



MANITOWOC COUNTY LAND & WATER RESOURCE MANAGEMENT PLAN

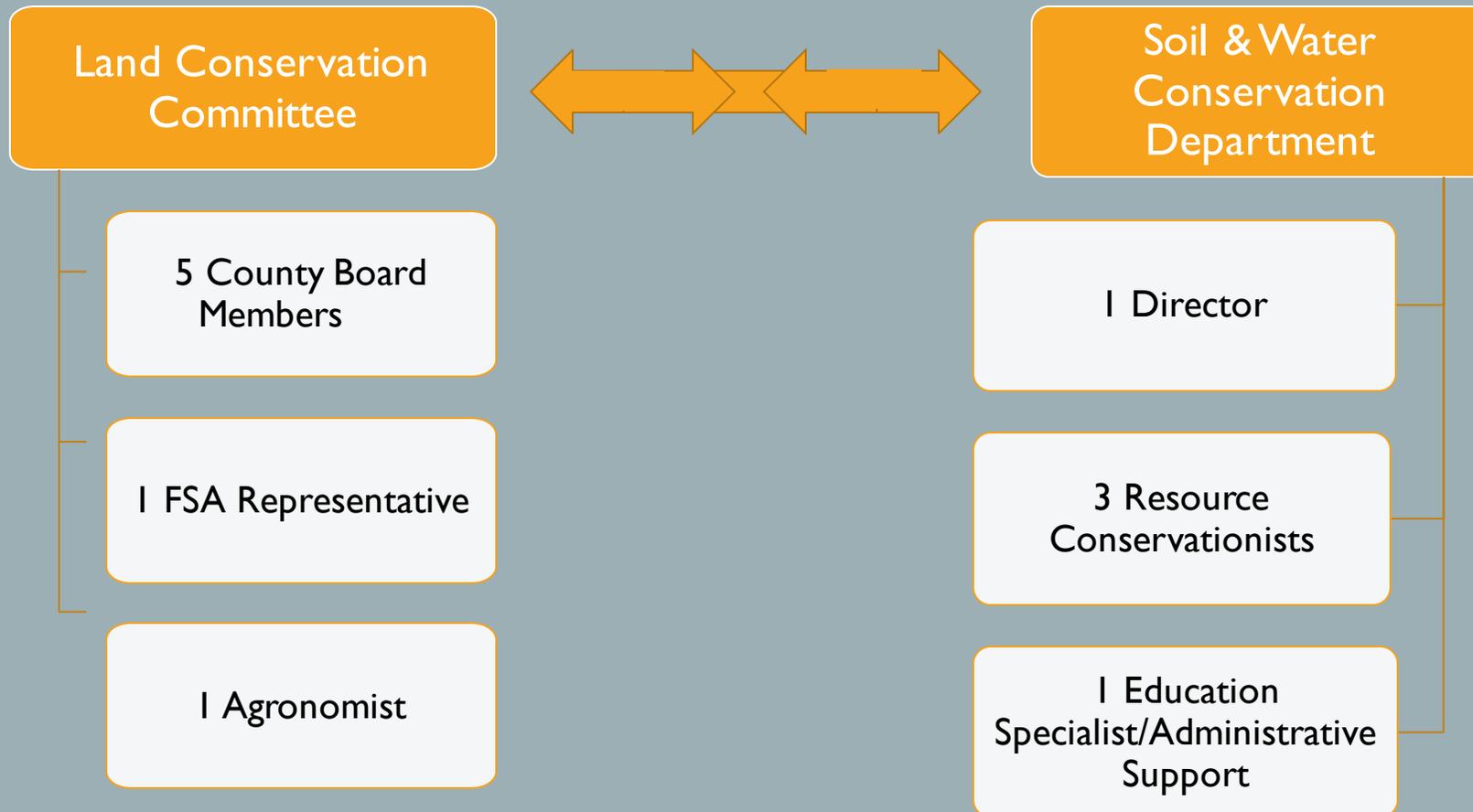
5-YEAR REVIEW





Located along 35 miles of Lake Michigan shoreline. Its 589 square miles are organized into 3 cities, 9 villages, and 18 towns.

