



Silver Creek Project



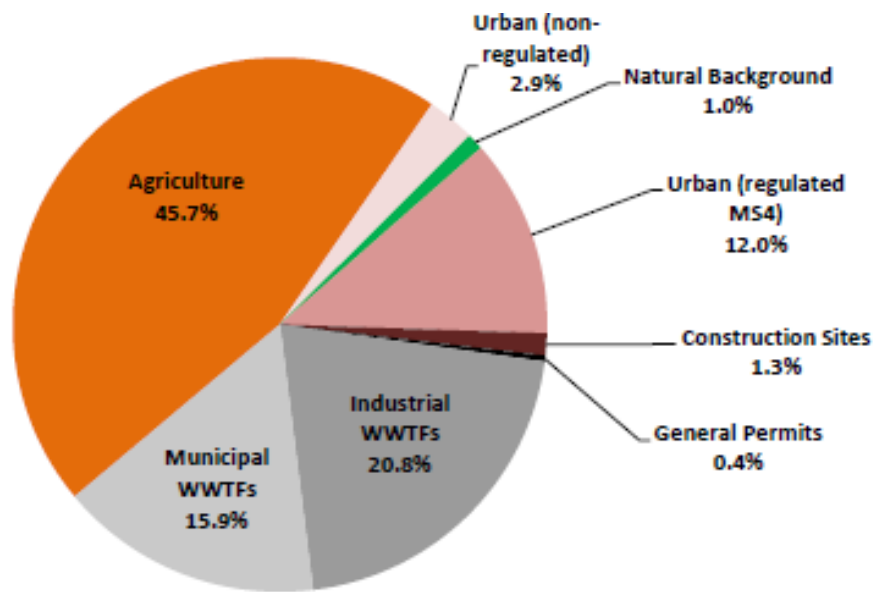
*Partnering
for Water Quality*

NEW Water: Green Bay Metropolitan Sewerage District

- Third largest wastewater treatment facility in Wisconsin
- Currently treat 38 million gallons a day
 - Two facilities
 - Green Bay Facility (30mgd)
 - De Pere Facility (8mgd)
 - 18 municipal customers
 - 219,000 residents
 - 285 square mile area
- Vision: **Protecting our most valuable resource, water.**
- 14 years continuous compliance at Green Bay facility.
- WPDES Permit, Issued July 1, 2014
 - Projected future TP and TSS limits



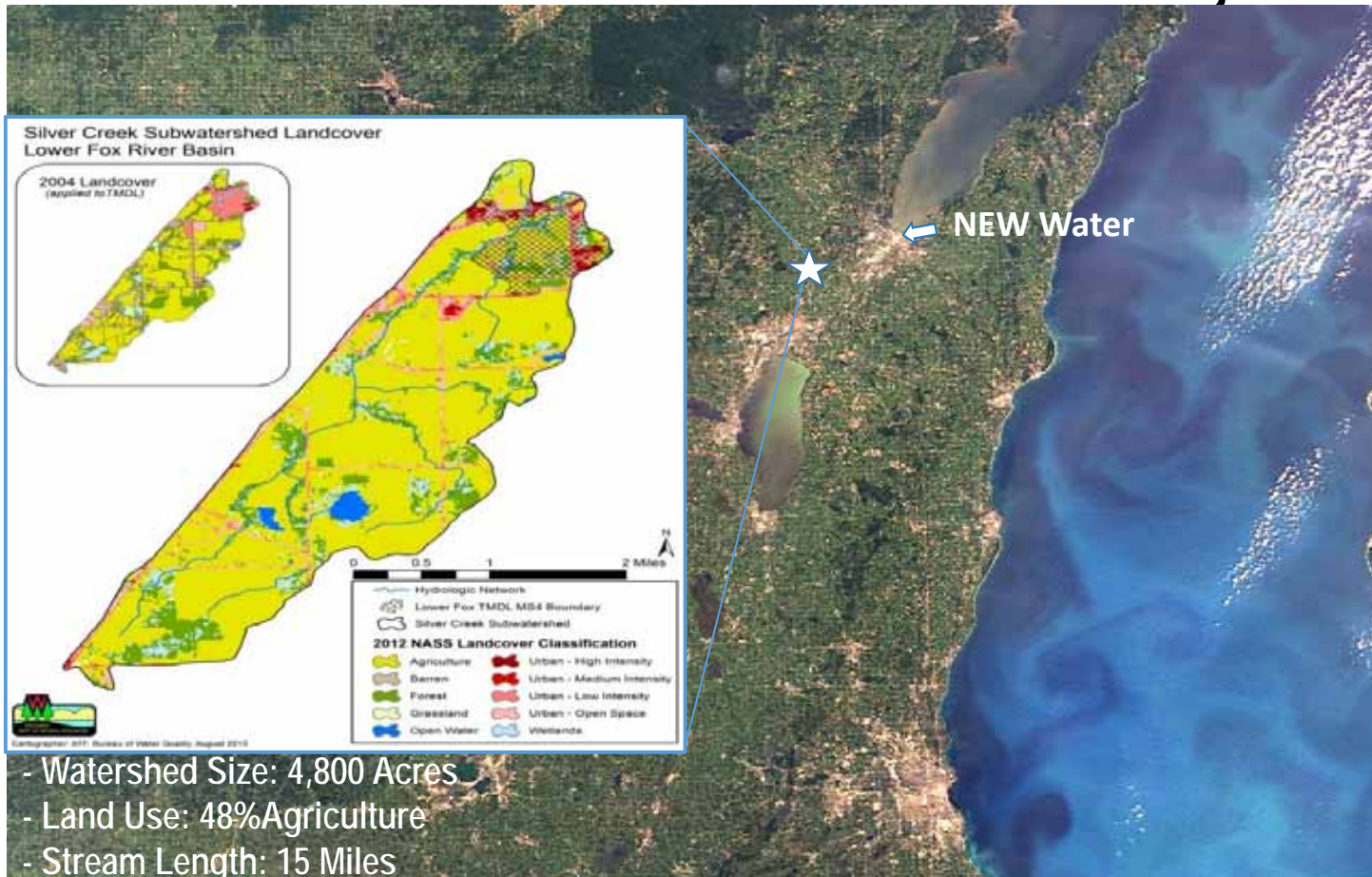
Sources of Phosphorus in Lower Fox River (LFR) Basin



