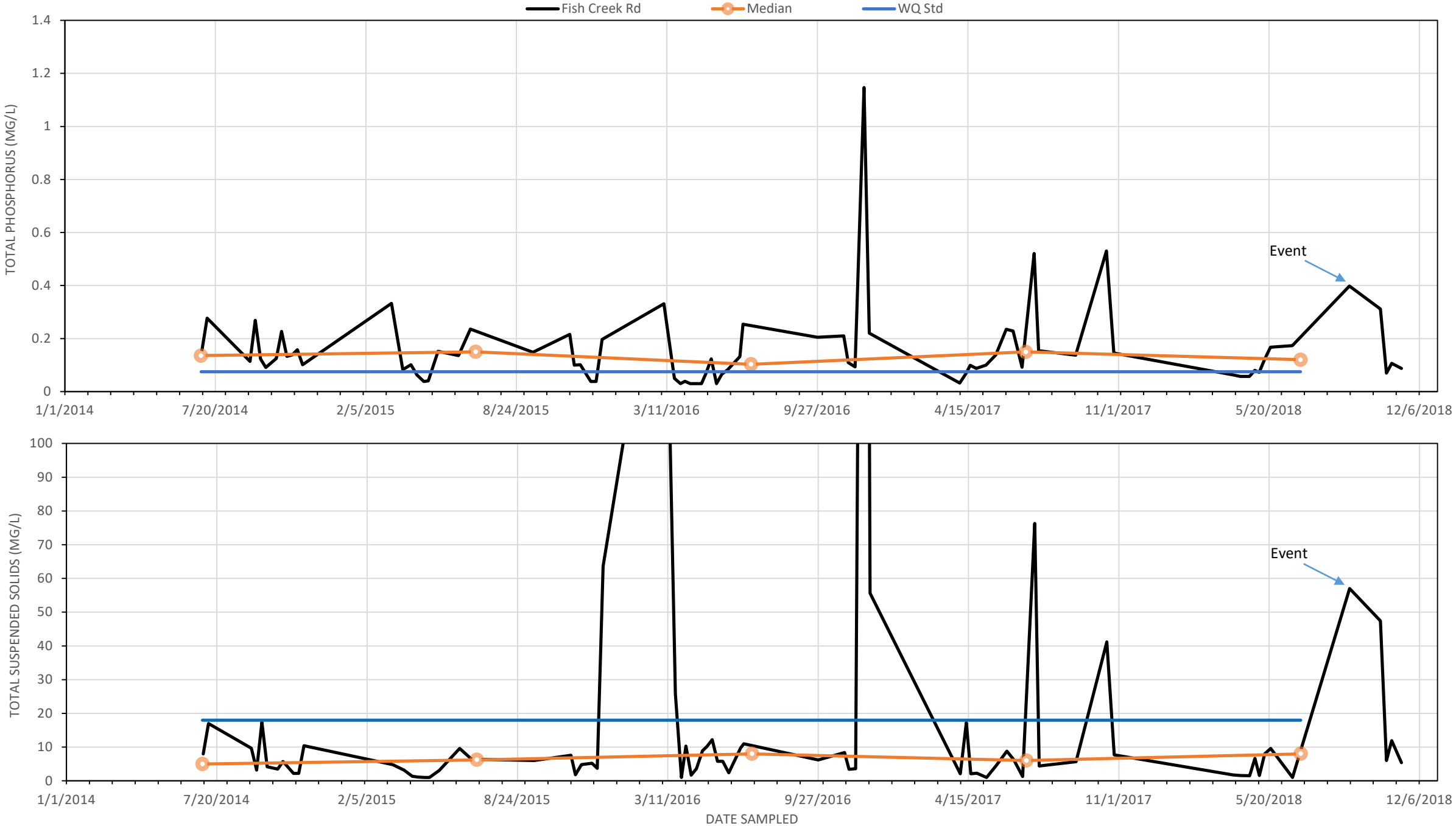


2018 September Manure Spill: NO3

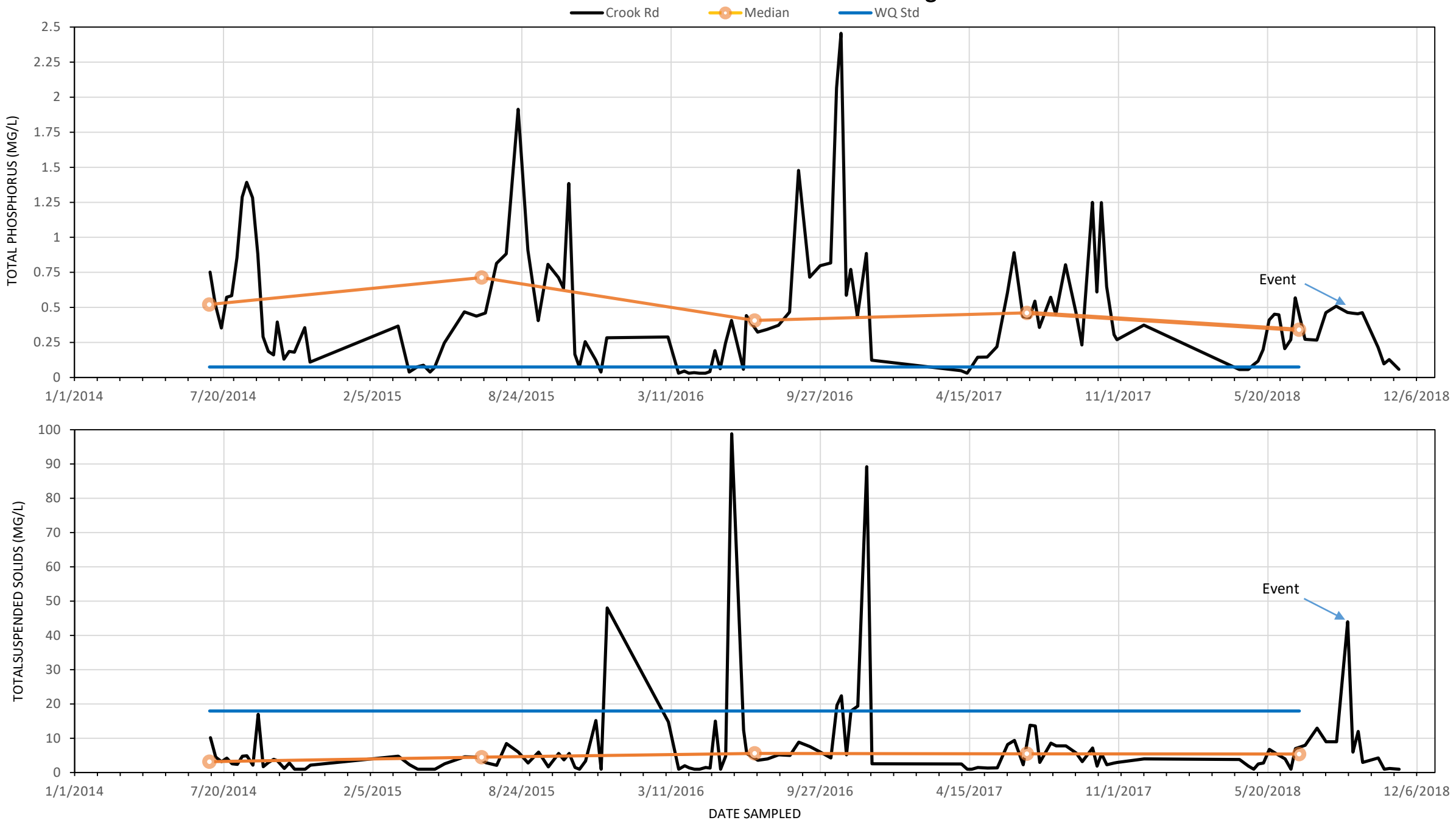


Fish Creek Road Crossing

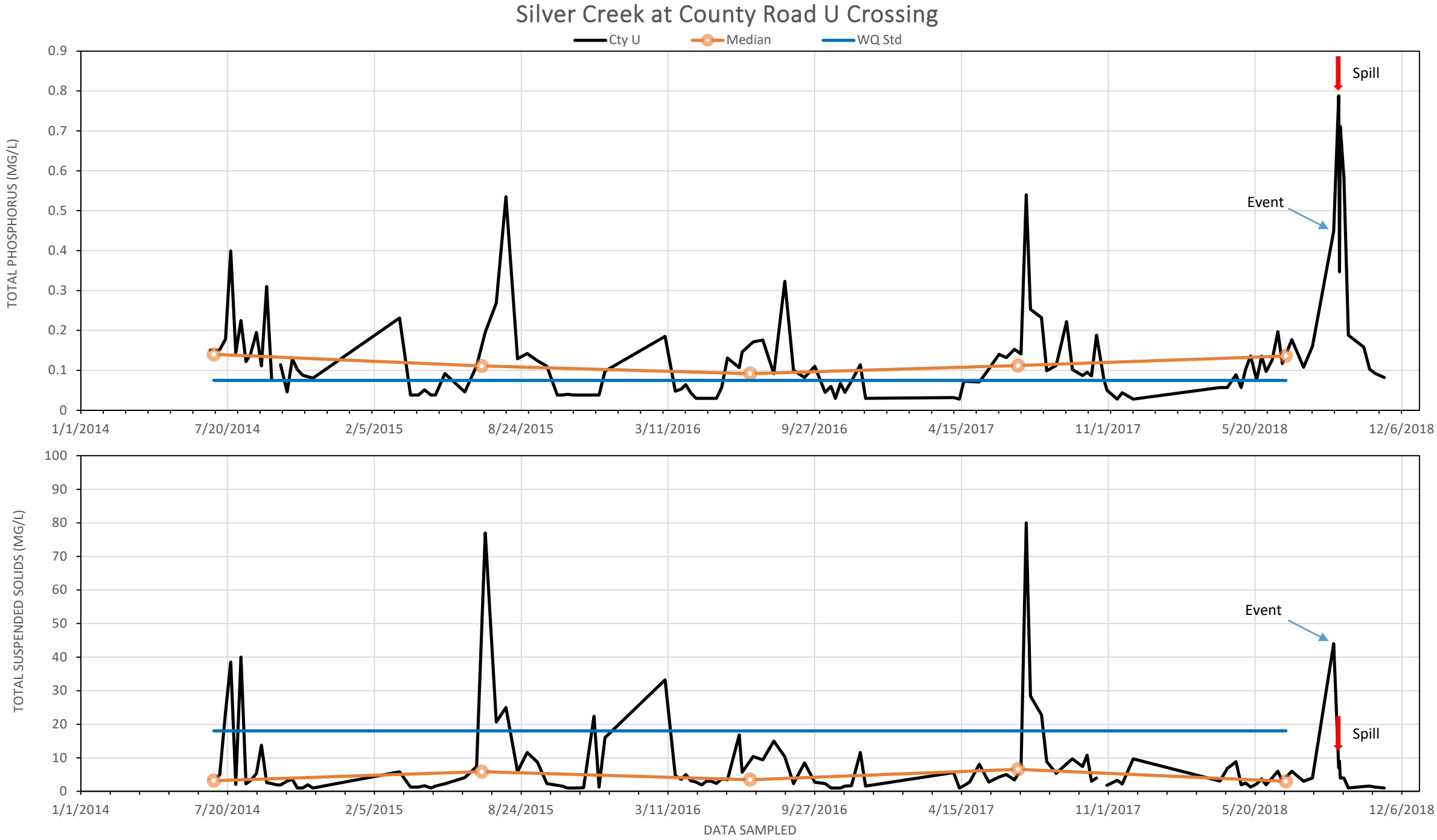
Silver Creek at Fish Creek Road Crossing



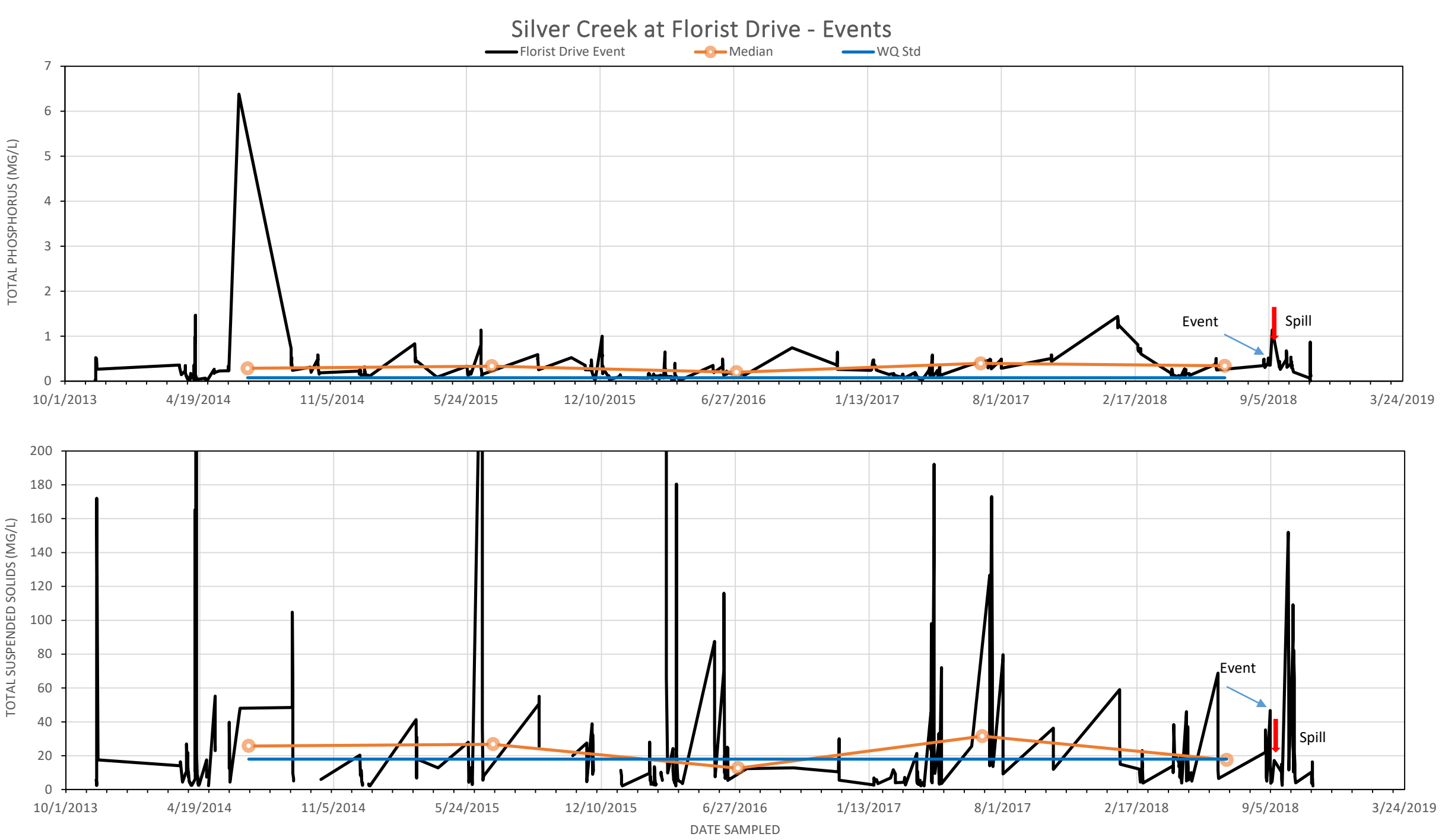
Crook Road Crossing


Silver Creek at Crook Road Crossing
Crook Rd
Median
WQ Std
TOTAL PHOSPHORUS (MG/L)
2.5
2.25
2
1.75
1.5
1.25
1
0.75
0.5
0.25
0
Event
1/1/2014
7/20/2014
2/5/2015
8/24/2015
3/11/2016
9/27/2016
4/15/2017
11/1/2017
5/20/2018
12/6/2018
TOTALSUSPENDED SOLIDS (MG/L)
100
90
80
70
60
50
40
30
20
10
0
Event
1/1/2014
7/20/2014
2/5/2015
8/24/2015
3/11/2016
9/27/2016
4/15/2017
11/1/2017
5/20/2018
12/6/2018
DATE SAMPLED

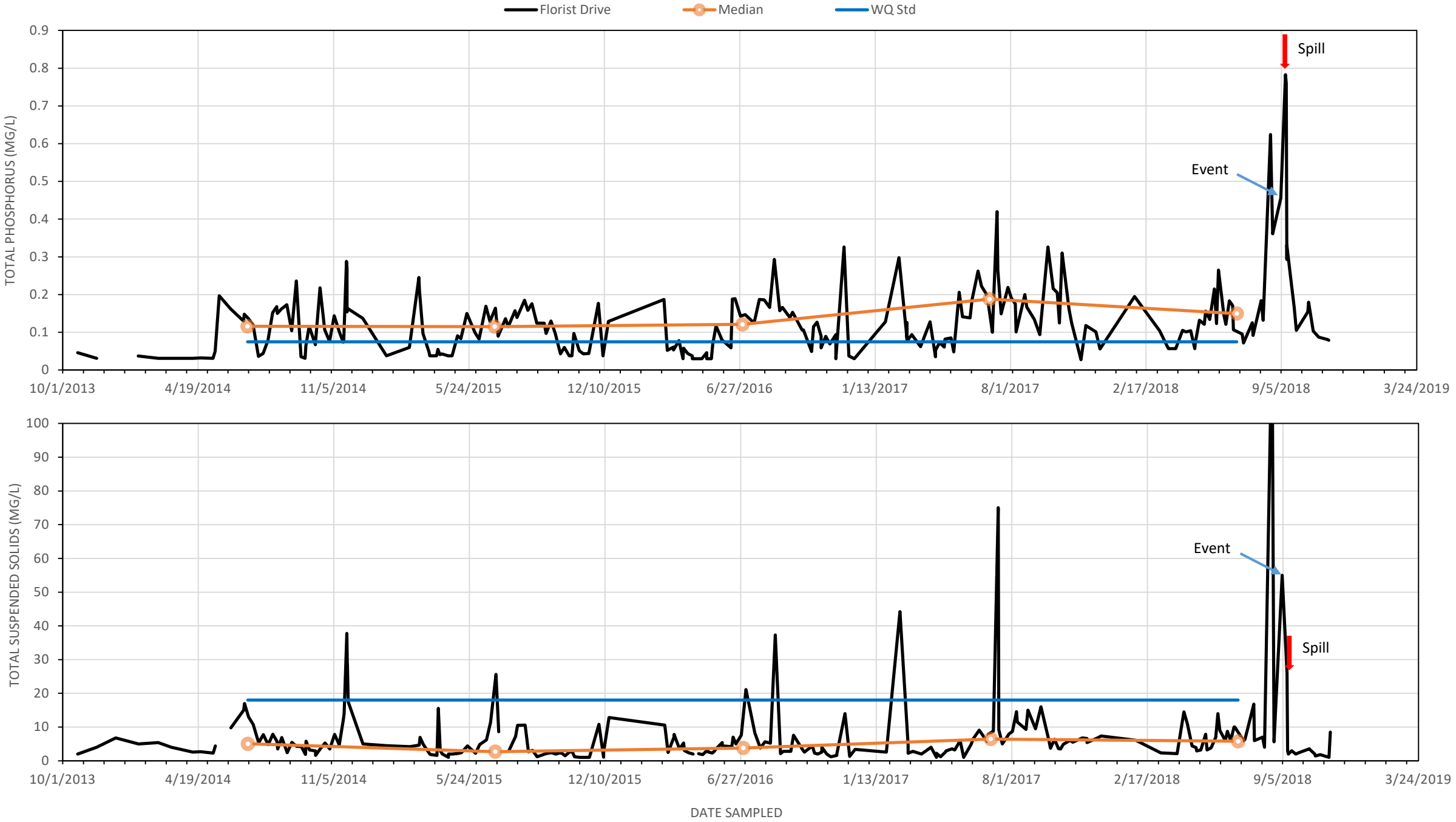
County Road U Crossing


Silver Creek at County Road U Crossing
Cty U
Median
WQ Std
TOTAL PHOSPHORUS (MG/L)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Spill
Event
1/1/2014
7/20/2014
2/5/2015
8/24/2015
3/11/2016
9/27/2016
4/15/2017
11/1/2017
5/20/2018
12/6/2018
TOTAL SUSPENDED SOLIDS (MG/L)
100
90
80
70
60
50
40
30
20
10
0
Event
Spill
DATA SAMPLED

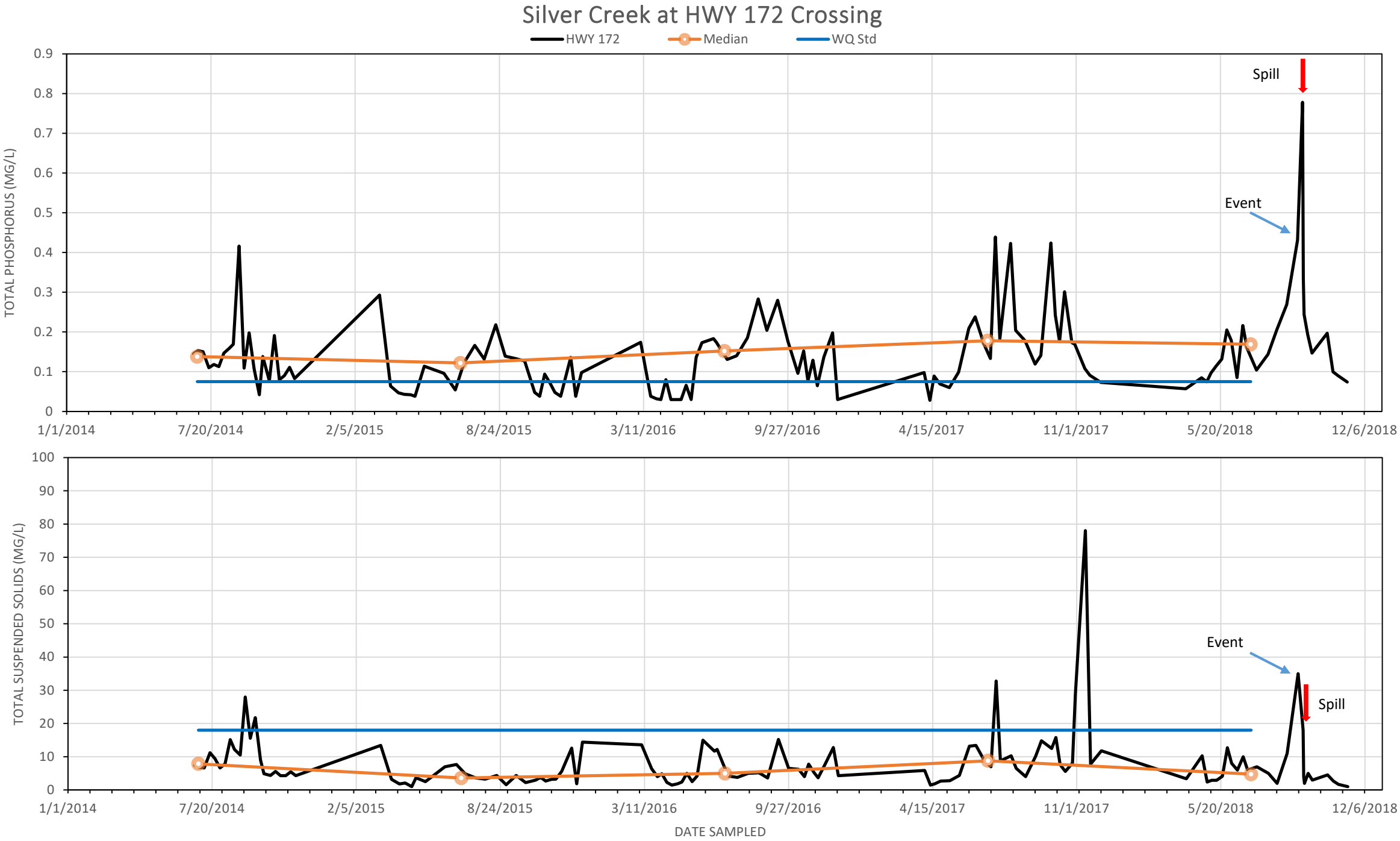
Florist Drive Event Sampler

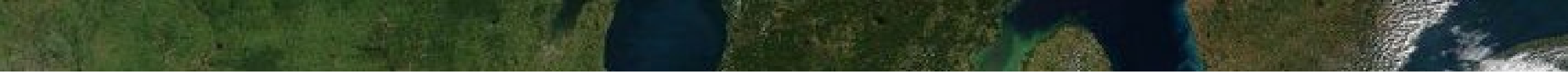

Silver Creek at Florist Drive - Events
Florist Drive Event
Median
WQ Std
TOTAL PHOSPHORUS (MG/L)
0
1
2
3
4
5
6
7
Event
Spill
10/1/2013
4/19/2014
11/5/2014
5/24/2015
12/10/2015
6/27/2016
1/13/2017
8/1/2017
2/17/2018
9/5/2018
3/24/2019
TOTAL SUSPENDED SOLIDS (MG/L)
0
20
40
60
80
100
120
140
160
180
200
Event
Spill
DATE SAMPLED

Florist Drive Crossing


Silver Creek at Florist Drive
Florist Drive
Median
WQ Std
TOTAL PHOSPHORUS (MG/L)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Spill
Event
10/1/2013
4/19/2014
11/5/2014
5/24/2015
12/10/2015
6/27/2016
1/13/2017
8/1/2017
2/17/2018
9/5/2018
3/24/2019
TOTAL SUSPENDED SOLIDS (MG/L)
100
90
80
70
60
50
40
30
20
10
0
Event
Spill
DATE SAMPLED

HWY 172 Crossing


Silver Creek at HWY 172 Crossing
HWY 172
Median
WQ Std
TOTAL PHOSPHORUS (MG/L)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Spill
Event
1/1/2014
7/20/2014
2/5/2015
8/24/2015
3/11/2016
9/27/2016
4/15/2017
11/1/2017
5/20/2018
12/6/2018
TOTAL SUSPENDED SOLIDS (MG/L)
100
90
80
70
60
50
40
30
20
10
0
Event
Spill
1/1/2014
7/20/2014
2/5/2015
8/24/2015
3/11/2016
9/27/2016
4/15/2017
11/1/2017
5/20/2018
12/6/2018
DATE SAMPLED



Break

NEW Water
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Special Projects Updates

NEW Water
The brand of the Green Bay Metropolitan Sewerage District

Biological Monitoring of Silver Creek

Pre-Restoration

December, 2018
Stakeholder's Meeting Update

ONEIDA

A good mind. A good heart. A strong fire.

