Imagine a Day without Water:

Notes from NEW Water

October 21, 2020

NEW Water
The brand of the Green Bay Metropolitan Sewerage District

Imagine a Day Without Water

October 21, 2020

Learn more: https://imagineadaywithoutwater.org/

Agenda

- Imagine a Day Without Water
  - *Tom Sigmund, Executive Director*
- Cyanotoxins & the health of area waters
  - *Sarah Bartlett, Water Quality Specialist*
- Runoff & how watershed efforts can improve area waters
  - *Erin Houghton, Watershed Programs Manager*
  - *Ben Young, Watershed Specialist*


NEW


18,151,990,000 billion
gallons in 2019


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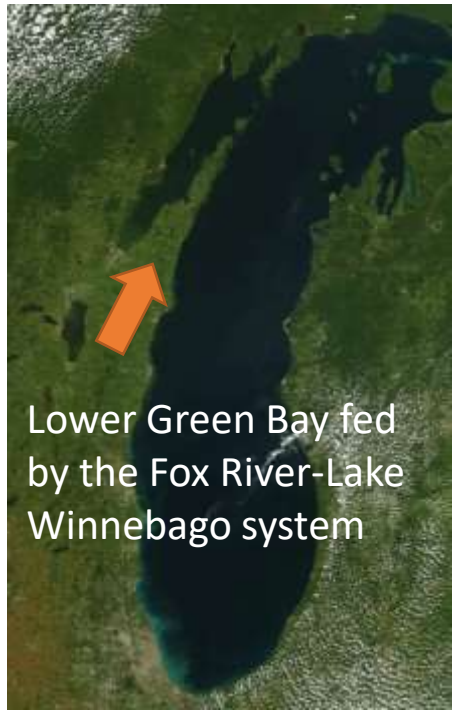
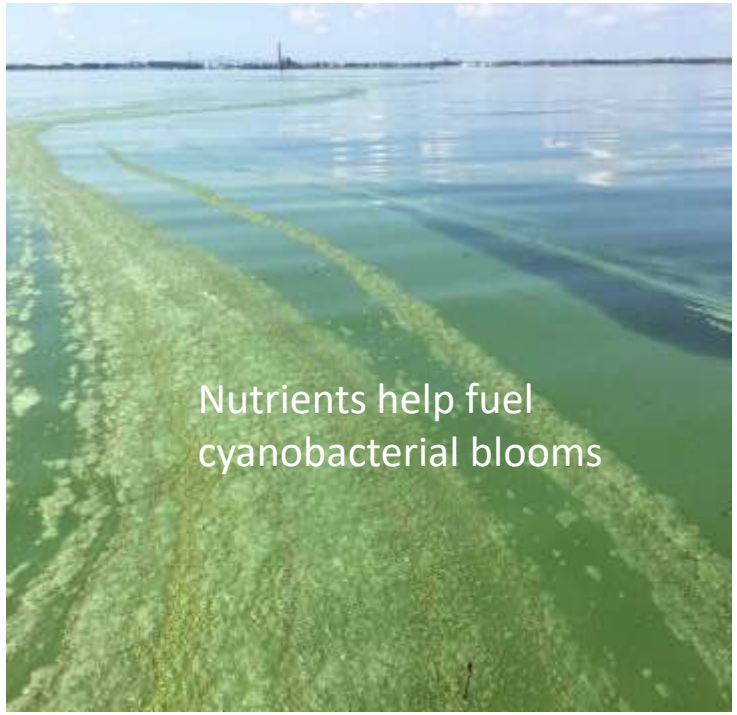
Metropolitan Sewerage District
Protecting our most
valuable resource,
water

Cyanotoxins & health of area waters



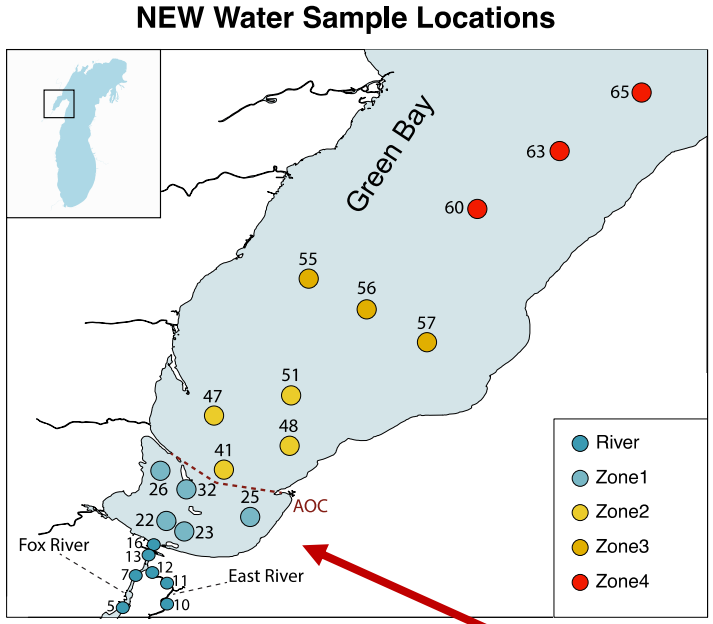


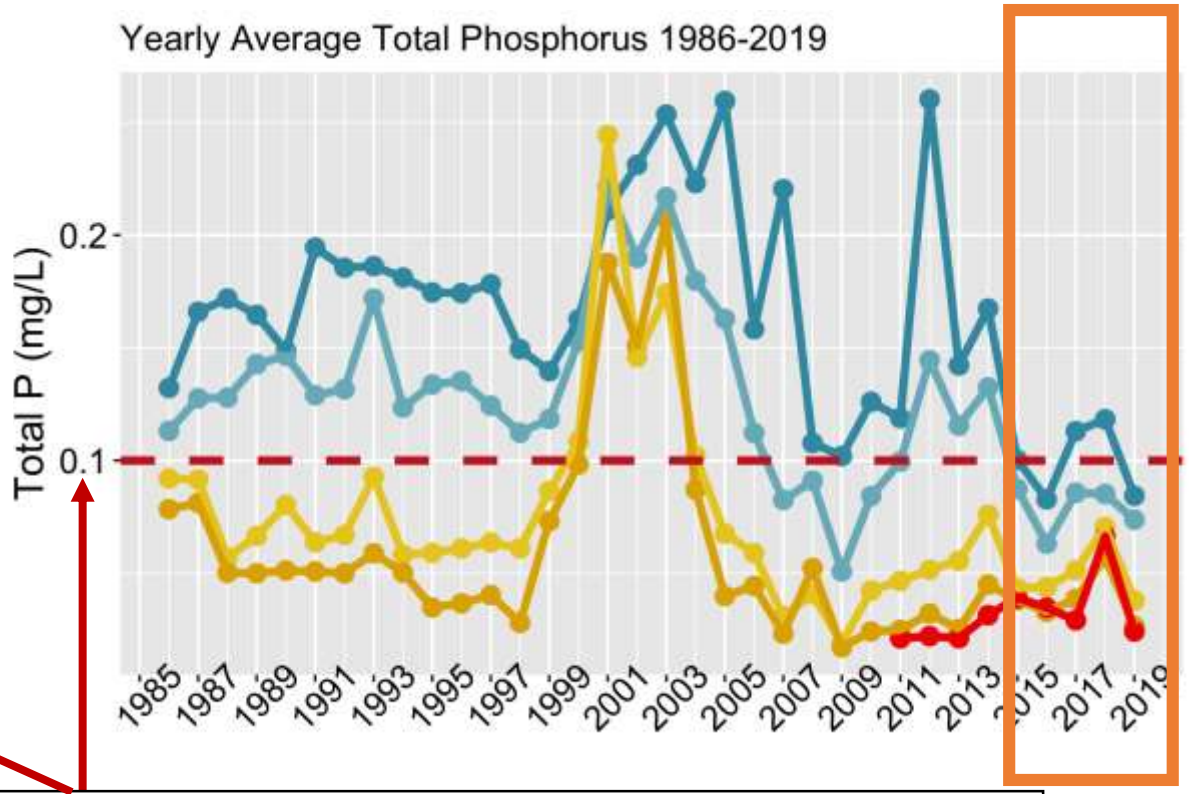
NEW Water's Aquatic Monitoring Program

- 1986 – present
- Study lower Green Bay and Fox River water quality
- Bay Guardian, 36 ft workboat

