



MANITOWOC COUNTY  
SOIL & WATER CONSERVATION DEPARTMENT  
**LAND & WATER RESOURCE  
MANAGEMENT PLAN**

2015-2025 REVIEW & 2026-2035 UPDATE





***“Working Together to Improve and Protect our Natural Resources to Enhance the Quality of Life for Present and Future Generations”***



# SOIL & WATER CONSERVATION DEPARTMENT STAFF

## Department Director



Dave Wetenkamp  
Phone: 920-683-4293

## Education Coordinator



Tara Wachowski  
Phone: 920-683-5133

## Resource Conservationist



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## Resource Conservationist



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## Administrative Assistant



JeriLynn Zutz  
Phone: 920-683-4183

## Resource Conservationist



Joseph Henson  
Phone: 920-683-4888



## Departments

### Soil and Water Conservation

GIS Maps

Department Staff

Best Management Practices

Cost-Share

Education

Farmland Preservation

Groundwater

Innovative Conservation Practice

Grants

Land Conservation Committee

Local Ordinances

Newsletter

Pine Creek Watershed

Soil Health

State Agricultural Performance

Standards and Prohibitions

Surface Water

Contact Us

## Soil and Water Conservation

**Our Mission:** Protecting our environment to enhance the quality of life for all County citizens. The responsibilities of the Soil & Water Conservation Department include erosion, runoff and sedimentation control and the conservation of soil, water, and related resources in Manitowoc County. The primary means of carrying out these responsibilities is by providing technical and financial assistance to landowners and land occupiers in both rural and urban areas. The Department also assists town, city, and village governments with land use planning, standards, and technical assistance. The Department also is responsible for enforcing County Ordinances protecting soil and water resources.



### 2016-2025 Land and Water Plan

#### Department Director

Dave Wetenkamp

Phone: 920-683-4183

F: 920-683-5131

[Contact Us](#)

#### Location Information

[Manitowoc County Office Complex](#)

