



northwater

**STAKEHOLDER MEETING**  
**THURSDAY, SEPTEMBER 21, 2023**



northwater

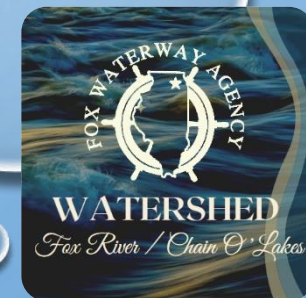
# INTRODUCTION

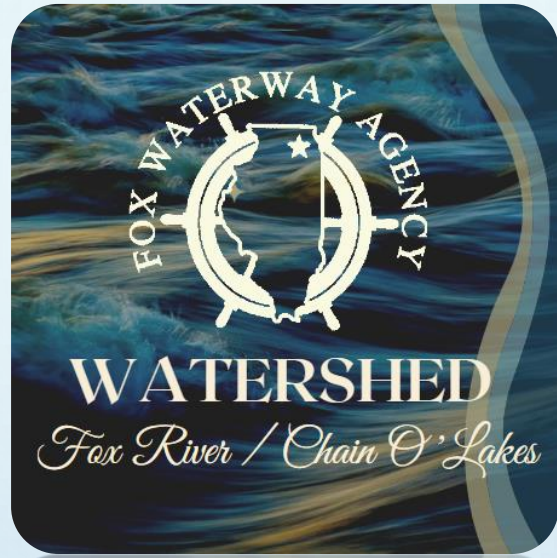
**JOSEPH S. KELLER – EXECUTIVE DIRECTOR  
FOX WATERWAY AGENCY**

**STAKEHOLDER MEETING  
THURSDAY, SEPTEMBER 21, 2023**

>Welcome!

**FOX / CHAIN WATERSHED**





northwater

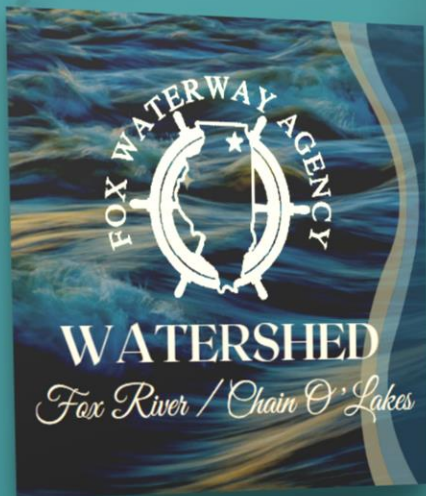
# WATERSHED GOALS

**ROB BRYSON – FWA ADVISORY COMMITTEE MEMBER**

**STAKEHOLDER MEETING  
THURSDAY, SEPTEMBER 21, 2023**

# Goals

#1

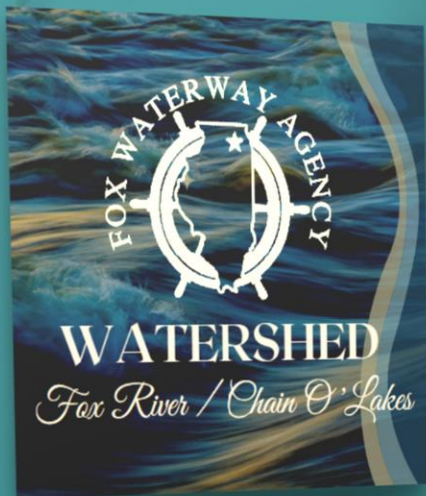


**Our water is  
clear enough  
that you can see  
the bottom in  
shallow water.**

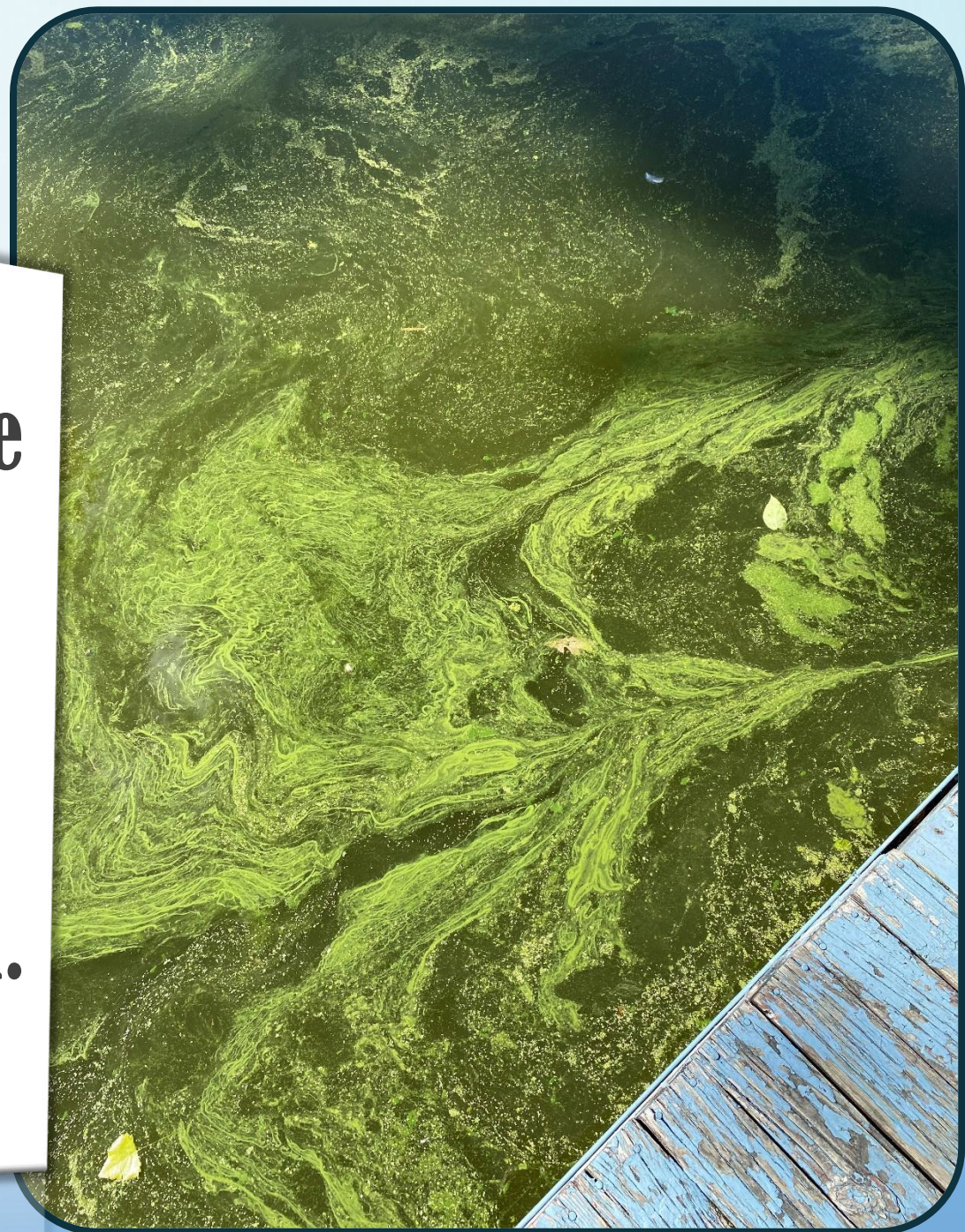


# Goals

#2

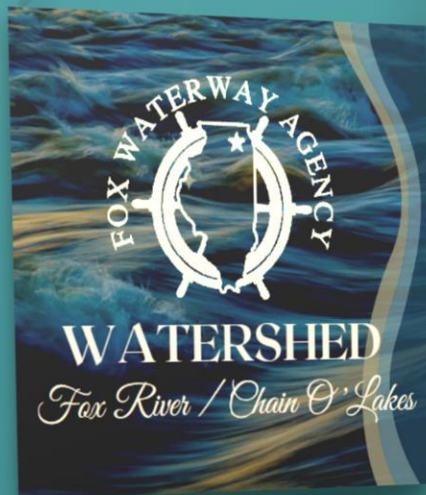


**Our water is free  
of excessive  
nutrients so  
algae growth  
does not turn  
our water green.**



# Goals

#3

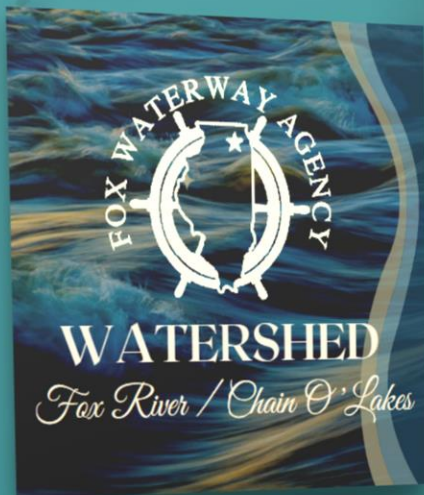


**Our water is clean enough that there are no recreational restrictions for boating, swimming and fishing.**



# Goals

#4



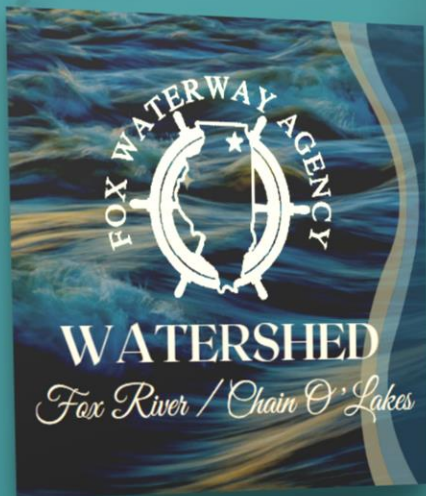
**Our community  
and  
stakeholders are  
knowledgeable  
and engaged in  
the preservation  
of our  
watershed.**