Photo credit: Ben Young

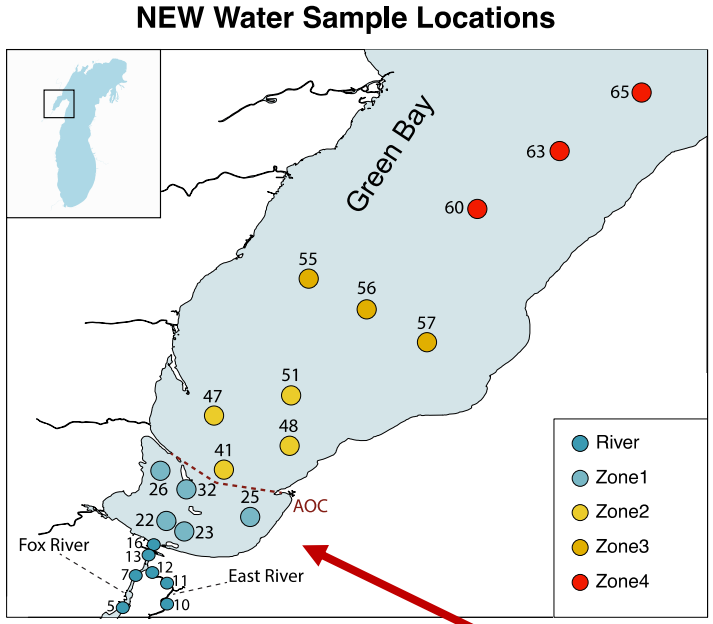
Lower Green Bay Phosphorus

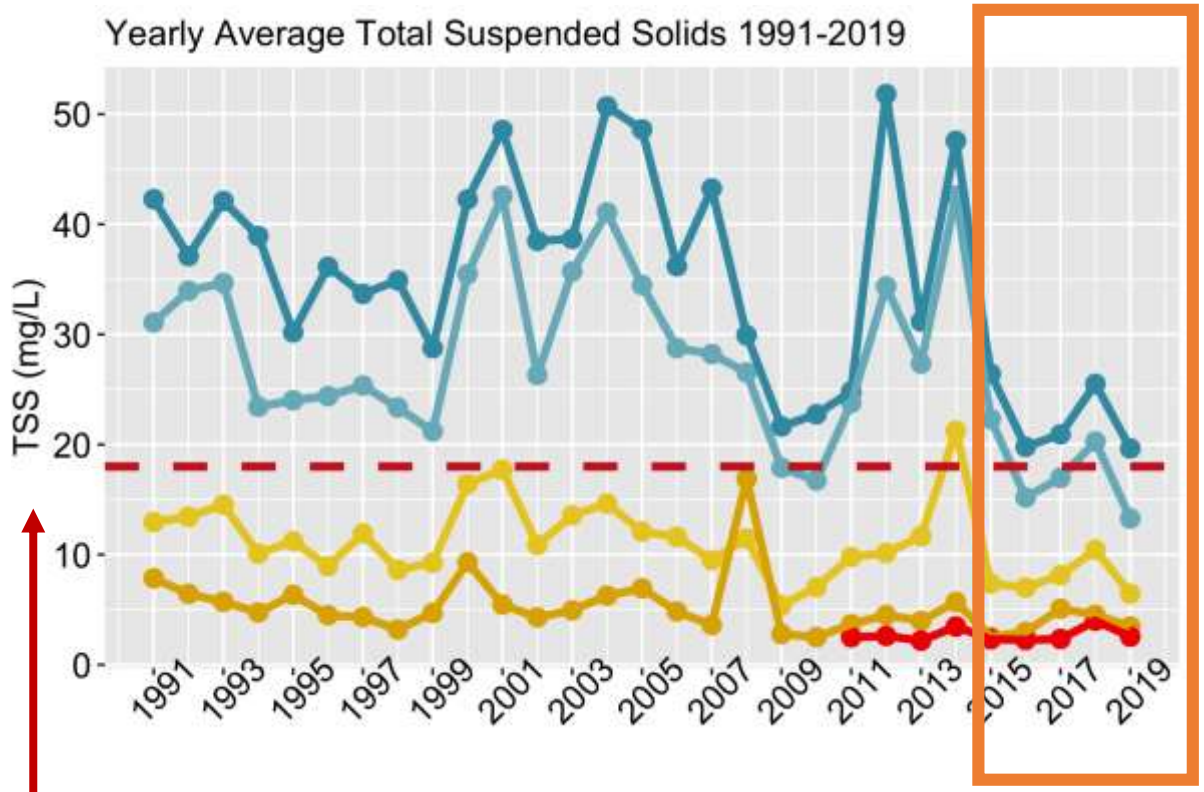




Water quality standard = 0.1 mg/L for Total Phosphorus in the Lower Green Bay Area of Concern (AOC)

Lower Green Bay Total Suspended Solids





Water quality standard = 18 mg/L Total Suspended Solids in the Lower Green Bay Area of Concern (AOC)

Cyanobacteria

- Naturally occurring bacteria
- Commonly referred to as blue green algae
- Problematic for water quality issues
- Can produce toxins harmful to humans and animals

400,000 in Toledo, Ohio, water scare await test results

By Susanna Capelouto and Mark Morgenstein, CNN

Updated 9:15 PM ET, Sun August 3, 2014

Lake Winnebago Water Quality Advisory for Blue-Green Algae

Winnebago County Health Department declares a WATER QUALITY ADVISORY for Lake Winnebago due to blue-green algae blooms.

Satellite imagery by NOAA indicate recent concentrations of blue-green algae on Lake Winnebago. As the wind and temperatures change, blue-green algae conditions can

ticularly before

THE MORNING SHOW

Haraz N. Ghanbari/AP Photo

Blue-Green Algae Has Increased Across U.S.