4319 Expo Drive

PO Box 935

Manitowoc, WI 54220

#### Hours of Operation

**Monday** 8:30 - 5:00

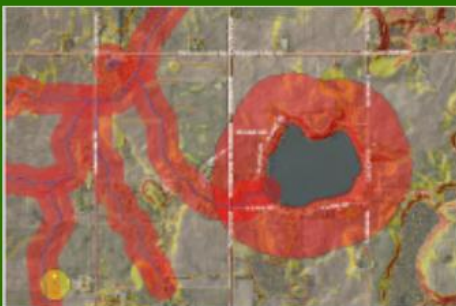
**Tuesday** 8:30 - 4:30

**Wednesday** 8:30 - 4:30

**Thursday** 8:30 - 4:30

**Friday** 8:30 - 4:30

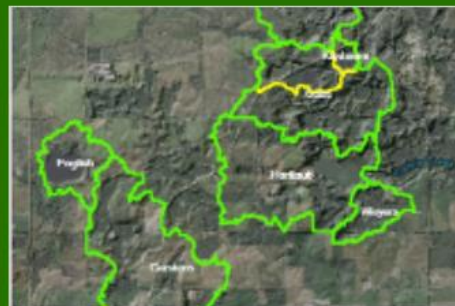




Chapter 19 Animal  
Waste Management



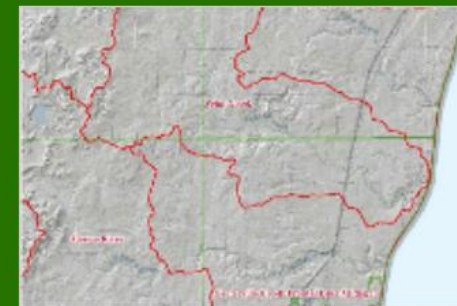
CREP Stream &  
Wetland Buffers



Inland Lake  
Watersheds



Karst & Bedrock  
Inventory



Know Your Watershed



Manitowoc County 3D  
LiDAR Analyzer



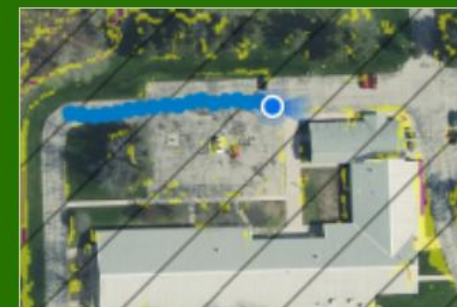
Manitowoc County 3D  
LiDAR Point Cloud



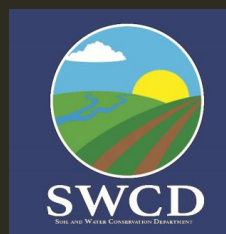
Manitowoc County  
Cover Crop Tour



Manitowoc County  
LiDAR Tree Canopy  
Heights

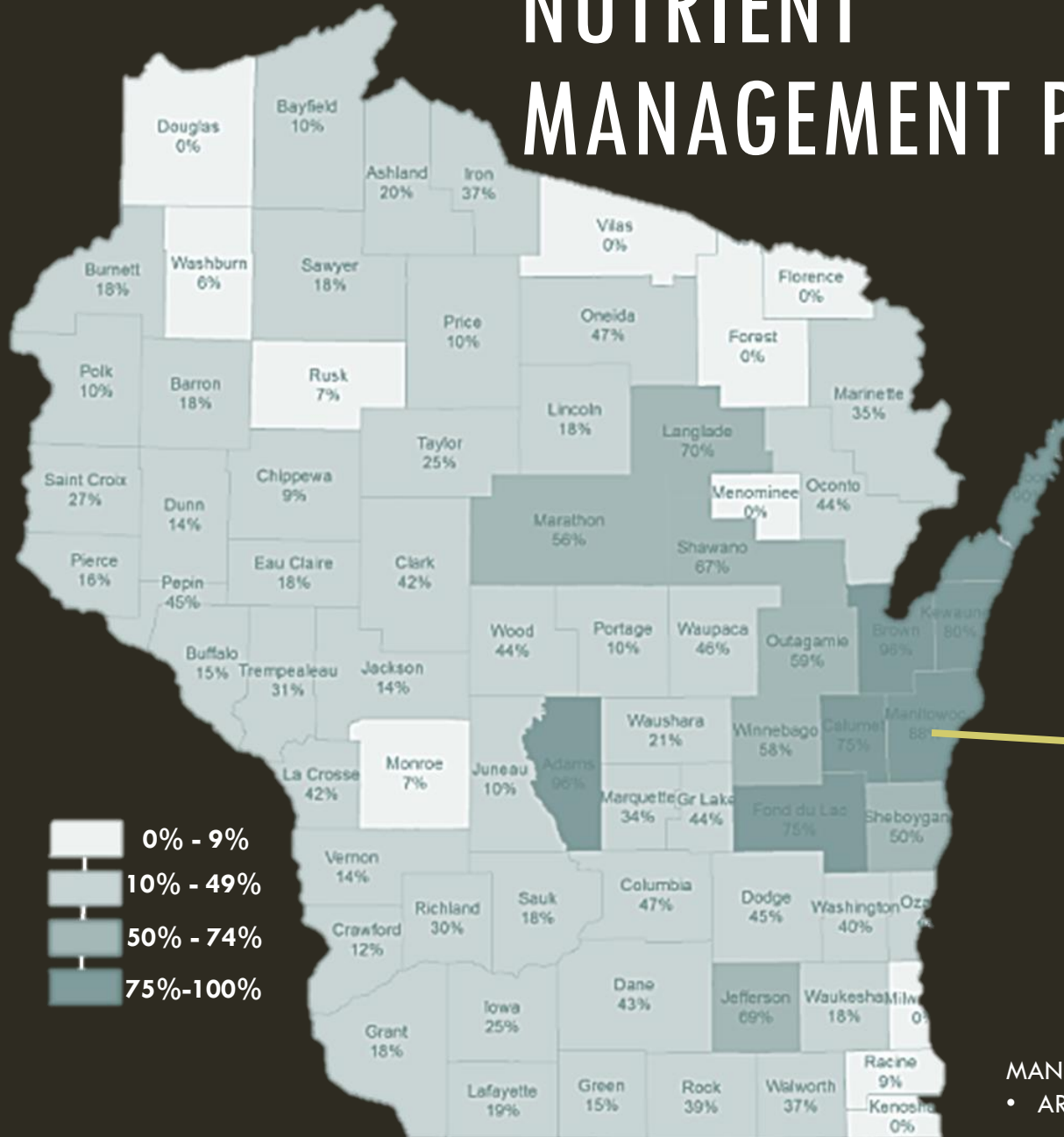


Mobile Manure  
Restriction Map

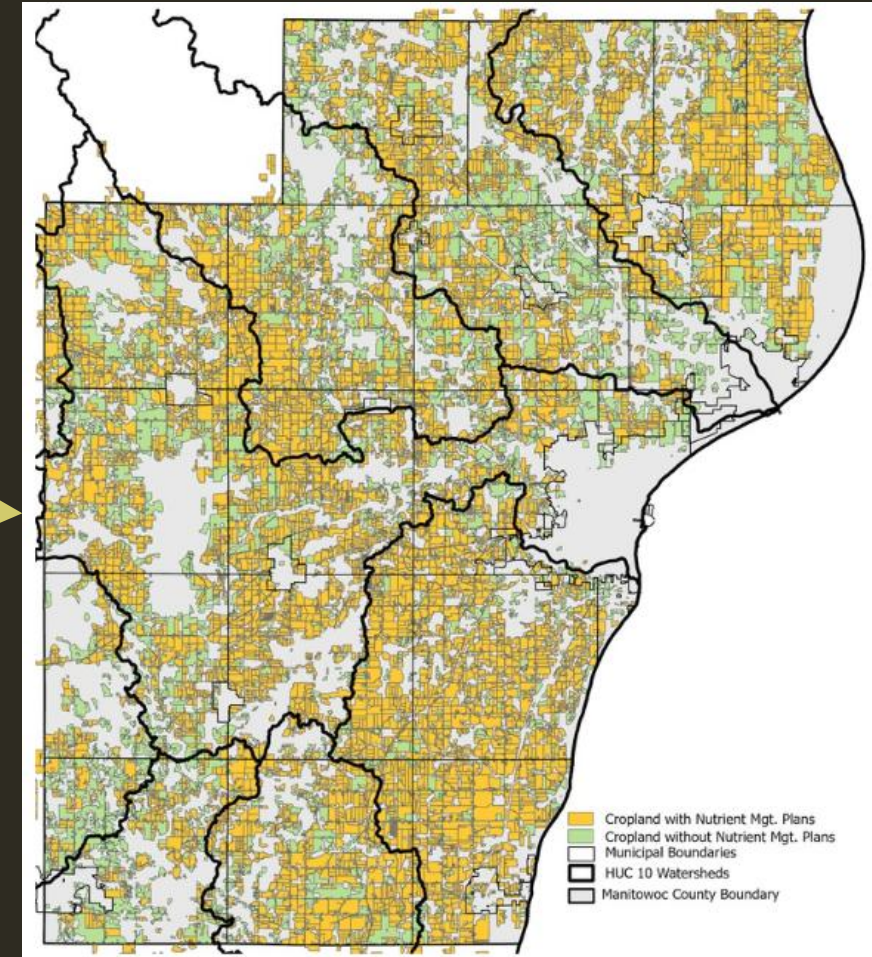




# NUTRIENT MANAGEMENT PLANS



**155K** Acres with NMPs  
**88% Manitowoc County**  
(~193,638 ACRES TILLABLE)



MANITOWOC COUNTY  
• AREA = 377,158 ACRES





**300+**  
Manure Storage  
and  
Transfer Systems



# 32 Farms with a Livestock Facility License

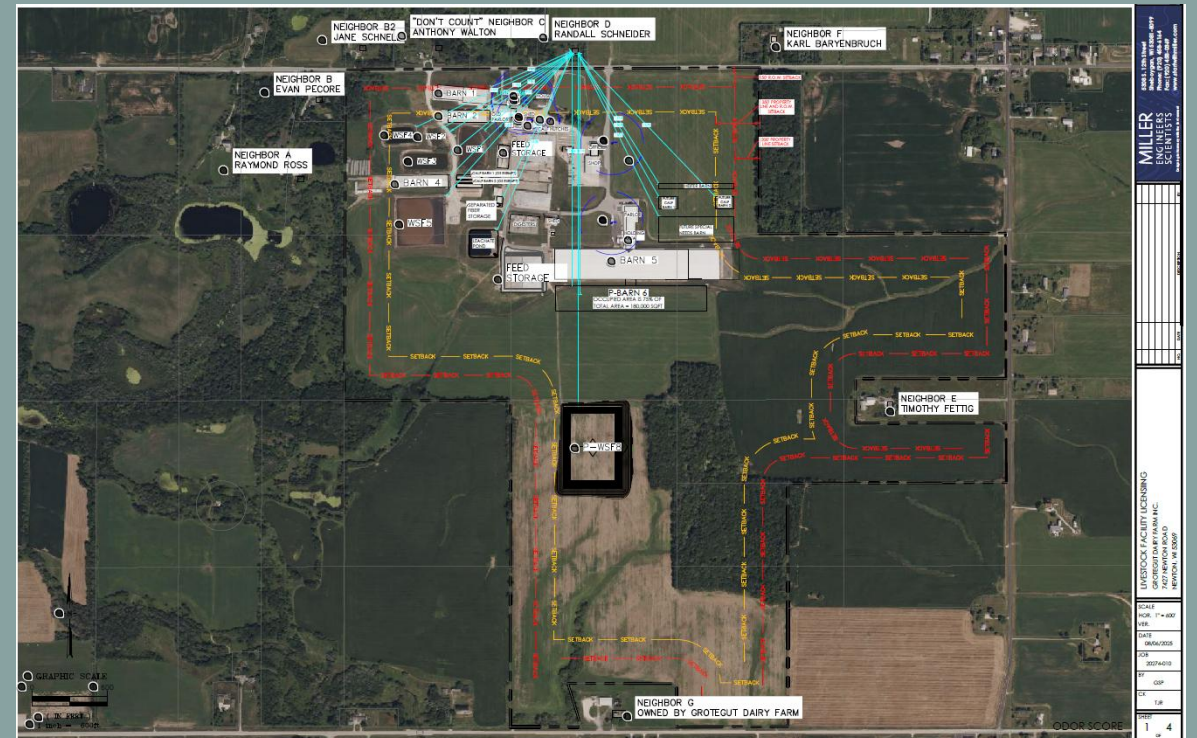
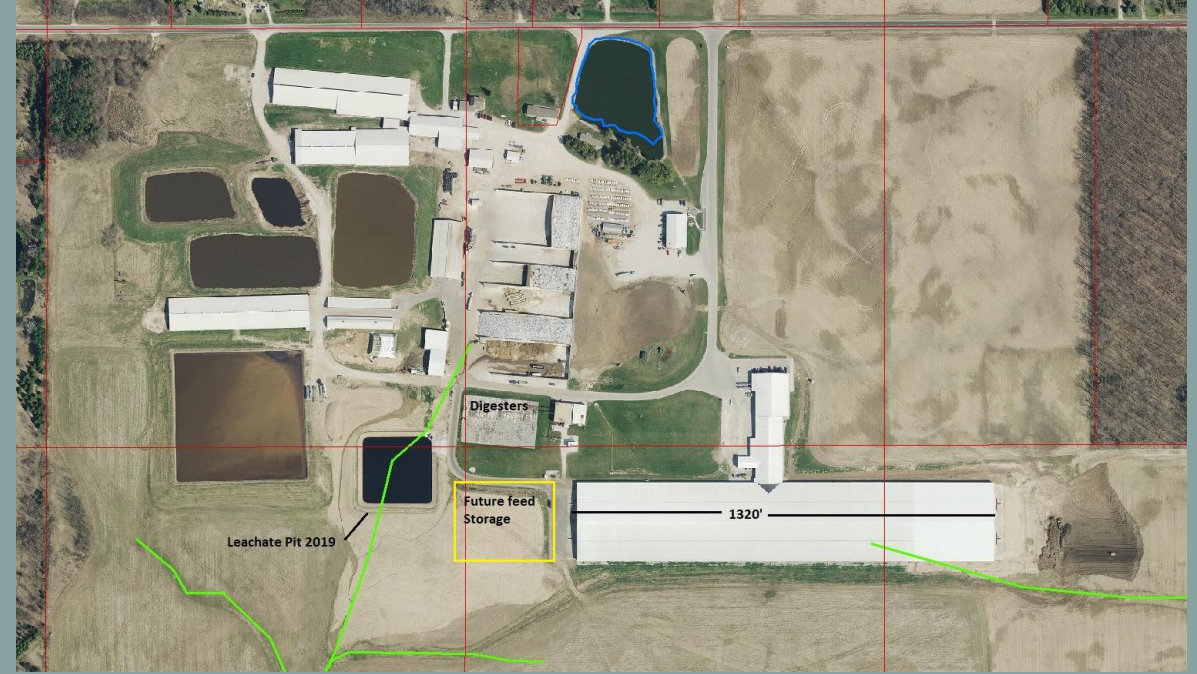


# 73,534+

(Total Animal Units Under Siting)

(Range of 832 to 14,028 AU on farms)  
Issued 32 Facility Siting Licenses/Modifications  
since 2016