# Goals

#5



**Our communities have land within the watershed so activities to monitor, maintain and improve water quality can be implemented.**





northwater

## EDUCATIONAL SESSIONS

**ANNE BASTEN – FWA ADVISORY COMMITTEE MEMBER**

**STAKEHOLDER MEETING  
THURSDAY, SEPTEMBER 21, 2023**

# Watershed Meetings

## Past Meetings

### Watershed Kickoff Meeting

• Thursday, July 17, 2022

### Watershed Planning Meeting

• Thursday, September 14, 2022

### Water Quality

• Thursday, October 27, 2022

### Chain O'Lakes Shoreline Erosion Issues

• Thursday, January 19, 2023

### Excess Nutrients

• Thursday, March 16, 2023

### Rain Gardens & Bioswales

• Thursday, February 23, 2023

### Geese Getting The Best Of You & Waterway?

• Thursday, May 18, 2023



## Future Meetings

### Minor Dredging Permitting

• October, 2023 TBD

### Septic Systems

• November, 2023 TBD

### Draft Watershed Plan

• December, 2023 TBD

### Best Management Practices (BMP's)

• TBD

### Non-Point Source Pollution

• TBD

### How's My Waterway

• TBD

### Aquatic Weeds

• TBD

### Wetlands

• TBD

### What Topic Would You Like To See?

• TBD



northwater

# WATERSHED DATA

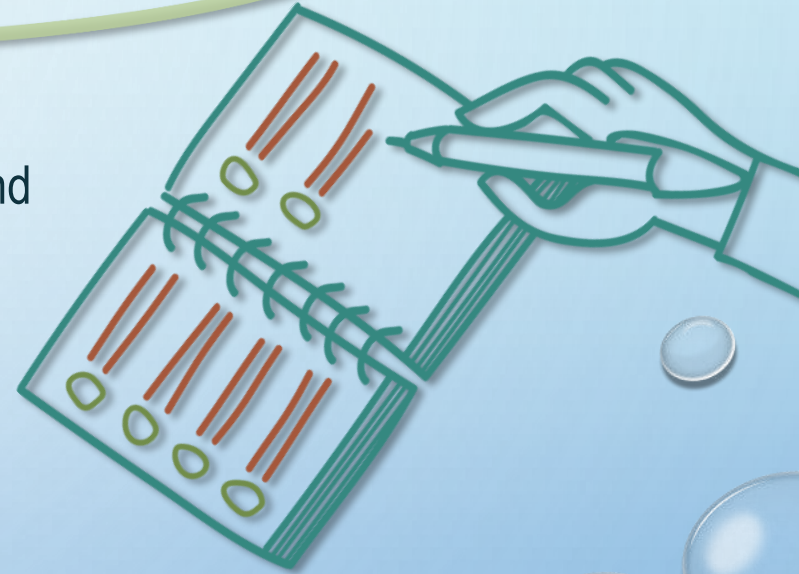
**JEFF BOECKLER – PRINCIPAL NORTHWATER CONSULTING**

**STAKEHOLDER MEETING  
THURSDAY, SEPTEMBER 21, 2023**

# WHAT IS A WATERSHED PLAN?

A watershed plan provides a road map to achieve objectives while characterizing and addressing problems identified through analysis and stakeholder input.

- Addresses stream and lake water quality
- A necessary first step to secure funding for improvements



# WHAT IS A TMDL?

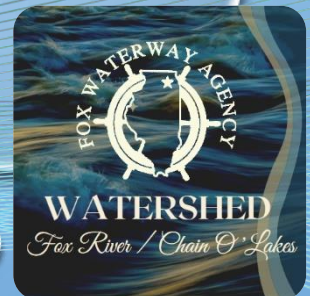
## Total Maximum Daily Load – TMDL

- Triggered by persistent impairment of designated uses
- A calculation of the amount of pollution a waterbody can assimilate while still meeting water quality standards
- Upper Fox/Chain o'Lakes TMDL approved in 2020 for phosphorus and fecal coliform
- TMDL = first in line for funding



# ELEMENTS OF A WATERSHED PLAN

- Stakeholder engagement
- A watershed inventory and characterization
- Estimates of pollution loading
- Causes and sources
- Strategies (practices) to reduce loading and estimates of expected load reductions
- Critical areas and priorities
- Goals and targets
- Responsible parties, milestones, schedule and cost estimates
- Education and outreach
- Monitoring component