By Colleen Leahy

Air Date: Tuesday, July 30, 2019, 6:30am | Tuesday, July 30, 2019, 8:30am

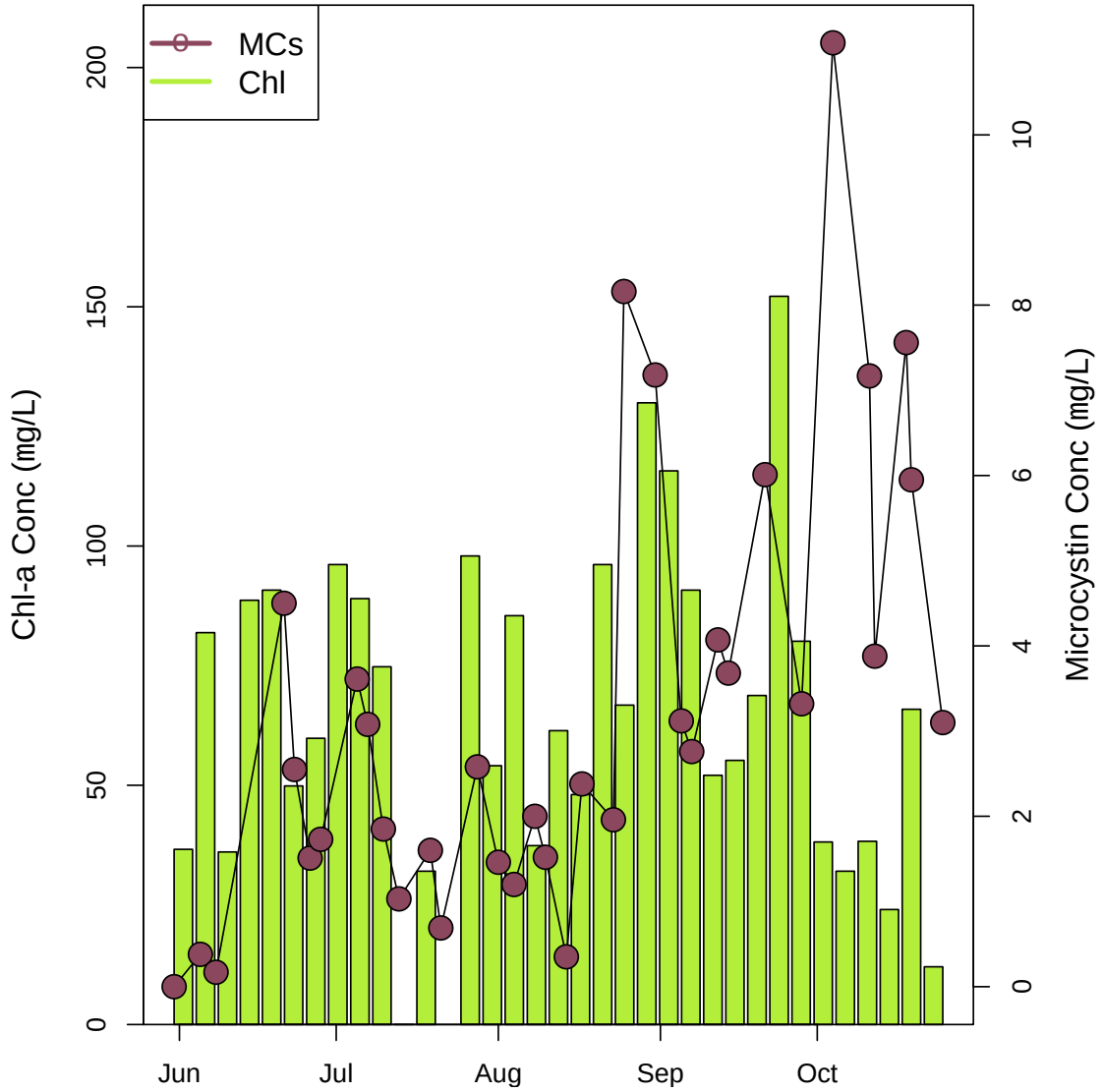
Six Madison area beaches closed, mostly due to blue-green algae in the water