ONEIDA

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ONEIDA

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Oneida Nation
Water Resources Program
Aquatic Invertebrate Data Sheet

Date of sample collection: 6/5/2018
Sample location: Silver Cr @ Moist Dr. Sample collected by: J.L. Smith
Sieve mesh size: 500µm Collection method: Qualitative
Date sorted: _____ Sorted by: LSRI
Date identified: 12/13/18 Identified by: J.L. Smith

Taxon	No.	Taxon	No.
Diptera		**Diptera - Other**	
Chironomidae			
Cricotopus bicinctus	3	Dixella sp.	1
Cricotopus sp.	7		
Diplocladius sp.	1		
Dicrotendipes modestus	7	**Trichoptera**	
Dicrotendipes sp.	16		
Cricotopus tremulus	1	Hydroptila sp.	1
Corynoneura sp.	5		
Orthocladius sp.	17		
Chironomini	3		
Labrundinia pilosella	1	**Ephemeroptera**	
Micropsectra polita group	11		
Orthocladiinae	3	Baetis brunneicolor	1
Parachaetocladius sp.	11		
Polypedilum aviceps	4		
Polypedilum sp.	2		
Parakiefferiella sp.	6		
Rheocricotopus sp.	1	**Plecoptera**	
Rheotanytarsus sp.	3	Isoperla sp.	4
		Pteronarcys dorsata	7
Stictochironomus sp.	45		
Tanytarsini	1	**Coleoptera**	
Tanytarsus sp.	3	Dubiraphia sp.	1
		Optioservus fastidiosus	1
Thienemanniella xena	1	Optioservus sp.	2
		Psephenus herricki	1
		Agabus sp.	1
		Odonata	
		Arshnia sp.	1

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Oneida Nation
Water Resources Program
Aquatic Invertebrate Data Sheet
(Continued)

Taxon	No.	Taxon	No.
Hemiptera		**Oligochaeta**	
		Enchytraeidae	1
		Nais sp.	9
Amphipoda			
Gammarus pseudolimnaeus	70		
Isopoda		**Others**	
Caecidotea sp.	42		
Pelecypoda		Hydracarina (mites)	3
		Oreomysis sp.	1
Gastropoda			
Physidae	6		

Date data entered: 12/17/18 Data entered by: [illegible]
Total taxa: 33 Total no. organisms: 302
HBI taxa: 28 HBI total no. organisms: 249

Seasonality adjusted HBI total no. organisms: 6.27

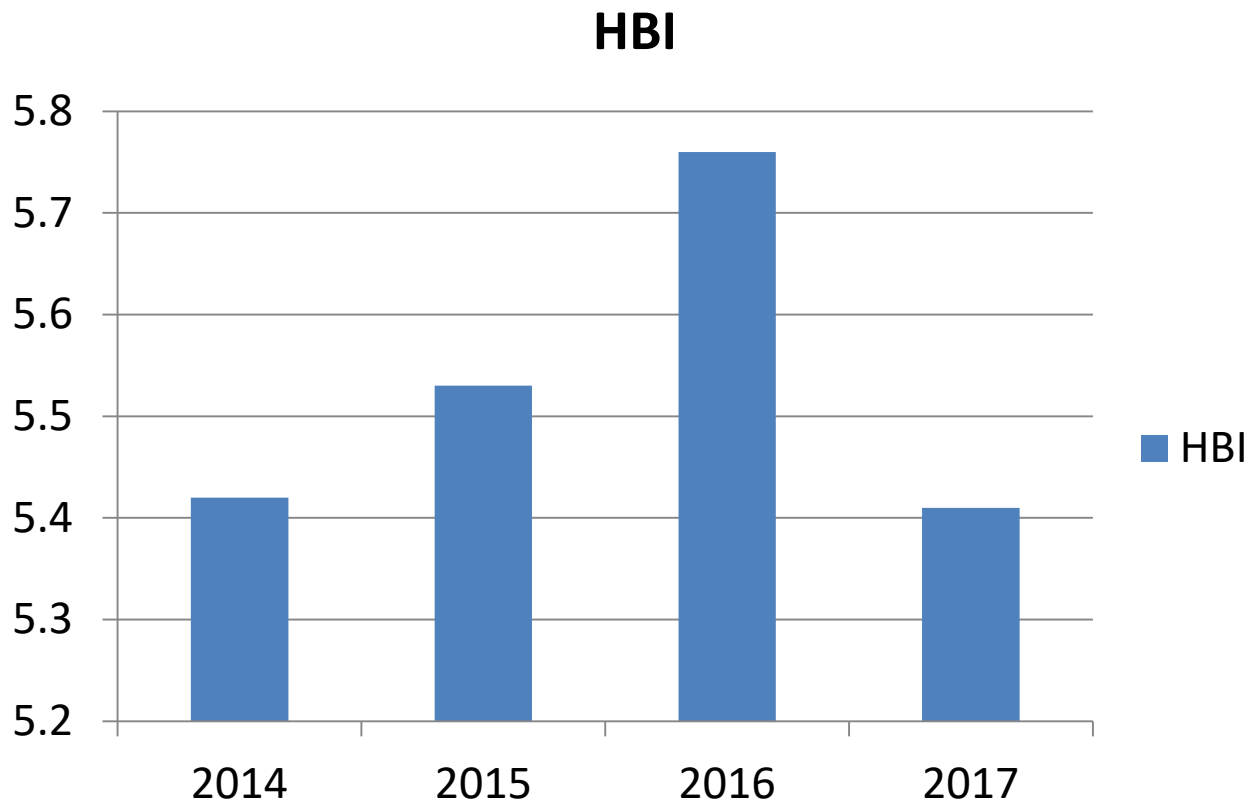
EPT = 4

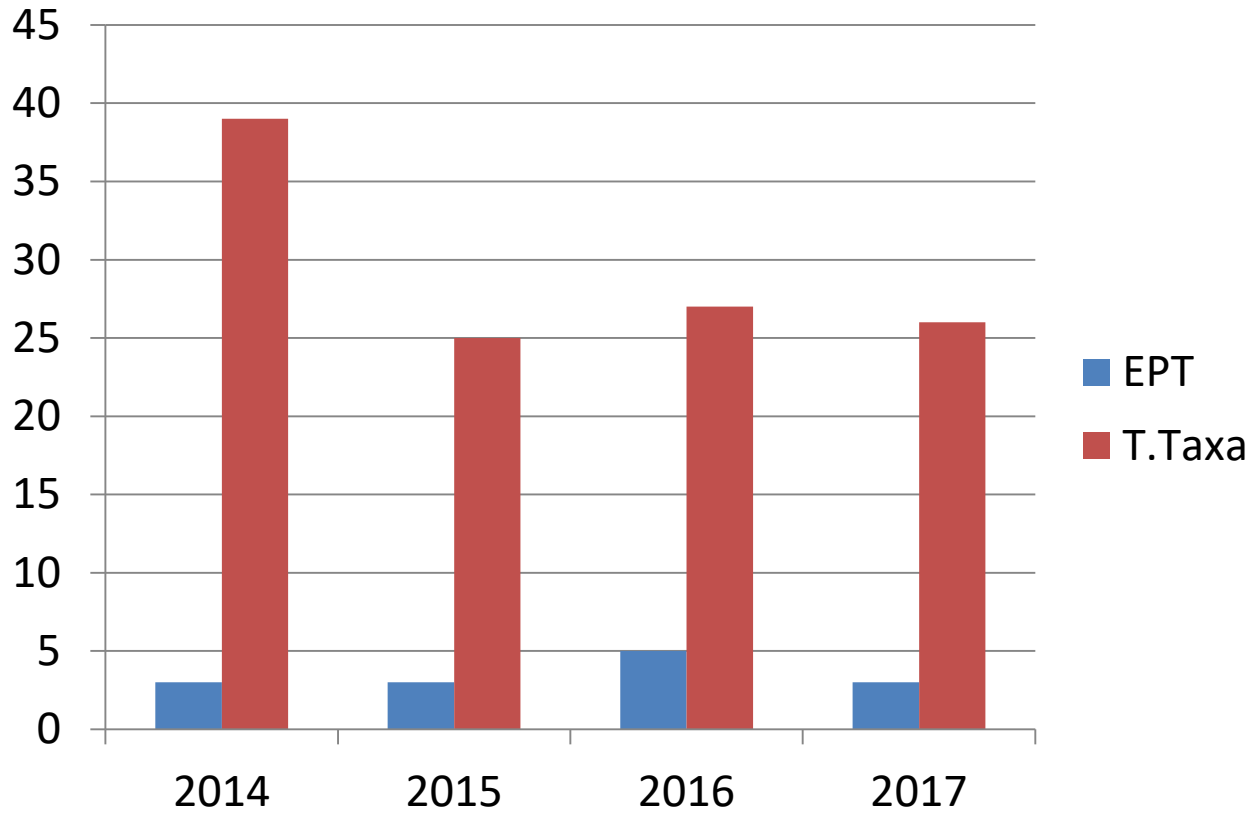
ONEIDA
A good mind. A good heart. A strong fire.

Table 1. Water quality ratings for HBI values (from Hilsenhoff 1987)

HBI Value	Water Quality Rating	Degree of Organic Pollution
≤ 3.50	Excellent	None Apparent
3.51-4.50	Very Good	Possible Slight
4.51-5.50	Good	Some
5.51-6.50	Fair	Fairly Significant
6.51-7.50	Fairly Poor	Significant
7.51-8.50	Poor	Very Significant
8.51-10.00	Very Poor	Severe

2018
HBI = 6.27
EPT = 4
Total taxa = 33


HBI
5.8
5.7
5.6
5.5
5.4
5.3
5.2
2014
2015
2016
2017
HBI



Other notes: 2 different stoneflies in 2015 sample, also in 2018 sample.
The rare midge *Acalcarella* in 2016 sample, in stream habitat
Enhancement + water quality improvements should show significant changes

Questions?

Vegetated Water Treatment Systems

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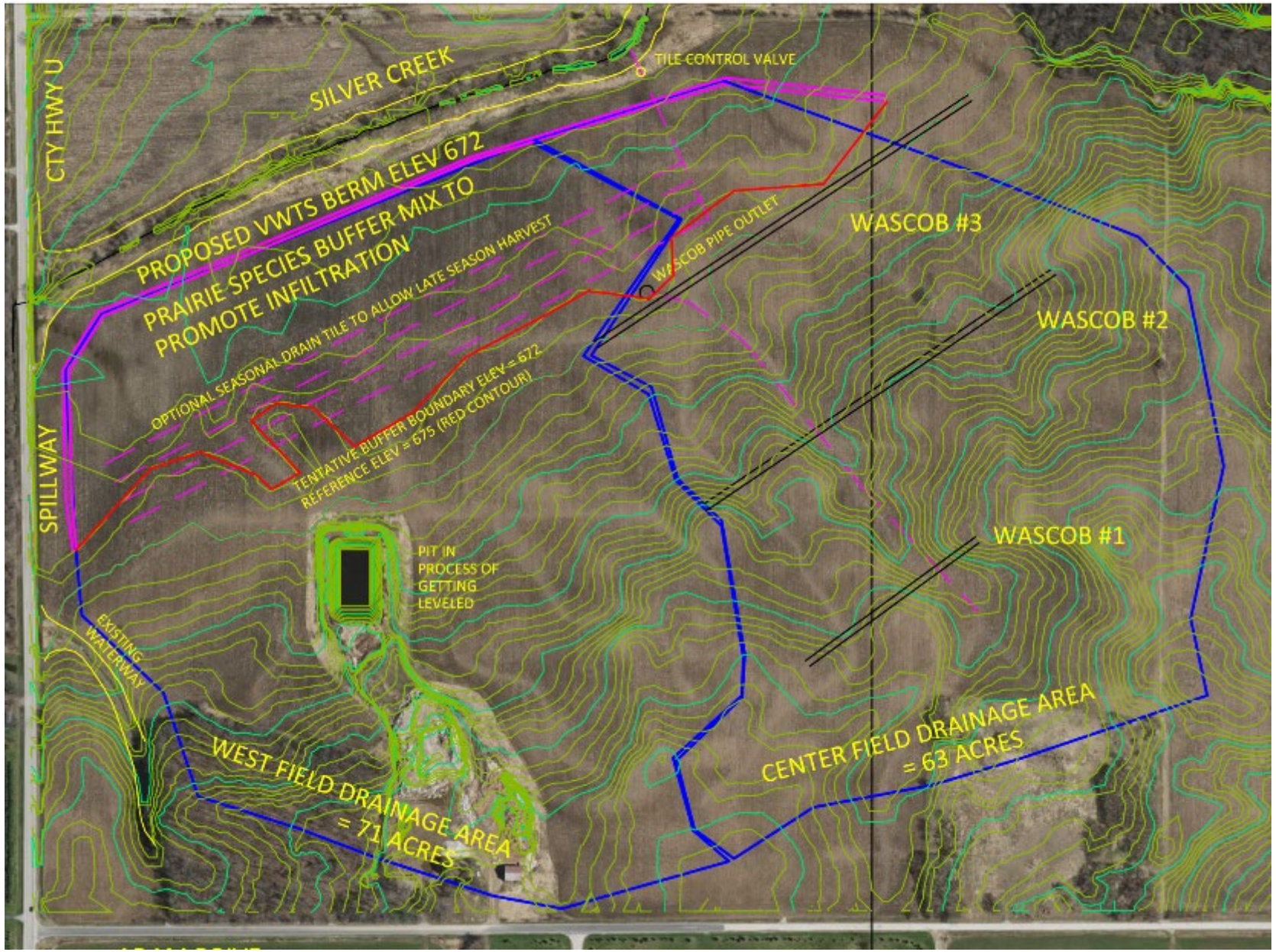
EW WATER / ONEIDA NATION SILVER CREEK WATERSHED PROJECT
EGETATED WATER TREATMENT SYSTEM DESIGN DEVELOPMENT UPDATE
ICHAEL TROGE, ONEIDA NATION ENVIRONMENTAL PROJECT MANAGER
ecember, 2016

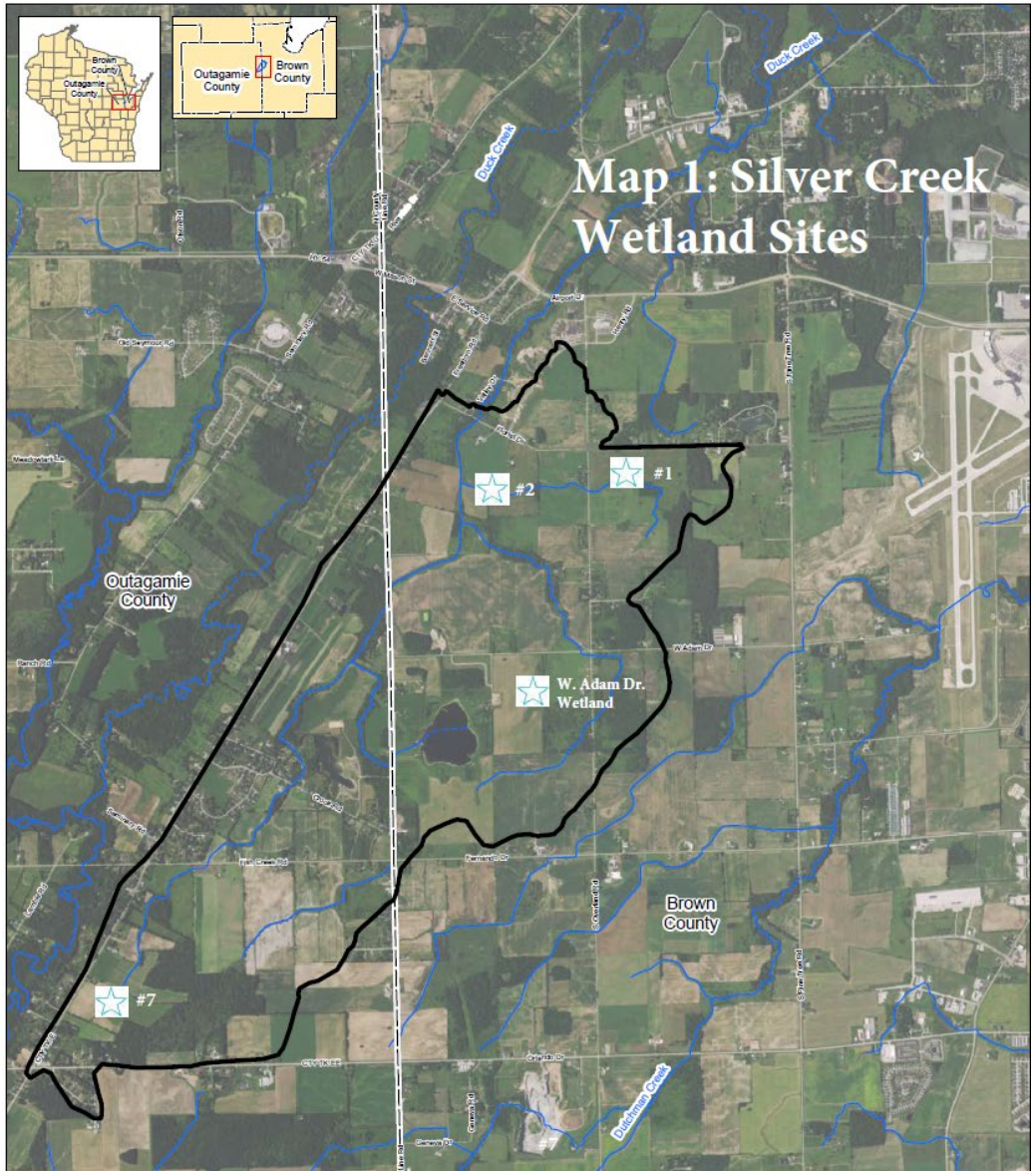
LOCATION: FORMER RUEDEN PROPERTY, FIELD 42
NE OF CTY U - ADAM DR INTERSECTION AND
WITHIN SILVER CREEK BUFFER

N




VWTS location
WASCOBs
Cty Hwy U
Adam Drive

Wetlands Team Update



NEW Water
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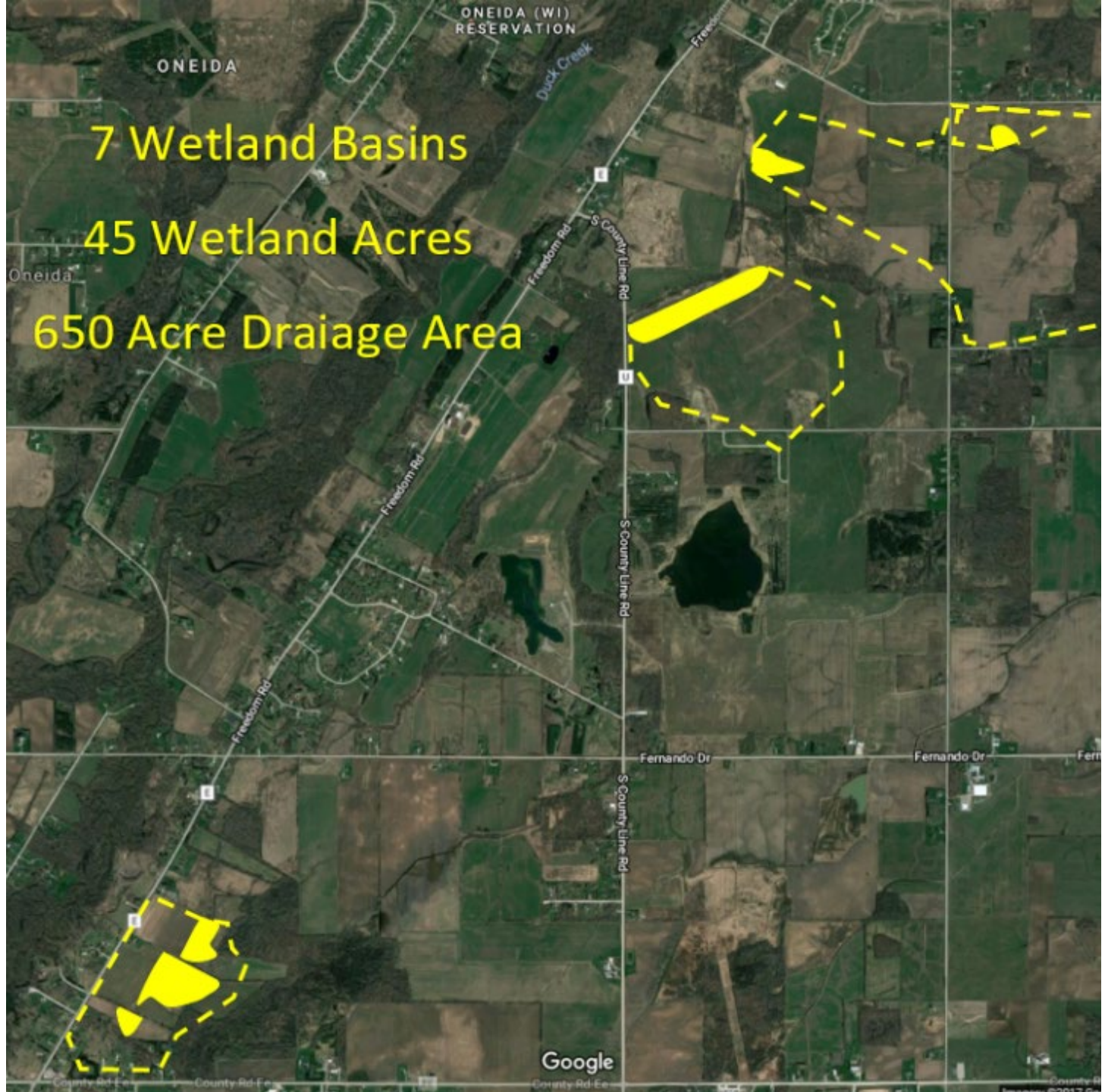
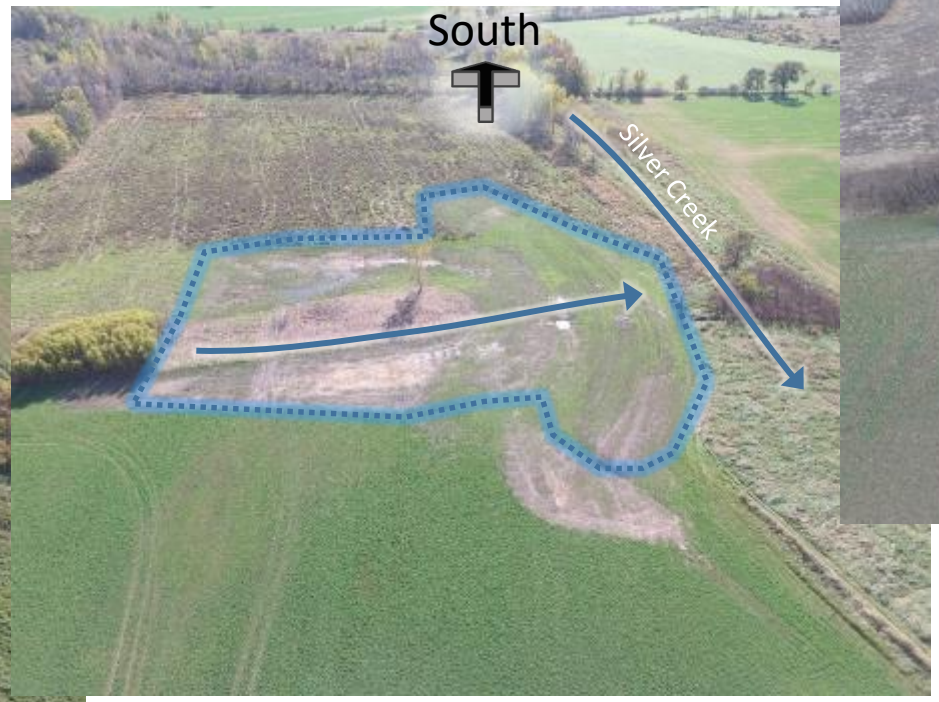