MANITOWOC COUNTY LAND CONSERVATION COMMITTEE & SOIL & WATER STAFF



Land Base

Manitowoc County

Cropland/Pasture 56%

Woodland 20%

Developed Acres 15%

Other Natural Areas 8%

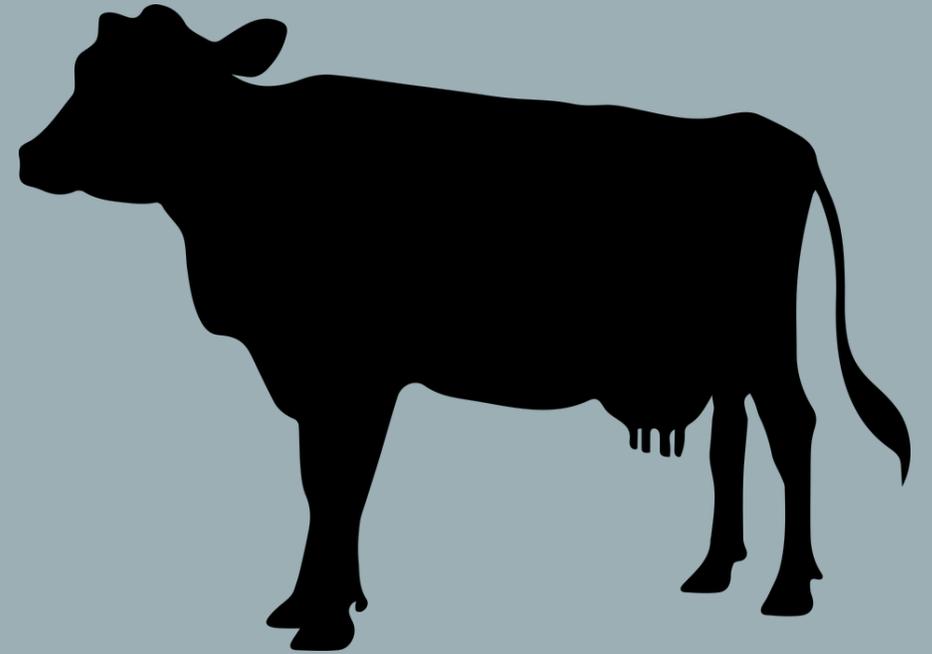
Water Features 1%



■ Cropland/Pasture ■ Woodland ■ Developed ■ Other Natural Areas ■ Water Features

MANITOWOC COUNTY AGRICULTURE

- **110,000** Head of Dairy Cattle
- **750 million gallons**
manure, urine, & bedding per year
- **Corn Silage Increase**