BILL NOVAK bnovak@madison.com Jul 9, 2019

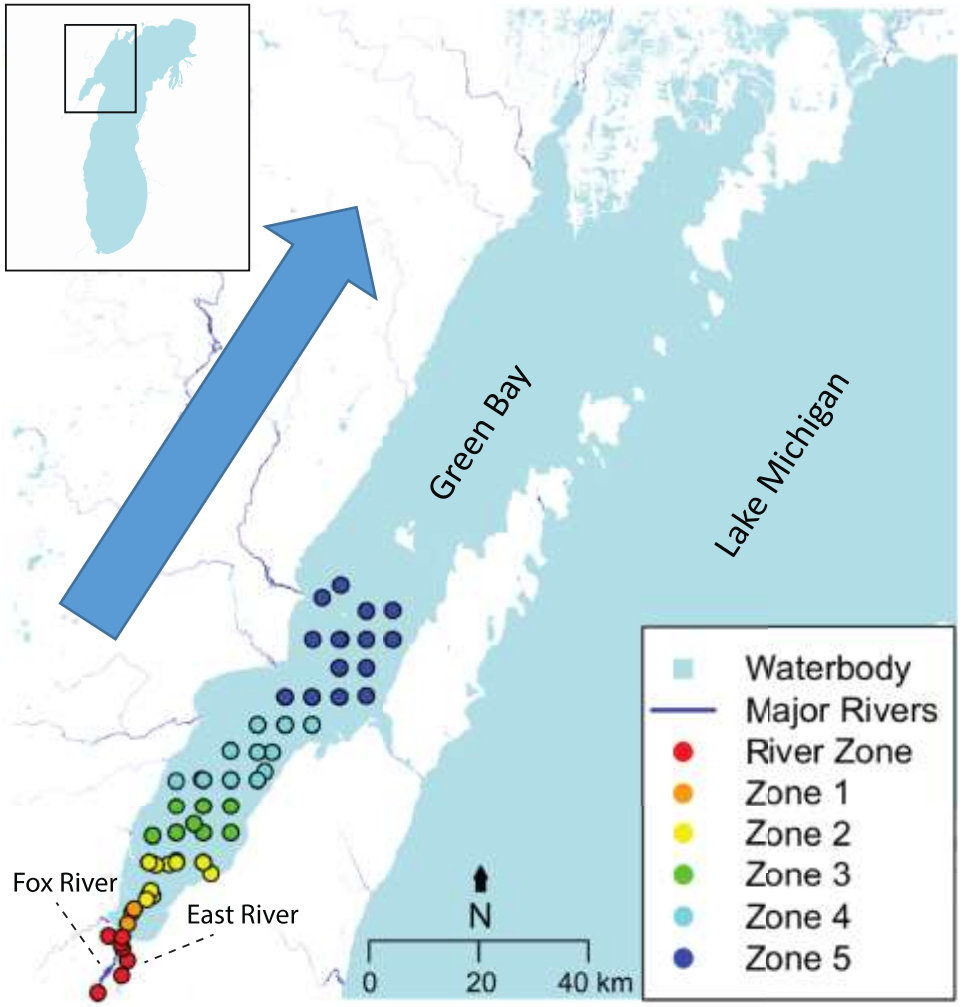
CyanoHAB Monitoring

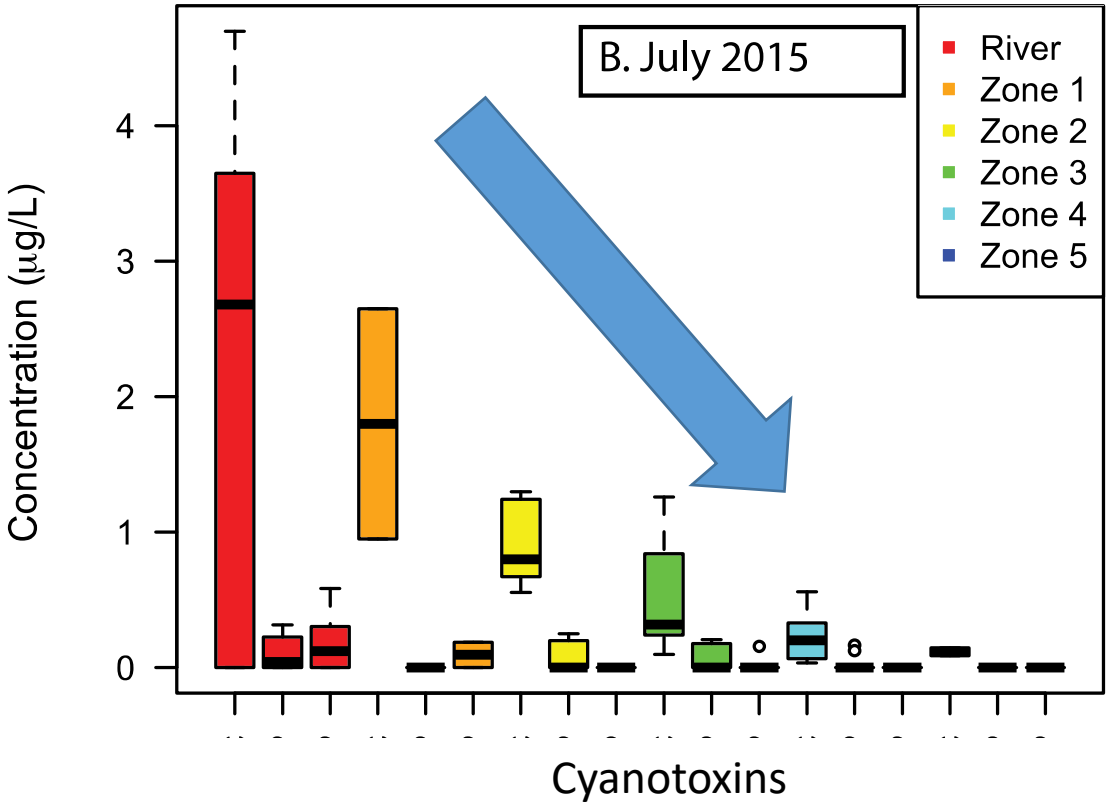
- Monitoring mechanisms
  - visual inspection
  - pigment analysis
  - satellites
- Pigment analysis = equipment measures chlorophyll (green) and phycocyanin (blue) fluorescence and relate to the abundance of cyanobacteria

Color is not a reliable indictor of cyanotoxins



Cyanotoxin and Nutrient Gradient





Spatial Assessment of CyanoHABs and Cyanotoxins in Lower Green Bay

- 2016 – 2020
- Multi-agency effort to learn what influences cyanotoxins in Green Bay

http://www.lakestat.com/BuoyData/GBE/UbidotsGBE.html

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UWM
University of Wisconsin Milwaukee

University of Wisconsin Green Bay

Wisconsin
University of Wisconsin-Madison

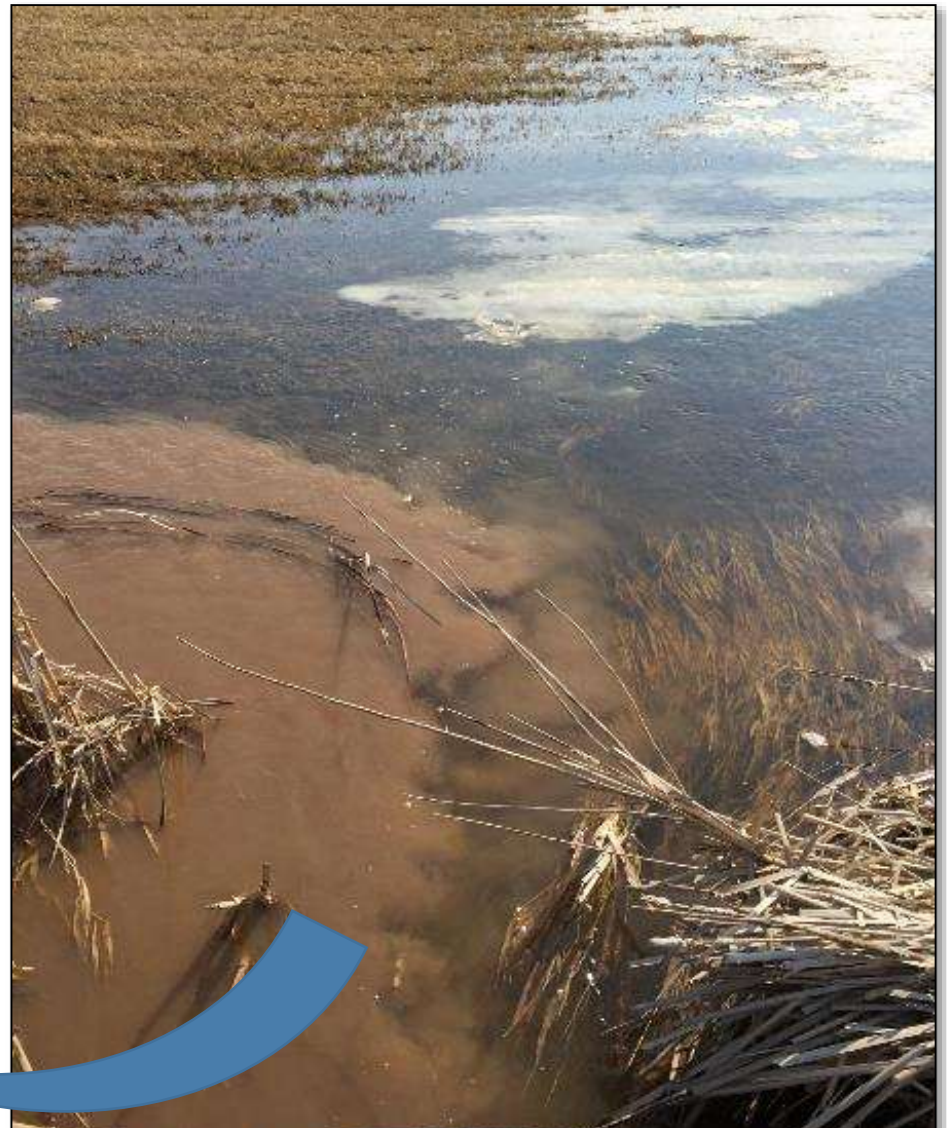
Wisconsin Dept. of Natural Resources

Future of HABs Monitoring?

- Satellite
- Buoys
- Commercial real-time cyanotoxin sensors (hoping for the technology!)