ONEIDA (WI)
RESERVATION
ONEIDA
Duck Creek
7 Wetland Basins
45 Wetland Acres
650 Acre Draiage Area
Oneida
Freedom Rd
S County Line Rd
Fernando Dr
Google

Wetland Restoration Projects

Sept. 19, 2017



Oct. 9, 2017

Dec 1, 2017

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Wetland Restoration Projects

June 5, 2018

NEW Water
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Wetland Restoration Projects

Dec 1, 2017

July 30, 2018

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Adams Drive Wetland

NEW Water
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W. Adams Drive Project

Project Goals

1. Improve surface **water quality**
2. Restore **habitat for wildlife** and native plants
3. **Educate** stakeholders and garner support

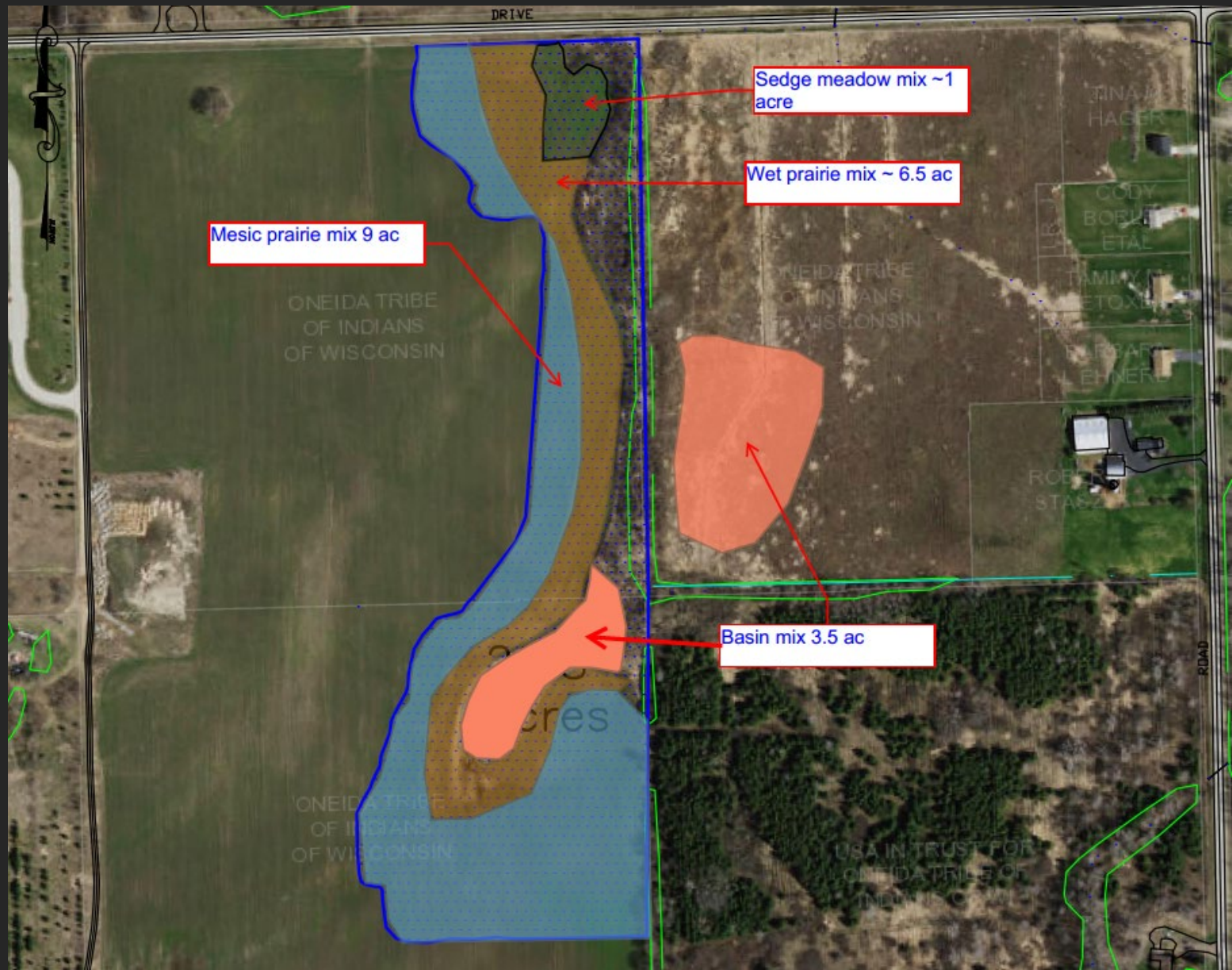
Very High Phosphorus, Altered Hydrology, Degraded Wetland

2015-16 Invasives Treatment & Permanent Cover in Ag Field

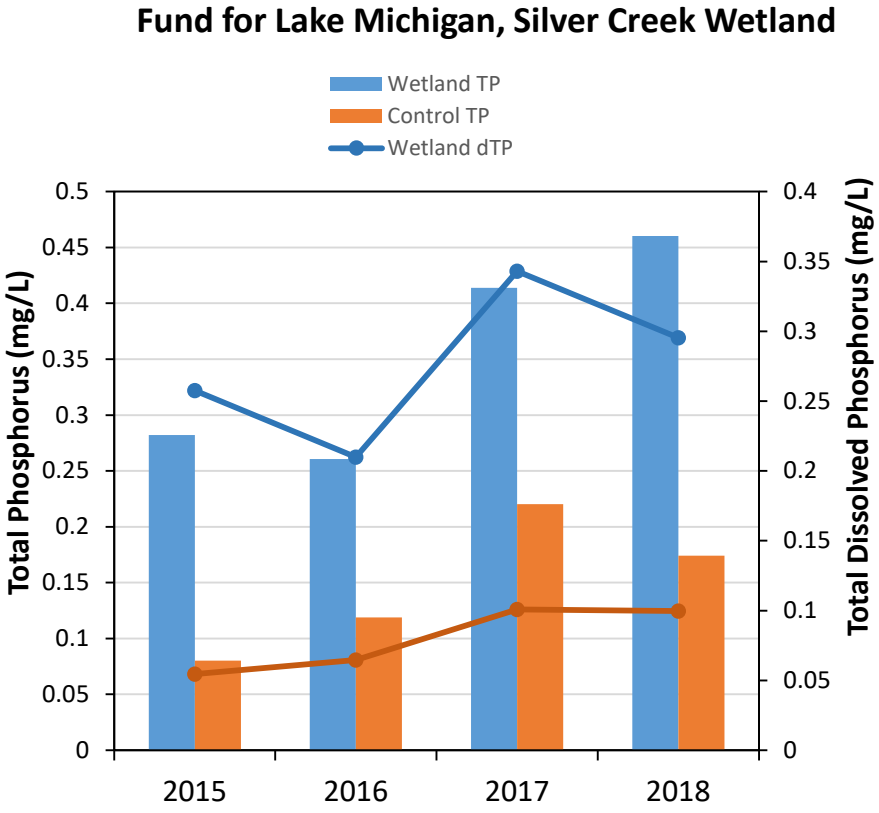
Oct 2017 – Wetland Basins

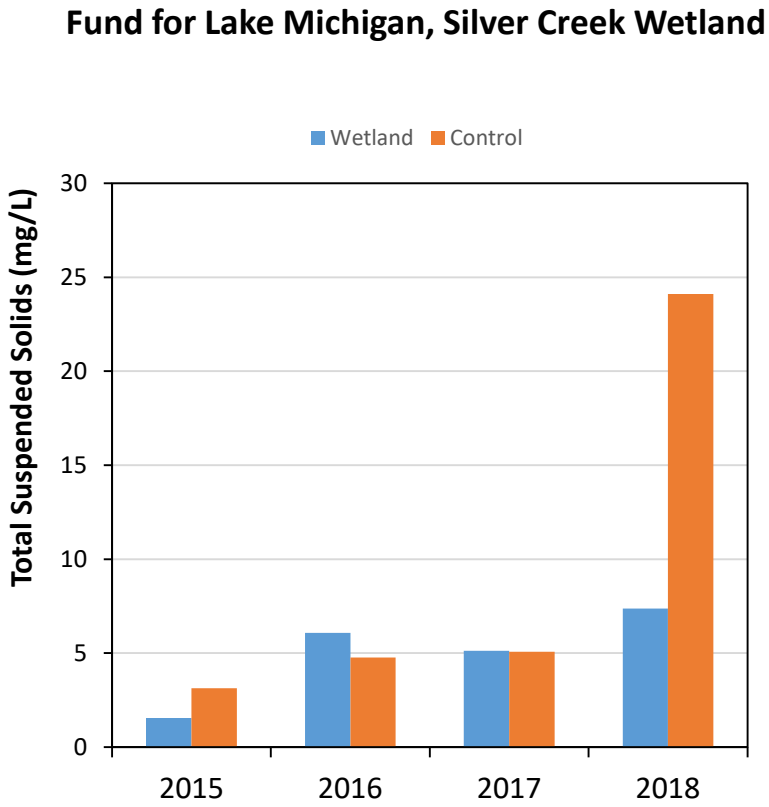
Fall 2017-18 Planting

Habitats


Sedge meadow mix ~1 acre
Wet prairie mix ~ 6.5 ac
Mesic prairie mix 9 ac
Basin mix 3.5 ac
ONEIDA TRIBE OF INDIANS OF WISCONSIN

Water Quality Monitoring





Wildlife Usage

Beyond Compliance: Protecting Our Waterways

The science of water. Through its Aquatic Monitoring Program (AMP), NEW Water joined forces with the Wisconsin Department of Natural Resources, and the University of Wisconsin–Milwaukee Zilber School of Public Health on a three-year study to determine levels of toxins (cyanotoxins) produced by cyanobacteria, or blue-green algae, in the bay of Green Bay. Launched in 2016, the study continued in 2017, with preliminary data showing elevated levels of cyanotoxins in the water. AMP has been continuously monitoring area waters for more than 30 years, and its extensive database is used by water scientists in Northeast Wisconsin, the Great Lakes region, and throughout the United States. NEW Water is proud to serve as a trusted source of water information for our community.

Photos above, left to right:

Sarah Bartlett, Water Resources Specialist, was interviewed for Mike Goushe's "Up Front" program.

The Bay Guardian workboat.

Photos right and below, clockwise:

Left to right: Nicole Van Helden of The Nature Conservancy, Jeff

Wetlands installation. Wetlands have been called the "kidney" of an ecosystem – filtering out pollutants and sediment, and serving as a sponge to control water flow. In partnership with The Nature Conservancy, Ducks Unlimited, U.S. Fish and Wildlife Service, and the Oneida Nation, nearly 7% of cropland acres in Silver Creek were restored to wetlands.

Grazing Paired Field Monitoring

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UW-Green Bay: PAIRED Grazing Study

Primary objectives

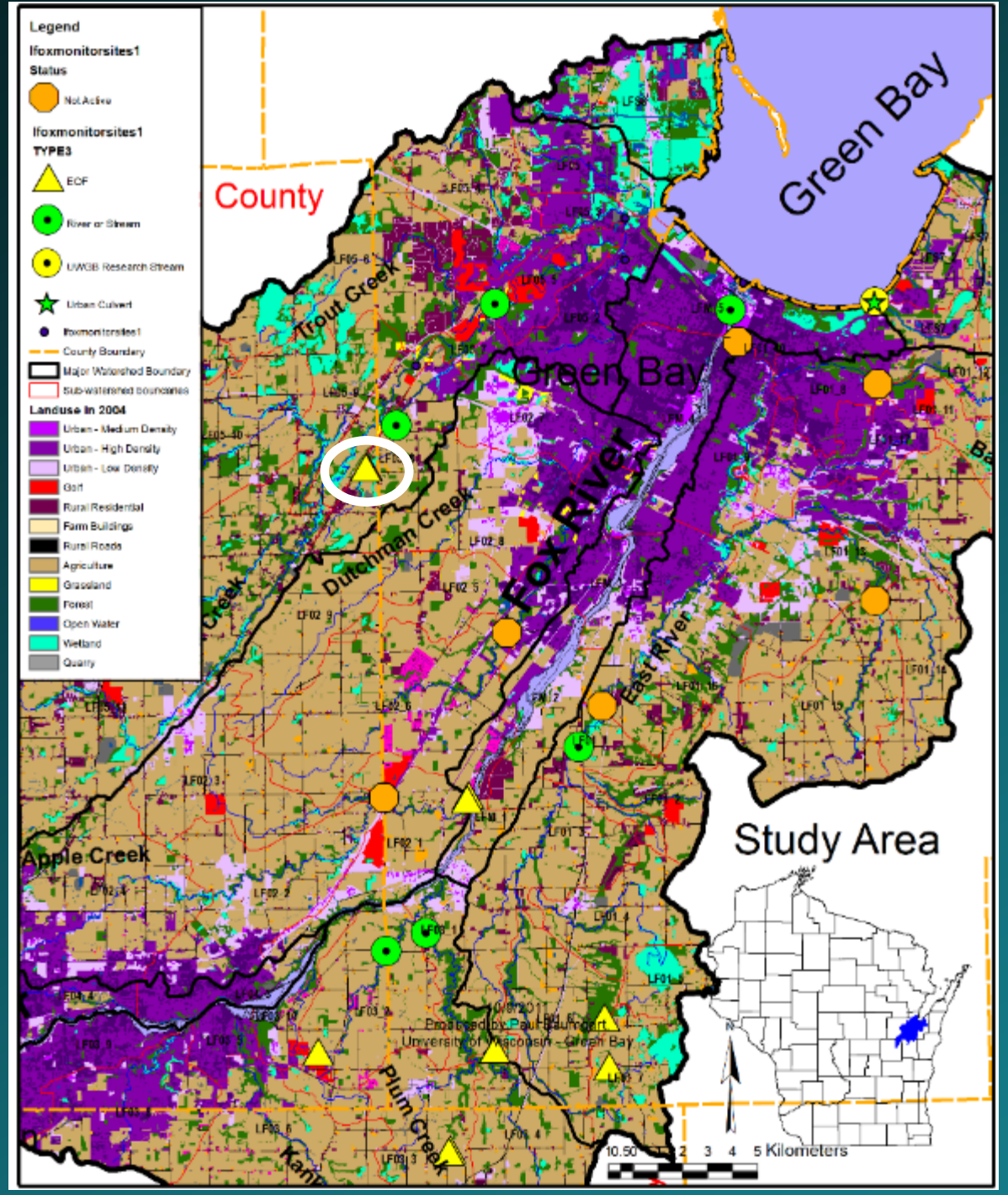
- Evaluate Effectiveness of Ag Treatments:
  - Silver Creek watershed --- Managed grazing compared to conventional dairy farm practice
- Metrics:
  - TSS, TP, dP (Event Mean Concentration, Total Event Mass)
  - Event Flow Volume
  - Turbidity, plus used as surrogate for other constituents (and Backup)

Paul Baumgart and Kevin Fermanich

University of Wisconsin – Green Bay

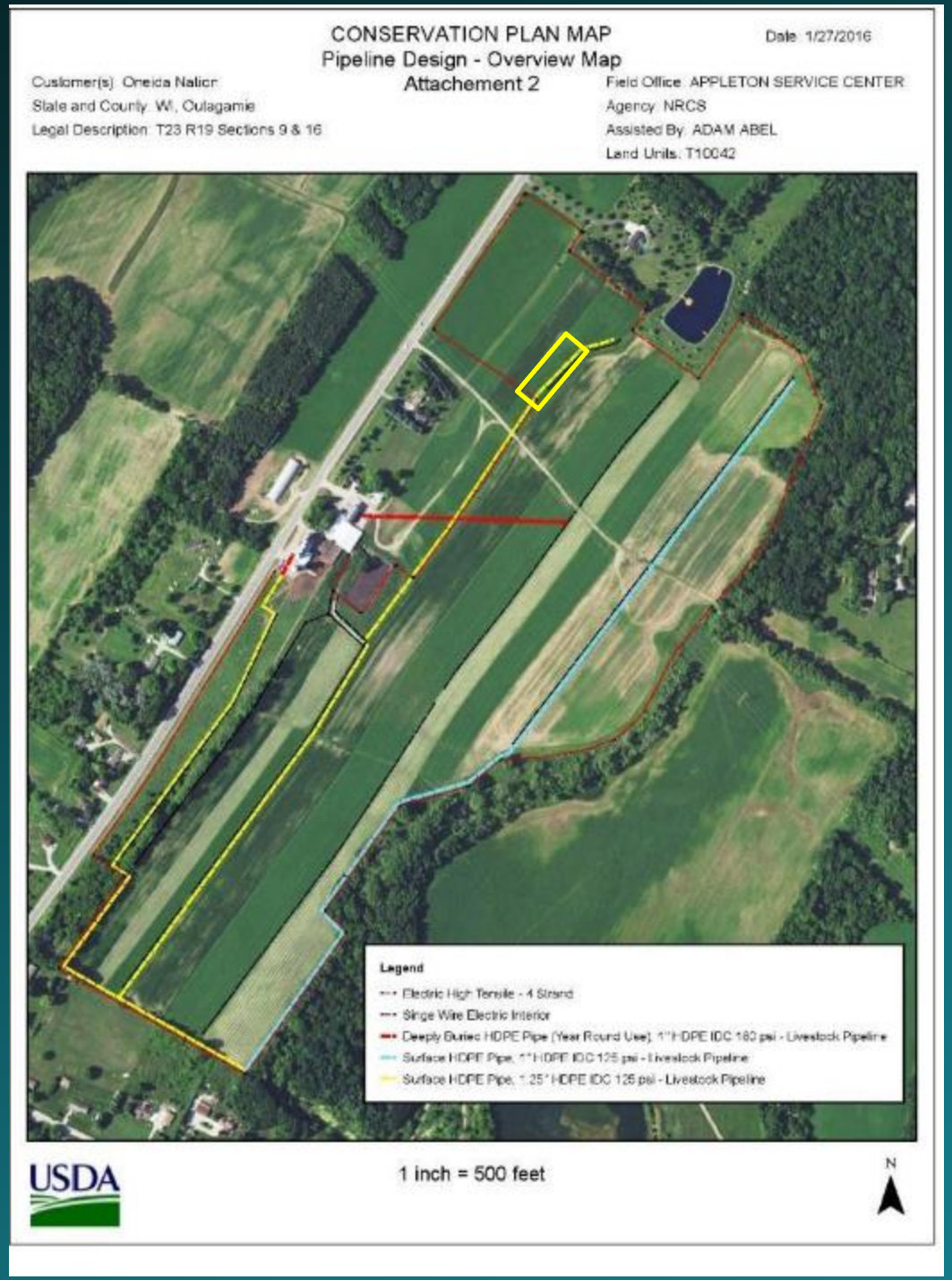
Silver Creek near Oneida: Grazing Study

- Similar equipment as USGS EOF stations
- PAIRED Study --- two EOFS
- About 0.6 acre per site
- Continuous Silage Corn (cooperative farmer)
- Very limited residue
- Treatment: Managed Grazing when pretreatment data are sufficient



UWGB
Silver Creek – near Oneida
Paired EOF catchments

GLRI Grants
NEW Water



Dairy Farm Transitioning to More Managed Grazing

Study Site Paired Catchments

Silver Creek near Oneida: paired EOF catchments

Silver Creek near Oneida: paired EOF catchments

North Station

South Station

Retractable head CS OBS-501 turbidity probes (South EOF)

Campbell Scientific OBS-501 turbidity **pr**obe

South Station

narrow 1’ HS flume

hence: 2”x3” mesh screen for “trash”