# COMPLETED ELEMENTS

Data mining – existing research and plans

- Field surveys

Lake shoreline assessment – 150 miles

- Windshield survey

Individual stakeholder meetings

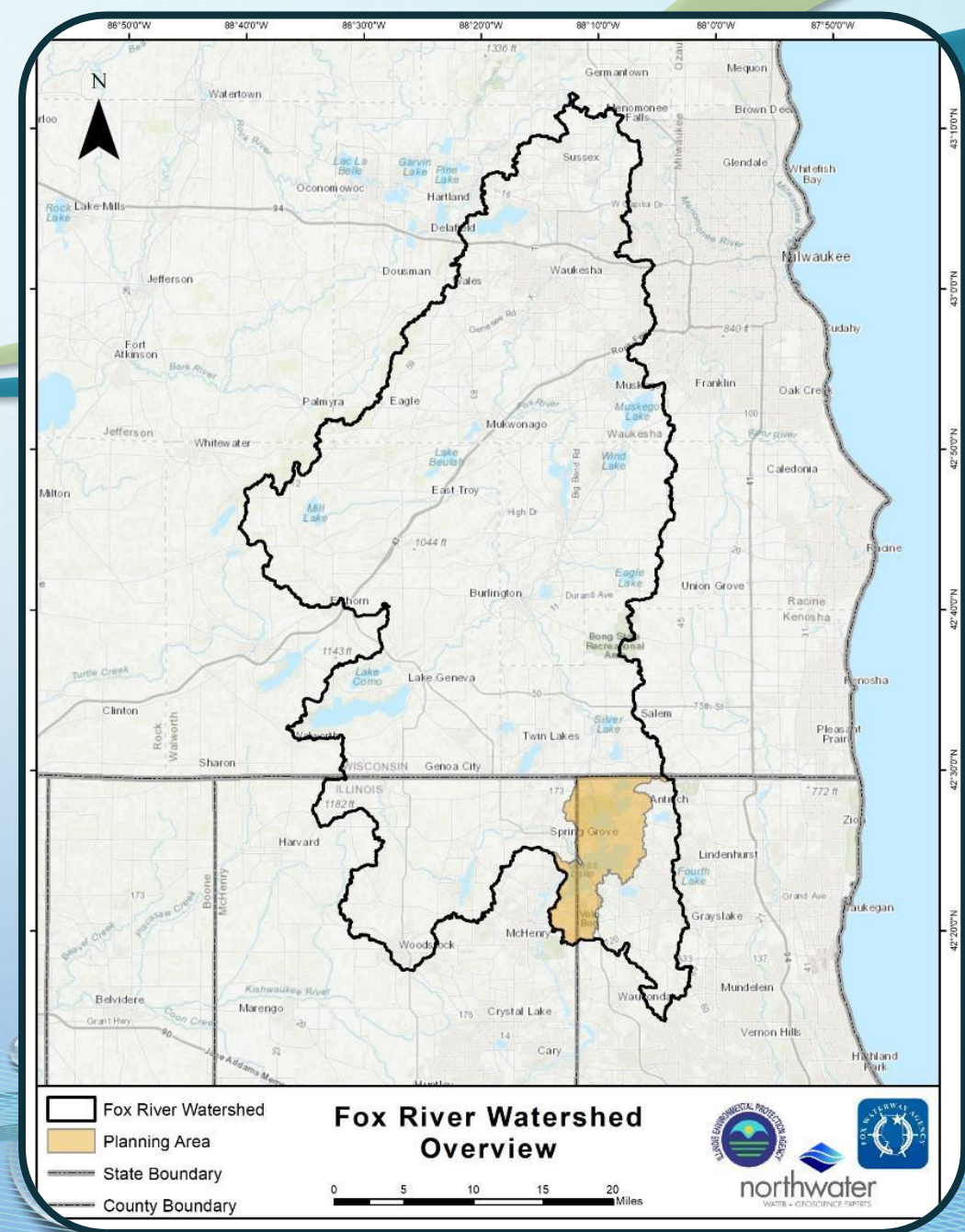
- Water quality analysis

Custom land use map layer

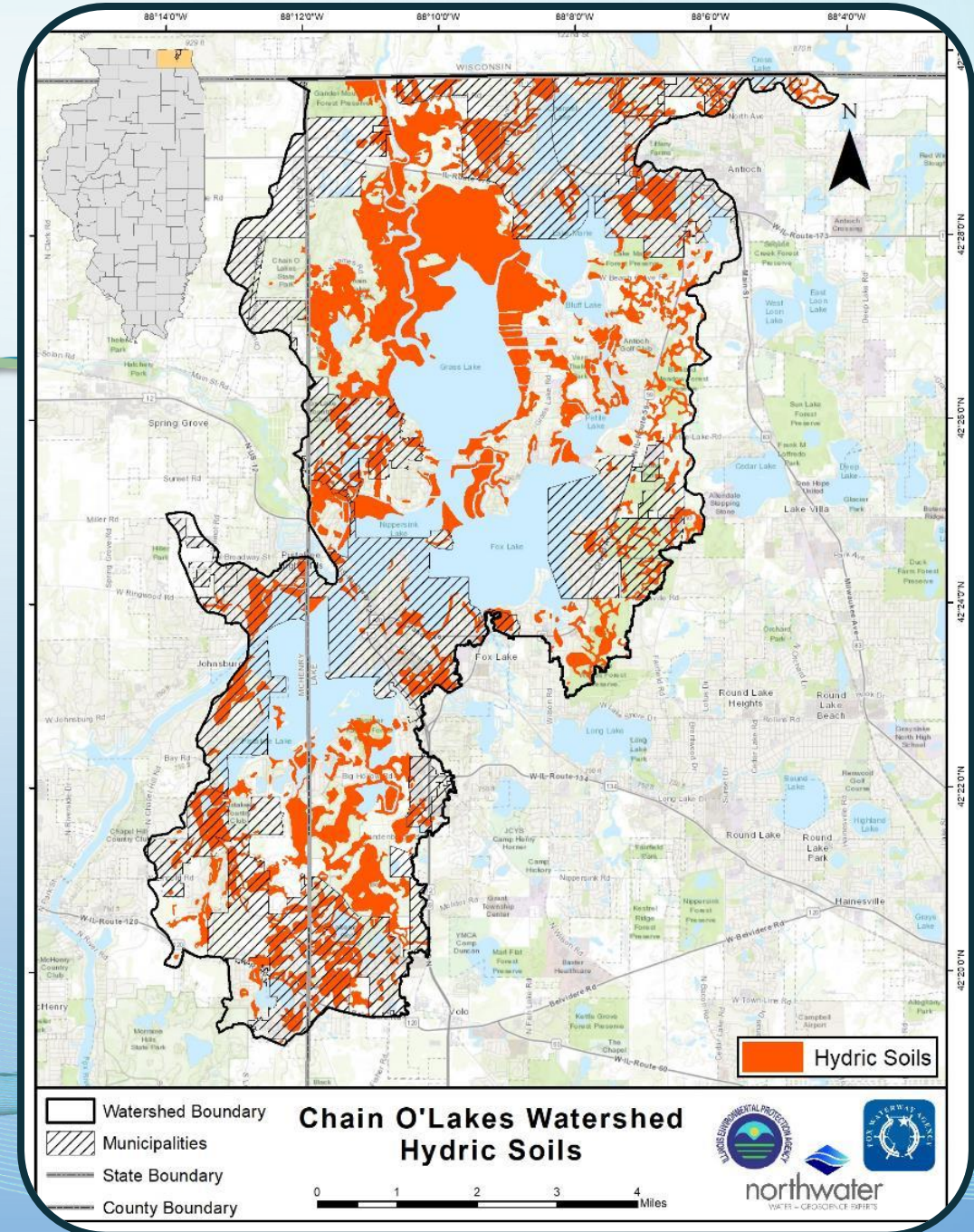
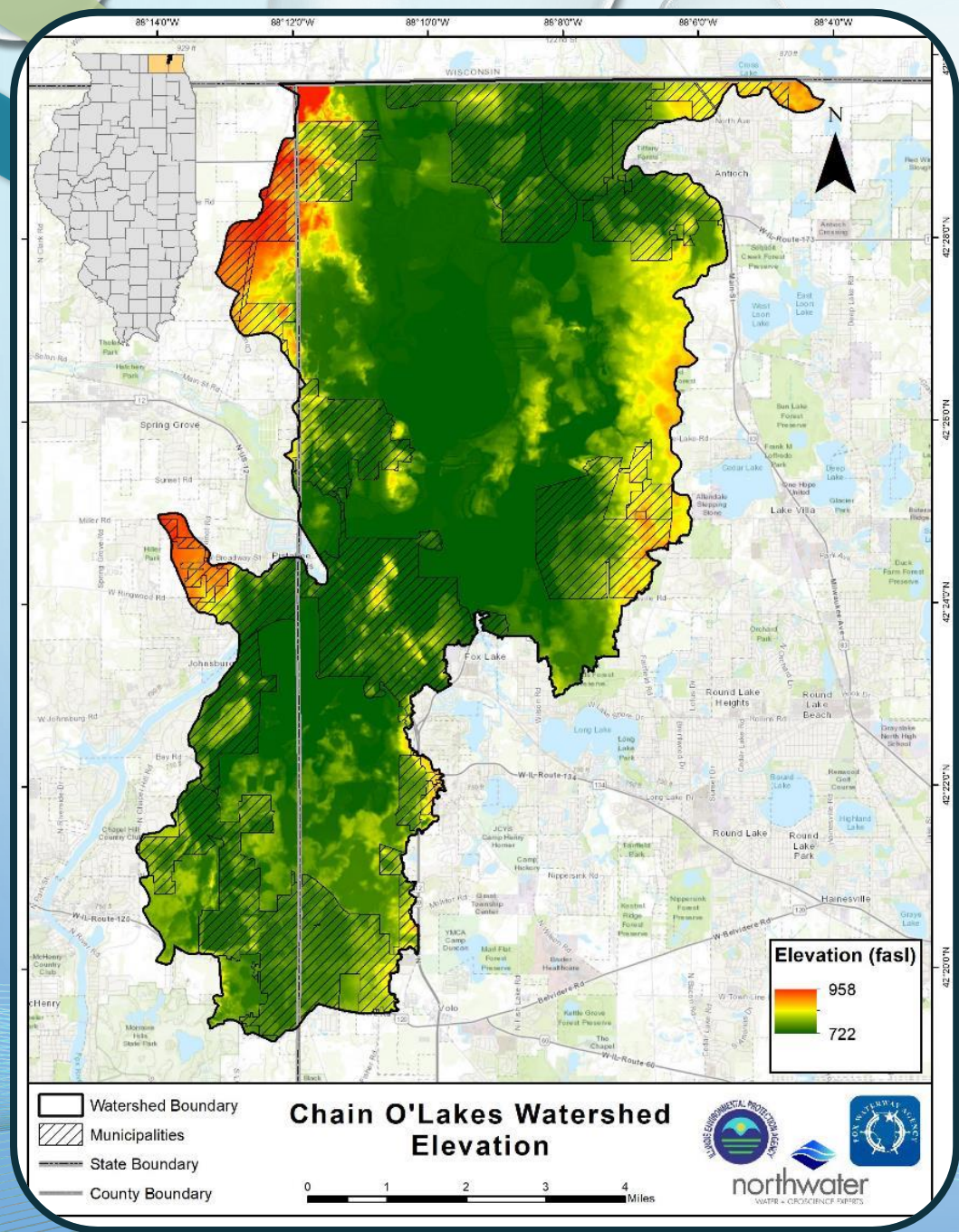
- Watershed inventory

Soils, jurisdictions, septic systems, land use

Goals and objectives

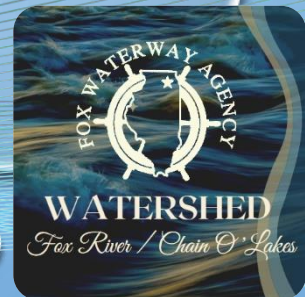






# PLAN ELEMENTS UNDERWAY

- Pollution loading model
  - Sediment, nitrogen, phosphorus, and bacteria
- Portions of the watershed inventory
  - lake and stream buffer adequacy
  - geology, demographics
- Project recommendations (1/2 done)
- expected load reductions (from projects)
- Critical areas and sources
- Responsible parties, milestones, schedule and cost estimates
- Education and information
- Monitoring
- Stakeholder engagement



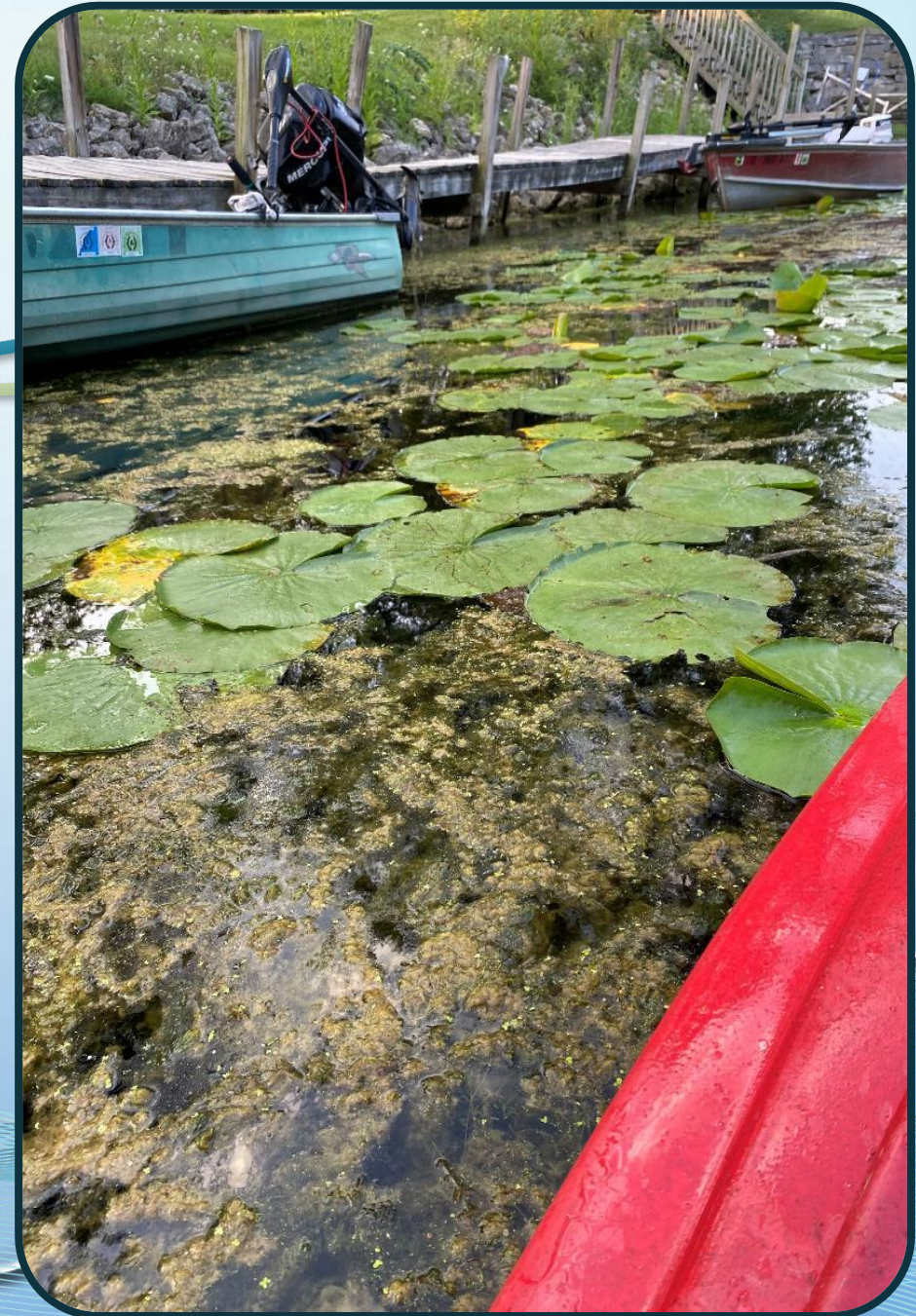
# FINDINGS...