Runoff & how watershed efforts can help

NEW Water & The Watershed



NEW Water & The Watershed

2014

- New WPDES permit
- Proposed new TP & TSS limits
- Alternate compliance options
- New treatment upgrades

2014 - 2020

- Treatment facility optimization
- Alternate compliance evaluations
- 2015 GLRI funded grant
- Adaptive management (AM) pilot & full scale planning
- New solids treatment GBF

2020 -

- AM Plan review with WDNR
- AM Pilot Continues
- AM Program development

Safety · Respect · Team · Environment

NEW Water

Silver Creek Project

Partnering for Water Quality

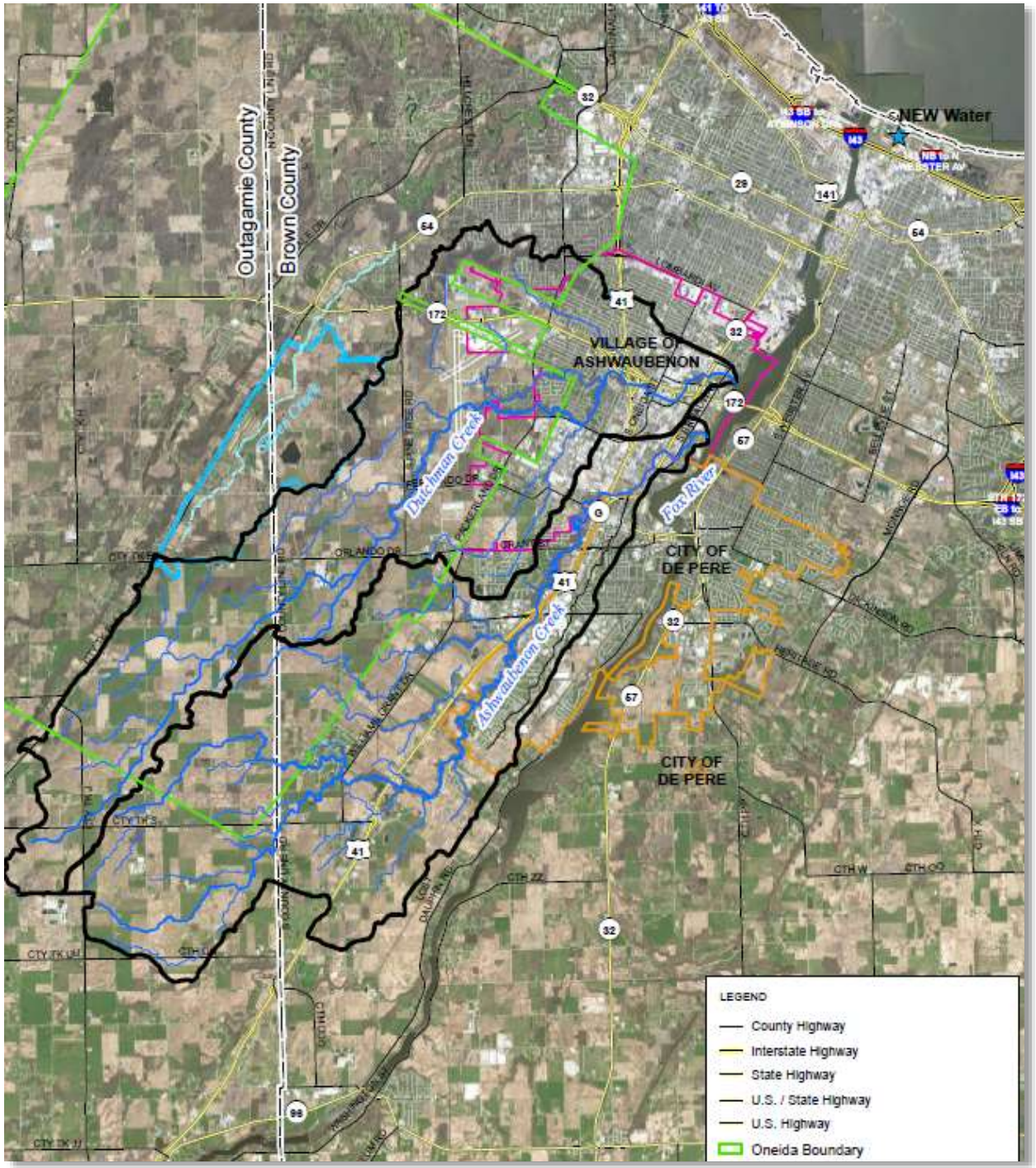
NEW Watershed Program

Partnering for Water Quality

Silver Creek Project

Partnering for Water Quality

- ~7.5 mi^2 or 4800 acre watershed
- Flows SW to NE into Duck Creek then Bay of GB
- Predominately agricultural land use



Silver Creek Pilot Project, 2014-2021+

- First hand experience in non-point P and TSS reductions
- Flow, Water Quality and Biological monitoring
- Field walks and gathering field information
- Cost Share for landowners/ growers
- BMP implementation and verification
- Ongoing water quality monitoring
- Feasibility
- Partnerships