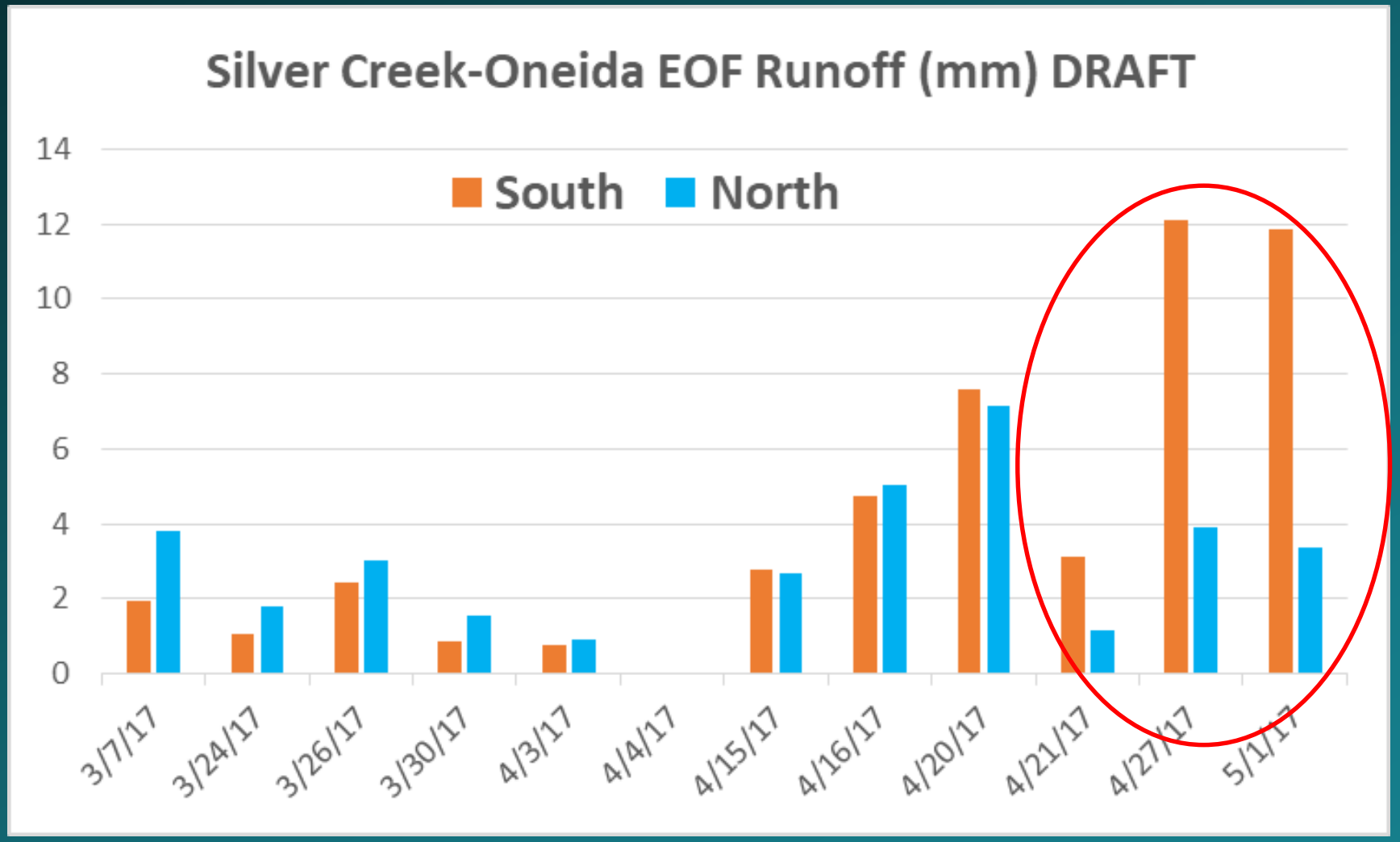
South Station

landscape

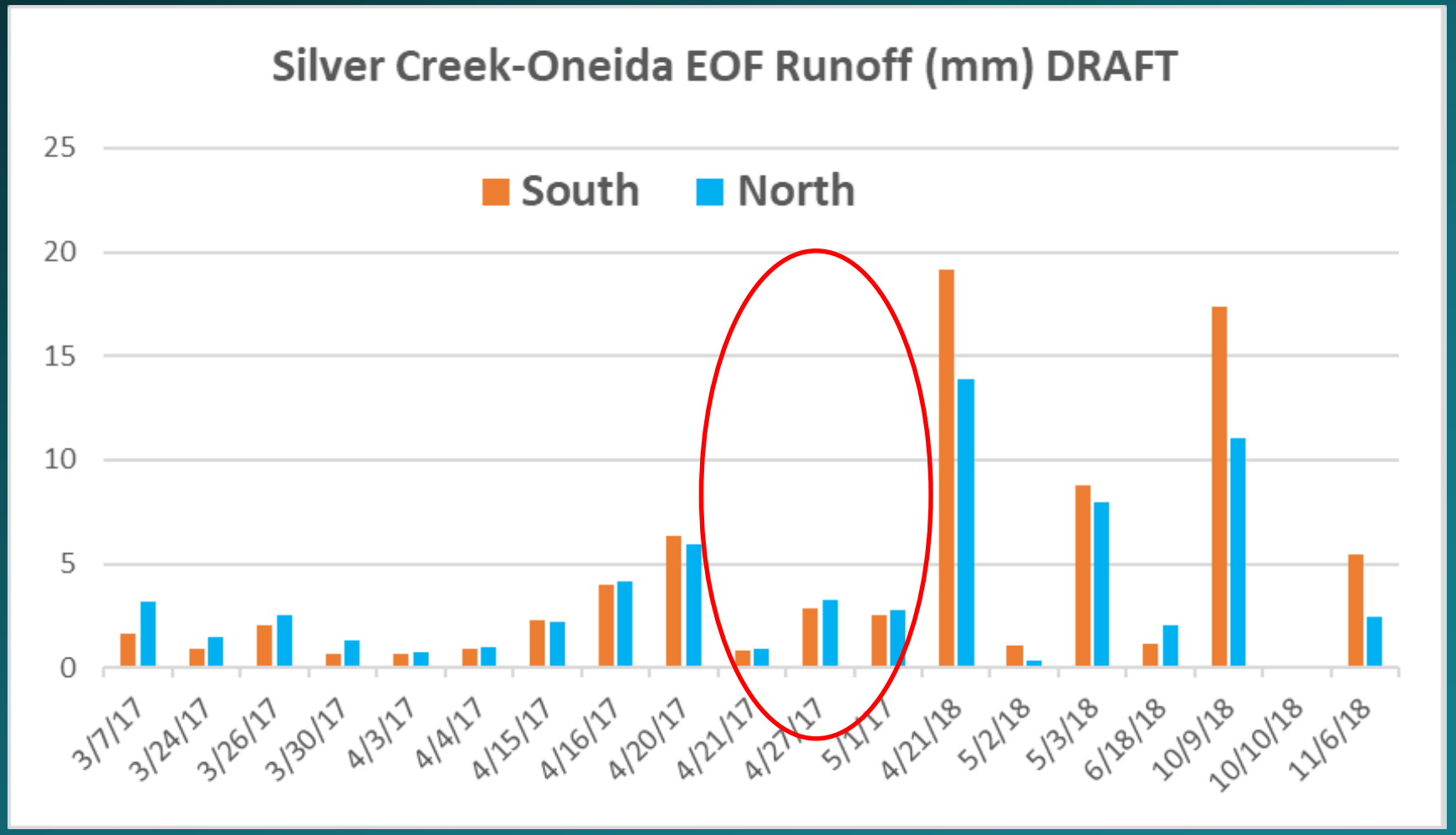
RESULTS

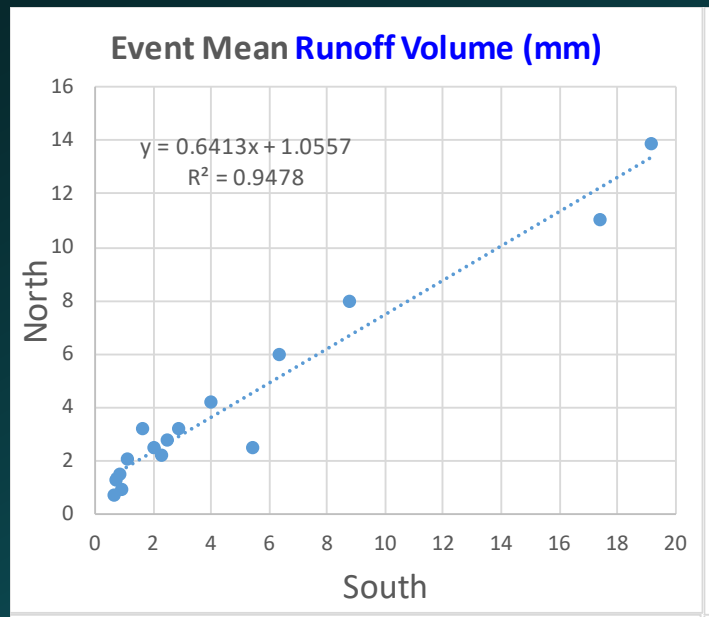
Silver Creek/Oneida Paired EOFs

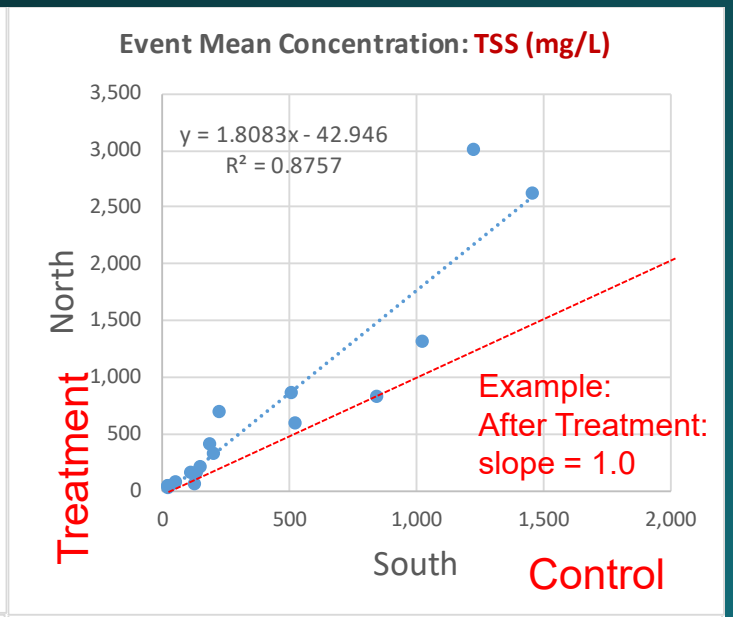
Runoff Pattern changes: South vs North

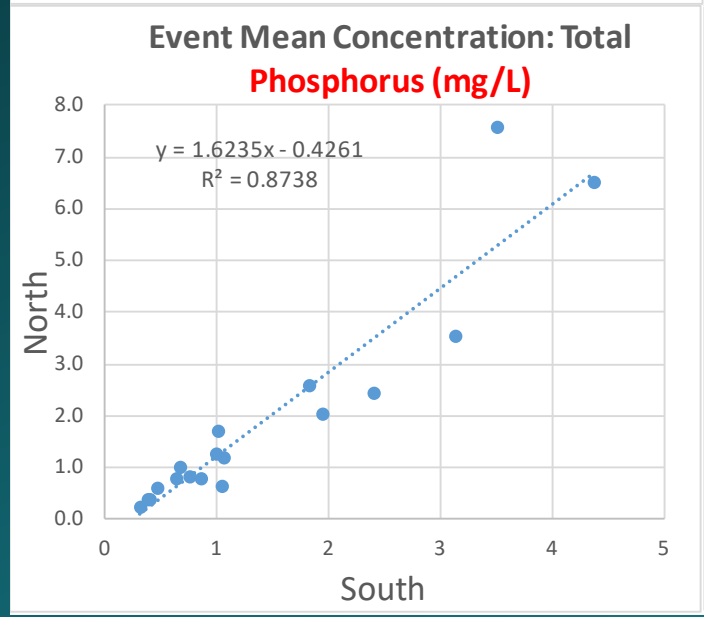


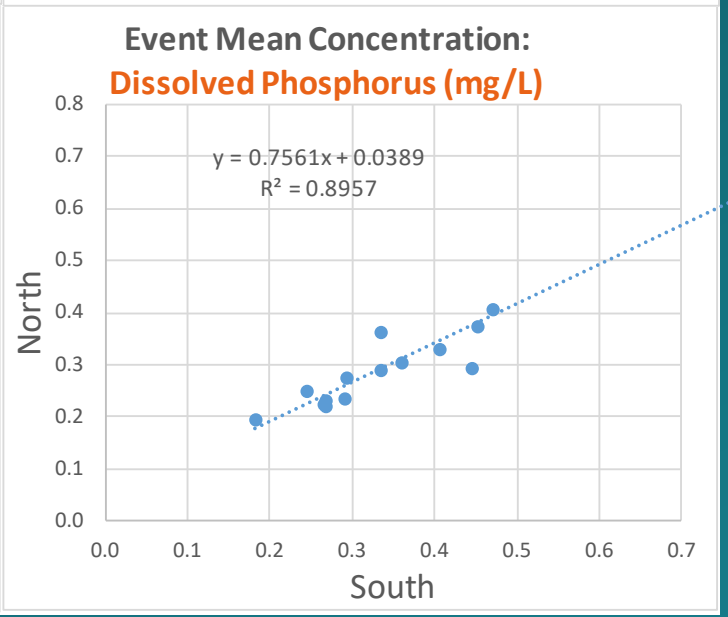
Runoff Pattern: adjusted 3 events: South vs North











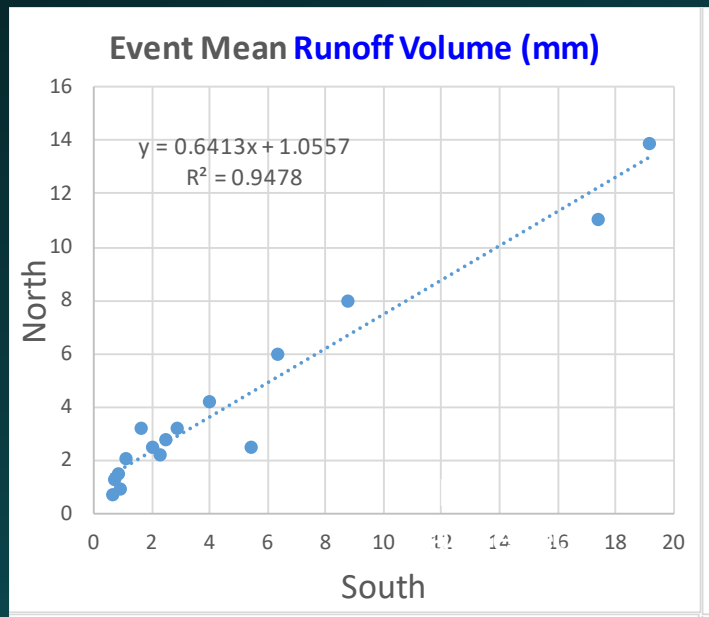
Silver Creek - Oneida Paired Managed Grazing Study

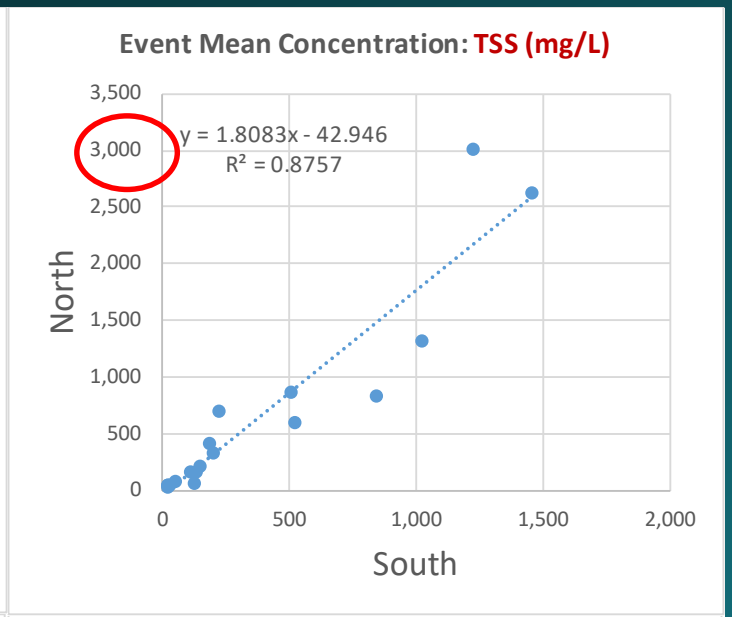
So far, relationships are satisfactory

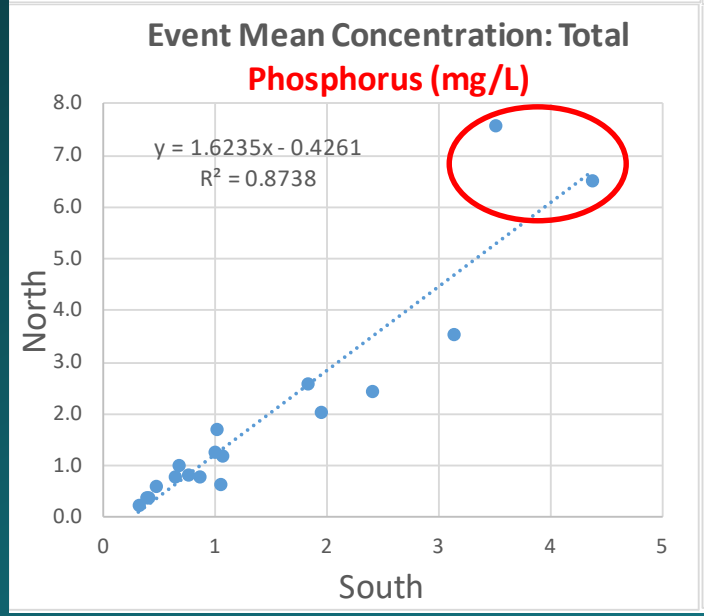
with runoff adjusted for 2 2017 events

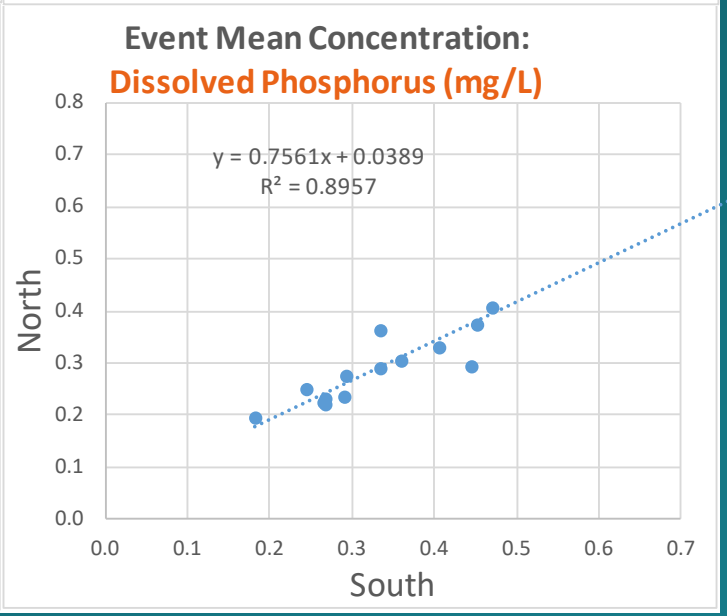
Runoff: n<18 (some estimates)

TSS, TP, DP n=18









Silver Creek - Oneida Paired Managed Grazing Study

So far, relationships are satisfactory

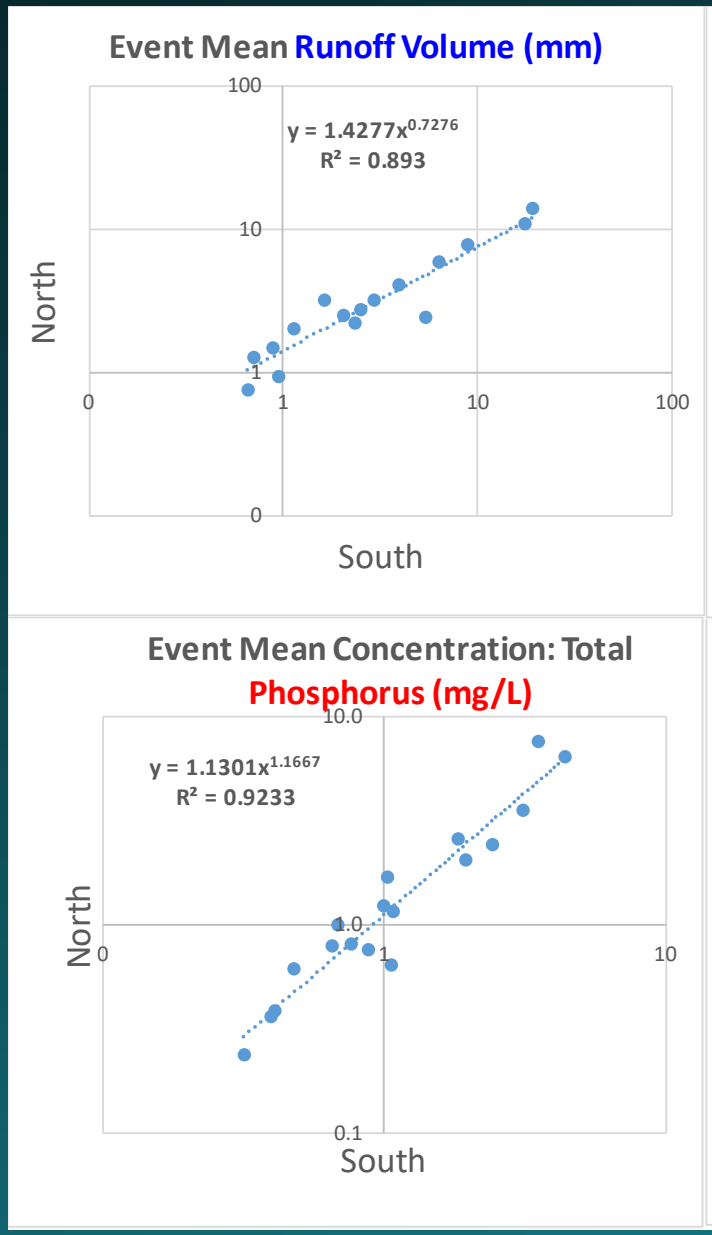
with runoff adjusted for 2 2018 events

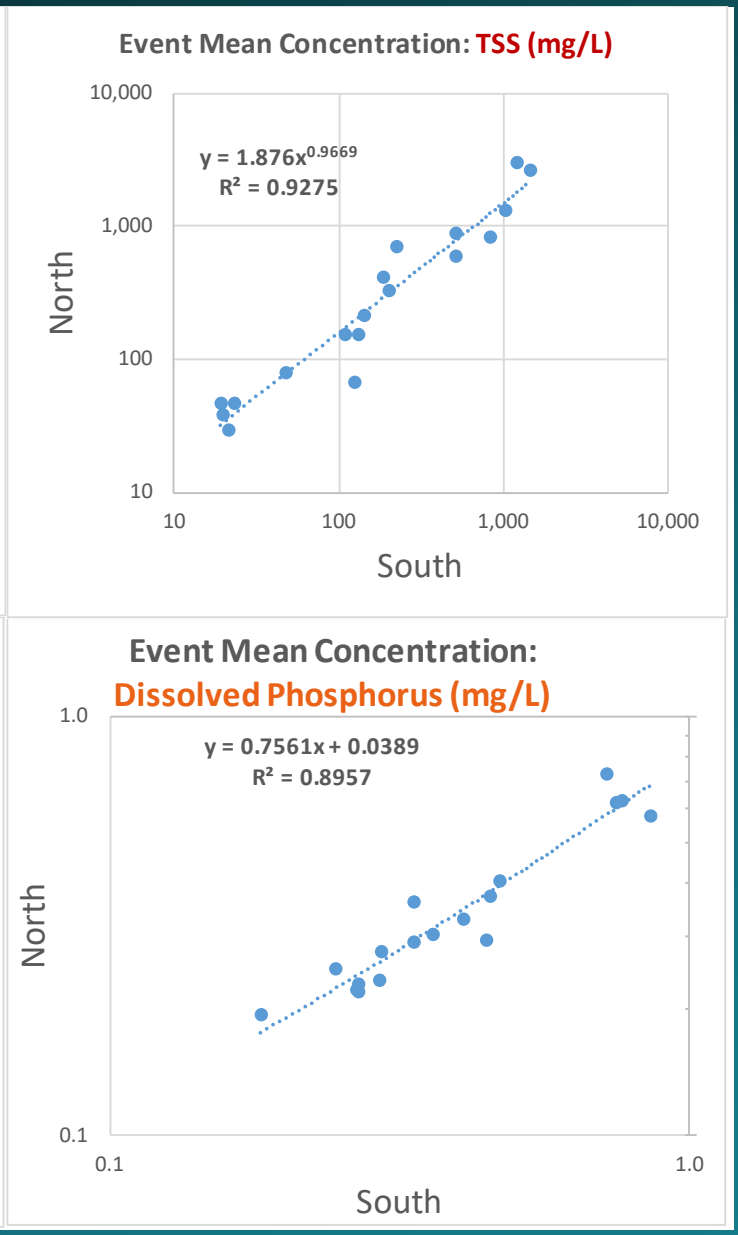
Runoff: n<18 (some estimates)