## Current water quality impairments:

- Total phosphorus
- Total suspended solids
- Bacteria in the fox river
- Heavy metals and PCB's - for fish consumption

## Water quality highlights:

- Elevated phosphorus across the board
- The chain traps a lot of sediment and phosphorus from the fox
- Suspended sediment in channel and bluff lake dropping



# FINDINGS...

## Water Quality Highlights:

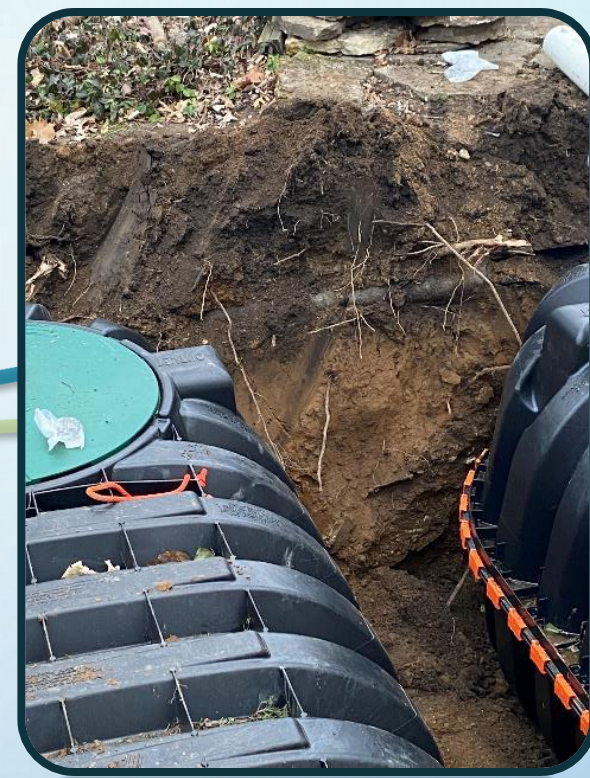
- Slight declining trend in nitrogen
- Sediment and phosphorus stable
- Internal nutrient release an issue – anoxic vs. re-suspension
  - boat traffic
- Bacteria hits at beaches but not a big issue based on data – more monitoring needed
- Further away from the fox river flow, better the water quality
- More monitoring of flow and chemistry needed for tributary streams
- Solutions must include work in the watershed + interstate cooperation



# FINDINGS...

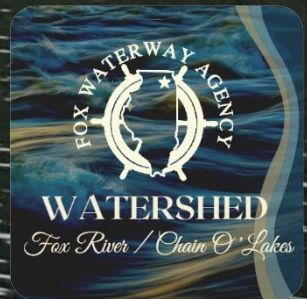
## Septic Systems

- 5 of 8 municipalities have some level of sewer
- 5 of 9 unincorporated areas do not have sewer
- Fox lake has most connections
- 8,872 septic systems, 86% within 1,000 ft of a lake
- 579 ft from a lake on average
- 754 possibly failing
  - 24,353 lbs/yr nitrogen
  - 9,534 lbs/yr phosphorus
- A very expensive study could determine the impacts of septic systems on water quality



# SHORELINE EROSION

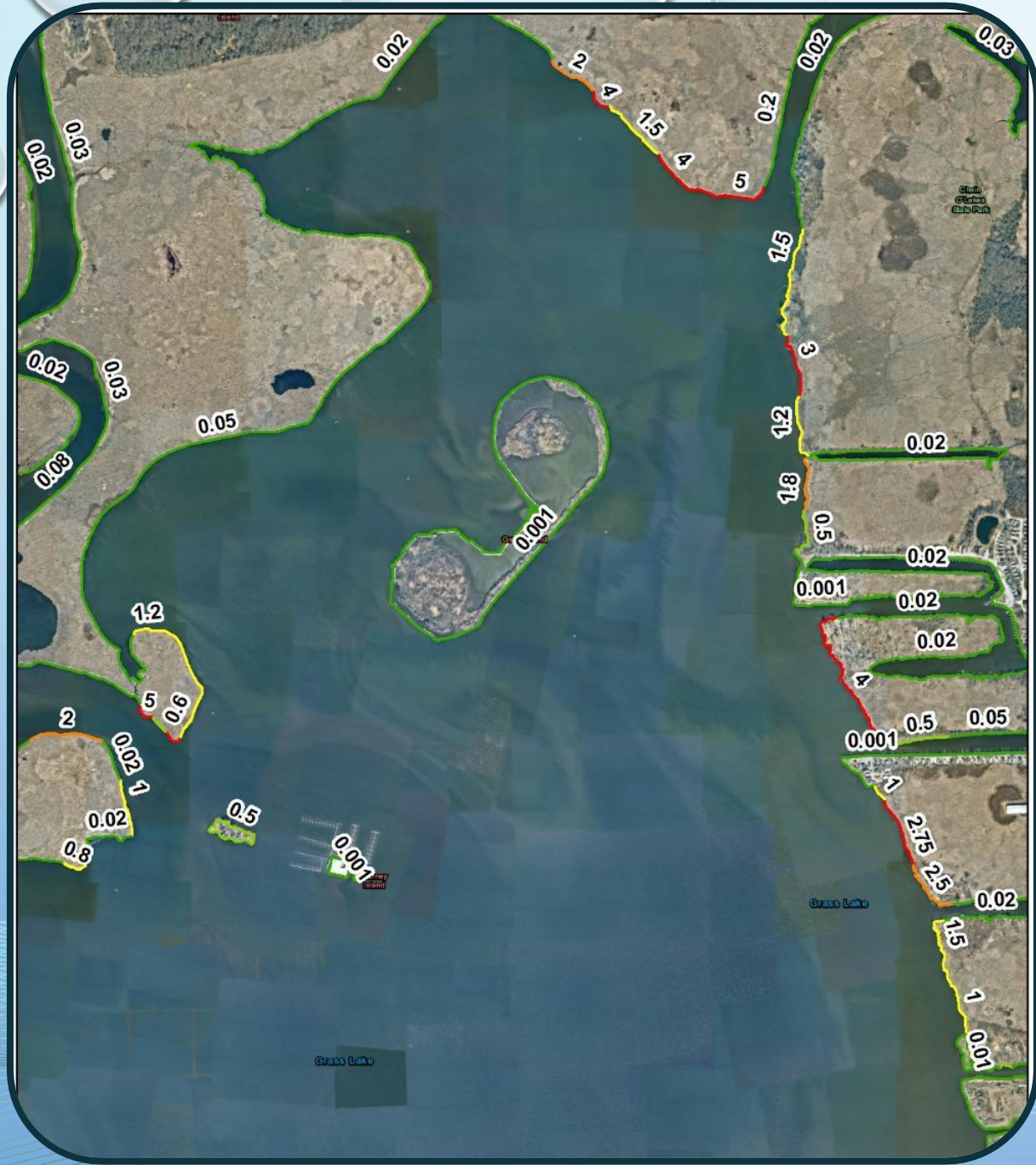
- **ANNUAL SEDIMENT LOAD**
  - **6,000+ TONS**
- **ANNUAL NITROGEN LOAD**
  - **150,000 + LBS**
- **ANNUAL PHOSPHORUS LOAD**
  - **4,700+ LBS**
- **AVERAGE OF 40 TONS OF SEDIMENT PER BANK MILE OR 24 LBS/FOOT**