Silver Creek Project
Partnering for Water Quality

Filter Strips & Grassed Waterways

Inter seeding cover crops

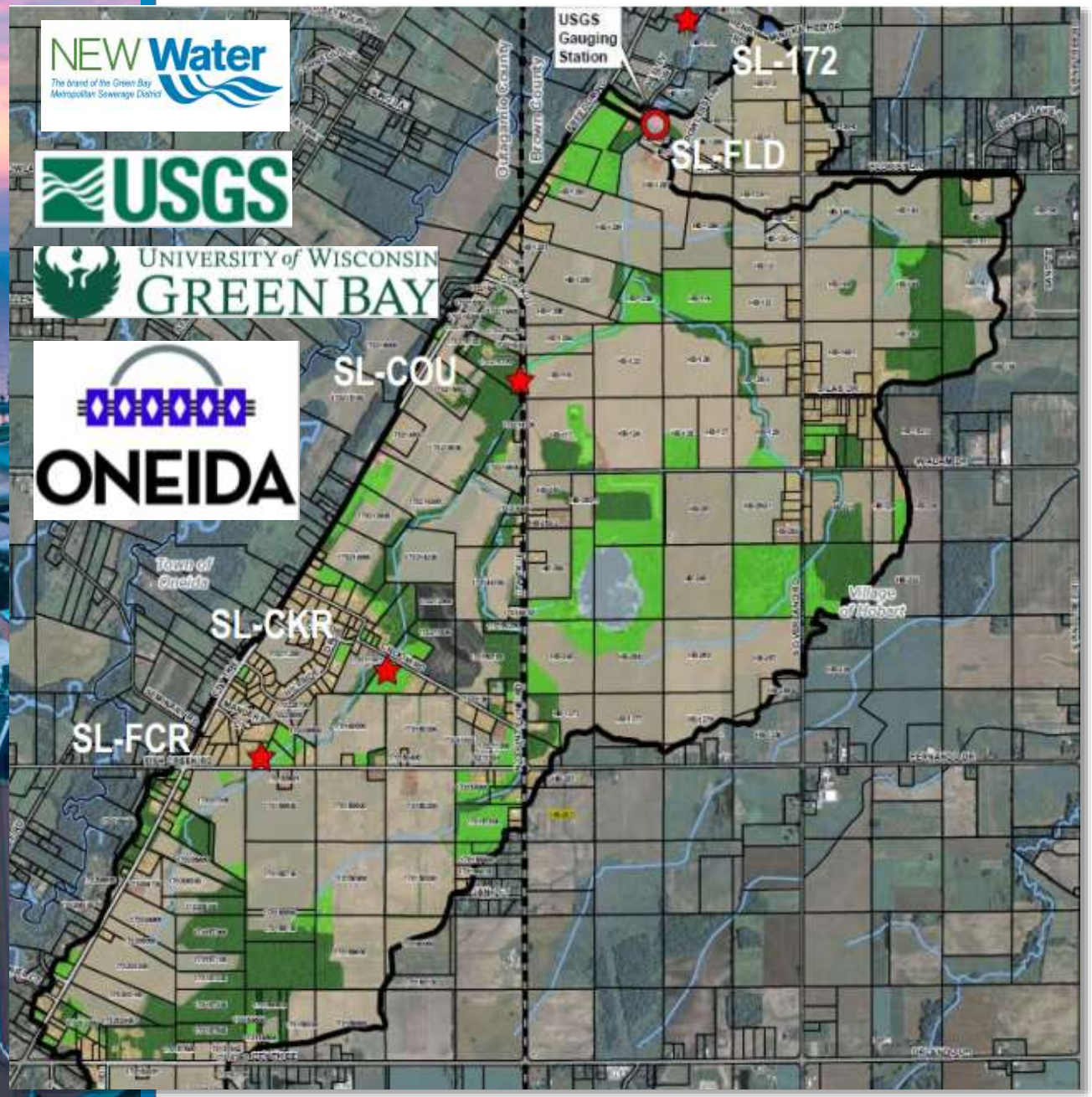
Managed Grazing

Wetland Restoration

Aerial Seeding of Cover Crops

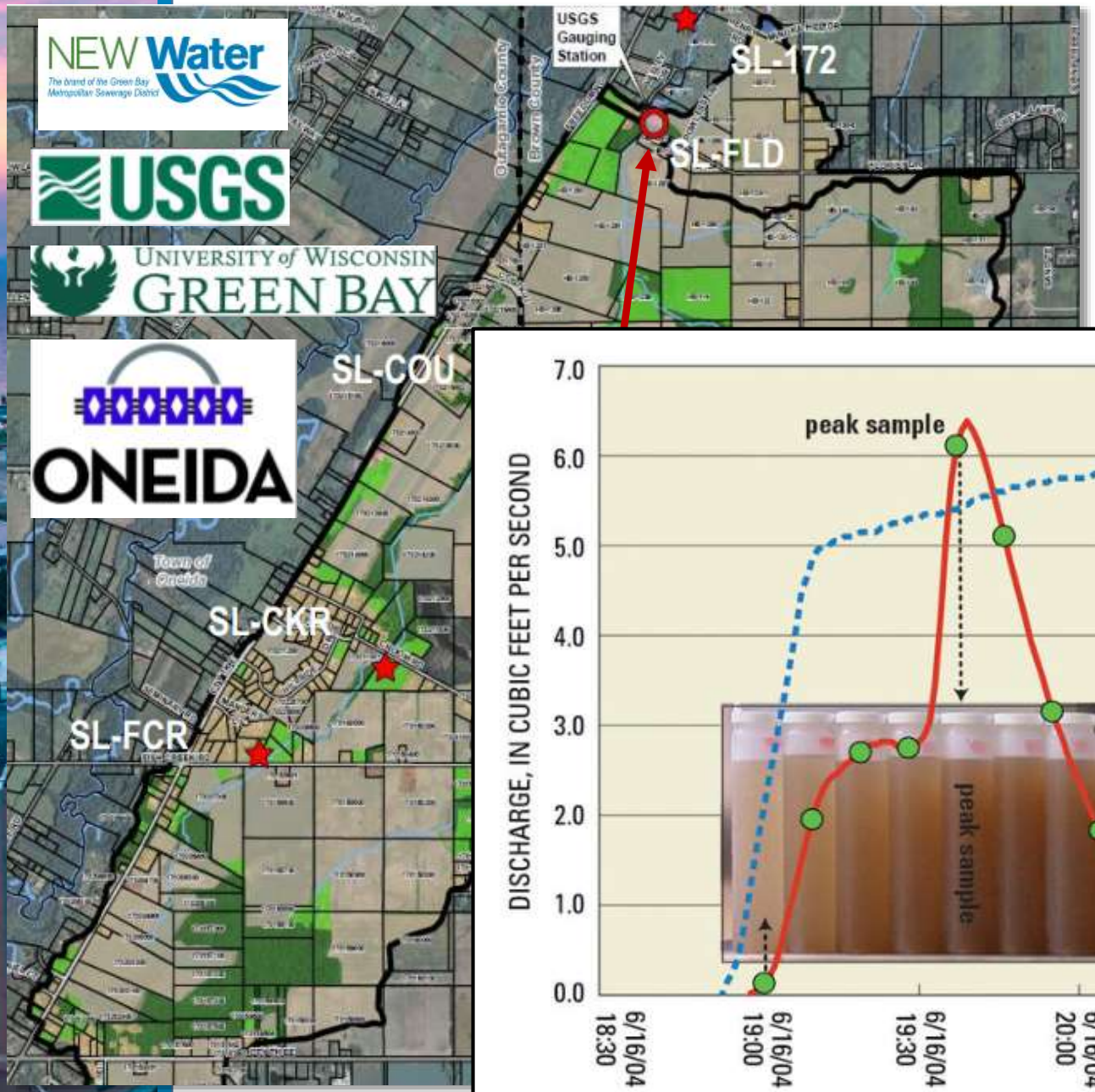

Water and Sediment Control Basins (WASCOB)
Stream Re-meandering
Cover Crops and No Till
Vegetated Buffer

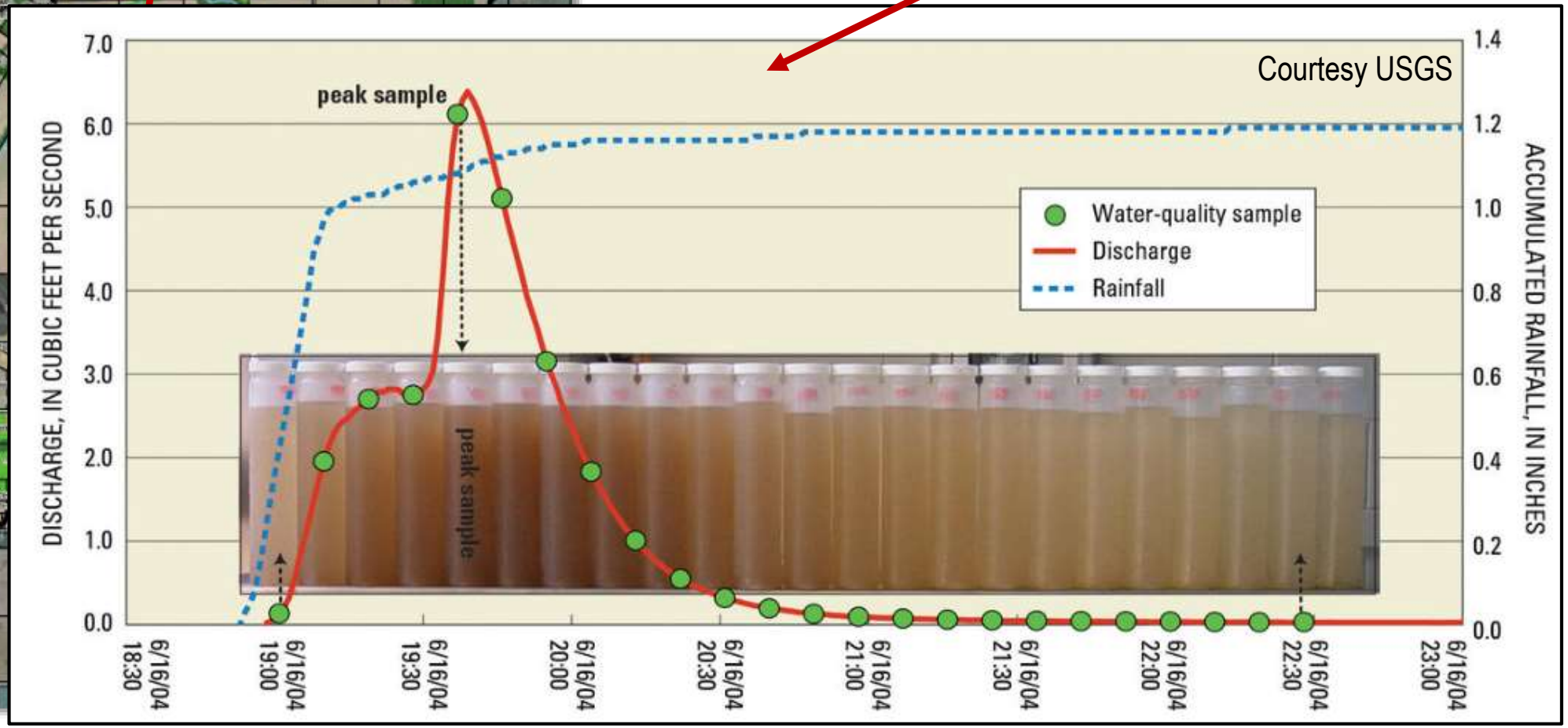
Water Quality Monitoring in Silver Creek