TSS, TP, DP n=18

dP Mass: 25%

median dP conc.: 37%





Silver Creek - Oneida Paired Managed Grazing Study

LOG-Space

Runoff: n<18 (some estimates) TSS, TP, DP n=18

EOF Event mean vs Stream concentrations (mg/L): WY2017+

	TP	dP	TSS	
PF-E	1.19	0.29	491	EOF - composites
PF-W	1.52	0.24	809	EOF - composites
Plum Main	1.07	0.30	576	Stream - discretes
Plum West	1.14	0.50	430	Stream - discretes
Silver	0.28	0.24	26	Stream - discretes
OF-North	2.30	0.32	797	EOF - composites
OF-South	1.66	0.37	469	EOF - composites

- EVENTS: EOF Event mean concentrations similar to discrete samples from streams
- Therefore, reducing contributions from sources like our EOF sites, should translate to the watershed

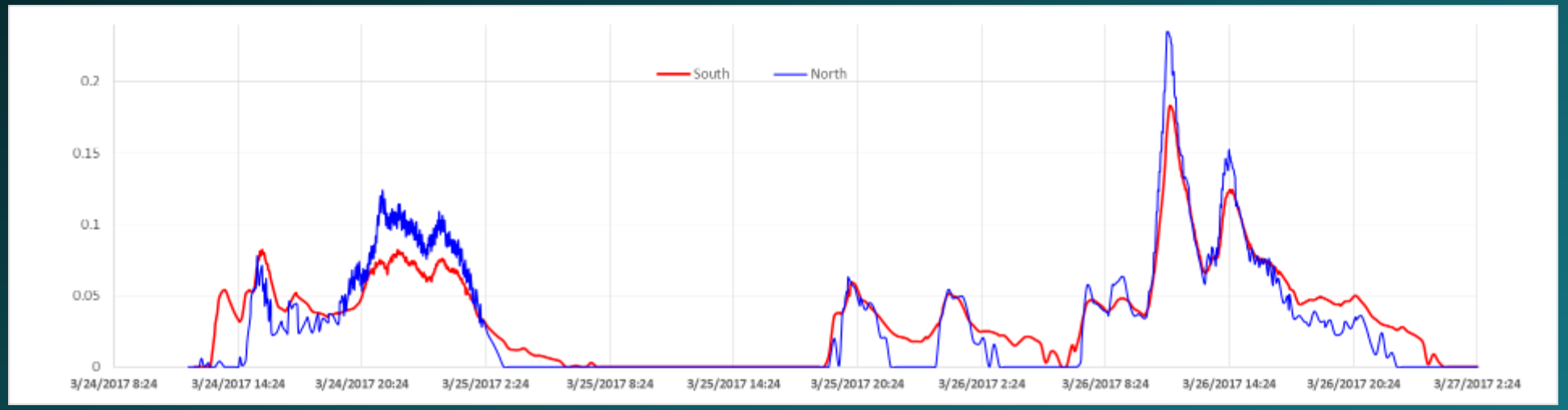
Next Steps

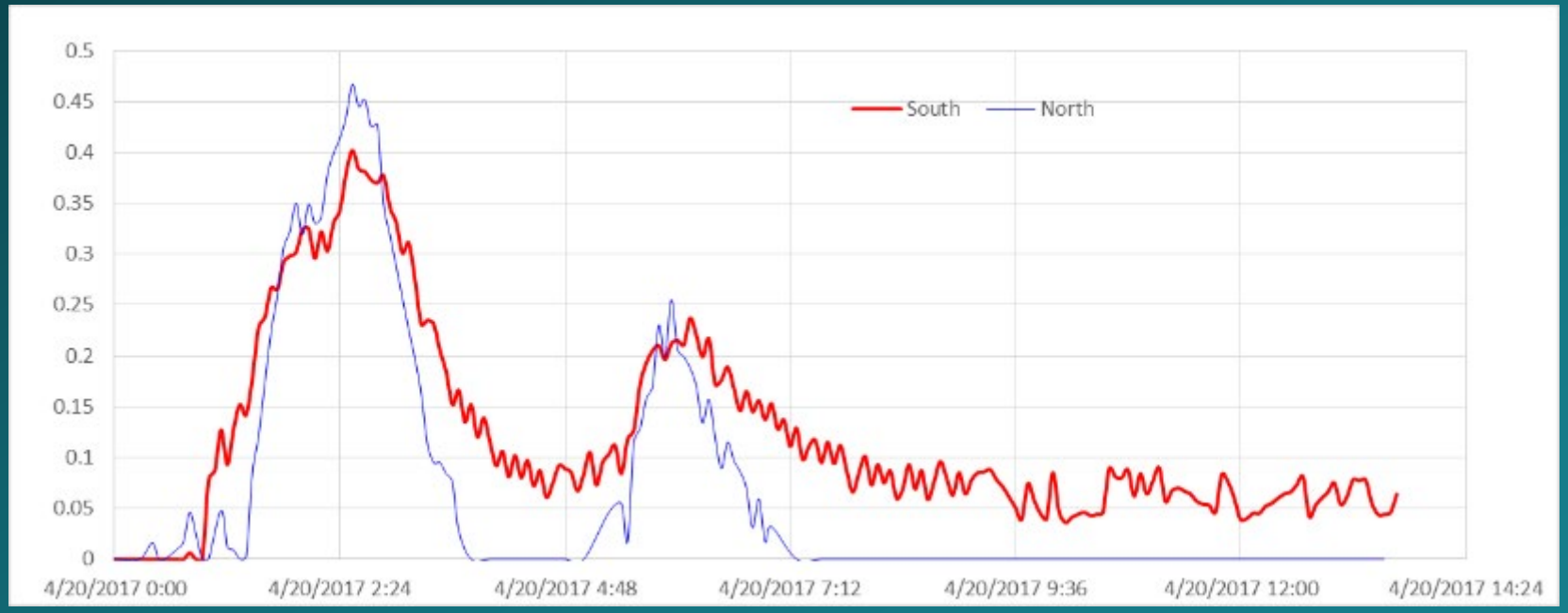
- Intended to plant pasture Fall 2018 (too Wet)
- Many deep ruts during fall harvest
- So plant pasture spring 2018 after tilling

- Transitional, then Treatment Phases
  - South catchment to pasture/treatment
- Need 2019 and 2020 runoff for study
  - So request for Extension
  - Ensure Access to monitoring site (fence)

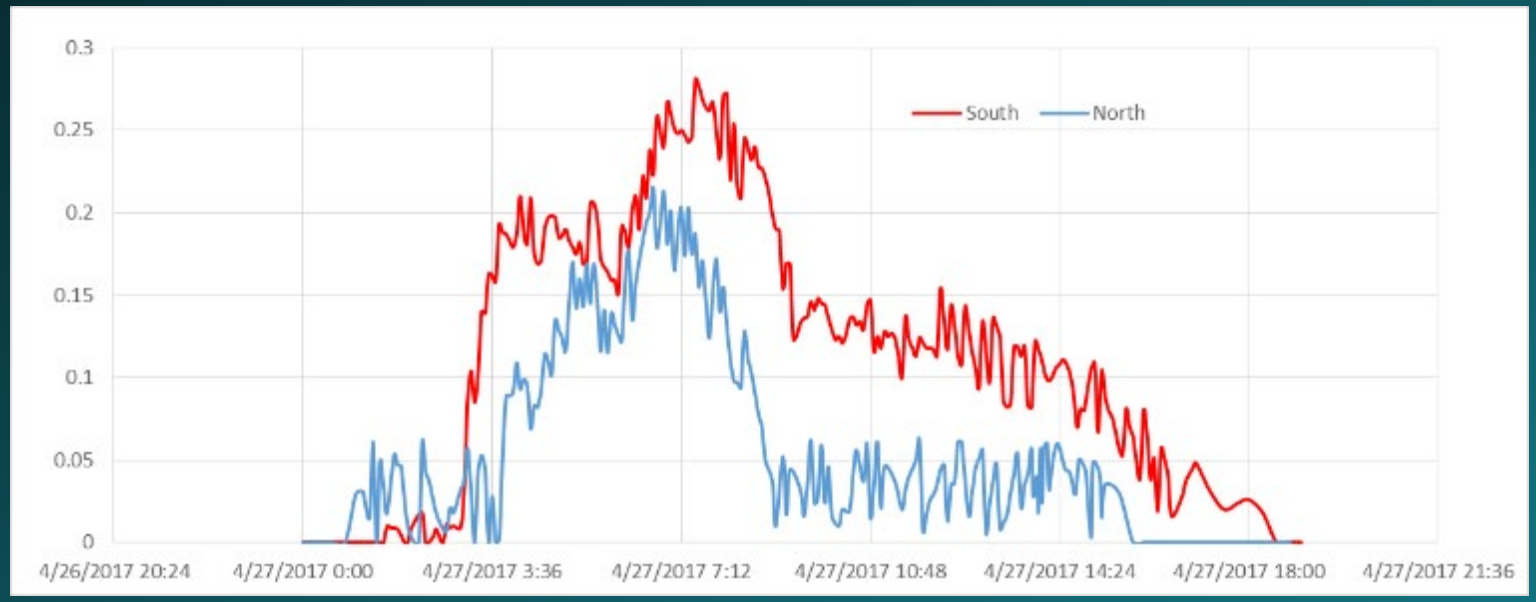
- ANALYSIS of Data/Summarize

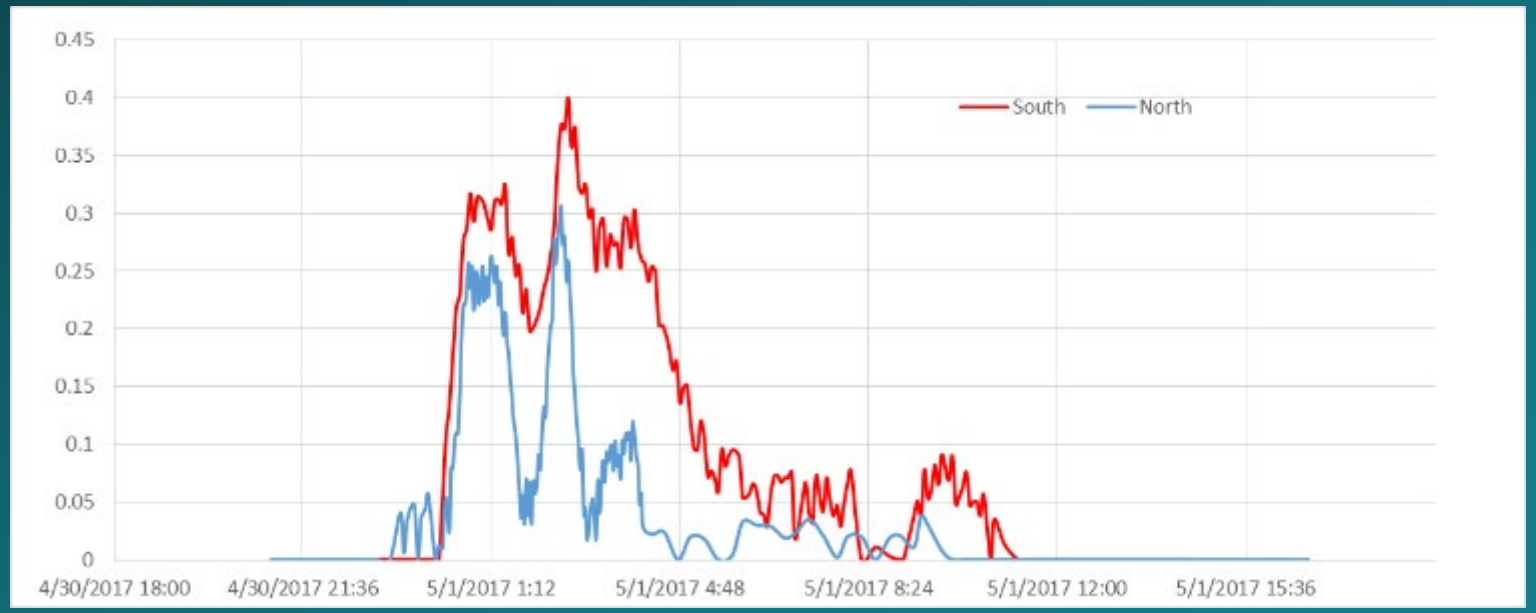
Hydrographs: North (blue) vs South (red)





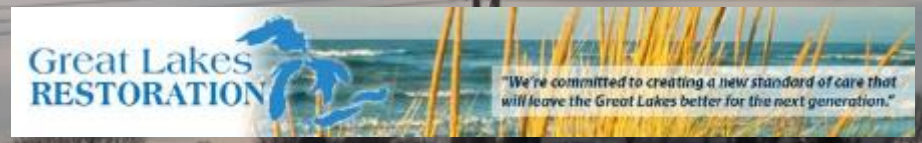
Hydrographs: North (blue) vs South (red)





Questions

THANKS!



NEW Water
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NRCS

FOX-WOLF
WATERSHED ALLIANCE

UW Extension
University of Wisconsin-Extension

ONEIDA NATION

*** Phil Robertson ***

* Crop Consultants

The Nature Conservancy

* Outagamie and Brown County Land Conservation Departments

* Forrest Kalk, Josh Jarosz, Zach Ashauer, Gillian Ivanoff, Noel Craig
UWGB students

University of Wisconsin
GREEN BAY

Dec. 18, 2018 Oneida EOFs

Managed Grazing Operation

NEW Water
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Lower Fox Demonstration Farms Network

NEW Water
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LOWER FOX
Demonstration Farms Network

Fox Demo Farms Outreach Update

Whitney Prestby, UW-Extension

New Fox Demo Farms

- **Neighborhood Dairy**
  - Mark & Joe Van Asten, Jerry Evers
  - Freedom, WI
  - 250 acres of low-disturbance manure applied
  - 80 acres of cover crops – harvested 35 acres of triticale for forage
- **Dairyland Farm**
  - Larry Dufek
  - New Franken, WI
  - Brown County funded
  - 1,000 acres of cover crops

Neighborhood Dairy, Transitioning to cover crops

Dairyland Farm, Oats and triticale

Producer-Focused Field Days

- June 19, 2018 – Fox Demo Farms Field Day
  - 30 attendees (predominately farmers)
  - Four farms (two Fox Demo Farms, two non-Demo Farms)
- June 20, 2018 – County Field Day
  - Four counties interested in building a Demo Farms Network
  - Oconto (brought farmers), Waupaca, Ozaukee, and Dane
- August 22, 2018 – UW-Discovery Farms Field Day
  - Farmers and county staff from western WI
  - Three farms

Greg Nettekoven's Farm, No-till soybeans

Neighborhood Dairy (8th Fox Demo Farm)

Producer-Focused Field Days

- October 11, 2018 – Fox Demo Farms Fall Field Day (1 of 2)
  - Westside of Brown Co. and Outagamie Co. (Four Fox Demo Farms, one non-Demo Farm)
  - 15 attendees
- October 16, 2018 – Fox Demo Farms Fall Field Day (2 of 2)
  - Eastside of Brown Co. (One Fox Demo Farm, two non-Demo Farms)
  - 30 attendees (predominately farmers)

Wavrunek's, Organic rotational grazing

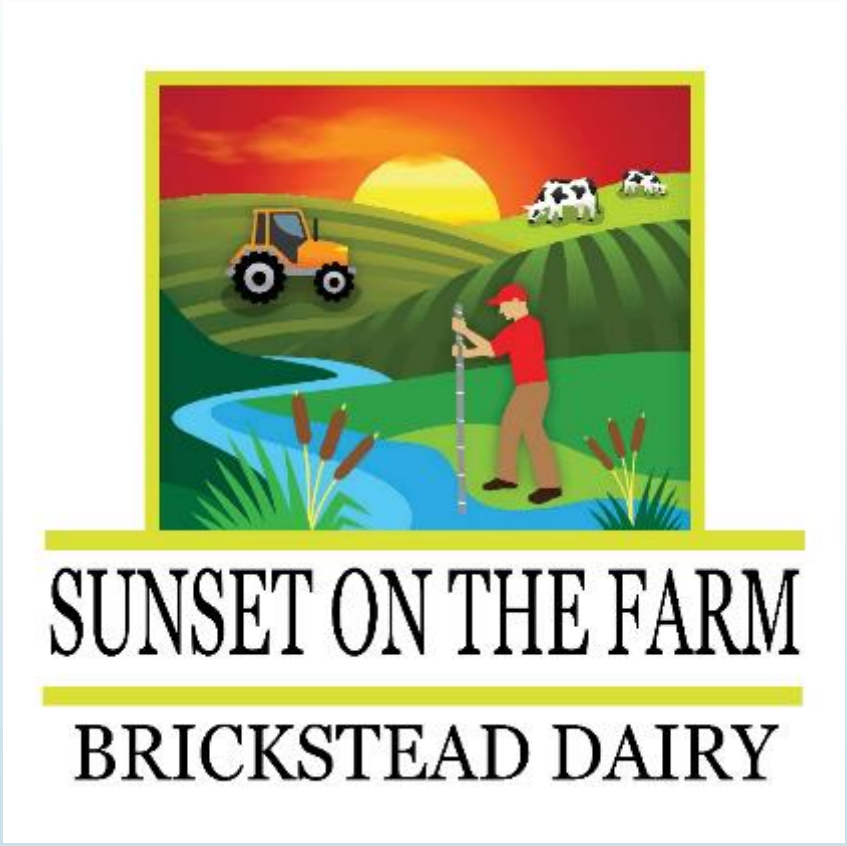
New Horizon Dairy, Diversified cover crops

K-12 Tours

- May 24, 2018 - Brillion High School Field Day – Brickstead Dairy & VandeWettering Farms
  - Agriculture class (9th-11th graders)
  - Two farms visited
- May 25, 2018 – De Pere First Graders at Brickstead Dairy
  - Farm wagon tours
  - Watershed model and soil science

Sunset on the Farm

- Nearly 500 people attended
- 44 sponsors
  - 11 Platinum
  - 4 Gold
  - 29 Silver
- Nearly 90 volunteers
- Event included: Dinner, wagon tours of the field, petting zoo, kids science stations, rainfall simulator, and more!
  - 17 wagon tours throughout the night



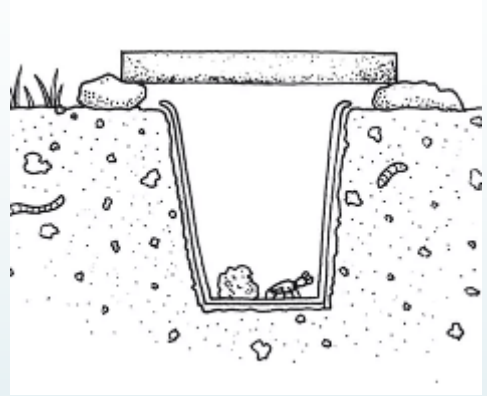

BEHOLD
SOIL

UW-Green Bay Tours

- UW-Green Bay Soil Environment Course
- 22 students
- Toured Dairyland Farms

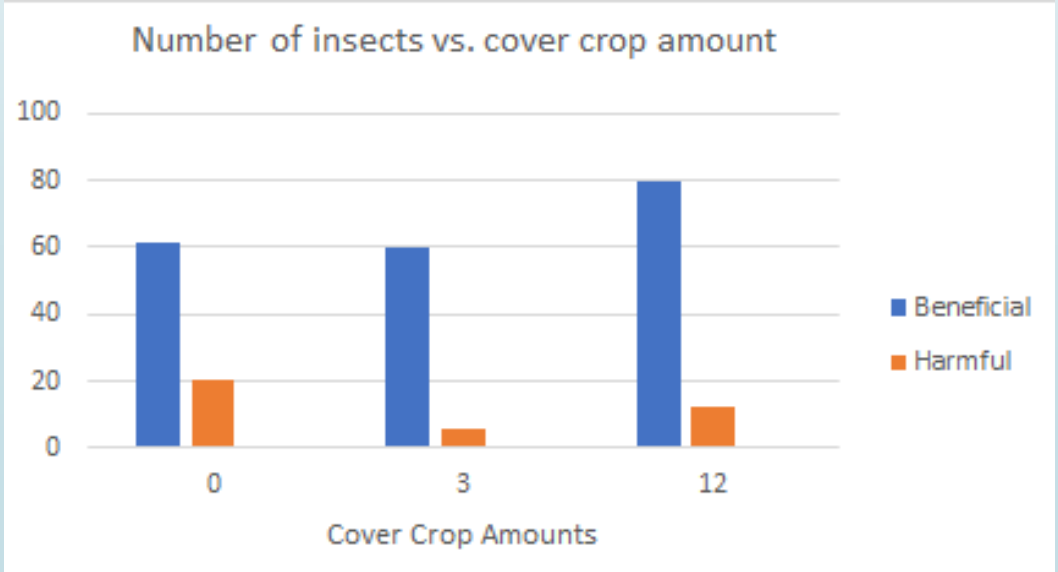
Diversified Cover Crops for Beneficial Insects & Pollinators

- Collaboration with US Fish & Wildlife Service and UW-Green Bay
  - Conservation Biology
  - Ecology
- Three Farms: New Horizons Dairy, Zirbel Dairy and DenMar Acres
- Pitfall traps, slug boards, and sticky traps
  - Pollinator was cancelled

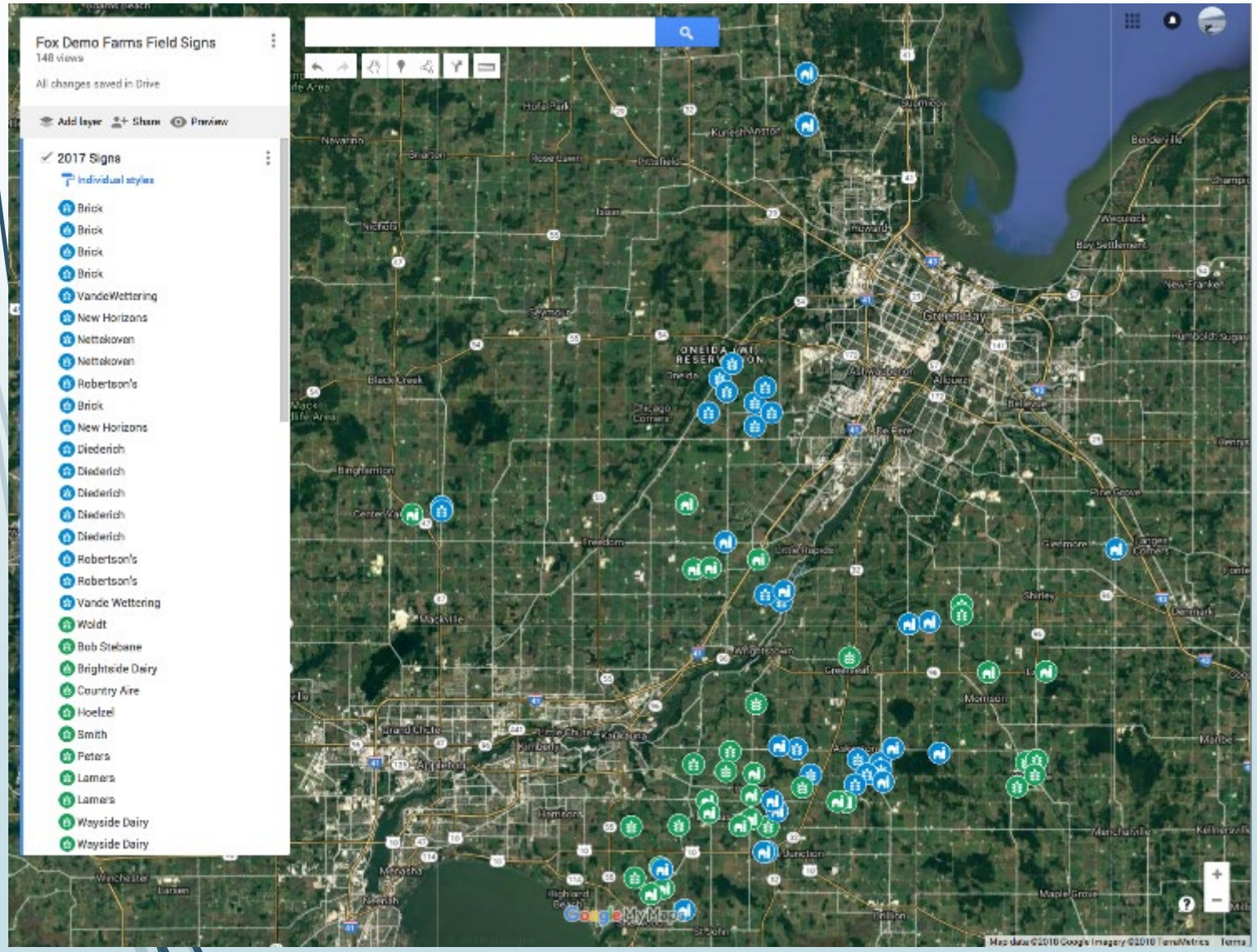


Diversified Cover Crops for Beneficial Insects & Pollinators

- Treatments:
  - Zero
  - Three species mix
  - Twelve species mix
- Insects were categorized
  - Beneficial
  - Neutral
  - Harmful



Cover Crops & No-Till Field Signs



34 signs throughout watershed

37 signs throughout watershed

Lessons Learned Technical Guide (2019)

- Build a space for all the knowledge gained in the Demo Farms project AND creating a useable resource for farmers and agronomists.
- First meeting with Brown & Outagamie County technical staff
- Meet regularly throughout winter to build content and then bring different groups to help fill in gaps

Ripple Effect Mapping (2019)

- Research Question: What social impact has the Fox Demo Farms project had on the Lower Fox River Watershed?