~ 115,000+ livestock in Manitowoc County







# FARMLAND PRESERVATION PROGRAM

**154,952 Acres  
Cropland in FPP**

**955**

**FPP Eligibility**

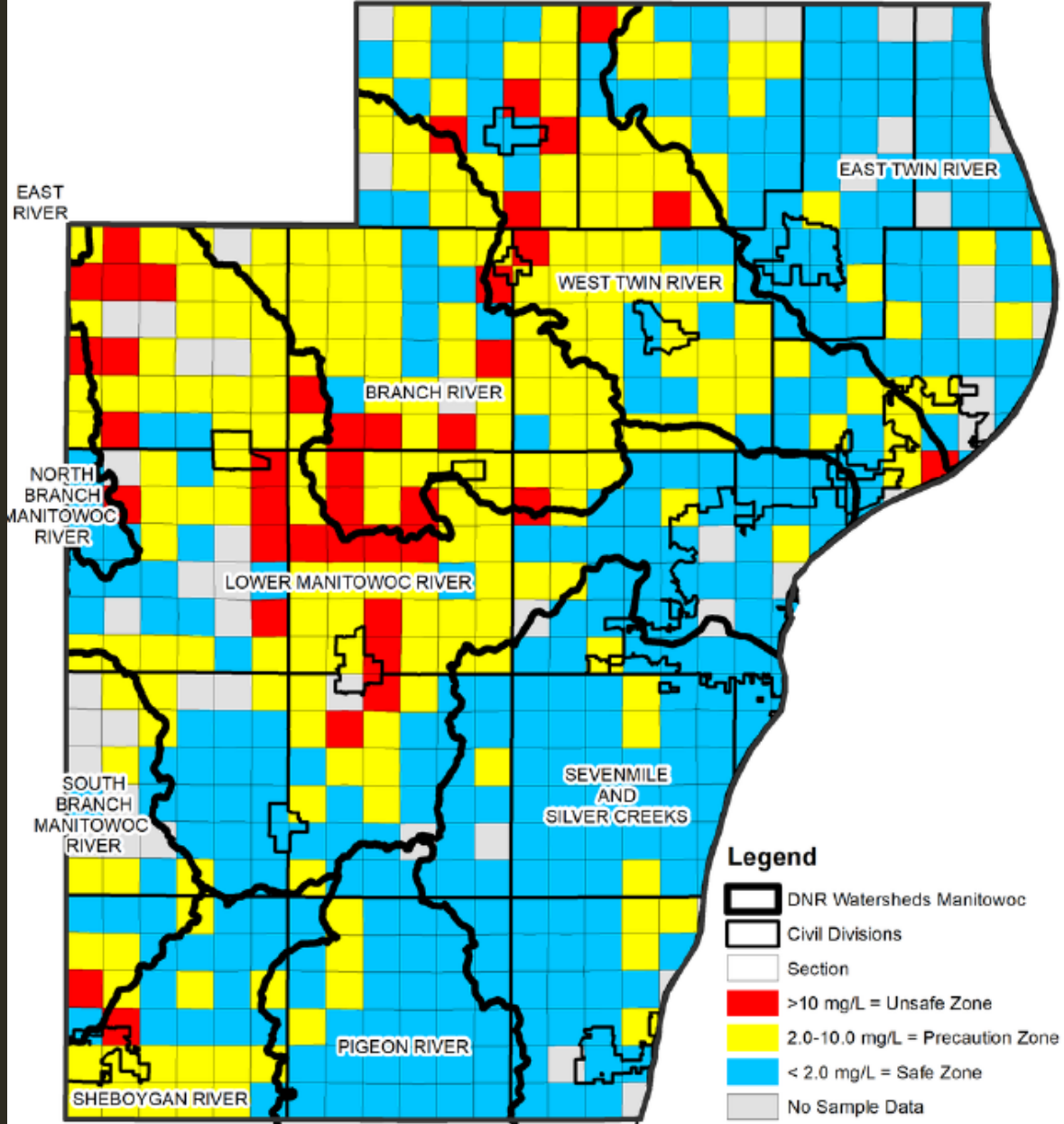
**613**

**Landowner Participants  
200 Annual Reviews**

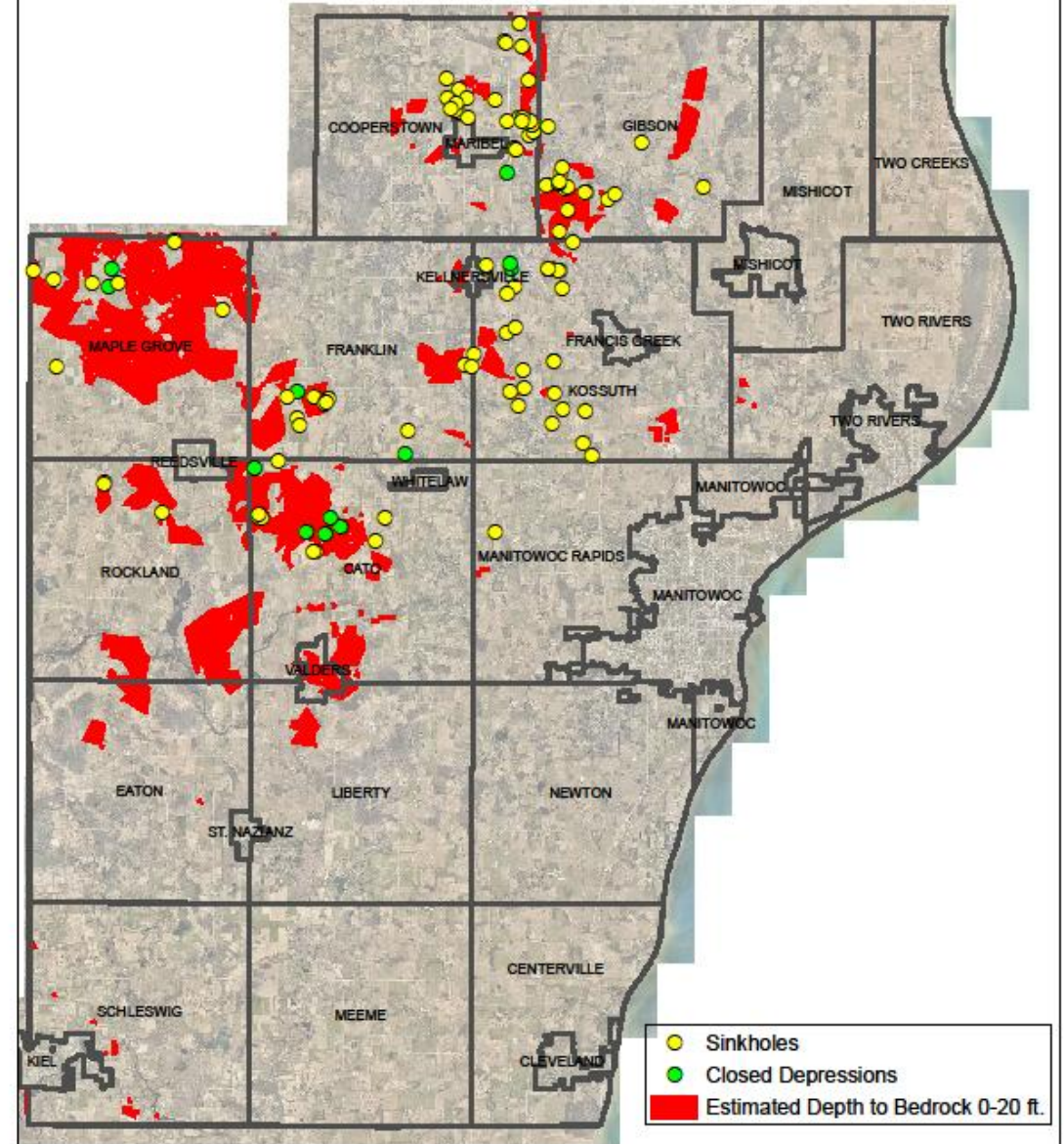
**\$1.1M**

**Tax Credit Dollars Generated**

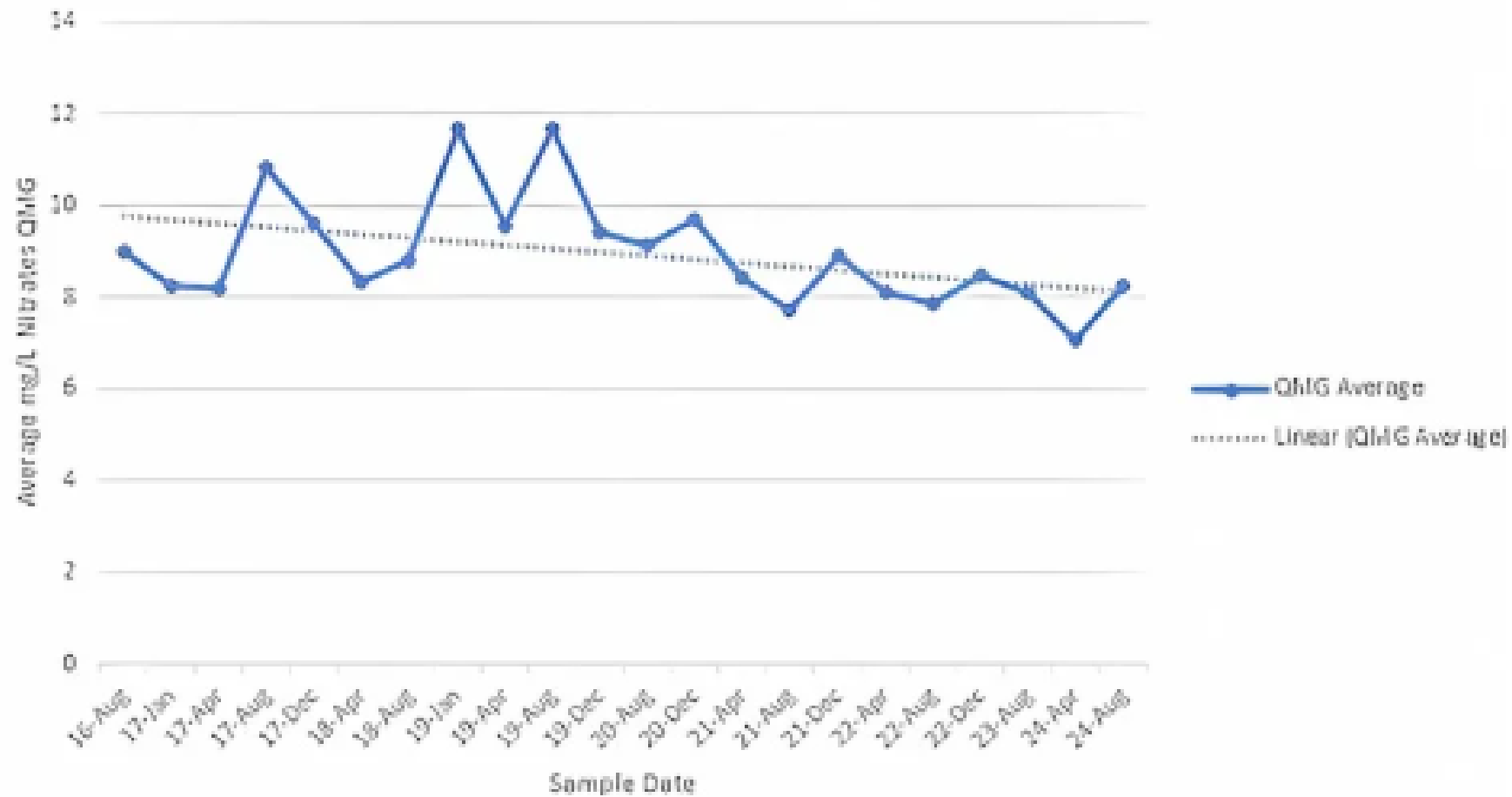
# Manitowoc County Nitrates 1994-2024 & HUC-10 Watersheds



## Manitowoc County



## Quarterly Monitoring Group (QMG) Average 2016-2024







Sinkholes





FILLING SINKHOLE & DIVERTING RUNOFF TO PROTECT WELLS











# Gass Lake improvement project



Author: T Smith  
Date Printed: 5/14/2020



The burden for determining fitness for use rests entirely upon the user of this website. Manitowoc County and its co-producers will not be liable in any way for accuracy of the data and they assume no responsibility for direct, indirect, consequential, or other damages.