Fox River contributes 1/3 nutrients to Lake Michigan

(Data Source: Total Maximum Daily Load - TMDL Watershed Plan for Lower Fox River March 2012)

Silver Creek Pilot Project



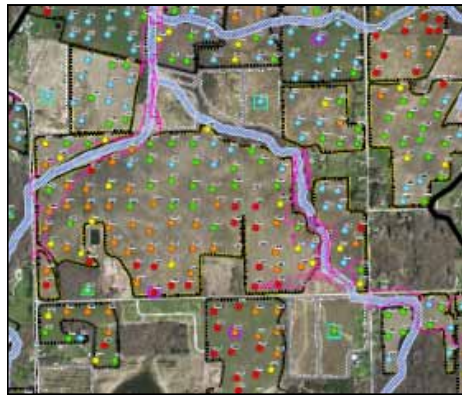
Partnerships in the Silver Creek Pilot Project



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



CONSERVATION & ENHANCED NUTRIENT MANAGEMENT PLAN



Silver Creek Pilot Project – 2016 & 2017



- 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
 - Etc.
- BMP Verification
- Coordination, coordination, coordination....



2017 By The Numbers

- Sampling
 - January 1, 2017- October 30, 2017
 - 187 – grab samples
 - 75 event samples
- Conservation and Enhanced Nutrient Management Plans
 - Over 1500 acres
- Cost Share Agreements
 - 9 Structural BMP Contracts
 - 5 Deed recordings completed
 - 7 Operational BMP Contracts
- Structural Best Management Practices
 - 5 Critical area plantings
 - 15 Filter strips (buffers)
 - 1 Rock Crossing
- Winter Cover in Fields
 - 540 acres of cover crops
 - 85% of cropland covered by either alfalfa, cover crops, winter wheat, forage, pasture, or grass
 - 2016 – 70%
 - 2015 – 30%

Timeline of Grassed Waterway Project



Aug. 16, 2016



Aug 31, 2016

Timeline of Grassed Waterway Project



Oct. 4, 2016



Nov. 29, 2016



Timeline of Grassed Waterway Project



June 13, 2017



Oct 9, 2017



Timeline of Grassed Waterway Project



Dec 1, 2017



Filter Strips Projects



Aug. 23, 2017



Dec 1, 2017



Water and Sediment Control Basins (WASCOB)