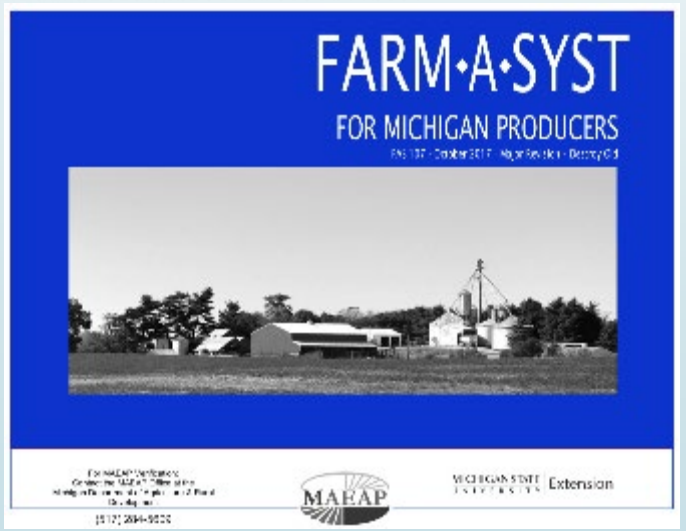
- Group or individual interviews
  - Fox Demo Farms (8 farms)
  - Farms who have implemented practices outside the network (farms with field signs)
  - Agronomists
  - Project partners

- Better understand who farmers talk to, where they're getting their information, what motivates them to try new practices (i.e., Neighborhood Dairy)

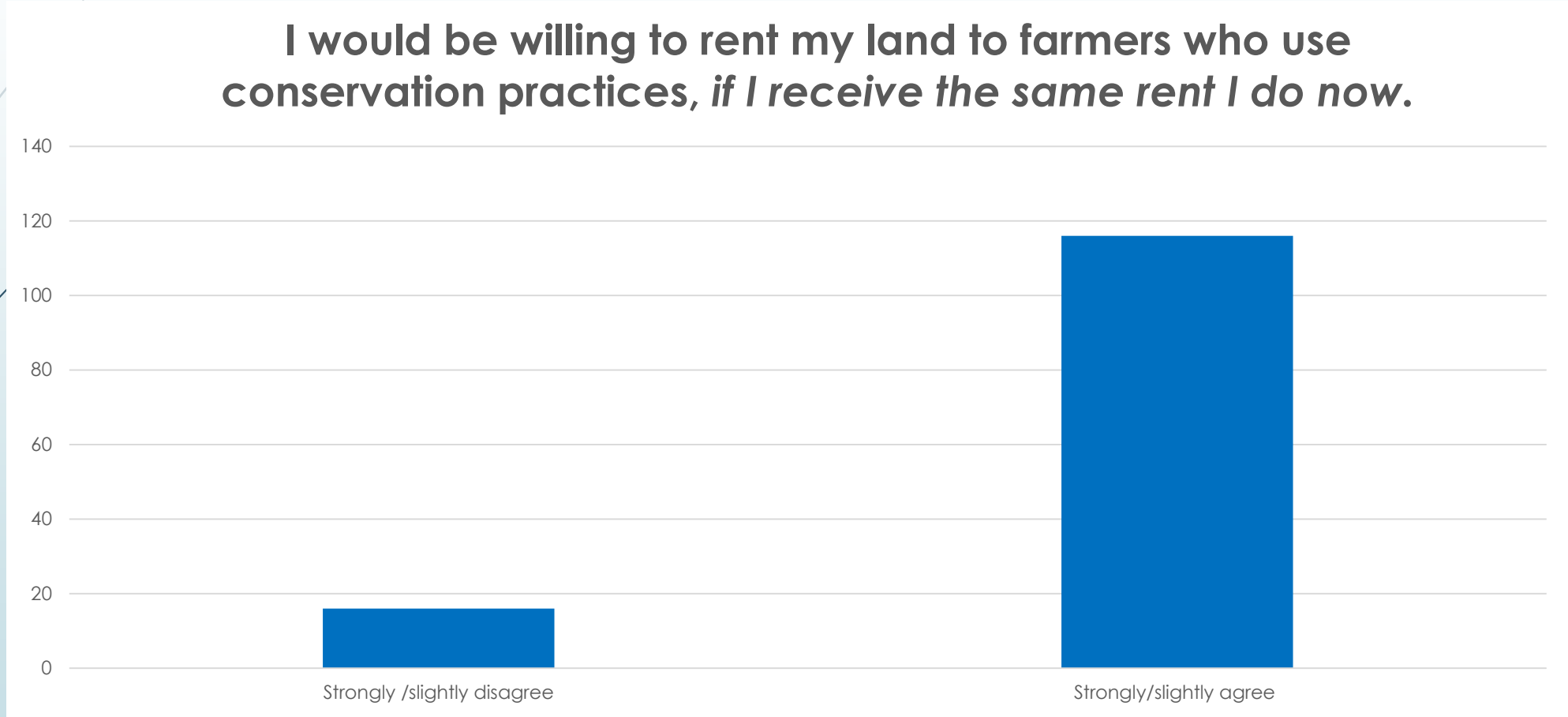
Certification Project

- River Alliance of Wisconsin: Clear Water Farm certification
- Alliance for Water Stewardship
- Farm-A-Syst: Michigan Agriculture Environmental Assurance Program
- Evaluations:
  - Brown Co. Landowner survey
  - Consumer survey – field days

CLEAR WATER FARMS

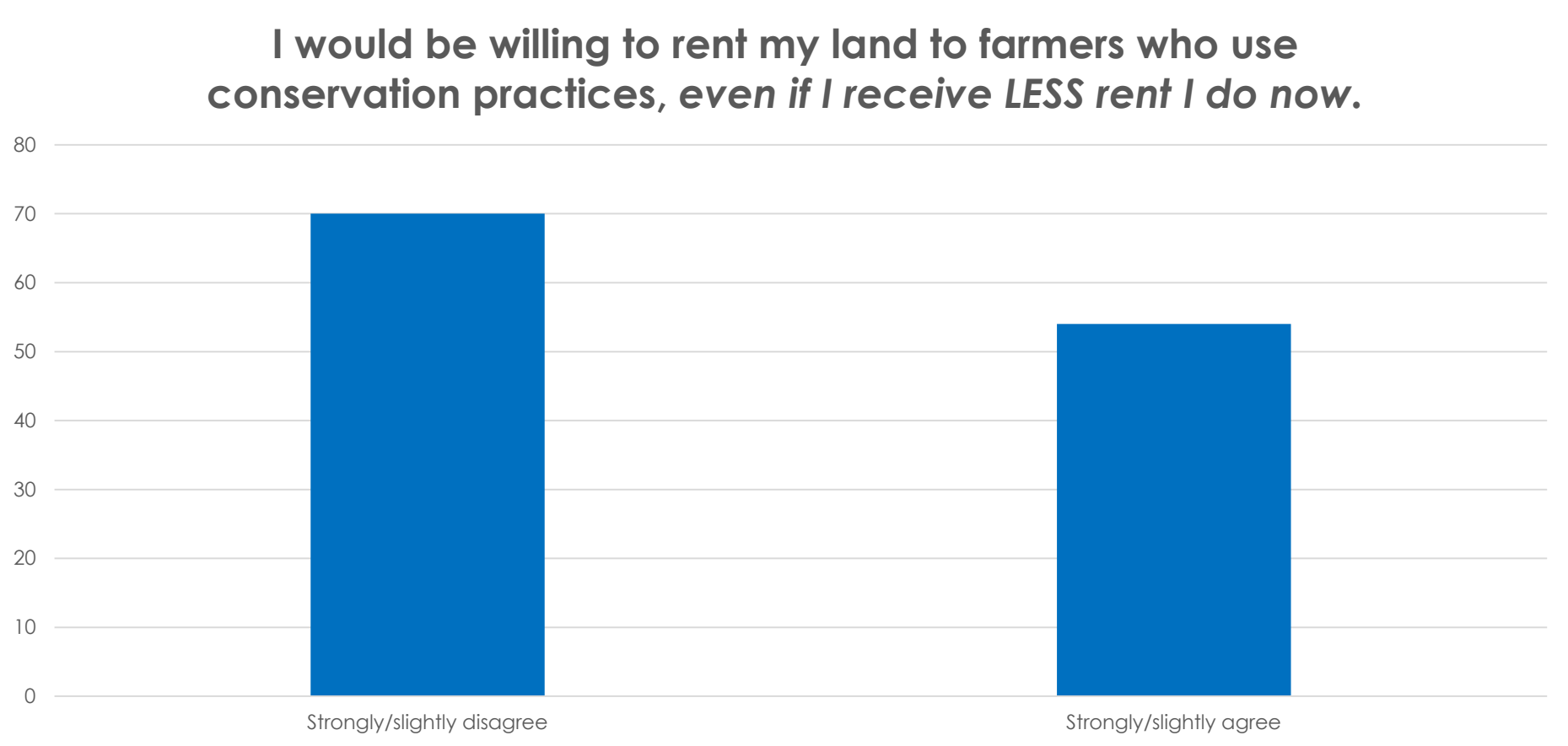


Brown County Landowner Survey



- ***Those who agree own 10,523 acres of farmland.***

Brown County Landowner Survey



- ***Those who agree own 3,985 acres of farmland.***

Dairy Consumer Survey

Dairy Consumer Survey

Brickstead Dairy

This survey is being conducted by University of Wisconsin-Extension (UW-Extension) and Brown County Land and Water Conservation Department (LWCD). Brown County LWCD is looking to build a certification program for farmers who implement practices that align with the principles of conservation agriculture (i.e., year-round plant growth, no-till planting, and low-disturbance manure applications). This survey is designed to identify how a "Clean Water Farm" certification might impact consumers and their willingness to pay for dairy products that were produced using certified conservation practices. Survey responses from consumers, like yourself, will help inform the development of the certification program.

Participation in this survey is voluntary and your responses are confidential. The survey should only take about minutes to complete. Thank you for your time and assistance!

Questions? Please contact Whitney Prestby, UW-Extension (920) 391-4663 or whitney.prestby@ces.uwex.edu

1. Please identify your level of familiarity with:

	Not familiar	Somewhat familiar	Very familiar
A. Conservation agriculture's impact on soil health and water quality			
B. Conventional agriculture's impact on soil health and water quality			

2. For each of the following products, please indicate how likely, if at all, you are to purchase them now **AFTER** the tour, and then think back to how likely, if at all, you were to purchase them **BEFORE** the tour?

Now, AFTER this tour				BEFORE this tour		
Not likely	Somewhat likely	Very likely		Not likely	Somewhat likely	Very likely
			A. Purchase dairy products that were produced by a certified *Clean Water Farm*			
			B. Purchase dairy products produced by a conventional dairy (Not a certified *Clean Water Farm)*			

3. For the following topics, please identify their importance to you now **AFTER** this tour, and then their importance **BEFORE** the tour:

AFTER this tour				BEFORE this tour		
Not important	Somewhat important	Very important		Not important	Somewhat important	Very important
			A. Your food is produced locally			
			B. Your food is produced using conservation practices			
			C. Your food is packaged using sustainable products (i.e., glass containers)			

4. For the following products, please indicate your willingness to pay:

Product and its average price in the U.S. in 2018	If this product received a *Clean Water Farm* certification, I would be willing to pay a maximum of…					
	Not willing to pay more for it	$1.00 more for it	$1.50 more for it	$2.00 more for it	$2.50 more for it	More than $2.50
A. Milk ($2.67/gallon)						
B. Cheddar cheese ($5.27/pound)						
C. Butter ($3.38/pound)						

5. Are you the primary decision maker for your household when it comes to buying groceries?

   a. Yes, I make most of the grocery decisions alone
   b. Yes, I make most of the grocery decisions along with my partner/spouse
   c. No, I don't make most of the grocery decisions

6. What was the most valuable part of this tour for you?

7. Additional comments:

Questions?

Outagamie County Watershed Efforts

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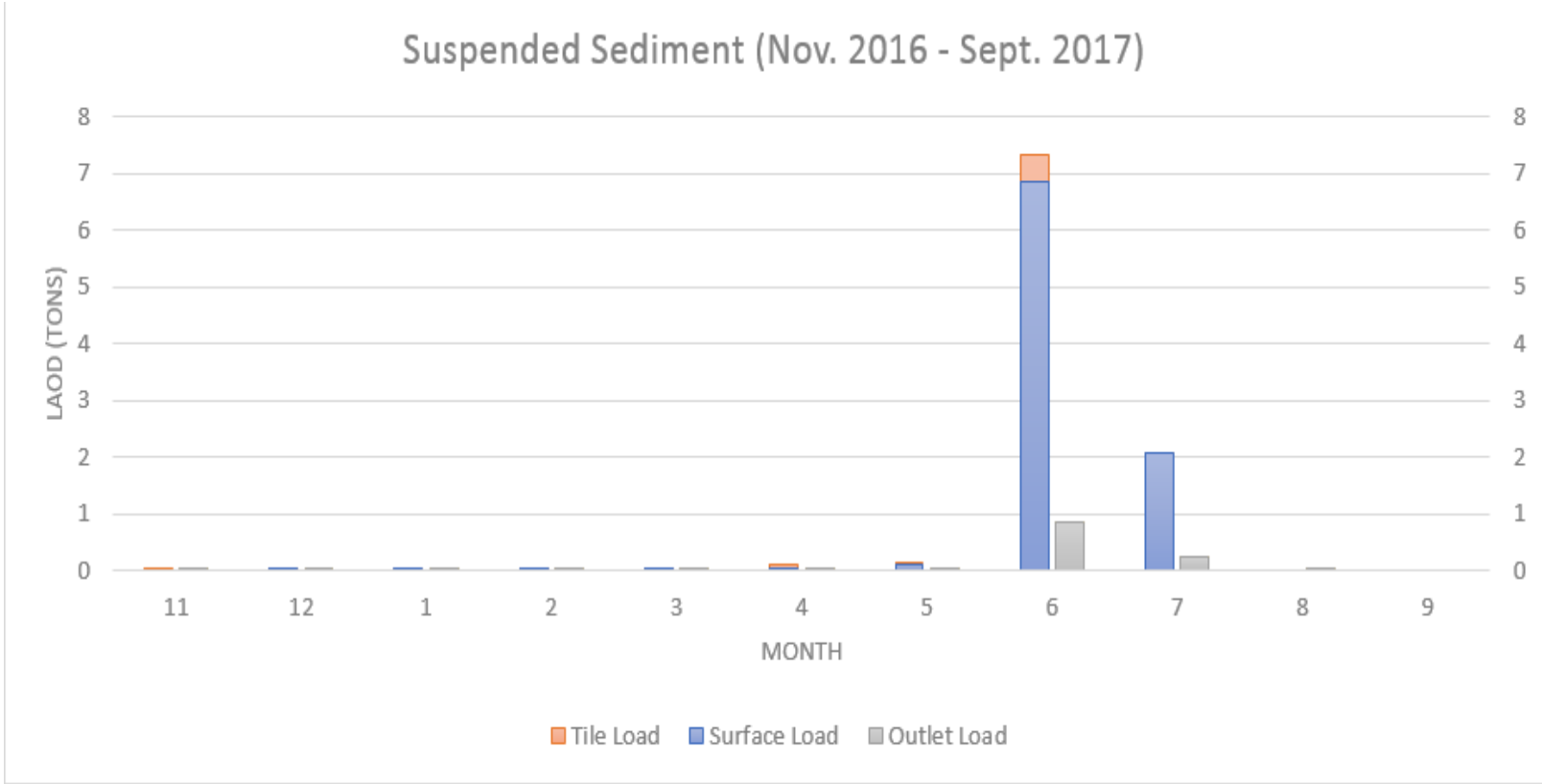
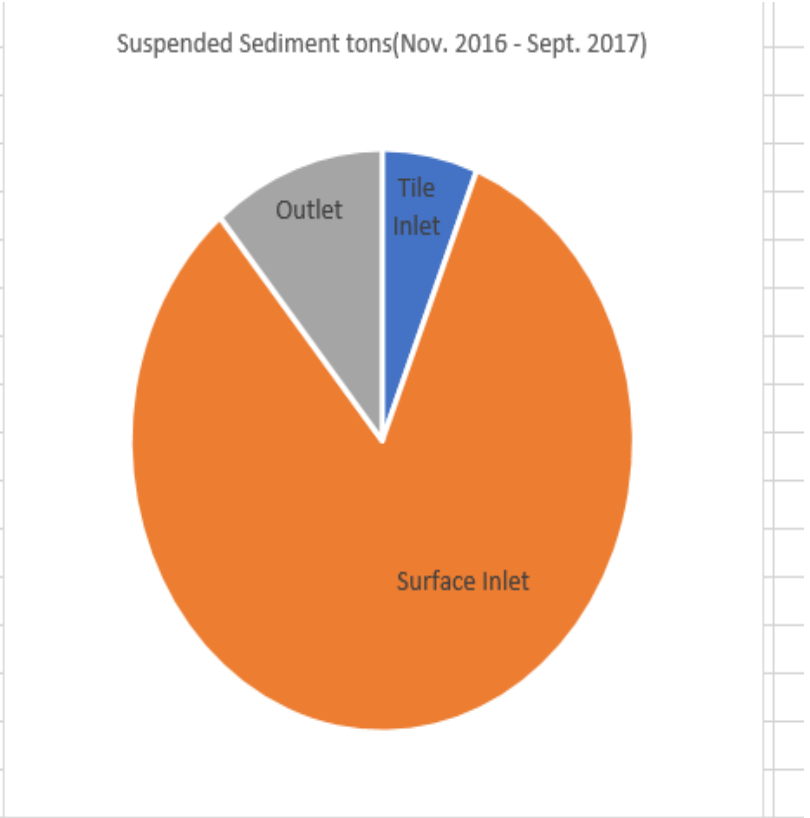
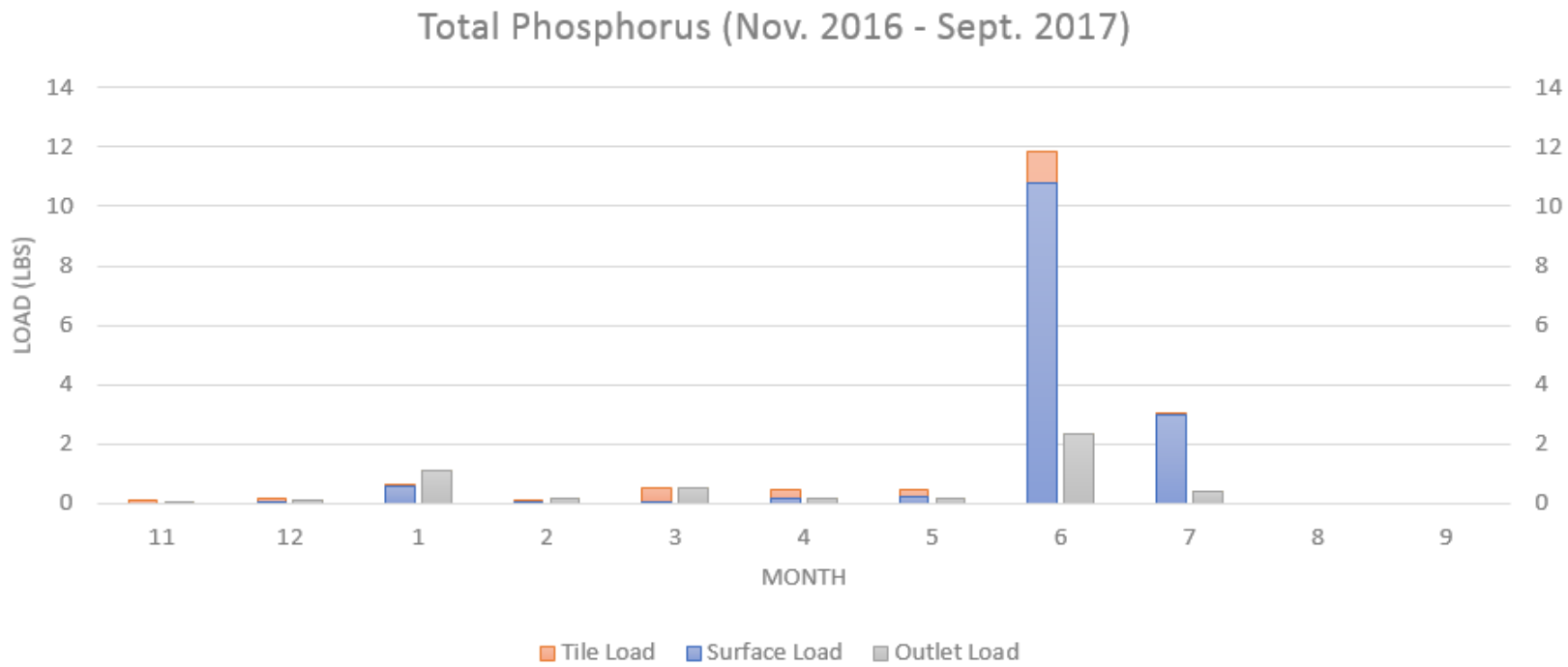
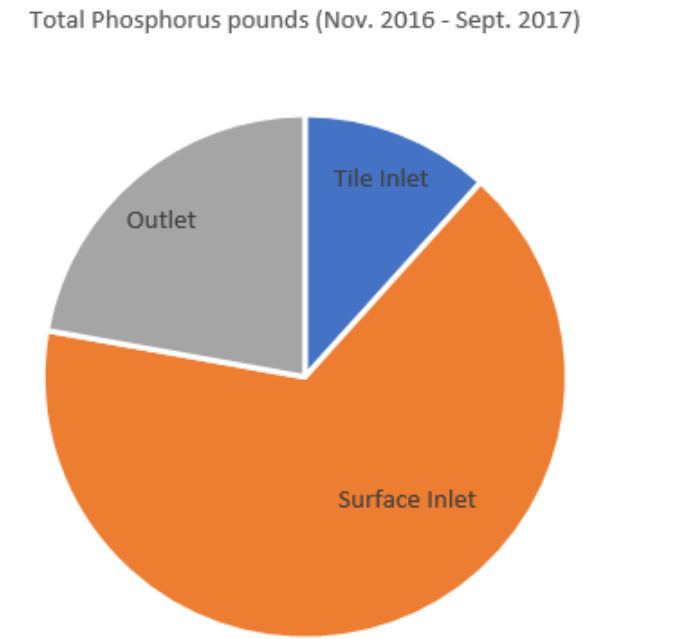
Treatment Wetland (Ag biofilter??)