BEFORE







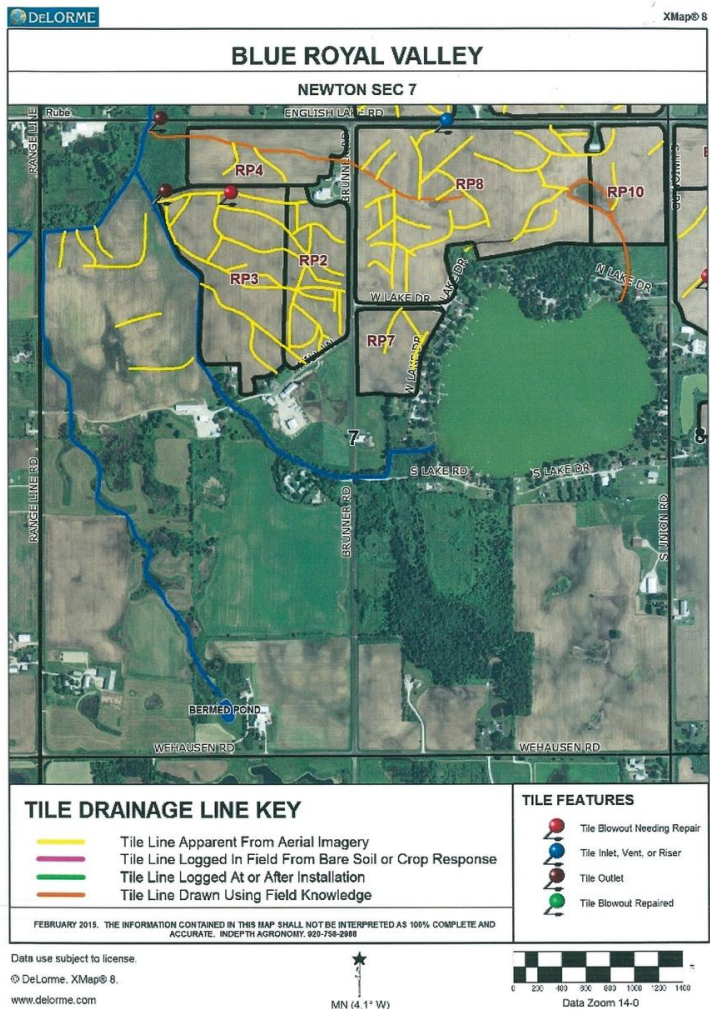
**DURING**







# FINISHED SEDIMENT BASIN ABOVE ENGLISH LAKE





ENGLISH LAKE  
WASCOB/TILE DIVERSION



MAY/ 3/2021





MAY/ 3/2021









WATERSHED & TILE DIVERSION IN-PROGRESS

APR/28/2022



# SURFACE WATER

## CalManLakes

### WATERSHED PROJECT



#### Goal 1:

Reduce total phosphorus of each lake to meet state water quality criteria within 20 years. (30 ug/L)

#### Goal 2:

Shift each lake from hypereutrophic (overly productive) to eutrophic status within 10 years by reducing phosphorus loading in each lake (30% to 71% reductions.)

#### Goal 3:

Residents, lake users, landowners, and operators understand the impacts of individual actions and are involved in reducing their impact on the lakes.

#### Goal 4:

Minimize localized flooding through improvements in upland management and nutrient loading