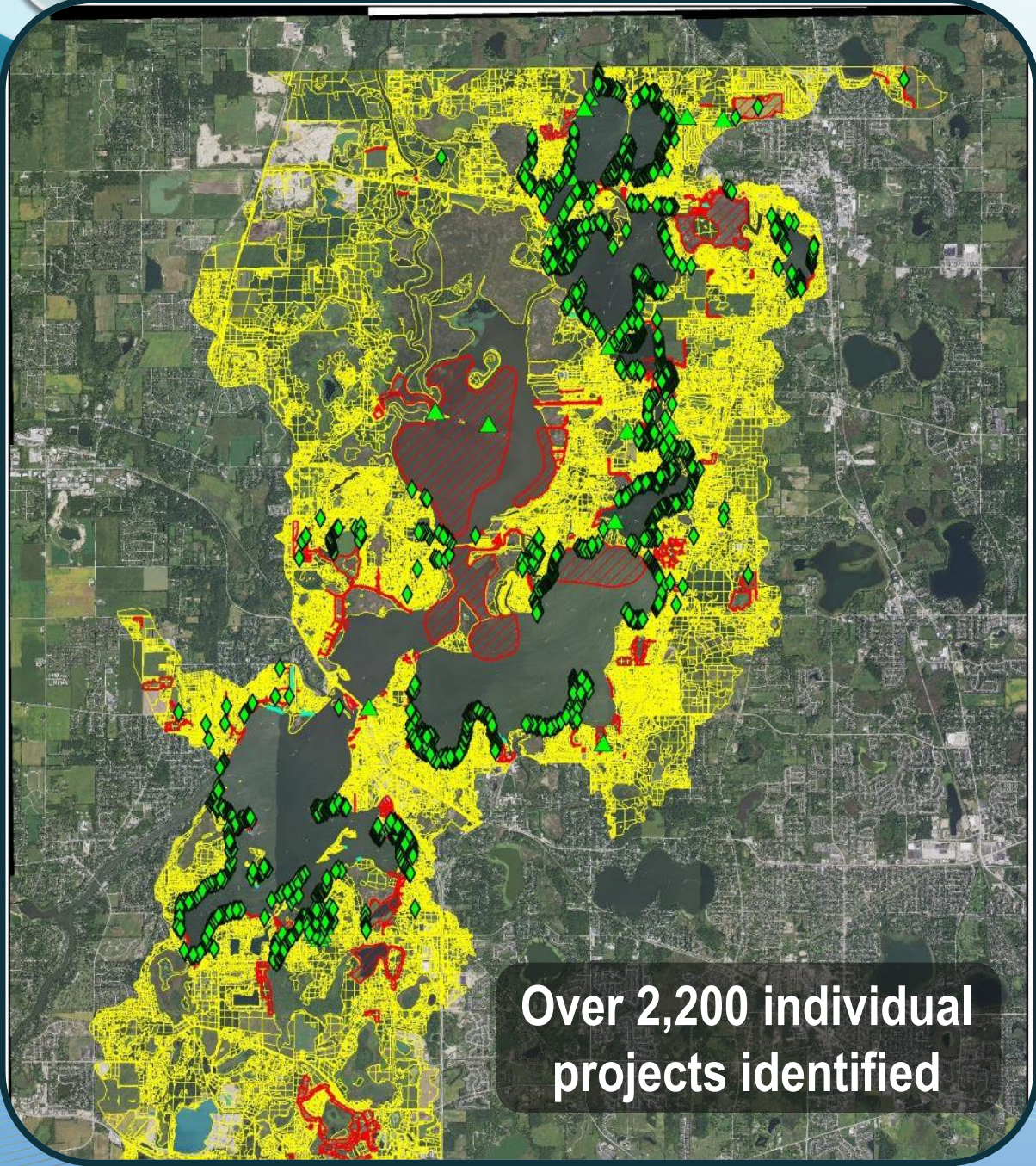
# SHORELINE EROSION

- **2,070 FT OF BANK ERODING AT OVER 1,000 LBS/FT OR 1,227 TONS**
  - **SO, 0.26% OF BANKS CONTRIBUTING 20% OF THE ENTIRE SEDIMENT LOAD**
- **4.95 MILES OF BANKS ERODING AT 100 LBS/FT OR GREATER ARE RESPONSIBLE FOR 5,491 TONS OR 91% OF THE ENTIRE SEDIMENT LOAD**
  - **3.3% OF BANKS RESPONSIBLE MOST OF THE SEDIMENT!!!**

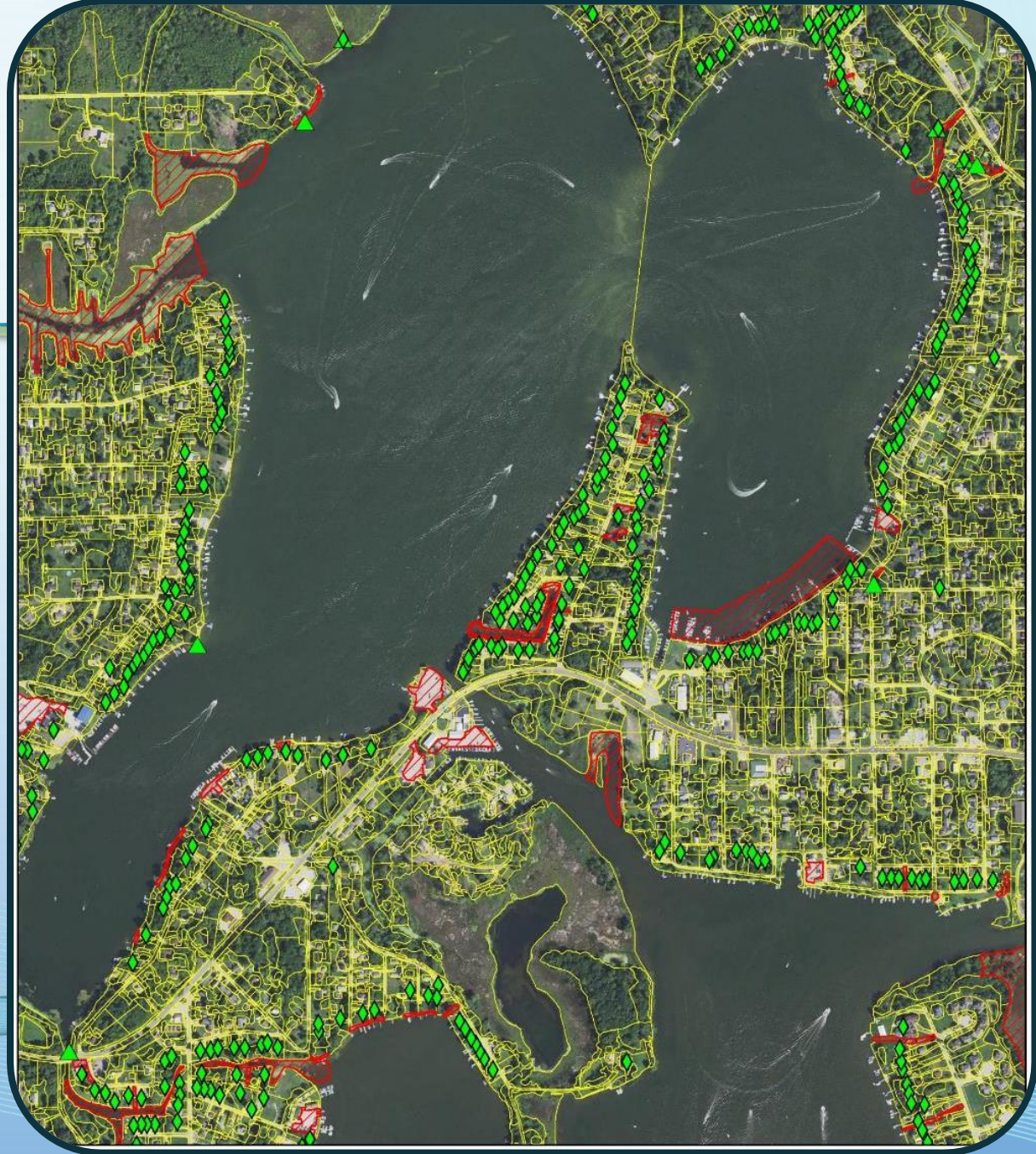








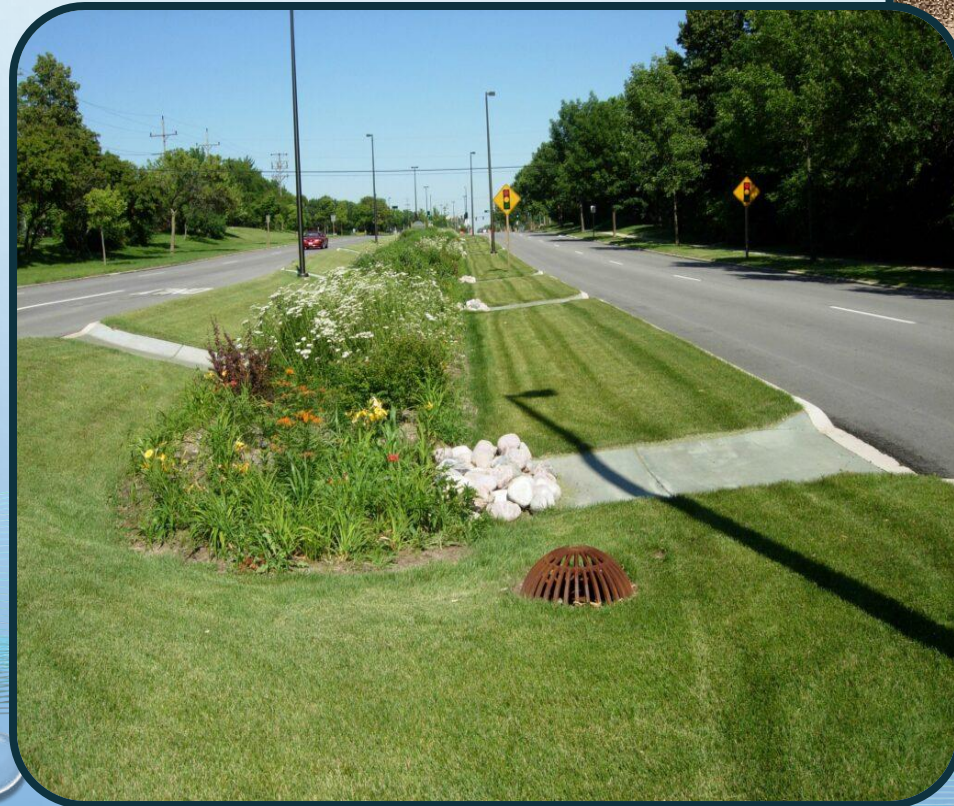
Over 2,200 individual projects identified



# PROJECT RECOMMENDATIONS

## Stormwater Runoff Control

- Buffers
- Rain gardens
- Bioswales
- Wetlands/detention
- Sediment traps
- Agricultural practices
- Education and outreach



# PROJECT RECOMMENDATIONS

## IN-LAKE

- SEDIMENT REMOVAL
- AERATION
- SHORELINE STABILIZATION



# NEXT STEPS & TIMELINE

- Finalize watershed inventory
  - Early October
- Finalize pollutant loading model
  - Mid October
- Calculate expected load reductions for projects
  - Late October
- Critical areas, sources, all the other stuff
  - Draft plan by mid-late November





northwater

# WATERSHED FUNDING

**RANDY STOWE – CHAIN O'LAKES WATERSHED PLAN**

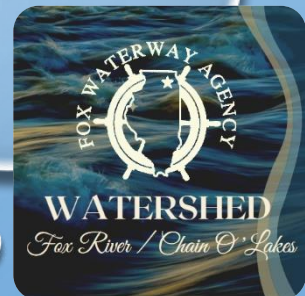
**STAKEHOLDER MEETING  
THURSDAY, SEPTEMBER 21, 2023**

# WHAT ARE SOME POTENTIAL BEST MANAGEMENT PRACTICES (BMPS) TO HELP PROTECT & ENHANCE WATER QUALITY?

---

There are (*at least* ) three types of activities that can be implemented to help protect and enhance the water quality of the Chain o'Lakes and the Fox River:

- Educating watershed stakeholders on the responsible use of lawn fertilizers and herbicides, proper pet waste management, regular septic system maintenance, downspout disconnection, creating shoreline / stream front buffer strips, etc.,
- Landowner scale bmp projects such as the creation of rain gardens and bioswales or converting turf lawns to native plantings, that can often be done cost effectively without the need for detailed engineering plans, regulatory permits, or other requirements, or
- Large scale bmp projects at the municipal, township, or HOA level that are typically subject to engineering plans, regulatory permits, competitive bidding, accounting and other requirements that come with outside grant funding.