June 13, 2017



Oct. 9, 2017

Vegetated Water Treatment Systems



Cover Crop Interseeder



Managed Grazing Operation

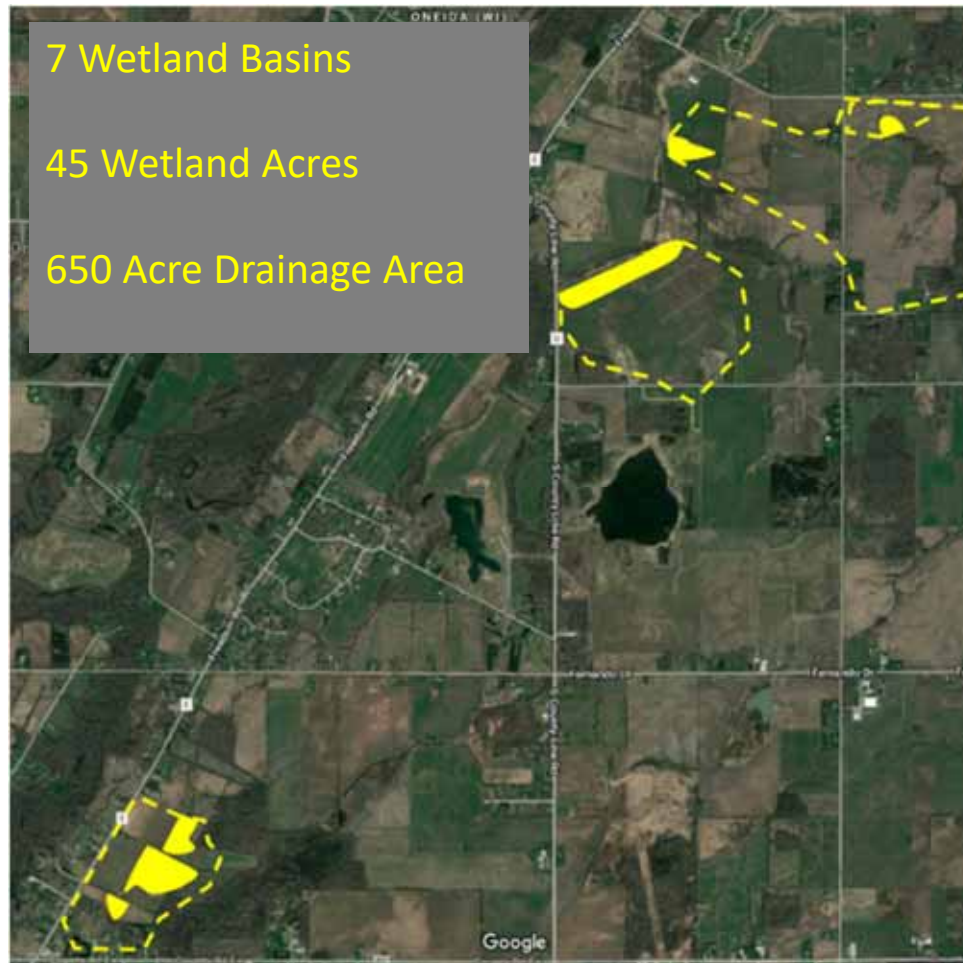


Wetland Restoration Efforts