- WQ sampling at 5 main stem sites, 2014-2020+
- Grab samples collected year round, regardless of ice conditions
- USGS continuous flow and event samples

Event Water Quality Monitoring in Silver Creek

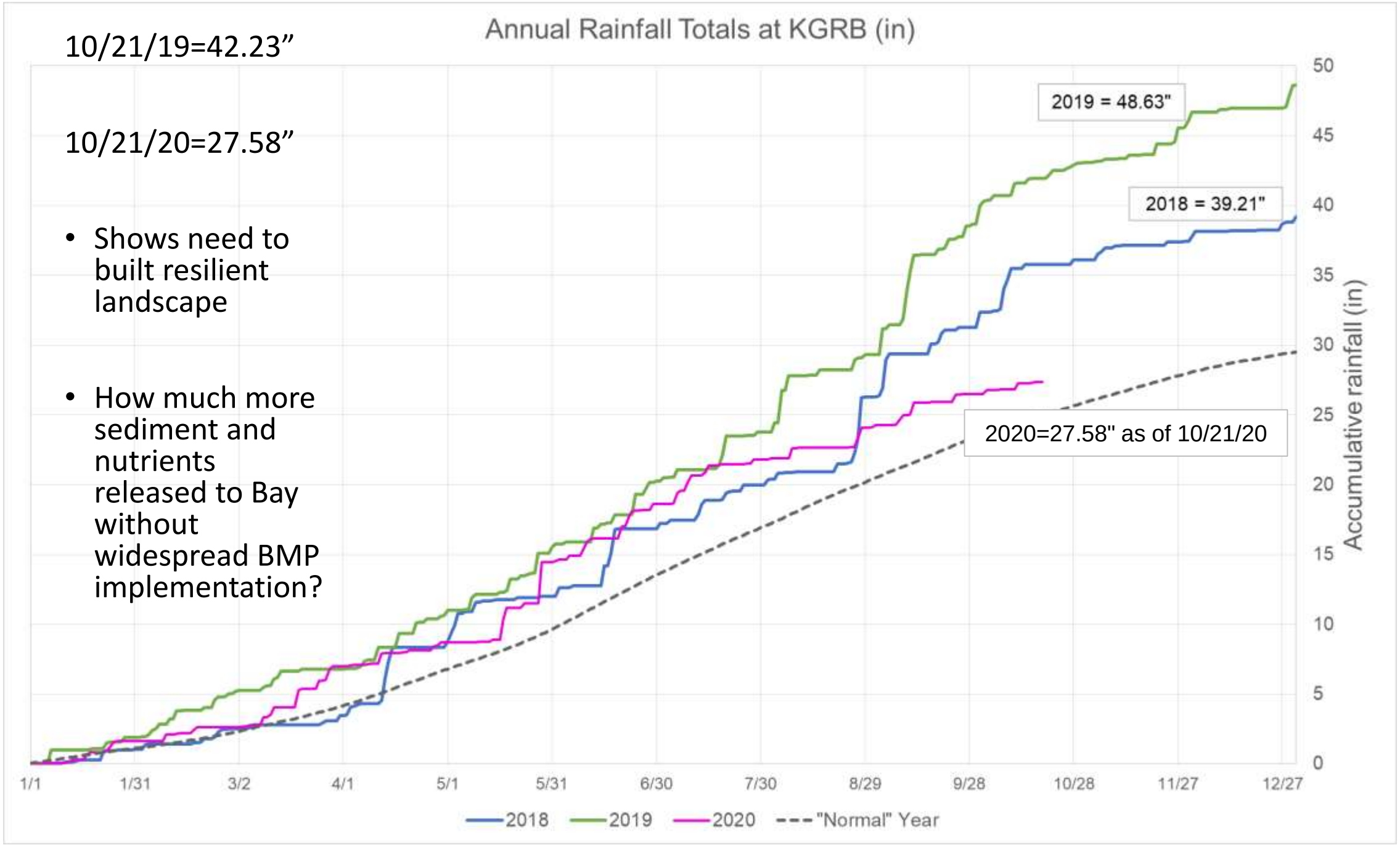




10/21/19=42.23”

10/21/20=27.58”

- Shows need to built resilient landscape
- How much more sediment and nutrients released to Bay without widespread BMP implementation?



"NEW Water has created a framework for cooperation between a wastewater treatment facility and agriculture. This is an innovative way to approach conservation. The farmers in Silver Creek are participating in a project which will have an environmental and economic impact on Northeast Wisconsin. This teamwork approach with NEW Water and conservation agencies is demonstrating success." ~Barry Bubolz, Natural Resources Conservation Service.

Pilot Project and Program Partners

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The brand of the Green Bay Metropolitan Sewerage District

CLEAN BAY BACKERS

JACOBS

ONEIDA ENVIRONMENTAL HEALTH & SAFETY DIVISION
LATHWYATYSA?NIKÚ·LALE?
THEY PROTECT THE EARTH

Outagamie County

GREAT SEAL OF THE STATE OF WISCONSIN

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WISCONSIN DEPT. OF NATURAL RESOURCES

The Nature Conservancy
Protecting nature. Preserving life.™

UNIVERSITY of WISCONSIN GREEN BAY

Brown County
Established 1818

Green Bay Conservation Partners

DUCKS UNLIMITED

USGS

McMAHON ENGINEERS ARCHITECTS

AgVentures

TILTH AGRONOMY
Growth Begins Here.