# WATERSHED PLANNING EDUCATION & OUTREACH EFFORTS SO FAR...

---

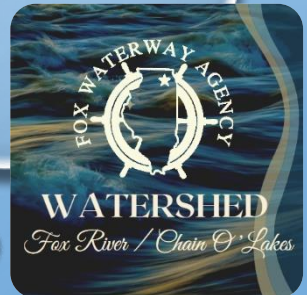
Public information outreach meetings were held July 6<sup>th</sup> and September 14<sup>th</sup>, 2022

Educational outreach meetings were held:

- Water Quality on October 27<sup>th</sup>, 2022,
- Shoreline Erosion and Stabilization on January 19<sup>th</sup>, 2023 ,
- Nutrients on March 16<sup>th</sup>, 2023,
- Rain gardens and bioswales on April 20<sup>th</sup>, 2023
- Goose management on may 18<sup>th</sup>, 2023

Each education event had roughly 20 - 30 people in attendance, with additional attendance opportunities for all events were provided via a zoom link.

upcoming education events planned for October and November 2023, include individual dredging permits, and septic system maintenance.



# DOWNSPOUT DISCONNECTION & RAIN BARRELS

## Downspout Disconnection & Rain Barrels

Connected downspouts on your house direct rainwater into foundation drains that connect to our sewer system. During a rain event, this extra water in our sewers may cause them to back-up, resulting in basement flooding. Disconnecting downspouts from your foundation drains and directing rainwater into your lawn, garden or rain barrel reduces the amount of rainwater entering our sewer system during a storm.

Disconnected downspouts must be directed away from your home or a neighbouring property. Do not direct rainwater onto cement or asphalt surfaces because in the winter this water can freeze and result in a slip and fall hazard.

The City of Windsor provides free downspout disconnection services. Call 311 for more information and to book an appointment.

Rain barrels can be installed on a disconnected downspout. The rainwater can then be used to water gardens, conserving municipal water.

### How To Disconnect Your Downspout



1 Measure 23cm from top of sewer standpipe. Measure higher if using rain barrel.



2 Cut downspout.



3 Cap sewer standpipe.

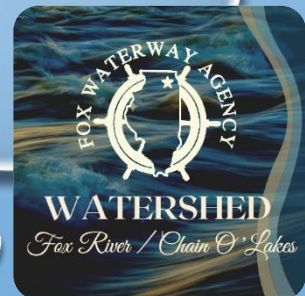


4 Insert downspout into elbow.



5 Attach downspout extension to elbow. Use splash board to prevent erosion.

For more information, please visit [www.citywindsor.ca](http://www.citywindsor.ca)





# RAIN GARDENS



BEFORE

AFTER



# DOWNSIZING TURF GRASS AREAS

before



after



# BIOSWALES



BEFORE

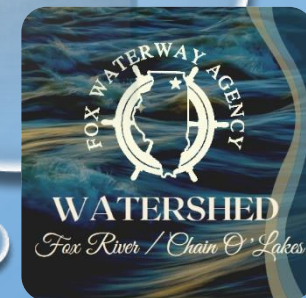
AFTER



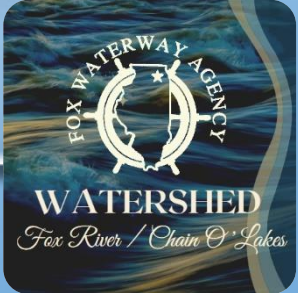
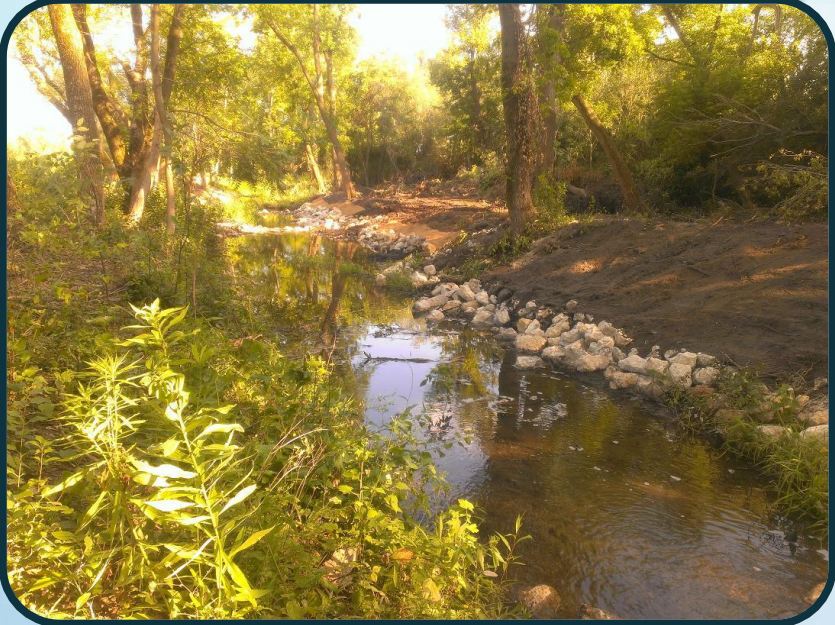
# SHORELINE STABILIZATION & BUFFER



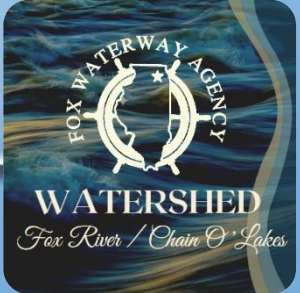
# PERMEABLE PAVERS



# STREAMBANK STABILIZATION



# IN-LAKE ISLAND PROTECTION



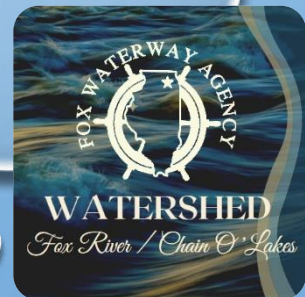
# IEPA Section 319(h) Nonpoint Source Pollution Control Financial Assistance Program

---

Section 319-Grants are potentially available to local units of government and other organizations to protect water quality in Illinois. Projects must address water quality issues relating directly to nonpoint source pollution.

Funds can be used :

- For the development, update, and implementation of watershed-based management plans
- The development of information / education programs
- Installation of Best Management Practices





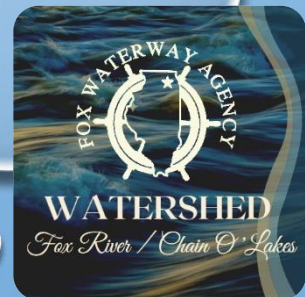
# TYPES OF WATERSHED PROJECTS POTENTIALLY ELIGIBLE FOR IEPA 319 GRANT FUNDING

---

If a BMP for a specific location is identified in an IEPA approved watershed plan, that project is eligible to apply for section 319 implementation funding from IEPA in future annual grant cycles.

In evaluating 319 grant applications, IEPA will generally favor projects that propose the largest pollutant load reduction (plr), for the most cost-effective price.

319 grant awards typically range from \$20,000 to \$1.2 million.



# 319 GRANT FUNDING BASICS

---

The IEPA 319 program accepts grant applications once a year, with the application date deadline usually in fall, however the submittal date for the next grant cycle (2024) has not yet been established.

The 319-Grant program is highly competitive, with roughly \$4,500,000 in grant funding available state-wide annually in recent years. In a typical funding cycle, far more 319 applications are received than can be awarded & funded.

If a 319-Grant application is awarded, the IEPA grant will provide up to 60% of the project cost, with the remaining 40% provided by the applicant.

If a 319-Grant is awarded, the applicant is required to pay the entire cost of the project and submit invoices to IEPA as the project progresses seeking reimbursement of the 60% grant award being provided by 319.

Once awarded, the program period is two years unless otherwise approved

<https://epa.illinois.gov/topics/water-quality/watershed-management/nonpoint-sources/grants.html>



# IEPA Green Infrastructure Grant Opportunities (GIGO)

---

The Green Infrastructure Grant Opportunities (GIGO) Program funds projects to construct green infrastructure best management practices (BMPs) that prevent, eliminate, or reduce water quality impairments by decreasing stormwater runoff into Illinois' rivers, streams, and lakes. Projects that implement treatment trains (multiple BMPs in a series) and/or multiple BMPs within the same watershed may be more effective and efficient than a single large green infrastructure BMP.

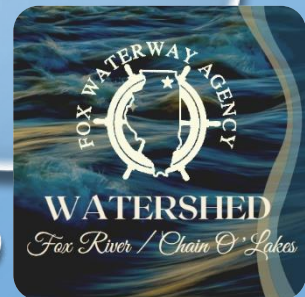
Green Infrastructure includes, but is not limited to, methods of using soil and vegetation to promote soil percolation, evapotranspiration, and filtering or the harvesting and reuse of precipitation.



# IEPA Green Infrastructure

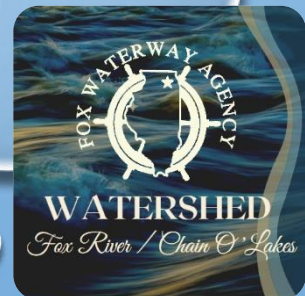
GIGO eligible projects will construct BMPs to decrease stormwater runoff prior to release into rivers, streams, and lakes, and include:

- Reconnection of a stream with its floodplain (e.g., two-stage ditch, daylighting);
- Treatment and flow control of stormwater runoff at sites directly upstream or downstream of an impervious area that currently impacts river, stream, or lake water quality through stormwater runoff discharge; and/or
- Treatment and flow control of water generated from impervious surfaces associated with urban development (such as roads and buildings).