7 Wetland Basins

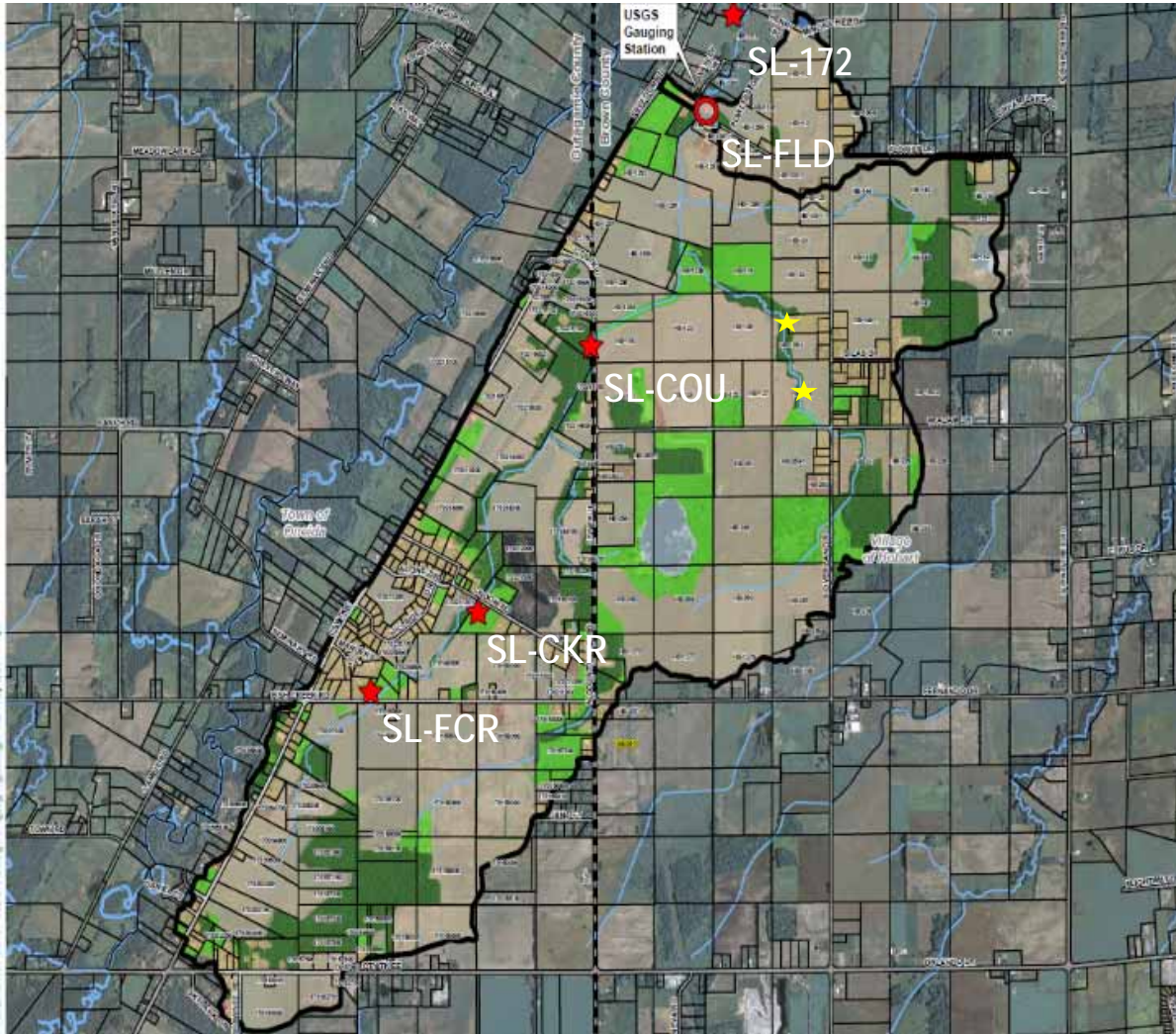
45 Wetland Acres

650 Acre Drainage Area



Wetland Restoration Efforts

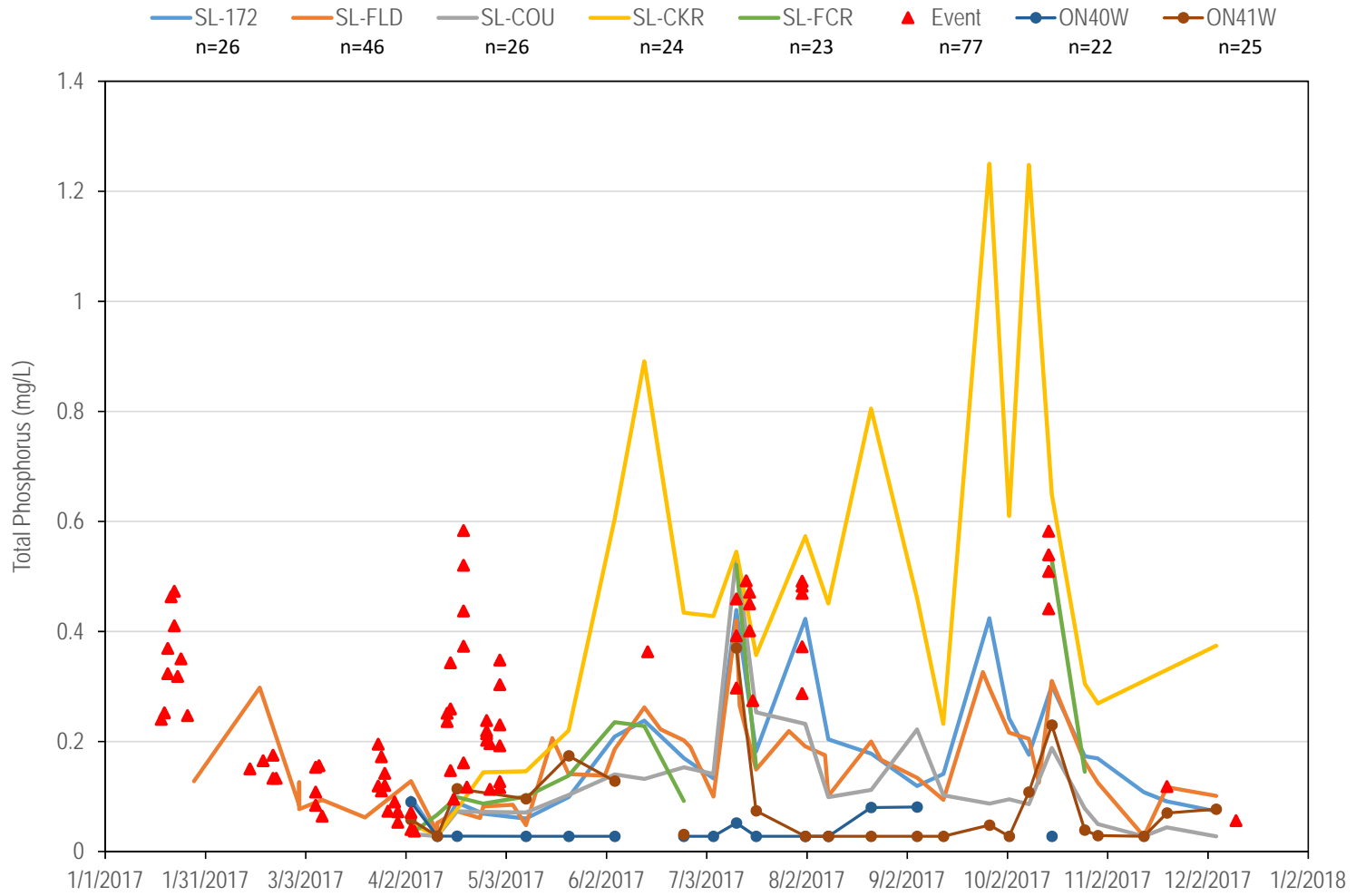




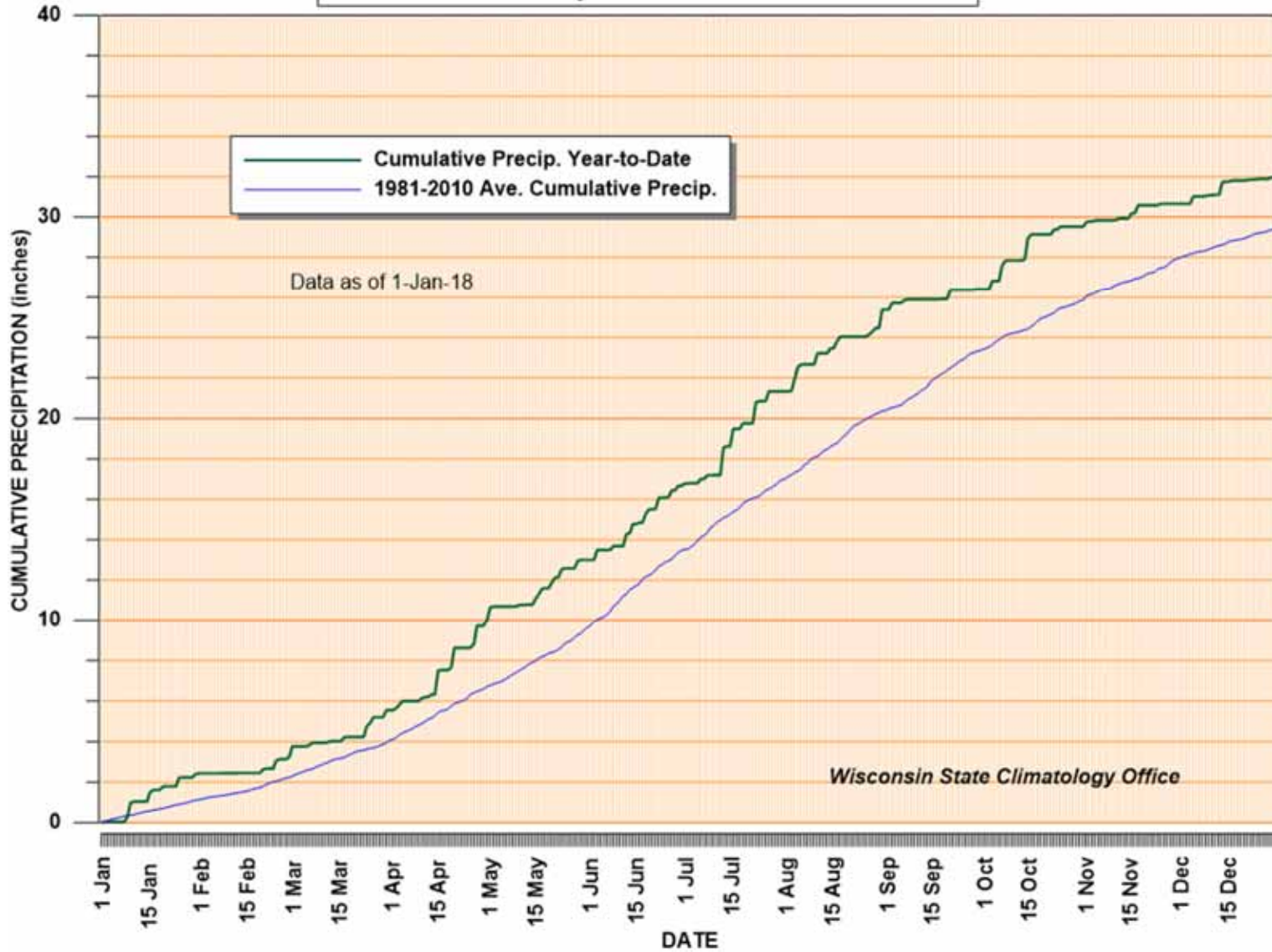