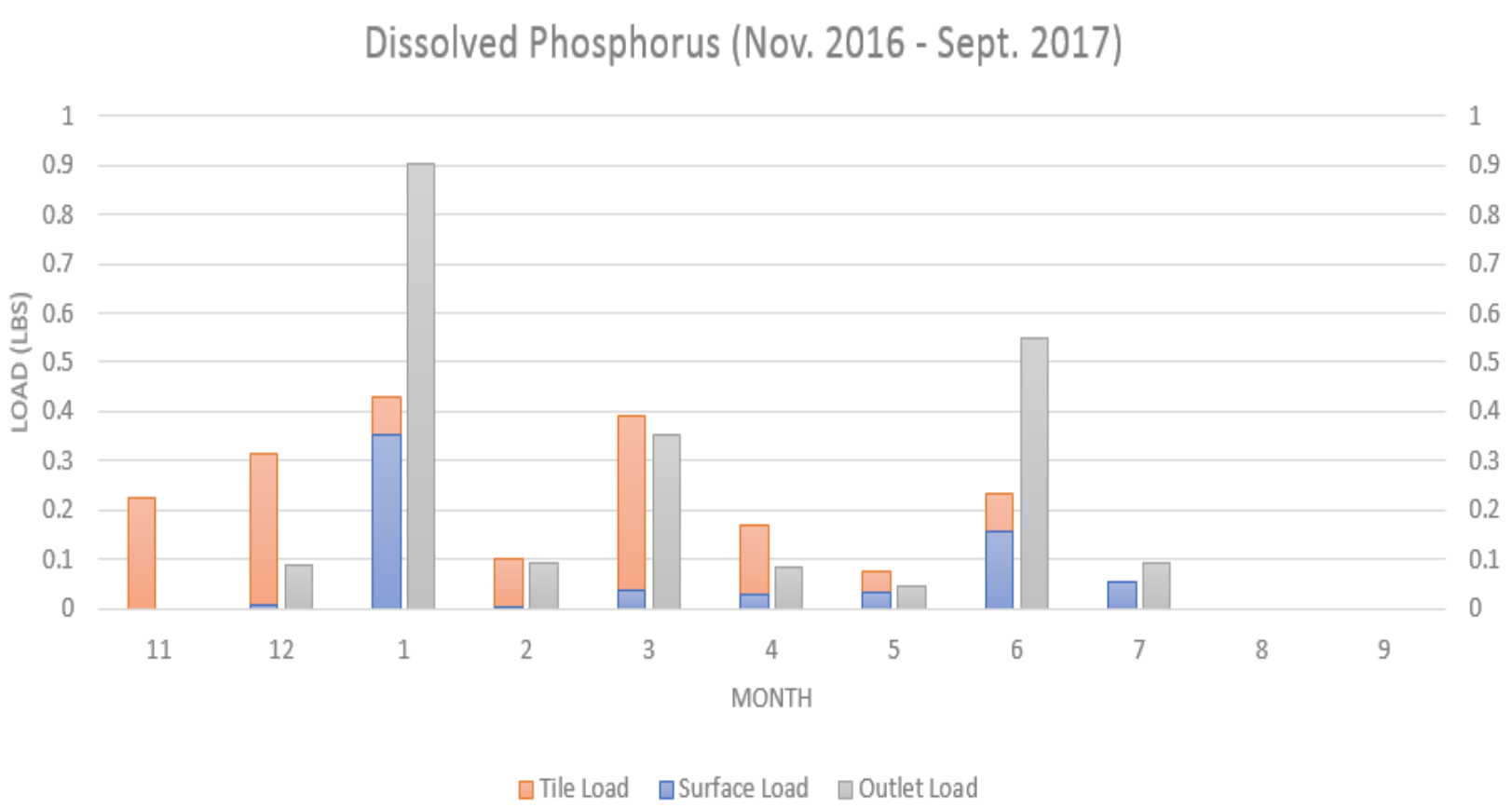


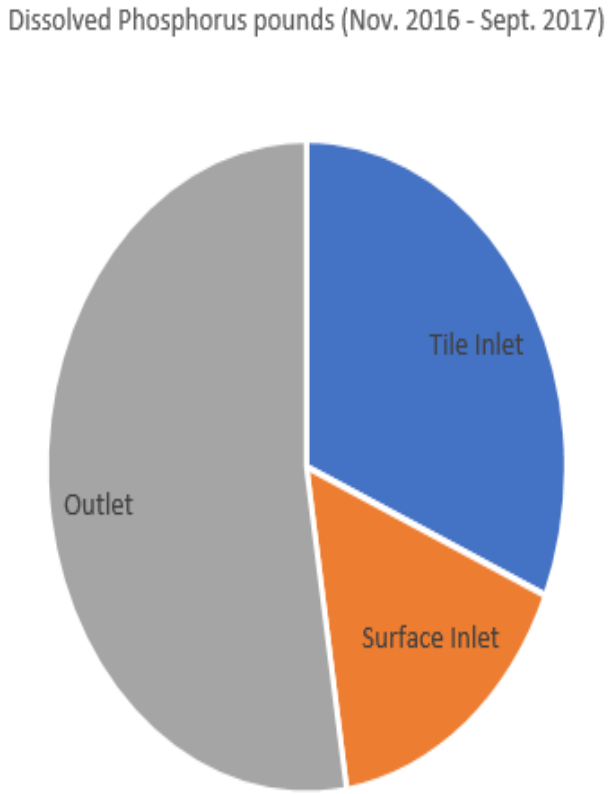
	November	December	January	Febuary	March	April	May	June	July	August	September	Total
Tile Inlet	0.01	0.01	0.00	0.00	0.03	0.09	0.04	0.46	0.01	0.00	0.00	**0.67**
Surface Inlet	0.00	0.00	0.03	0.00	0.00	0.01	0.09	6.86	2.08	0.00	0.00	**9.07**
Outlet	0.00	0.00	0.02	0.00	0.04	0.02	0.02	0.86	0.24	0.01	0.00	**1.22**
Amount Contained/Lost	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.08**	**0.11**	**6.46**	**1.85**	**-0.01**	**0.00**	**8.52**
	88.8%	88.5%	15.7%	-0.1%	-0.2%	79.6%	81.9%	88.2%	88.6%			87.5%





	November	December	January	Febuary	March	April	May	June	July	August	September	Total	
Tile Inlet	0.14	0.19	0.11	0.11	0.47	0.31	0.21	1.05	0.02	0.00	0.00	**2.6**	
Surface Inlet	0.00	0.01	0.56	0.01	0.05	0.15	0.24	10.77	3.01	0.00	0.00	**14.8**	
Outlet	0.02	0.11	1.09	0.15	0.53	0.17	0.18	2.33	0.38	0.00	0.00	**5.0**	
Amount Contained/Lost	**0.1**	**0.1**	**-0.4**	**0.0**	**0.0**	**0.3**	**0.3**	**9.5**	**2.6**	**0.0**	**0.0**	**12.5**	
	84.0%	44.0%	-64.4%	-24.2%	-0.1%	63.8%	59.6%	80.3%	87.4%			71.5%	





	November	December	January	Febuary	March	April	May	June	July	August	September	Total
Tile Inlet	0.23	0.31	0.08	0.09	0.35	0.14	0.04	0.08	0.00	0.00	0.00	**1.3**
Surface Inlet	0.00	0.01	0.35	0.01	0.04	0.03	0.03	0.16	0.05	0.00	0.00	**0.7**
Outlet	0.00	0.09	0.90	0.09	0.35	0.08	0.05	0.55	0.09	0.00	0.00	**2.2**
Amount Contained/Lost	**0.2**	**0.2**	**-0.5**	**0.0**	**0.0**	**0.1**	**0.0**	**-0.3**	**0.0**	**0.0**	**0.0**	**-0.2**
	100.0%	71.5%	-110.6%	6.0%	10.5%	51.2%	37.6%	-133.7%	-66.4%			-10.4%


Heavy Duty


116

Fox Wolf Watershed Alliance Update

FOX-WOLF
WATERSHED ALLIANCE

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FOX-WOLF
WATERSHED ALLIANCE

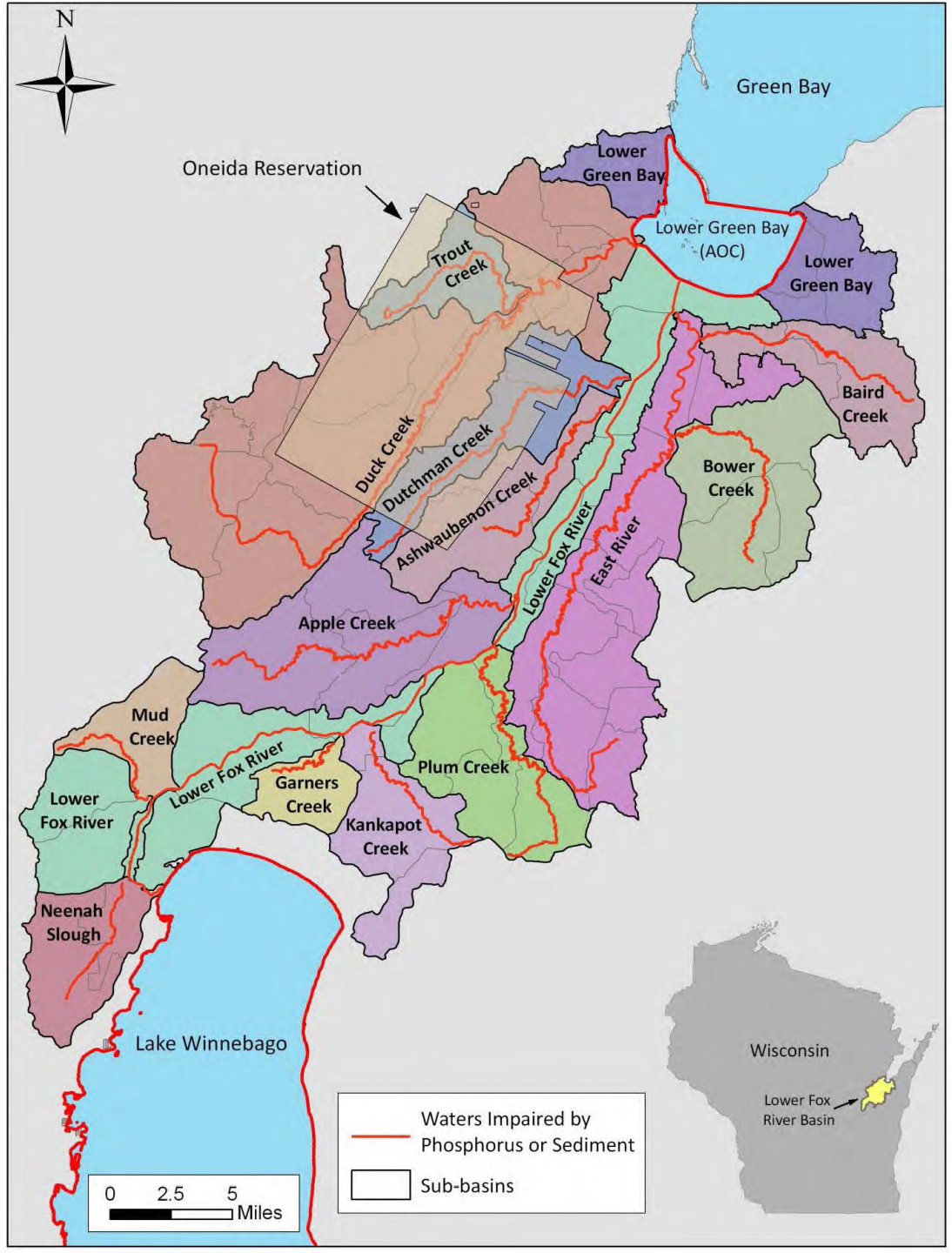
Update for Silver Creek Stakeholder Meeting

December 18, 2018

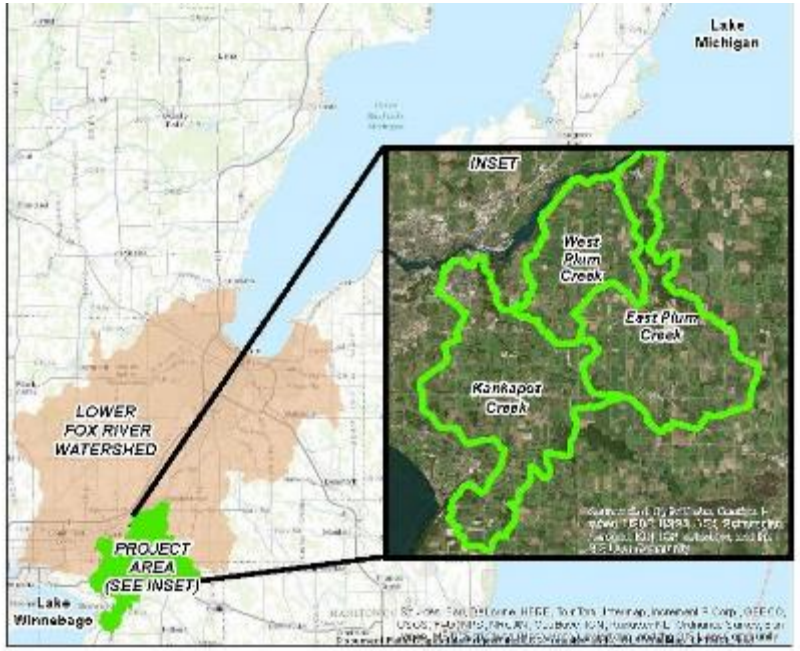
Jessica Schultz, Executive Director

Jessica@fwwa.org 920.858.4246

Lower Fox River TMDL Implementation



Plum & Kankapot Creeks – Great Lakes RESTORATION



Reported to EPA as of 9/30/18

	35-49' Buffer	50'+ Buffer	Concentrated Flow	Treatment Wetlands (Treated acres)	Streambank Protection (grant 1)	Streambank Protection (grant 2)	Pay for Performance Cover Crop System
Goal	76 ac	58 ac	128 ac	3 – 6 ac	5438 ft	2280 ft	3137 ac
Installed as of 9/30/18	41 ac	43 ac	29 ac	2 ac (42.6 ac)	6624 ft	350 ft	2245 ac • over 3 years • 1334 ac verified in cover for 2017, 1226 enrolled in 2018

Project period grant 1: 2015-2020 *Anticipate 1 year extension to bring project through Feb 2021
Project period grant 2: 2016-2020 *1 year extension granted (reflected in date)

Notes of interest for group

Streambank projects were carefully planned to reduce erosion and provide habitat.
Outagamie County placed toe wood structures at the base of this restoration project.

Concentrated flow treatment is being installed in the watershed often without cost share for installation. Of the 116 acres that will be verified for our next reporting period – 70 acres were voluntary not cost shared but provided permission for county staff to verify and map.

***Boots on the Ground is the biggest win for Watershed projects!**

Pay for Performance Cover Crop System – lots of interest
Unfortunately when weather doesn't cooperate interest wanes.
More reason to push for interseeding Cover
Left: No tilled corn into green covercrop
Right: Same field showing corn plant growth

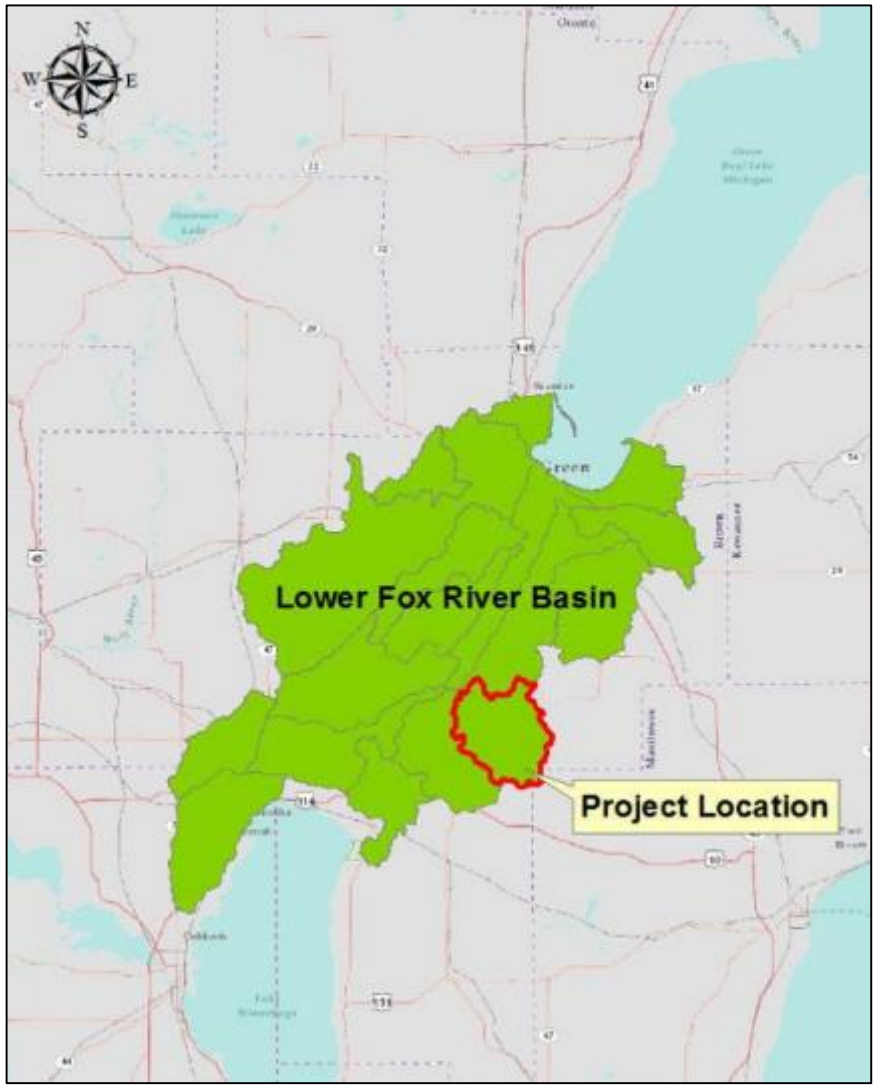
Equipment continues to be a big win for GLRI funding!

- **2 new low disturbance manure injectors were purchased by custom haulers.**
- **Producer who tested GLRI funded no-till equipment upgraded his own planter.**
- **Promotion of no-till in the area inspired a local producer to build a state of the art no-till drill called a CrossSlot**

Upper East River – GLRI

Reported to EPA as of 9/30/18

	35-50' Buffer	Pay for Performance Cover Crop System
Goal	34 ac	3000 ac (1000 ac/yr)
Installed as of 9/30/18	0 ac	0 ac 254.8 limited tillage (funded through GLRI to promote residue after cover crop funded through another program)



Project period: 2017-2020 *Anticipate 1 year extension

GIS Conservation Tracking Tool

Project Partners:

Fox-Wolf Watershed Alliance

Outagamie County Est. 1851

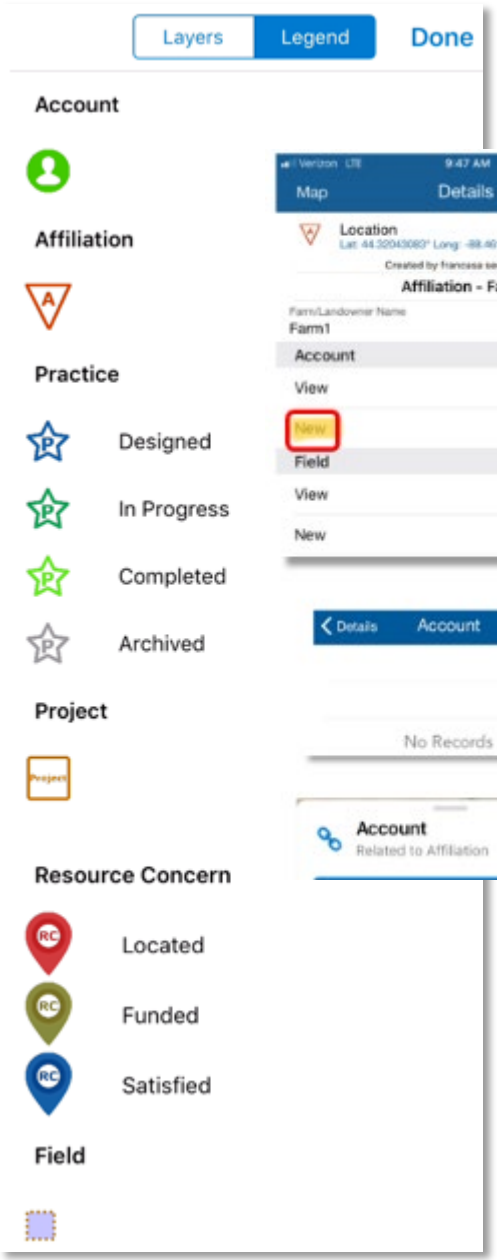
Brown County Established 1818

Winnebago County

Designed with County Land Conservation Staff

Goals:

1. Work with LCD workflow
2. Track accounts/affiliations to connect relationships between landowners, farms, renters, consultants, etc.
3. Track contacts to be able to highlight quantity of work actually done by boots on the ground
4. Track Resource Concerns to easily identify needs for future projects/grants
5. Track projects/practices installed to be able to efficiently report to funding sources and increase the ability to report implementation success at a watershed scale
6. Track funding source and allow multiple funding sources to trigger different verification requirements – ultimately reducing reporting burden for counties working with multiple funding agencies/reporting requirements



1. Select 'New" **Account** or the 'link' icon to create one, and fill in the details.
2. Choose Map view to place the **Account** feature in a location
3. Submit

Selecting 'View' will allow you to see **Accounts** previously created and associated with this Farm. If there are no **Accounts** yet associated with this Farm, this will be indicated when you choose 'View'.

Great Lakes Restoration

GIS Conservation Tracking Tool

Designed to work with the reporting system being developed by WDNR to track MDV funds.
(has not been tested with the final version of WDNRs tool)

Tracking Tool is built on the ESRI Arc GIS platform.
Collector and Survey 123 Apps have been developed for data collection.

WHAT'S NEXT?