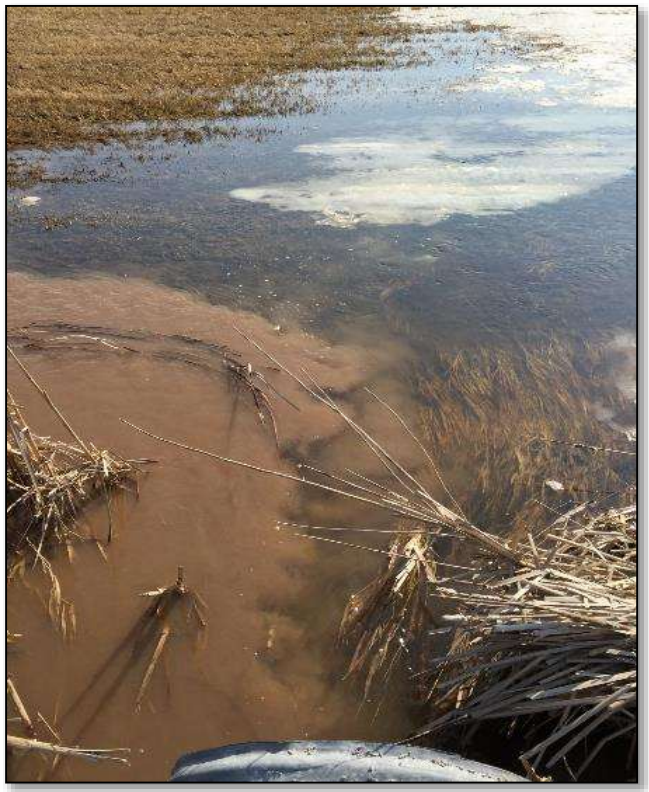
Fund for Lake Michigan

Great Lakes RESTORATION

NRCS
Natural Resources Conservation Service

Successes of Silver Creek

- Water quality improvements
- Soil health
- New partnerships, a core program team, and support from outside partners like Oneida
- 82% of cropland not tilled by 2018
- Field walks and Conservation Planning on 93% of fields
- Individual meetings with all landowners and growers
- GIS and mobile tools
- Initially cautious growers now implementing practices on their own, increased yield(s)
- Obtain equipment – Interseeder
- Gain confidence in Adaptive Management
- Increased funding and investment in watershed
- Develop a framework to expand into larger watershed area



NEW Watershed Program

Partnering for Water Quality

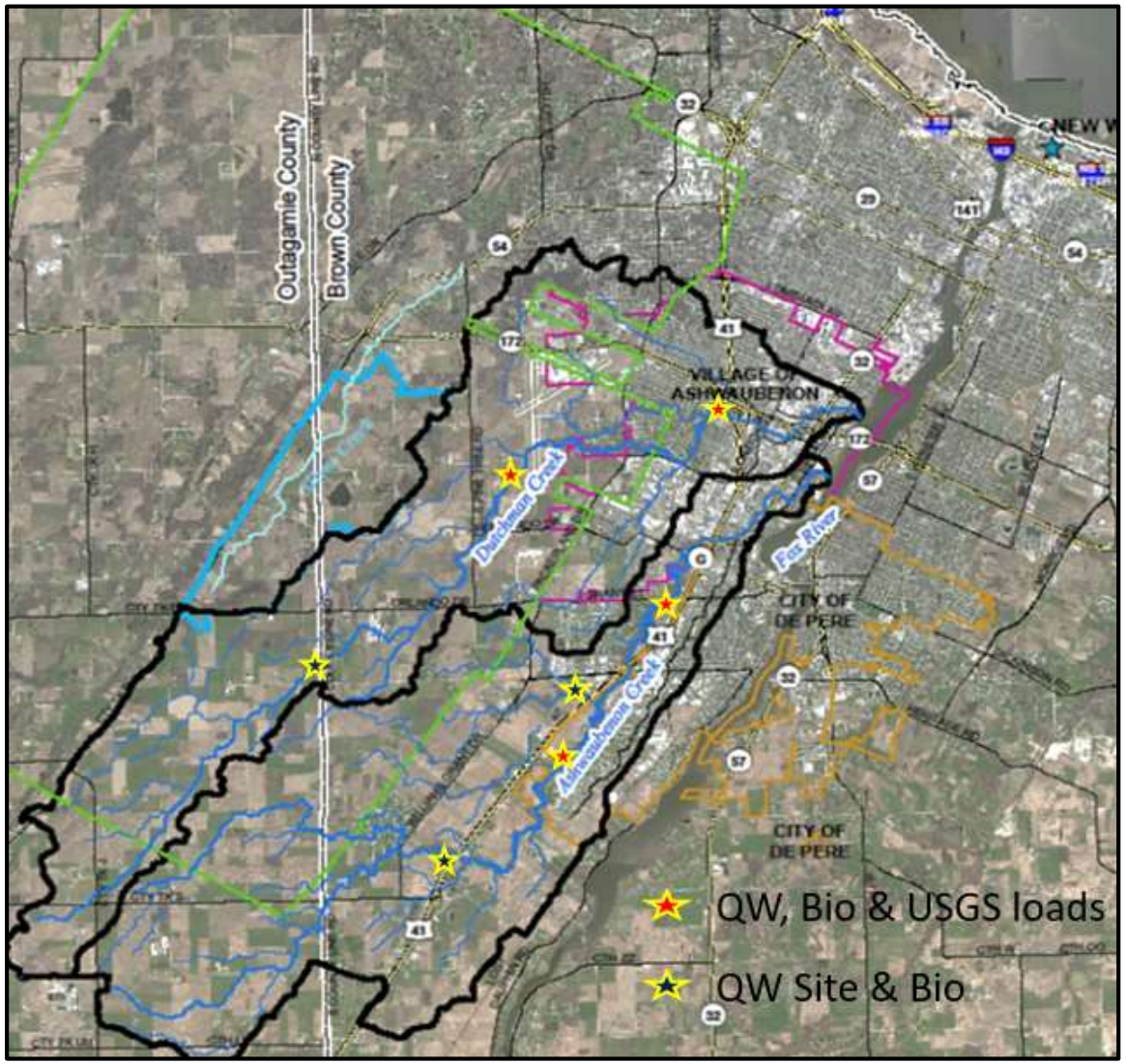
A BIG commitment!

Mission

To foster strategic partners and implement adaptive solutions to improve water quality in the Ashwaubenon Creek and Dutchman Creek watersheds.

Vision

A thriving ecosystem to benefit the region and its residents.



Program Goals

- Achieve the TMDL reduction targets over 20 years
  - 18,911 lbs/yr of phosphorus
  - 3.9 million lbs/yr of sediment.
- Demonstrate water quality and biological improvements in ACDC and Lower Fox River.
- Implement BMPs to the maximum extent possible.
- Maintain and build new partnerships with landowners, growers, municipalities, non-governmental organizations, and consumer-based industrial stakeholders to continue conservation implementation beyond the 20-year Program.

Program Strategy

- Build on approach and lessons learned in Silver Creek Pilot
- Initial focus on agricultural implementation
- Engage other stakeholders for non-agricultural implementation
  - Governmental
  - Municipalities
  - Austin-Straubel Int'l Airport
  - Drainage Districts

NEW Watershed Program

Partnering for Water Quality

- Flow, water quality and biological monitoring began late 2018 and will continue next 20+ years
- Completing field walks Fall 2020- Spring 2021 to identify resource concerns, prioritize implementation
- Cultural shift→ Landowners and growers are eager for implementation
- Build resilient landscape after historic rainfall in 2018-2019. Think outside the box

Key Takeaways

- NEW Water involvement in Silver Creek Pilot Project is a catalyst for others to join collaborative efforts. Special significance of NEW Water representing all municipalities in the area and going beyond compliance.

- A lot has happened in the Lower Fox River because of the work NEW Water has put in.

- NEW Water is making a huge long-term commitment and investment in watershed work to better water quality of the lower Fox River and greater Green Bay

Community Outreach

- *Connecting our community with water*
  - *Contact us for a presentation!*

Thank you!

Stay tuned to NEW Water news!

- *Subscribe to our E-news:* *www.newwater.us*
- *Follow us on social media:*