Stream Sediment and Drain Tile Sampling



2017 Total Phosphorus: January - December 2017

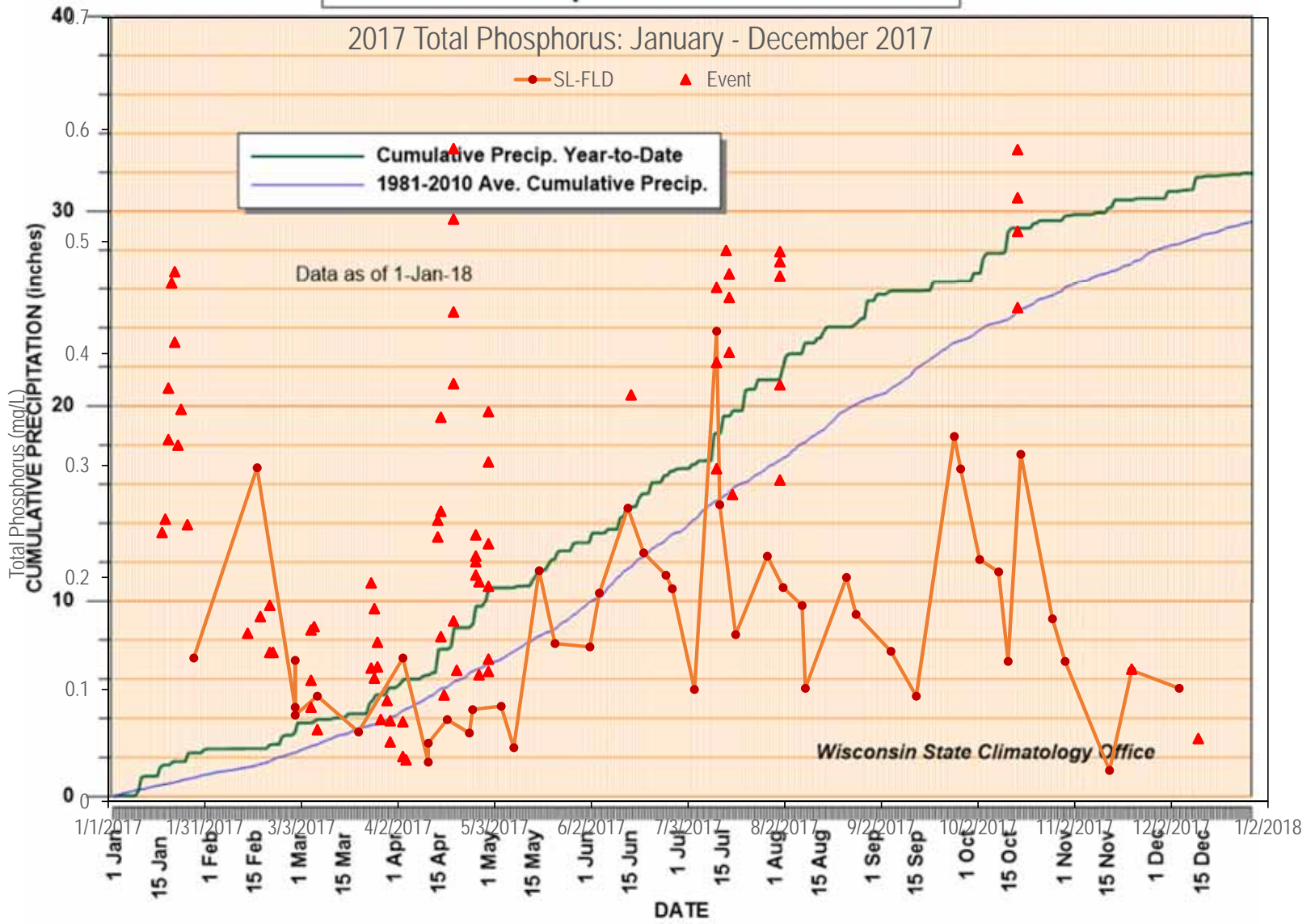


Cumulative Precipitation: GREEN BAY 2017