#### Goal 1:

Improve surface water quality

#### Goal 2:

Improve streambank stability

#### Goal 3:

Increase public awareness & participation in watershed conservation activities

11.5% Reduction in Sediment  
21.9% Reduction in Phosphorus



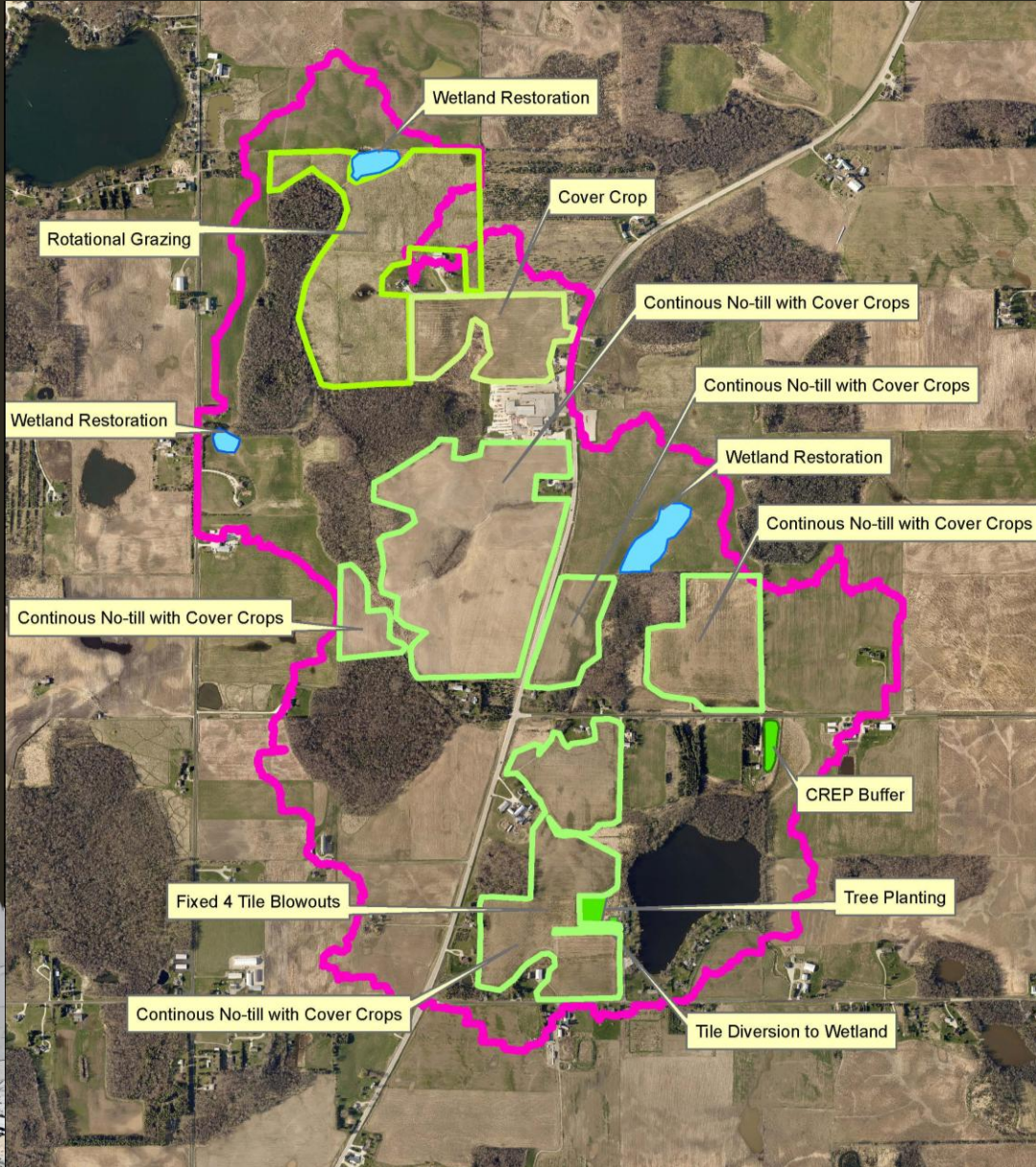
PINE CREEK

9 Key Element  
PLAN

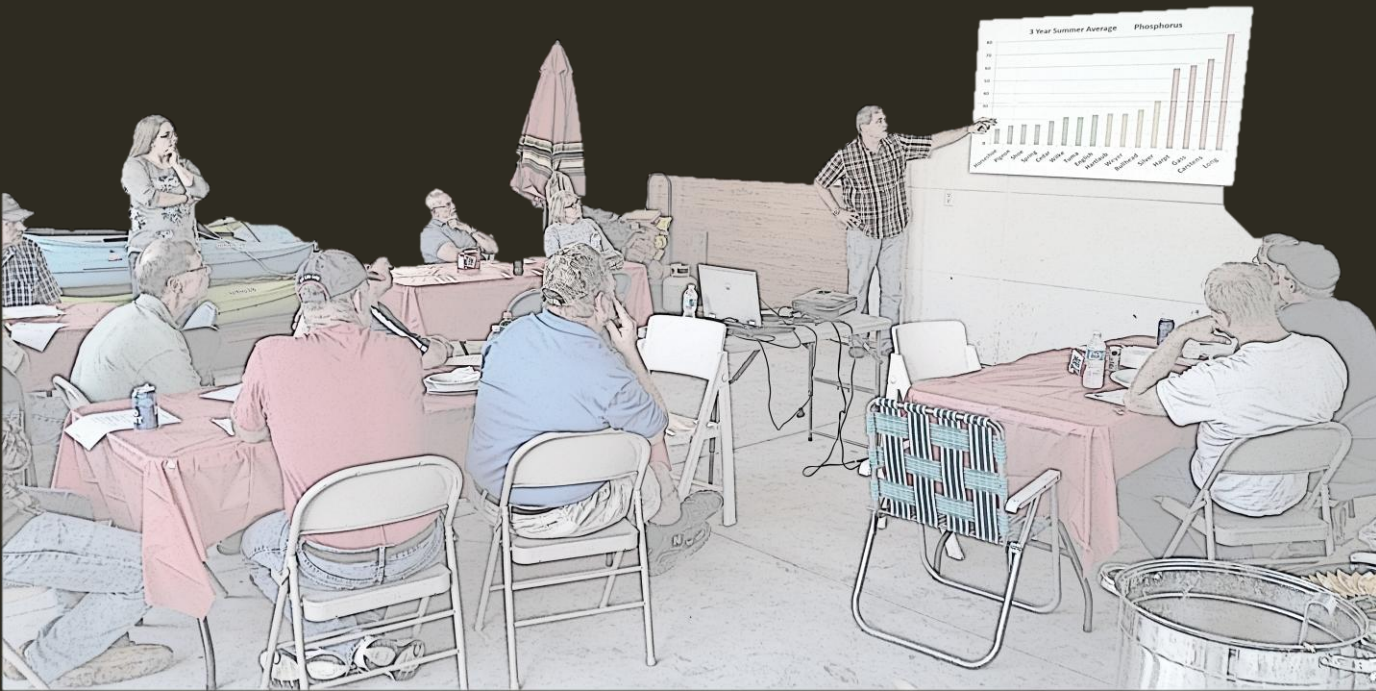




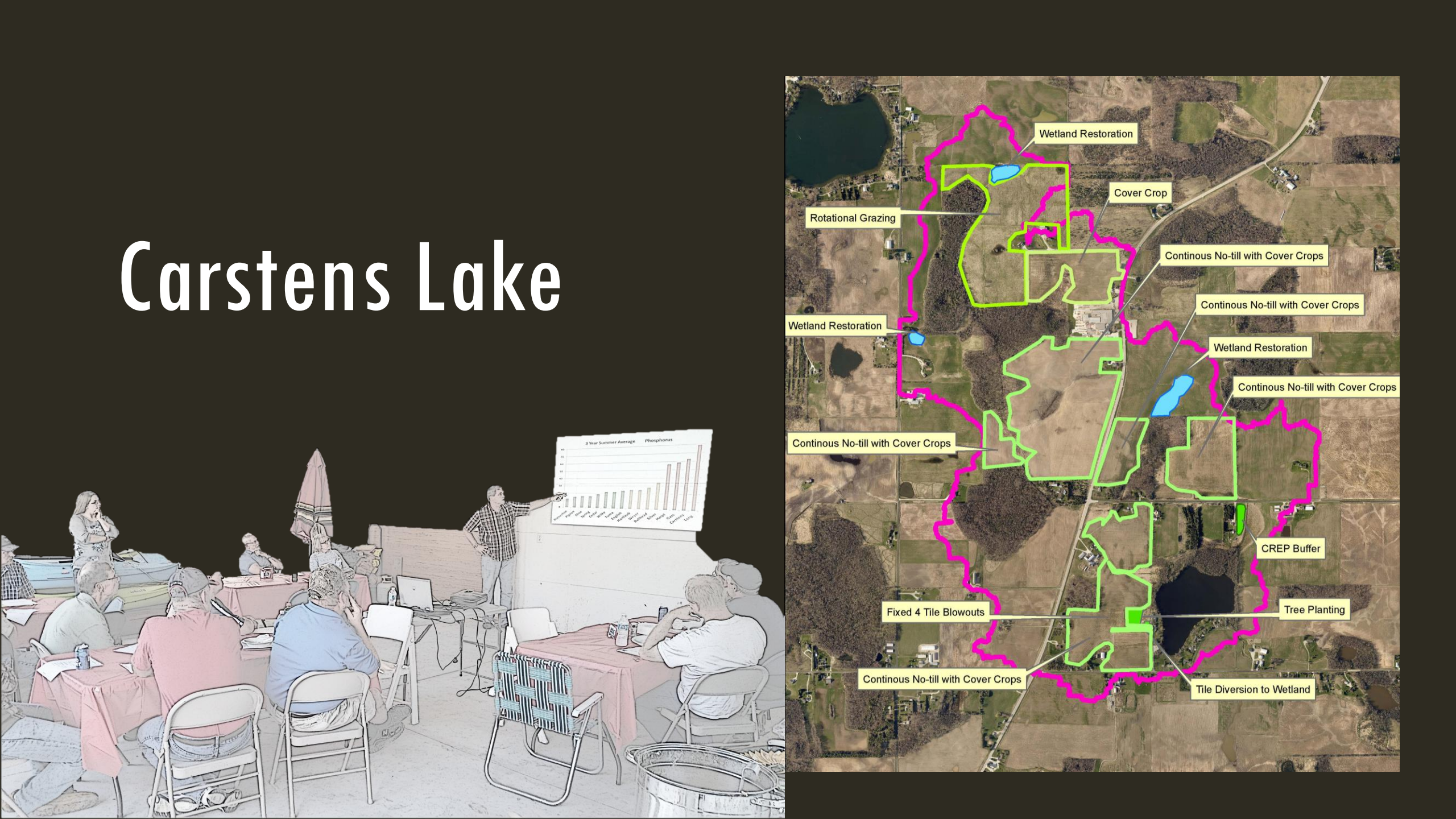
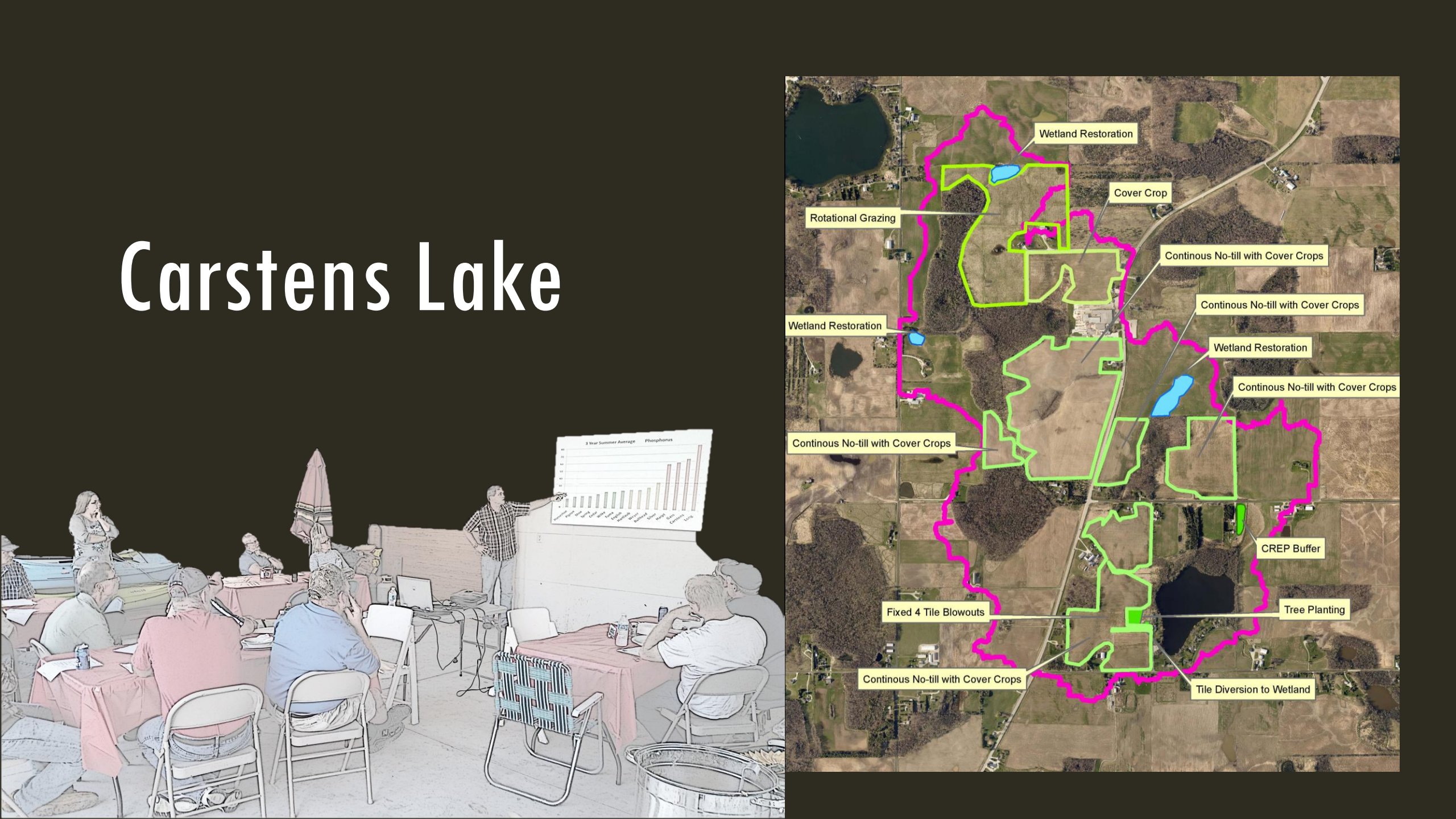
# Carstens Lake



An aerial photograph of the Carstens Lake watershed, outlined in green. The map is annotated with various conservation practices and features. Labels include: 'Wetland Restoration' (two locations, marked with blue areas), 'Rotational Grazing' (marked with a blue area), 'Cover Crop' (marked with a blue area), 'Continuous No-till with Cover Crops' (multiple locations), 'CREP Buffer' (marked with a blue area), 'Tree Planting' (marked with a blue area), 'Fixed 4 Tile Blowouts' (marked with a blue area), and 'Tile Diversion to Wetland' (marked with a blue area). The lake itself is a large blue area in the center of the watershed.



A group of people are seated at tables in a room, attending a presentation. A man stands at the front, pointing to a large screen displaying a bar chart titled "3 Year Summer Average Phosphorus". The chart shows phosphorus levels for various locations, with the highest levels occurring in the summer months. The audience is seated at tables with red tablecloths, and there are laptops and other items on the tables.







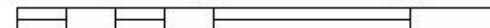
Section 17  
Newton  
Township



Joe Salm Tile  
Outlet relocation

CARSTENS LAKE:  
TILE OUTLET  
DIVERSION &  
WETLAND  
TREATMENT

0 50 100 200













# Priority E: Implement Surface Water Protection Programming

Streams Goal: Decrease phosphorus levels by 10% for streams identified in the Impaired Water List above the water quality standard of 0.100 mg/L for rivers and .075 for streams including stretches of the Manitowoc River, Meeme River, Molash Creek, Pigeon Creek, Pine Creek, Silver Creek, South Branch River, and West Twin River by 2026.

## Pine Creek Water Quality has improved!

### Currently working on Surface Water Quality Grants

- Sediment Basins/Wetlands
- Harvestable Buffers
- Cover Crops
- Grassed Waterways





**No-Till Planting**



**Cover Crops**



**Buffers**



**Water  
Diversion/Leachate  
Collection**

## **Priority G: Implement Best Management Practices**

### **Goals:**

- **Improve crop production & increase profitability.**
- **Minimize soil loss on cropland**
- **Control & reduce delivery of sediment, nutrients, and other pollutants to surface and groundwater from agricultural cropland.**



Stormwater Basins for Cropland?