# GIGO Grant Funding Basics

- Illinois EPA's Notice of Funding Opportunity includes \$10,000,000. GIGO has a set maximum total grant award of \$2,500,000 with a minimum grant award of \$75,000.
- GIGO is a reimbursement program. The grantee must perform the work, pay project costs, and submit an invoice with supporting documentation before Illinois EPA will reimburse the grantee for any approved eligible costs. Illinois EPA shall only make reimbursements to the grantee and shall reimburse the grantee no more frequently than monthly.
- GIGO may provide up to 75 percent of the approved project costs,; the remaining 25 percent is the responsibility of the grantee and constitutes the match.
- Applications for the GIGO Program are due by 12:00 p.m. CT on October 18, 2023.  
<https://epa.illinois.gov/topics/grants-loans/water-financial-assistance/gigo.html>

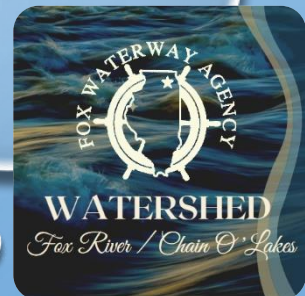


# WATERSHED PLANNING – WHERE DO WE GO FROM HERE?

---

At this stage of the on-going watershed planning process, Chain o'Lakes Watershed stakeholders can still provide valuable input on:

- Identifying areas where specific water quality issue may exist,
- Identifying areas where specific best management practices opportunities may be appropriate,
- The type of education and outreach activities and subject matter needed to make other watershed stakeholders aware of water quality issues and opportunities,
- How stakeholder volunteers can become an active part of watershed planning , implementation and outreach.





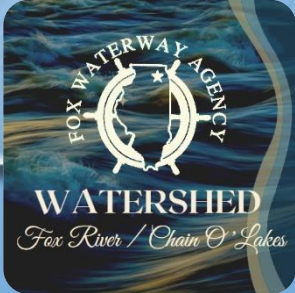
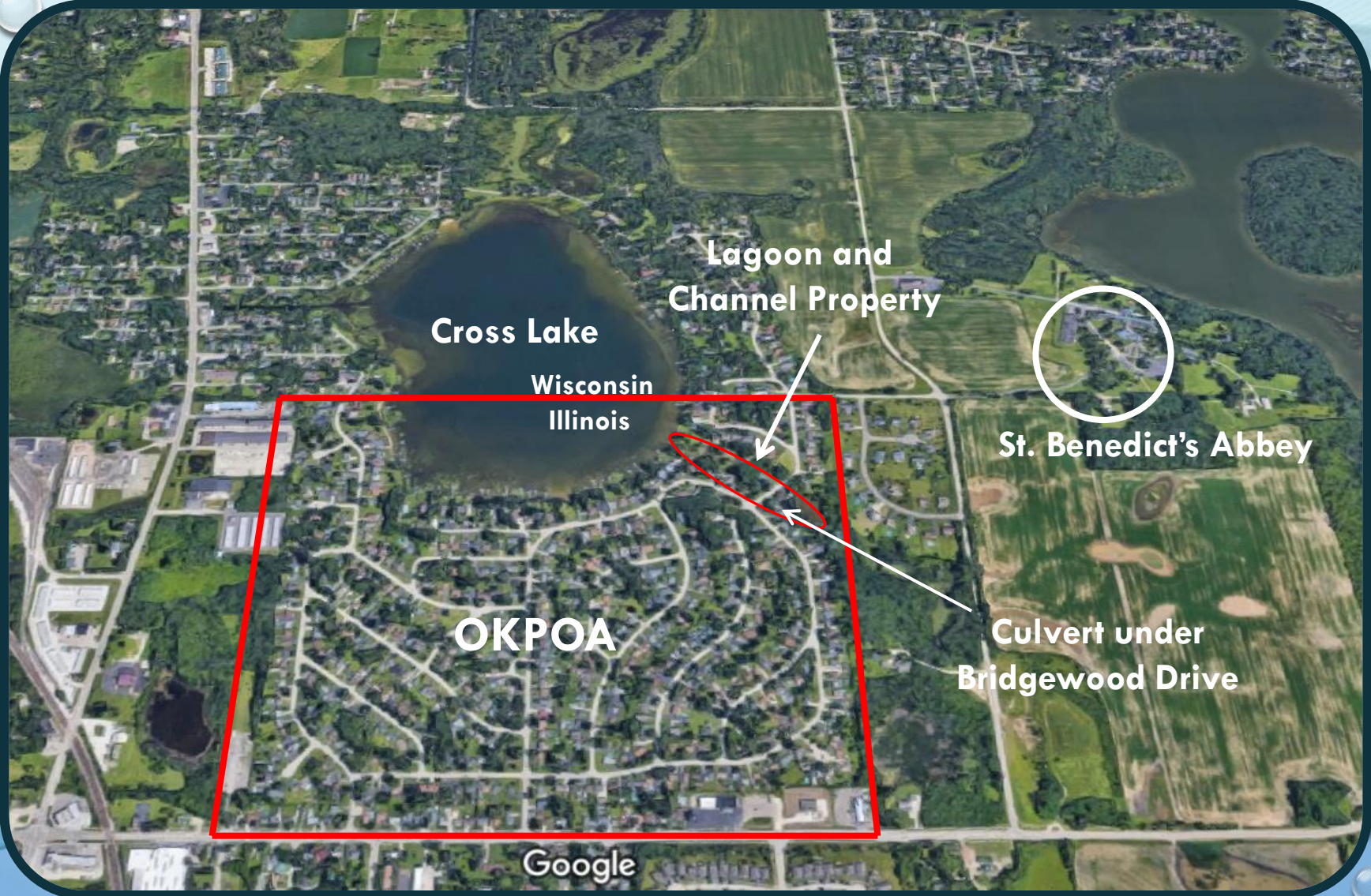
northwater

## **WATERSHED PROJECT HIGHLIGHT (CROSS LAKE)**

**ROB RINKENBERGER – FWA ADVISORY COMMITTEE MEMBER  
ALDRIDGE GROUP – MARINE / AMPHIBIOUS / CIVIL**

**STAKEHOLDER MEETING  
THURSDAY, SEPTEMBER 21, 2023**

# Oakwood Knolls Property Owners Association (OKPOA)





# Interior of a culvert in the channel during a recent drought. Channel and culvert are filled to capacity with muck



**CMP interior sediment loading  
requires dredging**



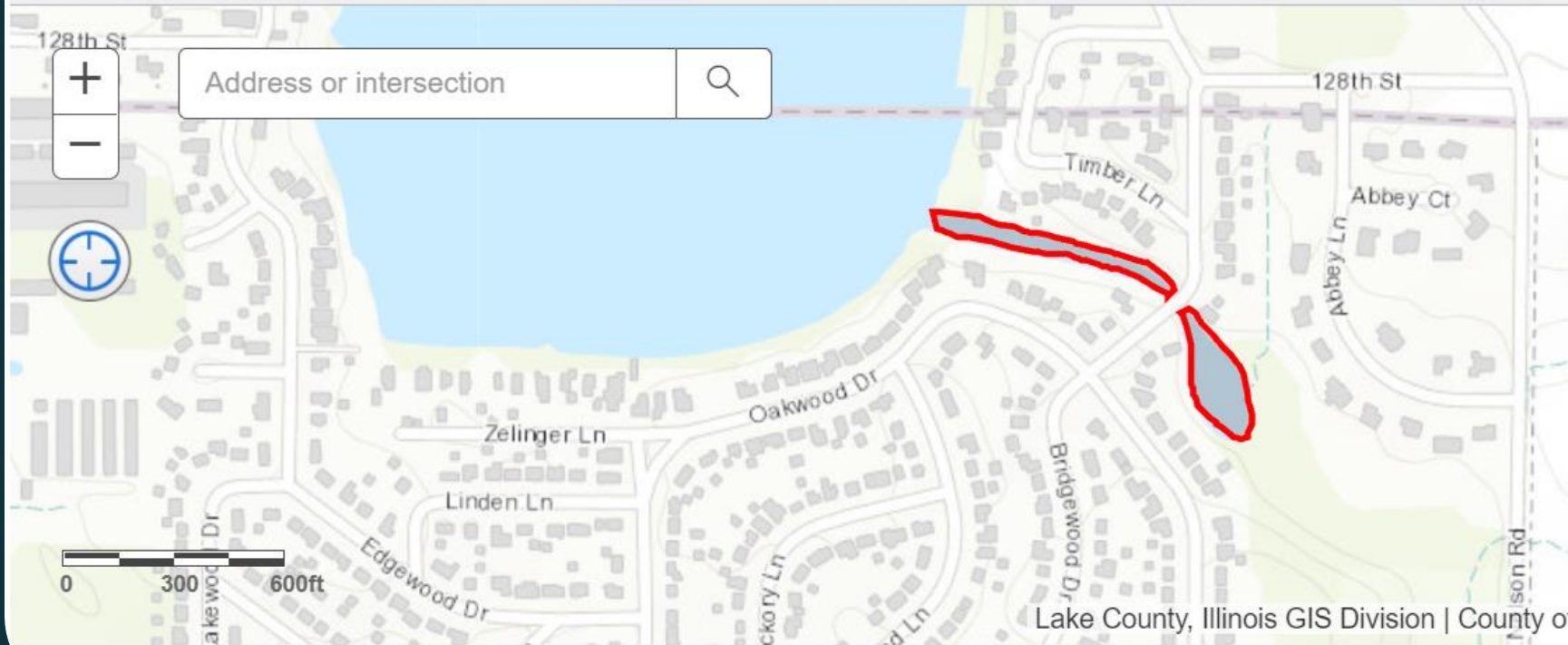
# Oakwood Knolls Property Owners Association (OKPOA) Owns the Channel and Lagoon Properties – shown in red

PARID: 0204302062

NBHD: 9455070

OAKWOOD KNOLLS CIVIC ASSOCIATION

Tax Year: 2021 (Taxes Payable in 2022).