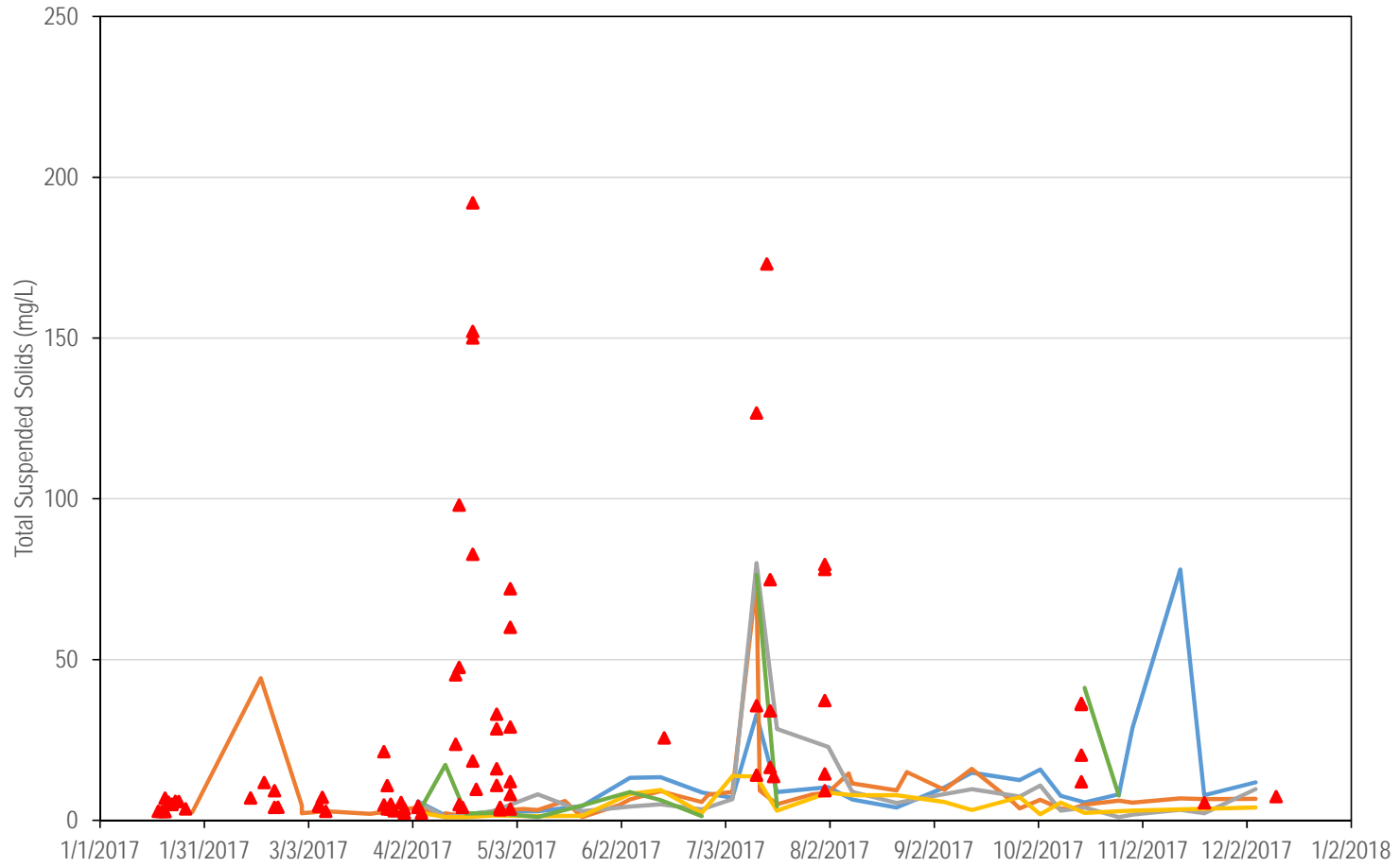
Wisconsin State Climatology Office

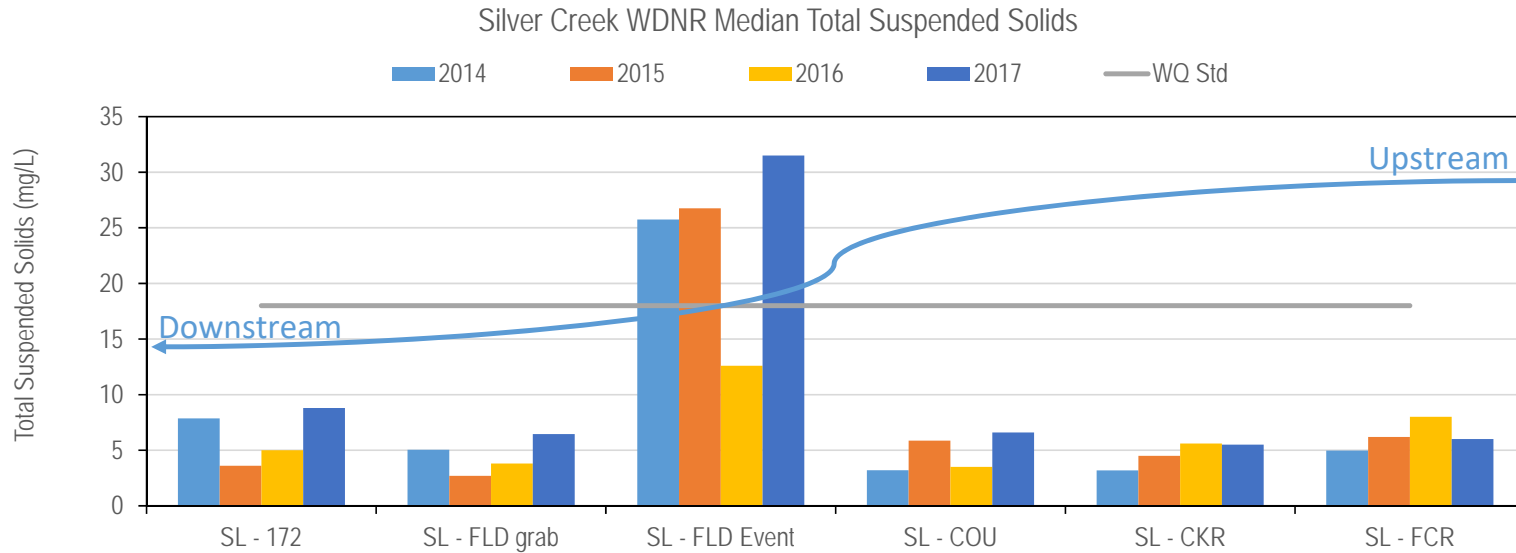
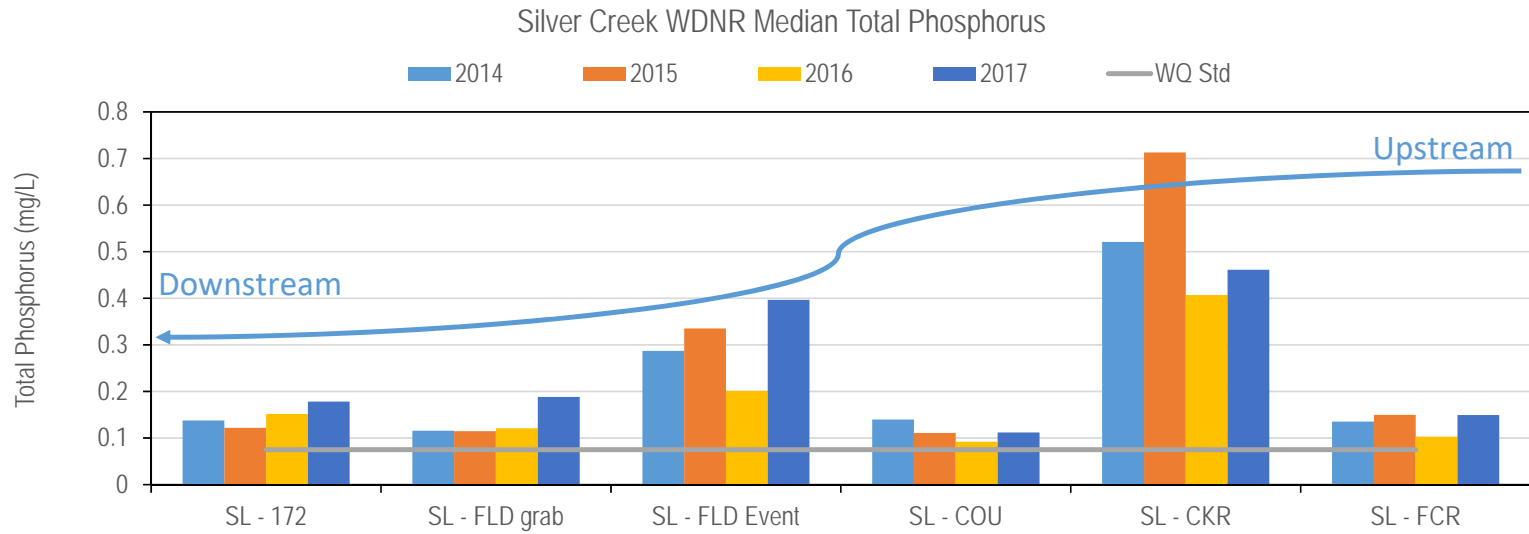
Cumulative Precipitation: GREEN BAY 2017