WASCOB

Water & Sediment Control Basin







GRASS WATERWAYS



# HARVESTABLE BUFFERS





# EDUCATION & OUTREACH SUCSESSES



- Secured 100% Education/Grants Manager Position
- Developed Communication Tools: Pine Creek Watershed Website/Story Map
- 40% Increase in Social Media & Quarterly Newsletter Engagement
- Resume In-Person Programming (Field Day, Nutrient Management Farmer Education Class, Breakfast on the Farm)





Farm Owner/Operators

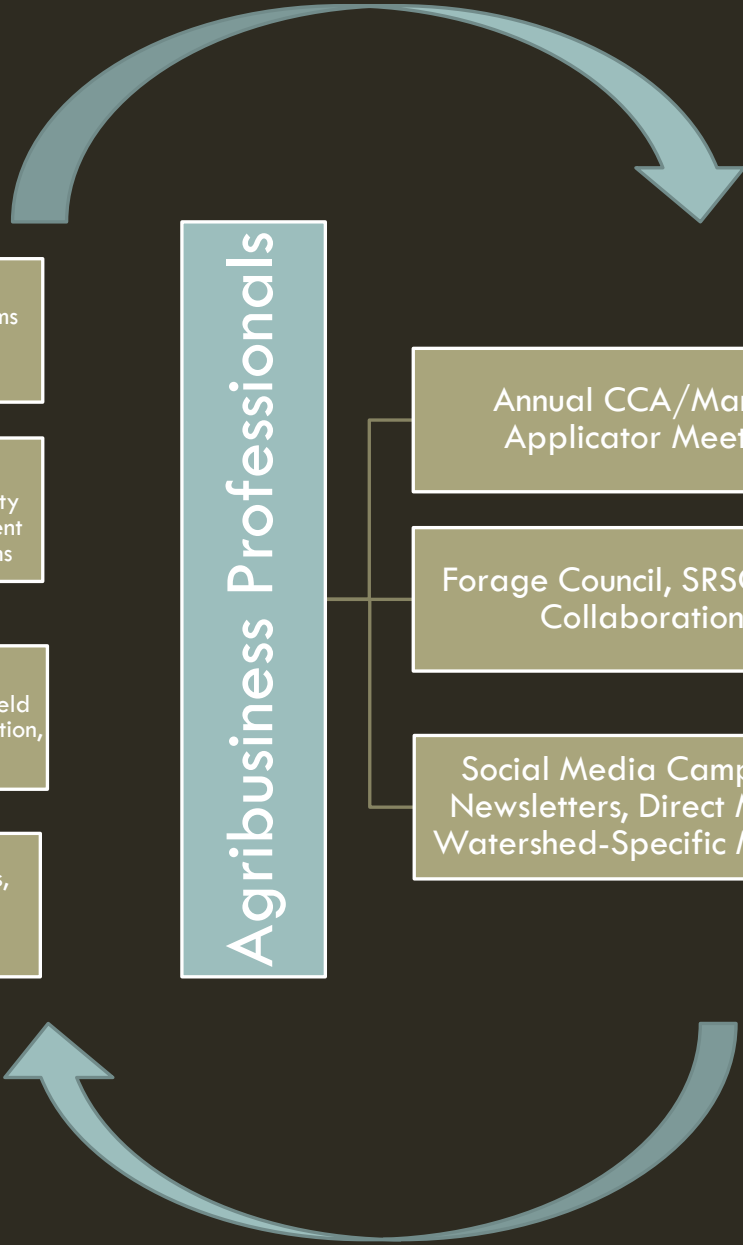
- Between the Lakes Demonstration Farms Network
- One-on-One Farmland Preservation Program/Facility Siting Visits/NMFE Nutrient Management Planning & Groundwater Presentations
- Seven Rivers Soil Cooperative Cover Crops, Carbon Sequestration, Field Days, Newsletters, Sand County Foundation, Community Outreach/Mentoring
- Social Media Campaigns, Newsletters, Direct Mailers, Watershed-Specific Meetings

Agribusiness Professionals

- Annual CCA/Manure Applicator Meeting
- Forage Council, SRSC & BTL Collaborations
- Social Media Campaigns, Newsletters, Direct Mailers, Watershed-Specific Meetings

Landowners/General Public

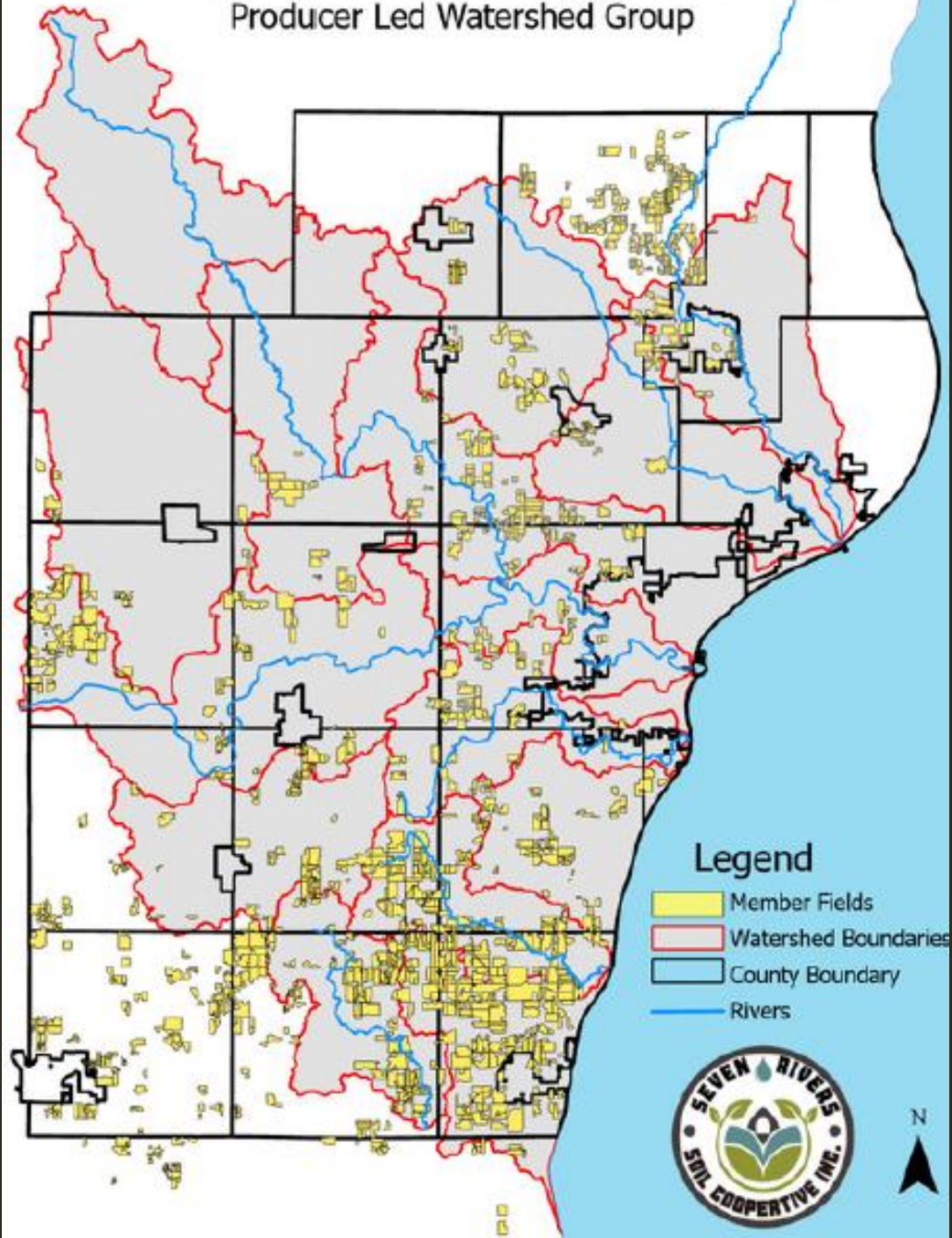
- Pollinator Habitat/Native Plant Promotions & Activities
- Earth Day/Breakfast on the Farm
- Social Media/Newsletters
- County Fair & Community Nitrate Screenings
- School & Local Organization Presentations