Now – January 2019

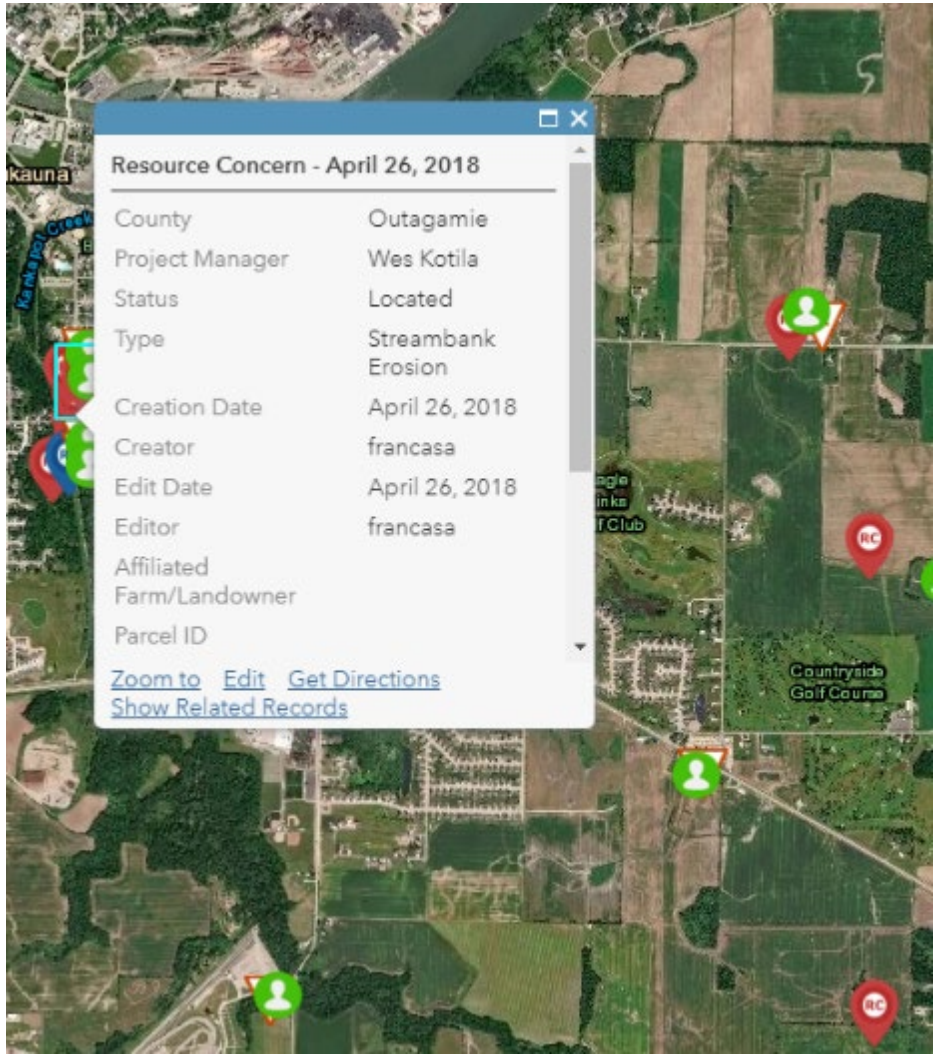
- Final changes are being made to the database.
- Work with partners to finalize data hosting/sharing details.
- Finalize detailed User Instructions being created for the apps.

January – March

- Dashboard development.
- Official Rollout to Lower Fox River County Land Conservation Departments - app training will be held at each county office for LCD staff.
- Develop funding strategy for technical support of tool

April – June

- Develop regional watershed recovery reports
- Modify tool as issues are identified (ongoing)
- Rollout out tool to additional counties (ongoing)



Researching the Effectiveness of Agricultural Programs

Project led by:

Great Lakes Commission
des Grands Lacs

Funded through:

Great Lakes RESTORATION

Research project to examine how GLRI dollars are spent.

- How effective different programs are for changing farmer behavior
- How effective project administration of programs are from farmer experience with grant manager to grant manager experience with EPA

Recommendations will be provided to EPA to guide future GLRI funds

Note of interest for group

A farmer survey will be sent to farmer's in the Lower Fox. Survey is being conducted by Ohio State University. Goal is to gather input from farmer's on current conservation programs used, and get input on what would make them better.

WDNR – Office of Great Waters

Green Bay AOC

Eutrophication BUI

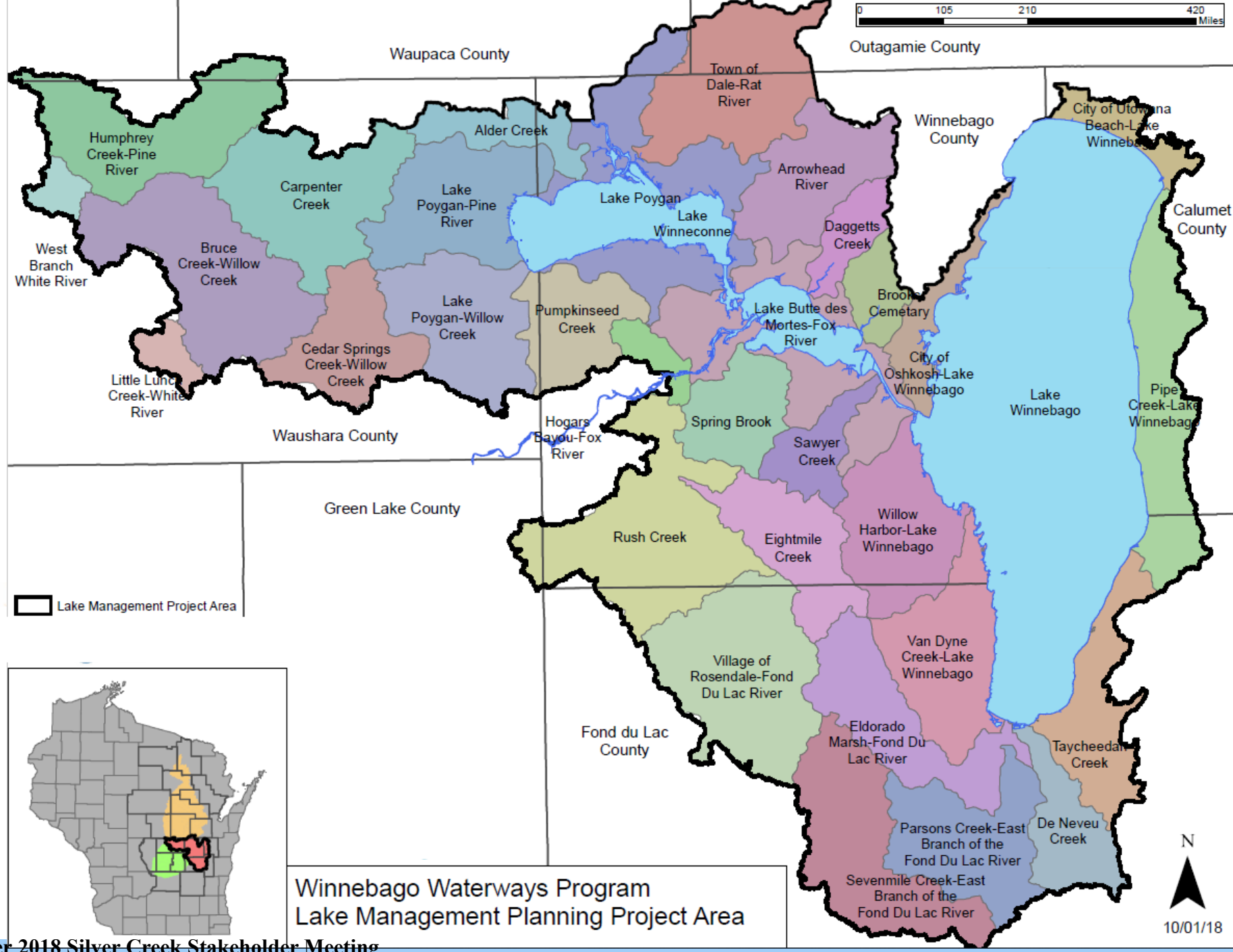
Technical teams are currently meeting to explore how the AOC program could make a meaningful contribution to the watershed work to reduce nutrient loading to the Green Bay AOC.

- Determining how to move toward delisting the Eutrophication BUI could result in significant funding from the AOC GLRI funding
- Process will include bringing recommendations from the technical team through public input process and working with EPA

Winnebago Waterways

A Fox-Wolf Watershed Alliance program

Lake Management Plan enhanced with 9 Key Elements



Winnebago Waterways Program
Lake Management Planning Project Area

FOX-WOLF WATERSHED ALLIANCE

Winnebago County

FOX-WOLF WATERSHED ALLIANCE

Basin Buzz

Semi-Annual Agricultural Newsletter – to be mailed in January

Watershed Hero

2019 Impact Awards

Accepting nominations NOW!

Presented at the Fox-Wolf Watershed Annual Watershed Celebration
Tuesday, March 5, 2019
Lambeau Field, Green Bay

WINNEBAGO ON TAP!

Expanding our Winnebago on Tap education series to the Fox River and Green Bay.
1st session for Green Bay on Tap will be Toxic PAHs presented by Clean Wisconsin

The Source

Monthly e-newsletter – in inboxes this week. Have a project you want to share? Send it in to be included in January.

Thank you & Merry Christmas!

FOX-WOLF WATERSHED ALLIANCE

Jessica Schultz, Executive Director

Jessica@fwwa.org 920.858.4246

Next Steps In Silver Creek

- Update conservation plans
- Planning for 2019 growing season
- Meetings with growers
- Continue installation of operational BMPs 2019
- GLRI grant funding thru 2019 (possibly 2020?)
- Continue water quality monitoring beyond 2020

NEW Water
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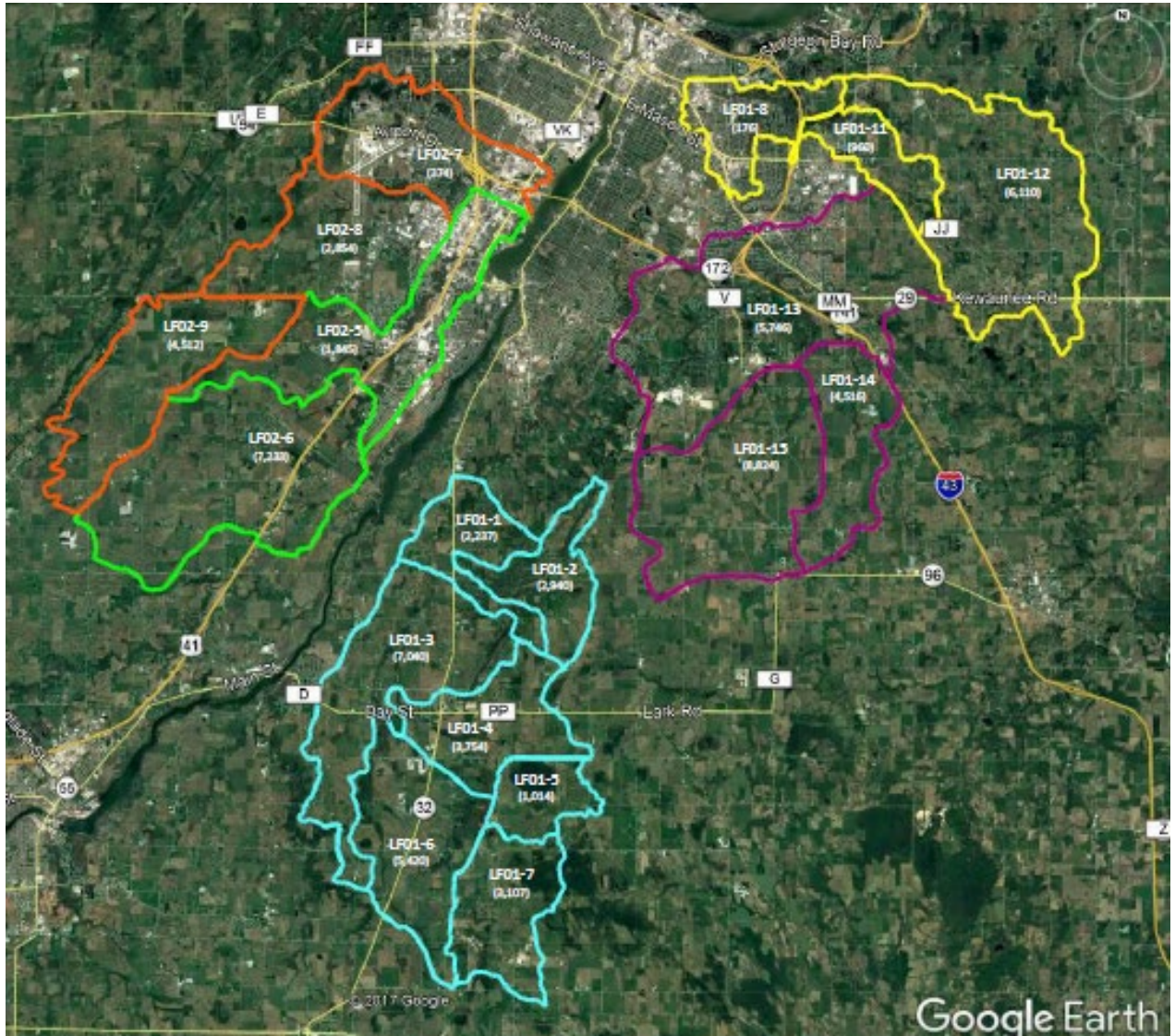
Working Lunch

NEW Water
The brand of the Green Bay Metropolitan Sewerage District

Future Watershed Program Efforts

NEW Water
The brand of the Green Bay Metropolitan Sewerage District

Opportunities in Adjacent Watersheds



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Watershed Evaluation Criteria

1. Sub-watershed Size
2. Sub-watershed Land Use and Agricultural Contribution
3. Geographic Location
4. Nine-Key Element Plan Status
5. Potential Load Partners
6. Flow and Water Quality Data
7. Ongoing Agricultural Watershed Projects
8. Severity of Perceived Issues
9. Technical Resources

NEW Water
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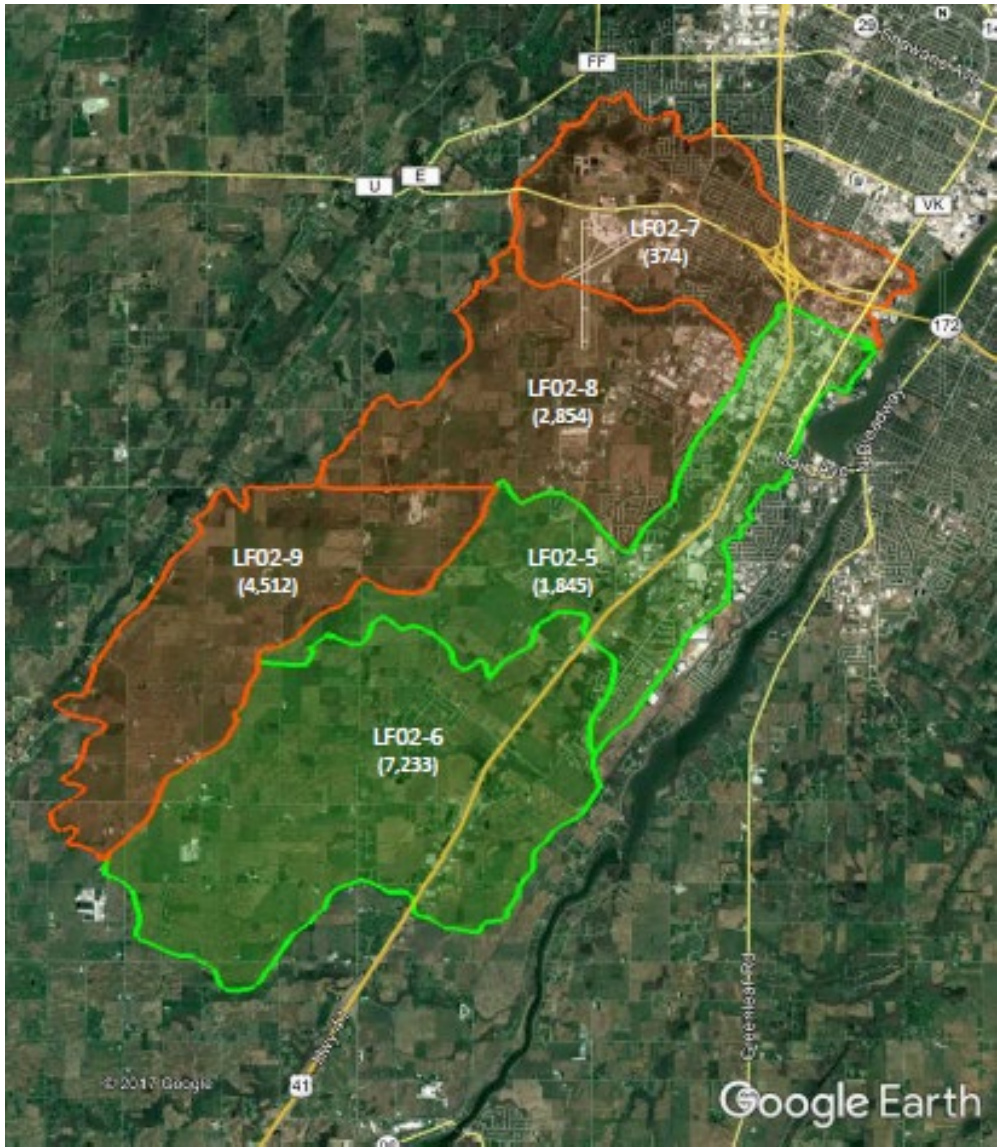
Ashwaubenon/Dutchman Creek



~ 38,000 acres total

~ 20,000 acres ag land

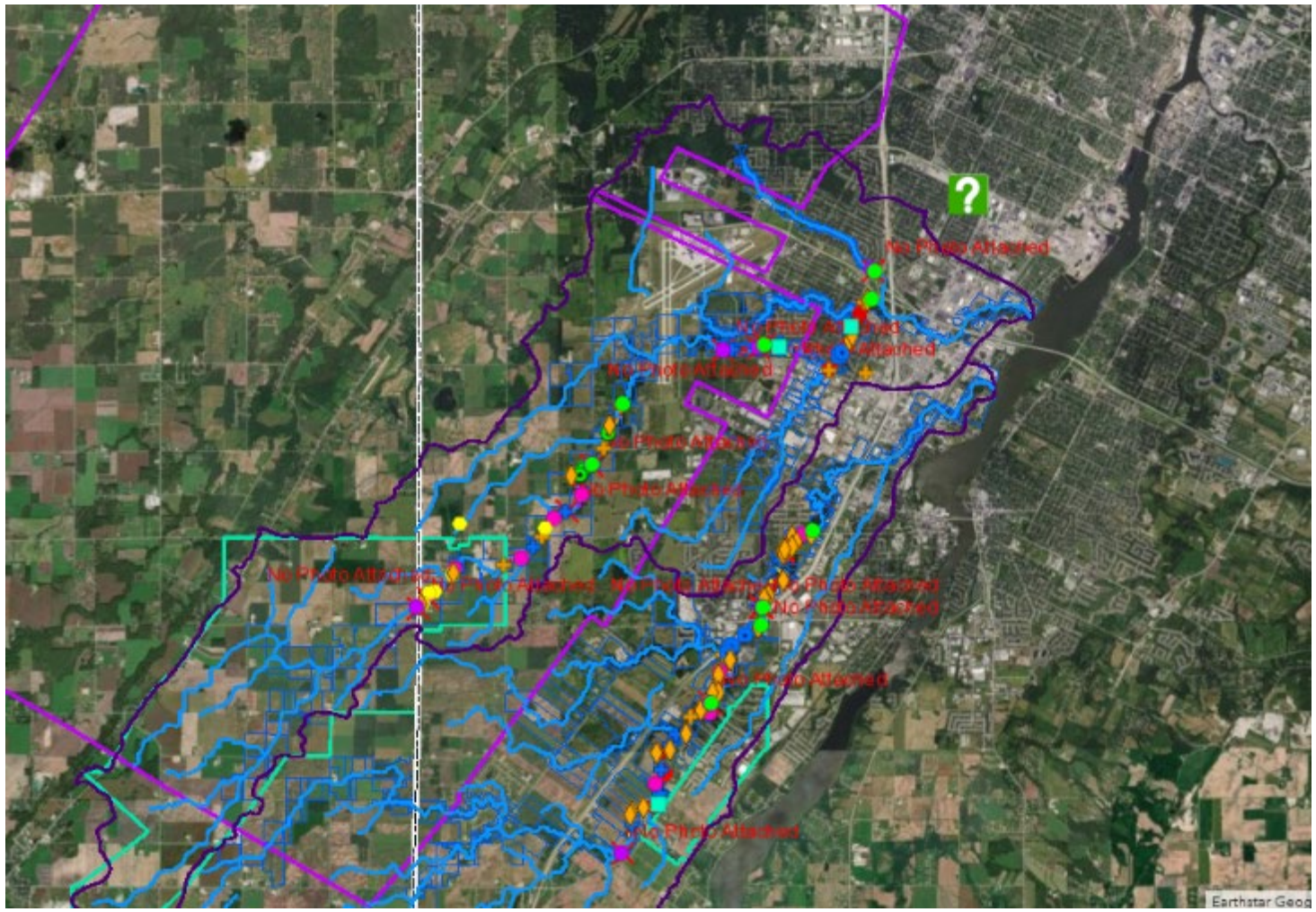
NEW Water
The brand of the Green Bay Metropolitan Sewerage District

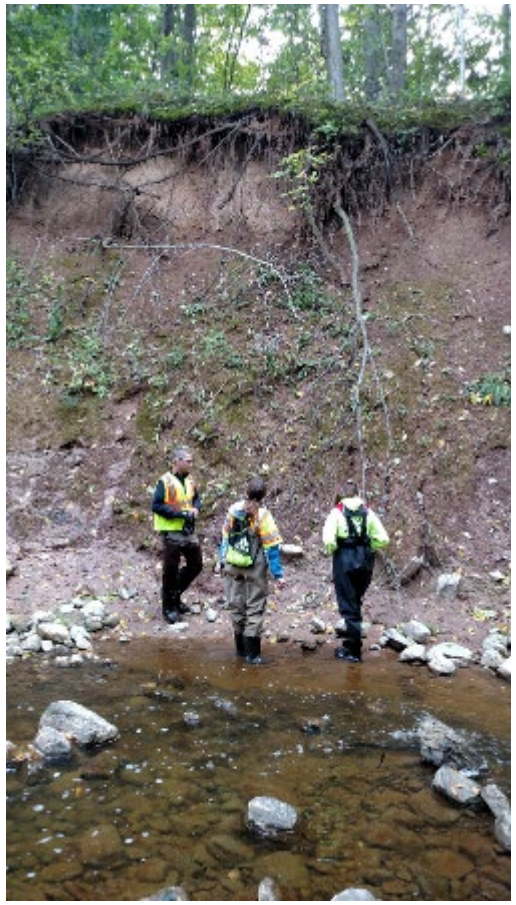
A Full Scale Watershed Management Program

- NEW Water Commission Approved Full Scale Planning in 2018
  - Position NEW Water to advance AM as part of the phosphorus and TSS compliance strategy
- Similar starting tasks as the Pilot
  - Stream corridor inventory
  - Workgroups and partnership agreements
  - Field walks and conservation planning
- Water Quality Monitoring
- Flow Monitoring
- Biological Monitoring

NEW Water
The brand of the Green Bay Metropolitan Sewerage District

Stream Corridor Inventory





NEW Water
The brand of the Green Bay Metropolitan Sewerage District

New Program Name and Logo

NEW Watershed Program

Partnering for Water Quality

NEW Water
The brand of the Green Bay Metropolitan Sewerage District

Next Steps in Full Scale Watershed Program

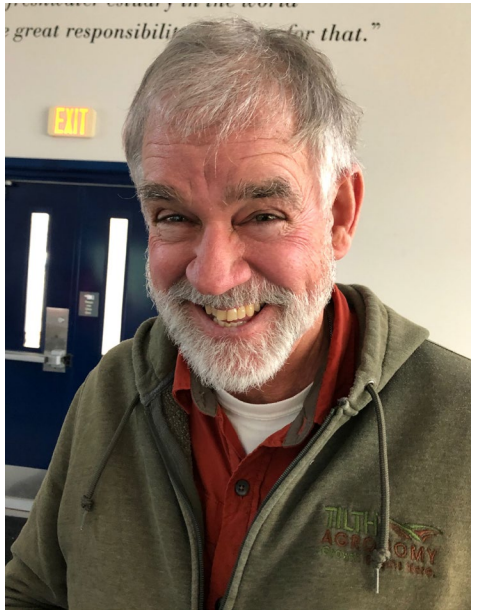
- Application for permit renewal at NEW Water
  - Due Dec 31
- Finalizing Adaptive Management Plan
  - Due Dec 31
- 2019 – a Year of Planning and Inventory
  - Water quality monitoring
  - Desktop field evaluation
  - Develop a method of prioritization
  - Develop advisory committee
  - Kickoff of the program
- 2020 – Begin implementation of practices
- 20 Years of watershed efforts

NEW Water
The brand of the Green Bay Metropolitan Sewerage District

Upcoming Retirements

- Bill Hafs – January 2, 2019

- Jeff Polenske – December 31, 2018



NEW Water
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Comments and Open Discussion