2017 Total Suspended Solids: January - December 2017

— SL-172 (n=26) — SL-FLD (n=46) — SL-COU (n=26) — SL-CKR (n=24) — SL-FCR (n=23) ▲ Event (n=77)





Outreach Events

- 3rd Annual Student Monitoring Event
- Interseeder Dedication Ceremony
- Grazing and Cover Crop Field Day
- NRDA Trustees Tour
- State of Lake Michigan Conference Tour
- Over 25 presentations



Next Steps in Silver Creek 2018-2019



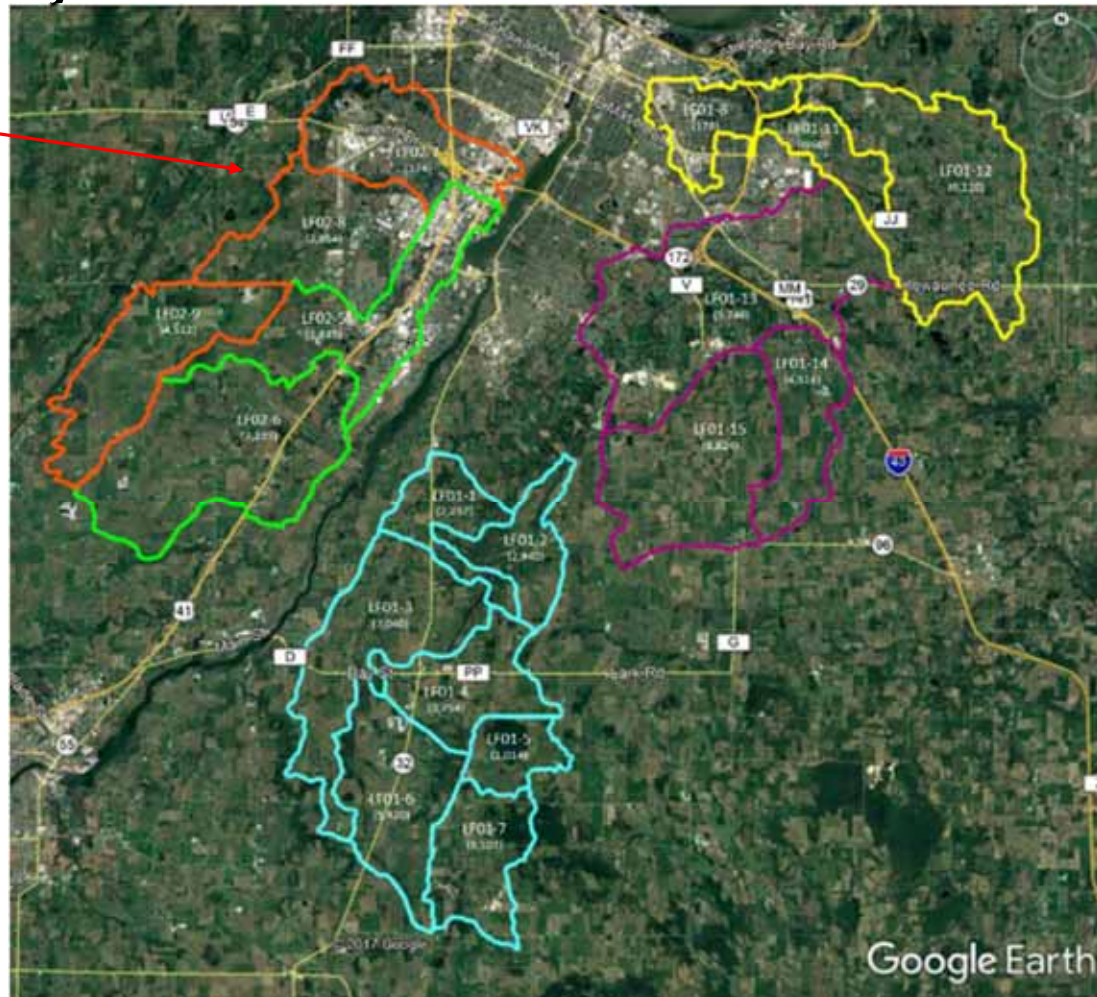
- Cover Crops
 - How are cover crops going to be continued in the future?
- Residue and Tillage Management
 - How do we continue to encourage this in the future?
- Interseeding Cover Crops
 - How can we utilize the interseeder more?