# Seven Rivers Soil Cooperative Inc.

Producer Led Watershed Group





GTTR DUN



MANITOWOC COUNTY FORAGE COUNCIL  
ANNUAL SOIL HEALTH & COVER CROP FORUM

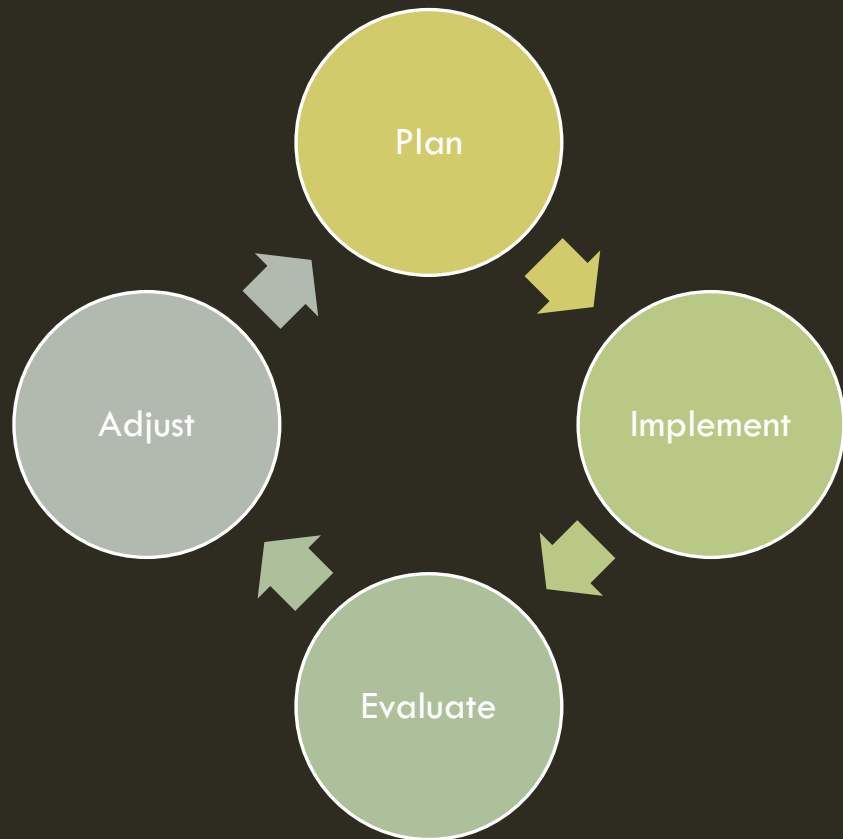
**REGISTER NOW**

**IMPROVE YOUR SOIL & REDUCE YOUR INPUTS**

**MARCH 22, 2022**  
10:00 AM - 2:00 PM



# THANK YOU LOCAL ADVISORY COMMITTEE



- Farm owners
- SWCD Agronomist
- Land Conservation Committee
- UWGB Professors
- Manitowoc Fish & Game Association
- Engineer – Miller Engineers & Scientists
- UW-Sea Grant
- WDNR Water Resources Specialist
- WDNR Watershed Coordinators
- Wisconsin Land & Water
- WDNR Regional Nonpoint Coordinator
- WDNR Fisheries & Wildlife Biologists
- WDNR Forester
- USDA-NRCS
- Glacierland RC&D
- Manitowoc Planning and Zoning Director
- Lakeshore Natural Resources Partnership
- Manitowoc Lakes Association
- Friends of the Manitowoc River
- WDNR Water Quality & Climate Specialist
- LCC, County Board & Executive Oversight





**MANITOWOC COUNTY LWRMP**  
**LOCAL ADVISORY COMMITTEE - Community Survey**



With input from our citizens, the Soil & Water Conservation Department (SWCD) and Local Advisory Committee (LAC) is in the process of developing a ten-year (2026-2035) land and water resource management plan for Manitowoc County. Past staff have tackled many issues facing the county and had made great strides in addressing many conservation issues, but continual improvement is still needed to prioritize efforts, address new problems and set up achievable outcomes. With your input we can assess your concerns and observations to help guide discussions, data gathering and initiatives to guide work being done on the landscape to improve and protect our soil and water resources. It is extremely valuable for us to understand what is of concern to you and other residents of Manitowoc County.

Below you will find a series of questions that we are asking you to prioritize. Your feedback will assist us with the direction of future programs.

**Thank you** for your time and continued efforts to conserve, maintain, protect and improve the natural resources and environment of Manitowoc County.

David Wetenkamp  
Department Director

\*If you would like to receive a copy of the results from this survey, please leave us at least (1) form of contact information where we can provide you the information. Your contact information will not be shared.

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please answer the questions on the back side of this page

I reside in the Town - City - Village of \_\_\_\_\_

Please circle your age group: under 18   18 – 24   25 – 40   41 – 64   65 & over

Please put an (X) in front of which best describes where you live

☐ Rural resident                                      ☐ Urban resident

Place an (x) on the items that apply to you

<input type="checkbox"/> Agriculture Producer	<input type="checkbox"/> Town Board Member	<input type="checkbox"/> Educator
<input type="checkbox"/> Work in Agri-Business	<input type="checkbox"/> Government Agency Staff	<input type="checkbox"/> Concerned Citizen
<input type="checkbox"/> County Board Member	<input type="checkbox"/> Environmental Group Member	<input type="checkbox"/> None of the Above
<input type="checkbox"/> City-Council/Village Board	<input type="checkbox"/> Student	

Rank which resources you think we should protect and improve in Manitowoc County.

Rank 1 -11 with 1 = Most Important & 11 = Least Important

<input type="checkbox"/> Streams	<input type="checkbox"/> Wildlife Habitat	<input type="checkbox"/> Wetlands
<input type="checkbox"/> Inland Lakes	<input type="checkbox"/> Soil	<input type="checkbox"/> Grasslands
<input type="checkbox"/> Woodlands	<input type="checkbox"/> Air	<input type="checkbox"/> Farmlands
<input type="checkbox"/> Groundwater (drinking water)	<input type="checkbox"/> Lake Michigan	

Rank the following priorities the Soil & Water Conservation Department should focus on to help and improve the natural resources of Manitowoc County. Rank 1 -11 with 1 = Most Important & 11 = Least Important

<input type="checkbox"/> Stream bank & lakeshore erosion	<input type="checkbox"/> Climate Resiliency
<input type="checkbox"/> Farmland Erosion	<input type="checkbox"/> Human/Industrial Waste
<input type="checkbox"/> Surface Water Contamination	<input type="checkbox"/> Wildlife Crop Damage
<input type="checkbox"/> Groundwater (drinking water) Contamination	<input type="checkbox"/> Restore Habitat (wetland, forestland, prairie)
<input type="checkbox"/> Invasive Species	<input type="checkbox"/> Air Quality
<input type="checkbox"/> Cattle Grazing	

In order to enact the previous chosen priorities, rank the following options you believe would have the greatest impact to help improve and protect the natural resources of Manitowoc County? Rank 1 -10 with 1 = Most Important & 10 = Least Important

<input type="checkbox"/> Education & Outreach	<input type="checkbox"/> Review and revise regulations
<input type="checkbox"/> Provide financial assistance for conservation projects	<input type="checkbox"/> Monitor compliance
<input type="checkbox"/> Target groundwater contaminated areas	<input type="checkbox"/> Comprehensive farm planning
<input type="checkbox"/> Provide technical assistance for conservation project	<input type="checkbox"/> Target surface water contamination areas
<input type="checkbox"/> Enforce existing regulations	<input type="checkbox"/> Collaborate with other organizations

Any other concerns or suggestions not covered above:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

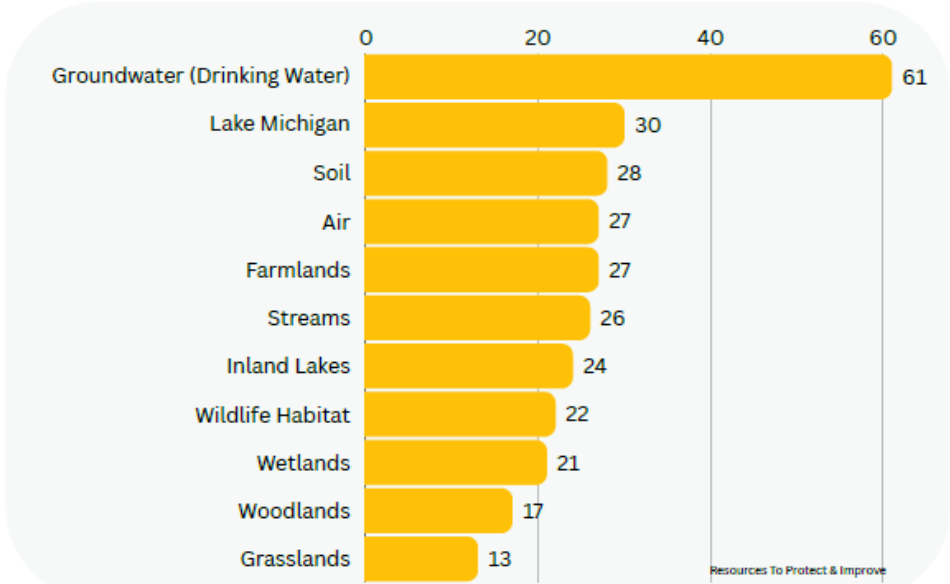
*Thank-you so much for your time and important input*



Rank which resources you think we should protect and improve in Manitowoc County from most important (1) to least important (11).



QUESTION 1



Rank the following priorities the Soil & Water Conservation Department should focus on to help and improve the natural resources of Manitowoc County from most important (1) to least important (11).



QUESTION 2



QUESTION 3

In order to enact the previous chosen priorities, rank the following option you believe would have the greatest impact to help improve and protect the natural resources of Manitowoc County from most important (1) to least important (10).





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**Priority B: Coordinate & Implement State Agricultural Performance Standards and Prohibitions**

GOALS: Control and reduce delivery of sediment, nutrients, manure, wastewater and other pollutants to surface and groundwater from agricultural cropland and production sites.

- Sustain healthy productive soil by minimizing soil loss on cropland.

Priority Zone	Activity	Staff	Annual Hours	When	Expected Outcomes (Annual)
Countywide	<b>Allocate Soil and Water Resource Management Grant Dollars to Implement BMPs for State Standard Compliance</b>	Resource Conservationist Education Coordinator	Included in Priority F & G	Annually	\$55,000 Structural Fund \$75,000 SEG Fund
	<b>Investigation/Enforcement</b>	Department Director Resource Conservationist	Included in Priority A & C	Annually	
	<b>Conservation Planning</b>	Resource Conservationists	240	Annually	10 referrals to NRCS for conservation practice funding
	<b>One-on-one contacts with landowners</b>	Resource Conservationists	Included in Priority A & C	Annually	200 Farmland Preservation Program Participants, 14 Facility Siting Farms
	Plan implementation Monitor Compliance				
	Total	Department Director Education Coordinator Resource Conservationist	240		
*Bold indicates high priority					
<b>Estimated annual cost to meet this goal: \$11,328.00</b>			<b>(Total Hours)</b>	<b>240</b>	



**Priority C: Administer Working Lands Initiative-Farmland Preservation Program**

GOALS: Control and reduce delivery of sediment, nutrients and other pollutants to surface and groundwater from agricultural cropland and production sites.

- Sustain healthy productive soil by minimizing soil loss on cropland.
- Minimize the risk and impact of animal waste in surface and groundwater.
- Assist landowners so that they become or remain in compliance with required standards to receive the income tax credit benefit.