Lake County, Illinois GIS Division | County of



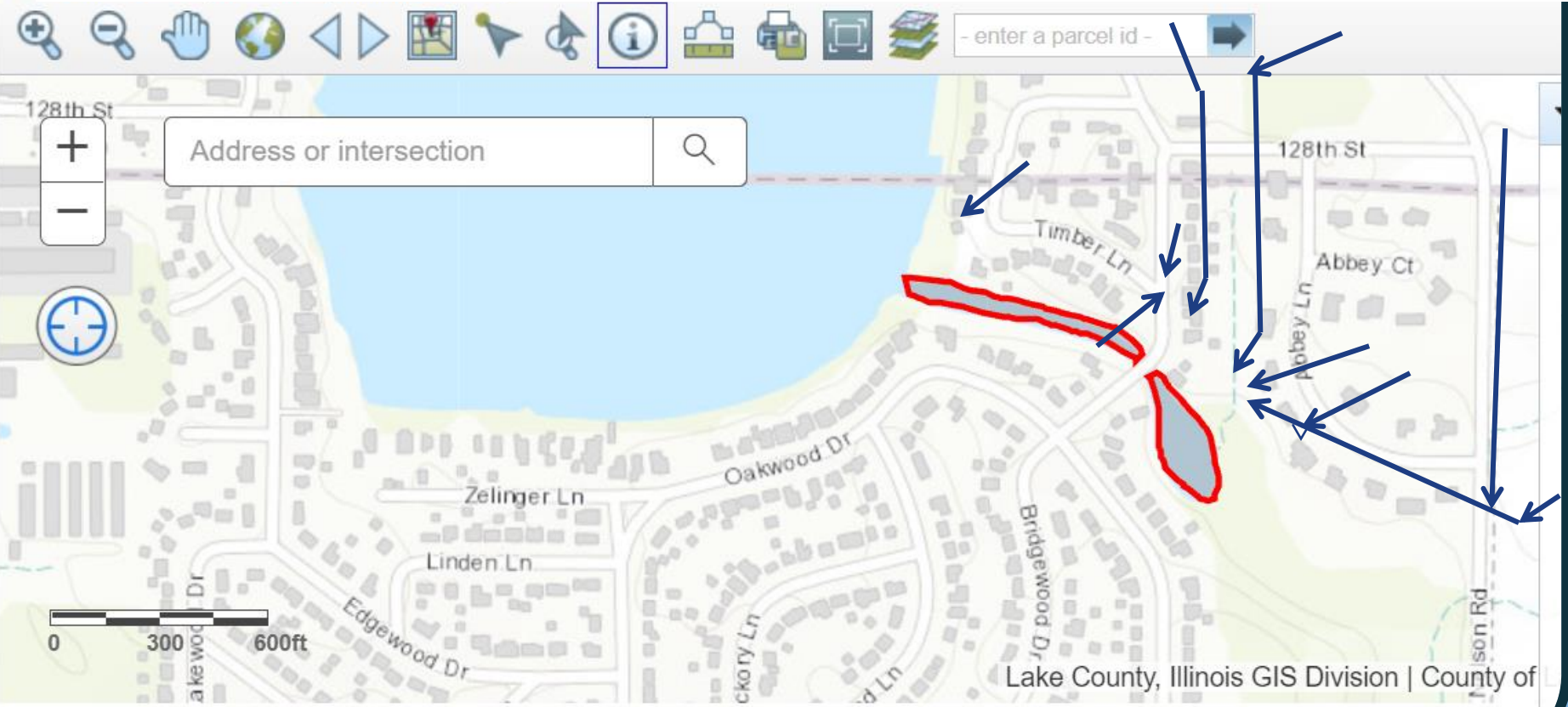
# Village Stormwater Drainage - Culverts and Ditches

PARID: 0204302062

NBHD: 9455070

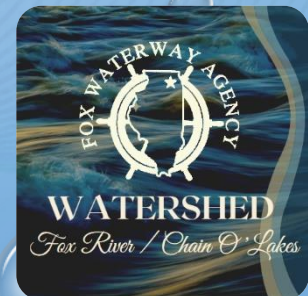
OKPOA is the property owner

**Arrow map of 10 stormwater culverts and ditches directing runoff into the lagoon/channel and out to the lake**



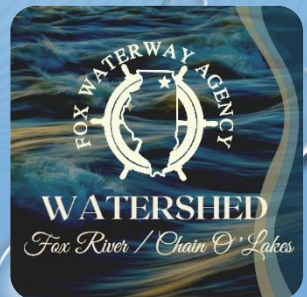
**Most the sediment comes from Farm Field Runoff.**

**A berm was installed and repaired in 1984 to control sediment runoff from St. Benedict's Abbey farm fields into Cross Lake**





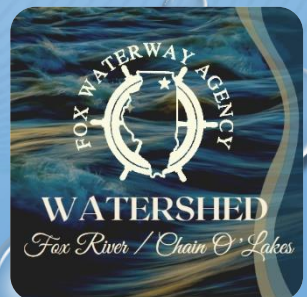
## **The berm breached causing flooding in Oakwood Knolls and Abbey Estates Subdivisions**





# **Runoff water flowing through the breach during a storm event on April 28, 2020**

*NOTE: The following photos were taken during recent storm events in 2019 & 2020*



## 228<sup>th</sup> looking south



**Runoff flows directly  
across 128<sup>th</sup> street from  
berm breach**



# Storm water, field runoff and sediment flows into Cross Lake Channel

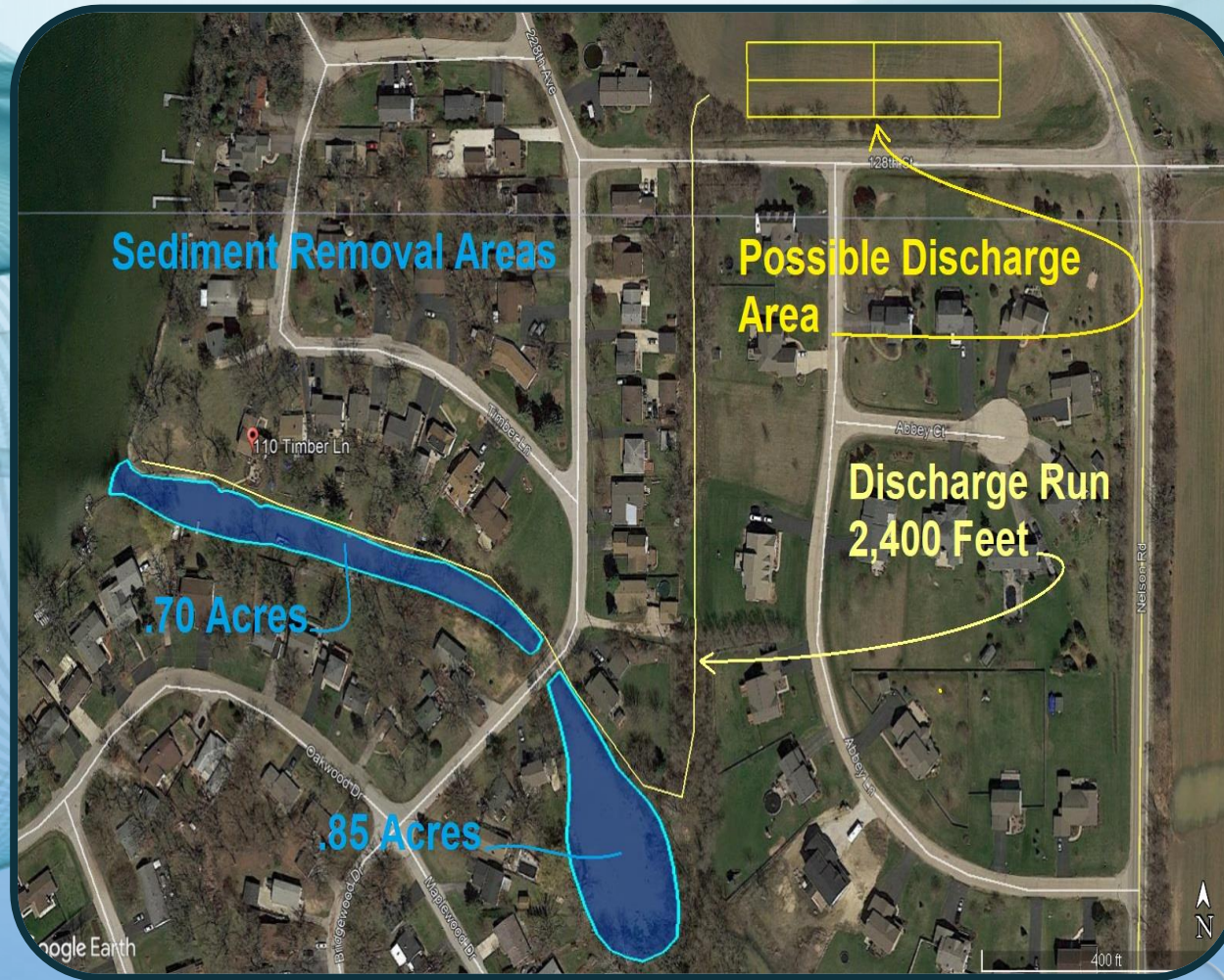




# Sediment flows directly into Cross Lake



# Lagoon and Channel Dredging Site Map and possible Discharge Area on Abbey's farm field





northwater

## **WATERSHED VOLUNTEERS**

**PATRICIA SMARTO – CHAIRWOMAN FWA ADVISORY BOARD**

**STAKEHOLDER MEETING  
THURSDAY, SEPTEMBER 21, 2023**

# BECOME A WATERSHED VOLUNTEER!