Full Scale Adaptive Management Evaluations and Next Steps in 2018

Opportunities in Adjacent Watersheds

Silver Creek



Legend

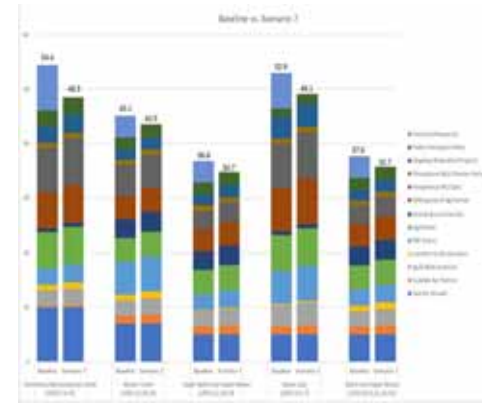
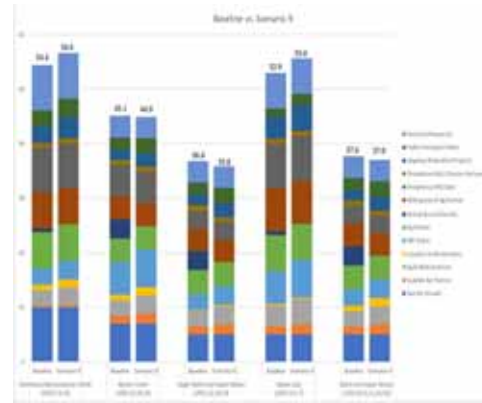
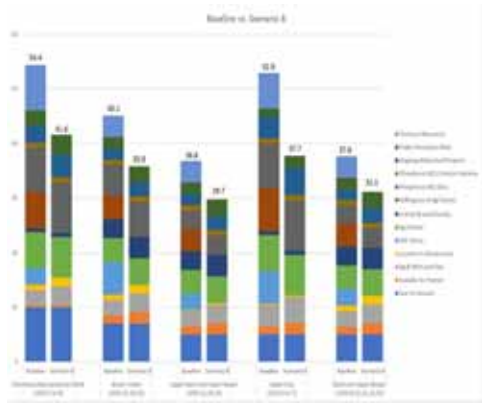
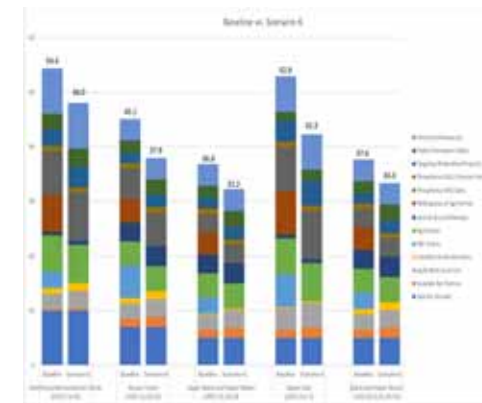
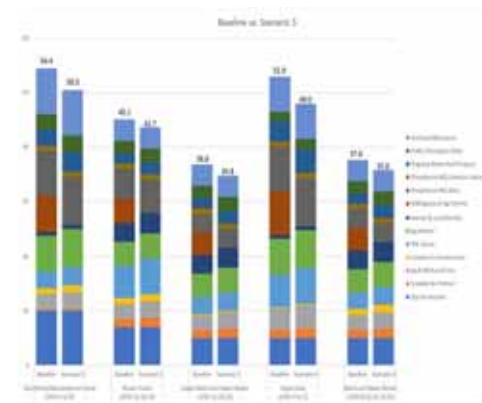
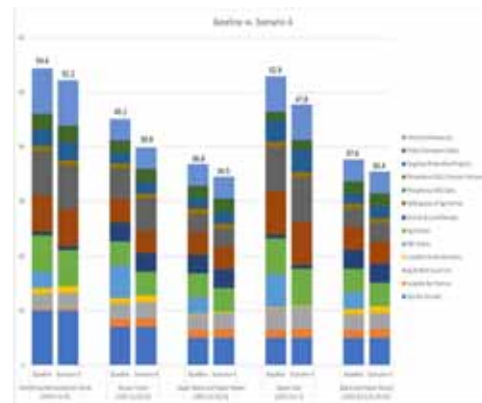
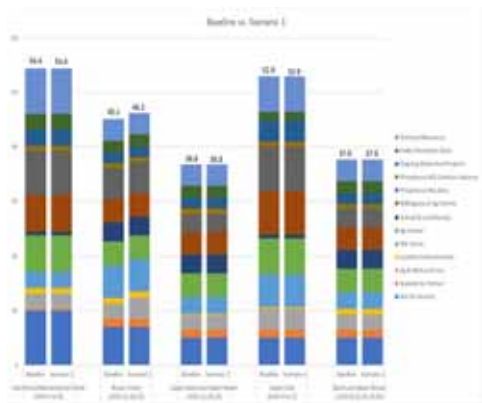
- Dutchman Creek
- Ashwaubenon Creek
- Upper East River
- Bower Creek
- Baird Creek



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**

Multiple Scenarios Led to Similar Conclusions



Ashwaubenon/Dutchman Creeks



Next Steps for a Full Scale Program

- Memorandum of Understanding with WDNR
- Finalize Action Area Evaluation
- Preliminary Compliance Alternatives Plan (March 31, 2018)
 - Comparison of Treatment and Watershed Alternatives
 - Review with Commission
 - Chart path forward for compliance plan
- Adaptive Management Plan (December 31, 2018)
- Final Compliance Alternatives Plan (December 31, 2018)

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
 - Workgroups and partnership agreements
 - Soil sampling
 - Field walks and conservation planning
- Water Quality Monitoring
- Flow Monitoring

Two Workgroups to Advance Planning

- Watershed Inventory
 - Water resource opportunities beyond the farm field
 - Support prioritizing opportunities
- Biological Monitoring
 - Habitat assessments
 - Fish and macroinvertebrate sampling plans
 - Select location(s) and frequency

LF02-8
(2,854)

LF02-9
(4,512)

LF02-5
(1,845)

LF02-6
(7,233)

Main Ave
Z Broadway

Unique Opportunity


- The Environmental Programs Division is expanding upon a legacy of water quality attentiveness and monitoring.
- Adaptive Management provides a way for NEW Water to meet recent WPDES permit requirements through improving the health and quality of local watersheds.
- By linking the established AMP database with a new watershed database, NEW Water is uniquely situated to document future water quality improvement in Green Bay and area rivers.

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(2,854)

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Thank You!
Questions?

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