Priority Zone	Activity	Staff	Annual Hours	When	Expected Outcomes (Annual)
Countywide except Town of Schleswig	Review NMPs for compliance with FPP standards	Resource Conservationist	1600	Annually	10 new participants 200 plan reviews
	Monitor Performance Standards	Resource Conservationist	400	Annually	
	Data entry of conservation performance	Resource Conservationist	400	Annually	
	Administration of Program & Promote FPP	Department Director Resource Conservationist Administrative Assistant	60 100 100	Annually	DATCP SWRM Grant-as allocated
	Total	Department Director Resource Conservationist Administrative Assistant	60 2500 100		

**Estimated annual cost to meet this goal: \$125,618.80 (Total Hours) 2660**



## Staff Hours and Financial Resources Needed to Accomplish Priorities

	Priority A	Priority B	Priority C	Priority D	Priority E	Priority F	Priority G	Priority H	Priority I	Plan Hours	Available Hours	Hours Deficit
Department Director	380	incl other	60	60	215	20	540	45	700	2020	1950	70
Education & Grants Coordinator	incl other	incl other	incl other	470	30	250	80	530	660	2020	1950	70
Resource Conservationists	500	240	2500	720	865	160	1500	250	180	6915	5850	1065
Administrative Assistant	40	incl other	100	140	40	40	40	30	555	985	975	10
Totals	920	240	2660	1390	1150	470	2160	855	2095	11940	10725	1215

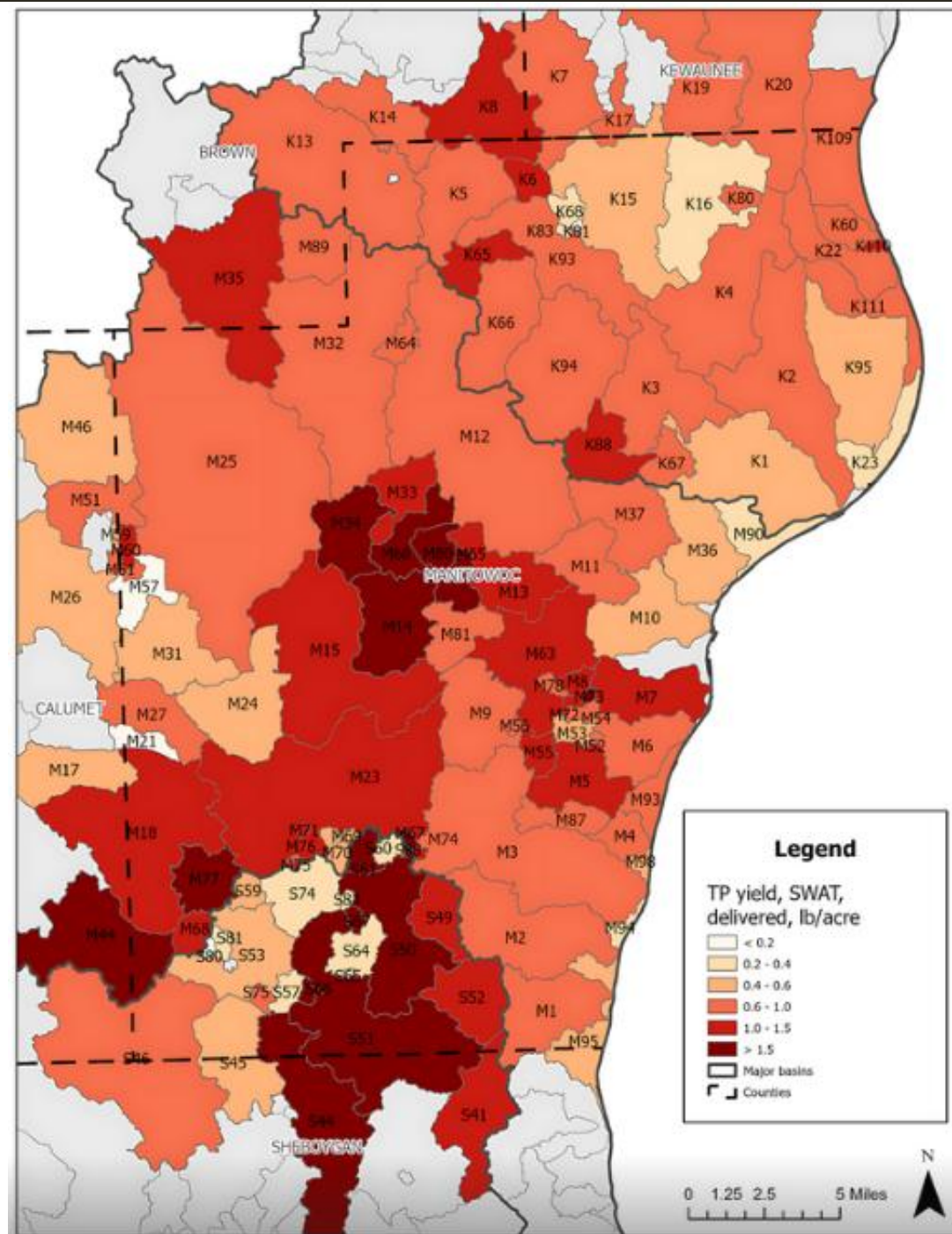
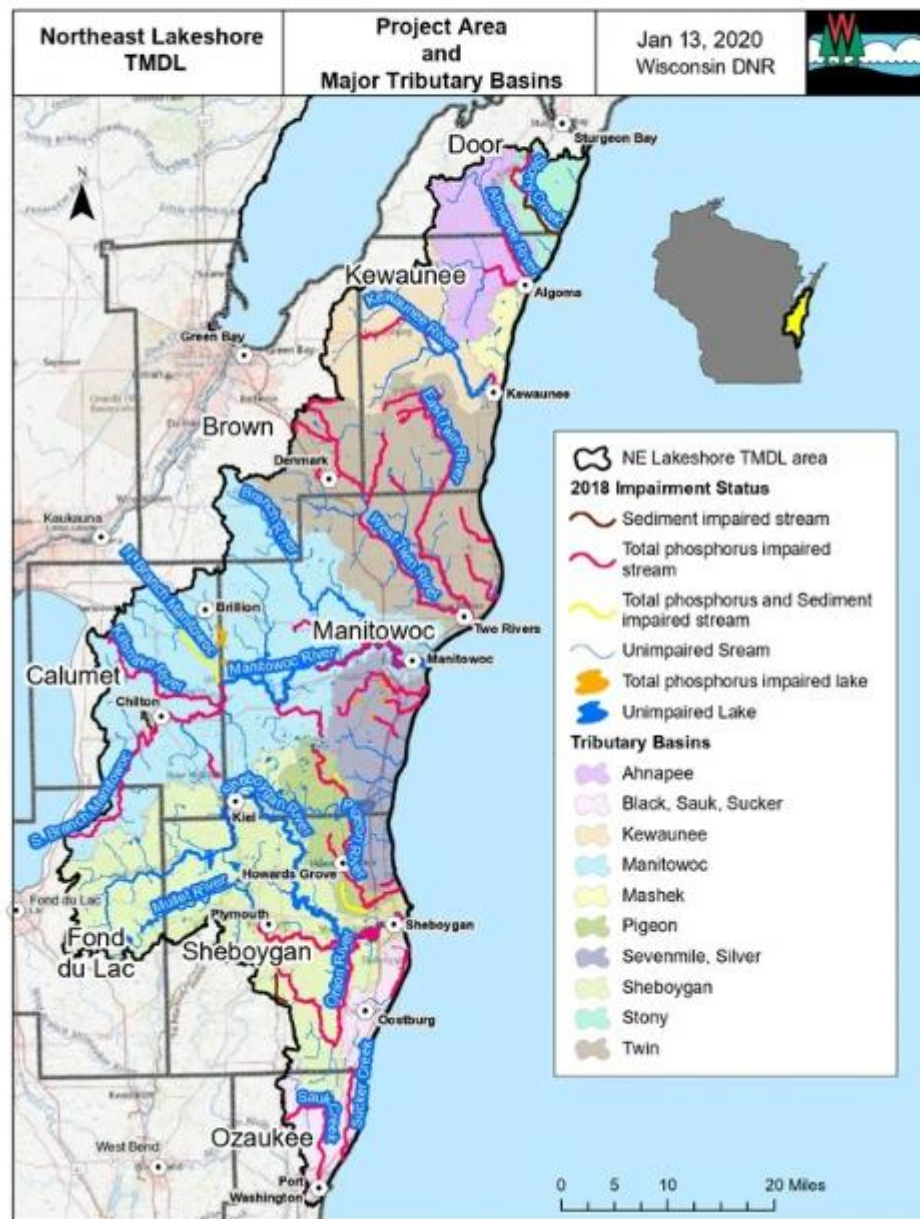
**Total Estimated Cost: \$598,993.55**

**Cost Deficit: \$58,911.80**



## NORTHEAST LAKESHORE TMDL (Total Maximum Daily Load)

The Northeast Lakeshore TMDL (Total Maximum Daily Loads) was approved by the EPA on October 30<sup>th</sup>, 2023 and is a comprehensive management plan that covers approximately 8 counties and 2,000 square miles.





# CURRENT INITIATIVES & GRANT PROJECTS

- SWRM GRANT
- NE-LAKESHORE TMDL IMPLEMENTATION PROJECT (TMDL)
- NUTRIENT MANAGEMENT FARMER EDUCATION (NMFE)
- PRODUCER LED GROUP (PLG)
- TNC GRANT & SAND COUNTY FOUNDATION GRANT
- MULTI-DISCHARGER VARIANCE (MDV)
- WDNR TARGETED RUNOFF MANAGEMENT (TRM) & NOD GRANTS
- SUSTAINABLE AGRICULTURE RESEARCH EDUCATION GRANT (SARE)
- NATIONAL WATER QUALITY INITIATIVE GRANT (NWQI)
- WDNR SURFACE WATER QUALITY GRANT (SWG)



THANKS FOR REVIEWING & CONSIDERING  
APPROVAL OF OUR PLAN

QUESTIONS ?