MANITOWOC COUNTY SURFACE WATER QUALITY

Fish & Aquatic Life Condition of Streams and Rivers

Excellent

- 0 miles of river water in “excellent” fish & aquatic life condition

Good

- 107.9 miles river water in “good” fish & aquatic life condition

Poor

- 125 miles of river water in “poor” fish and aquatic life condition

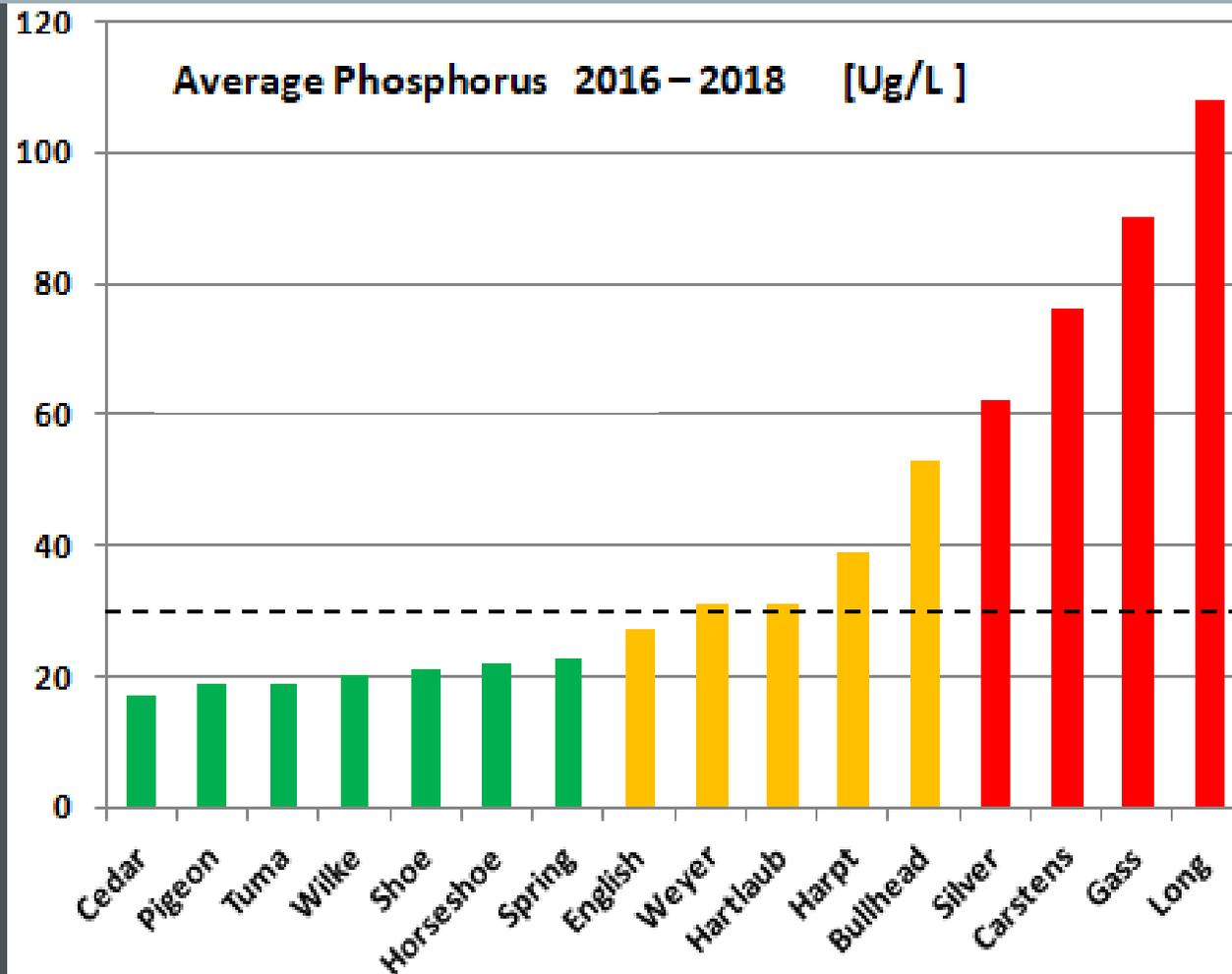
Unknown

- 360 miles of river water in “unknown” fish & aquatic life condition

- 40 impaired waterbodies

MANITOWOC COUNTY SURFACE WATER QUALITY

Manitowoc County Inland Lakes Total Phosphorus: Three Year Summer Average 2016-2018

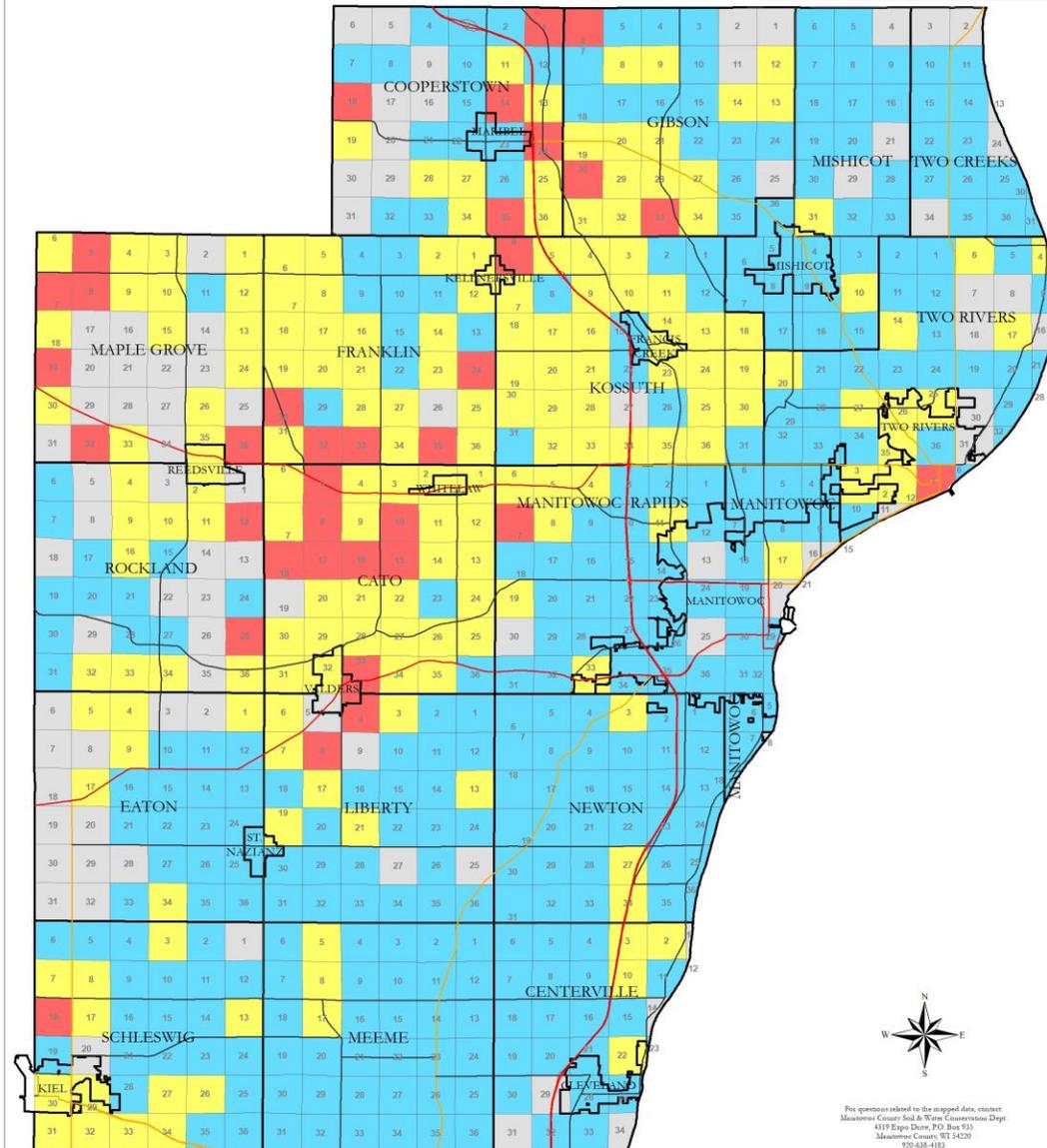


MANITOWOC COUNTY GROUNDWATER

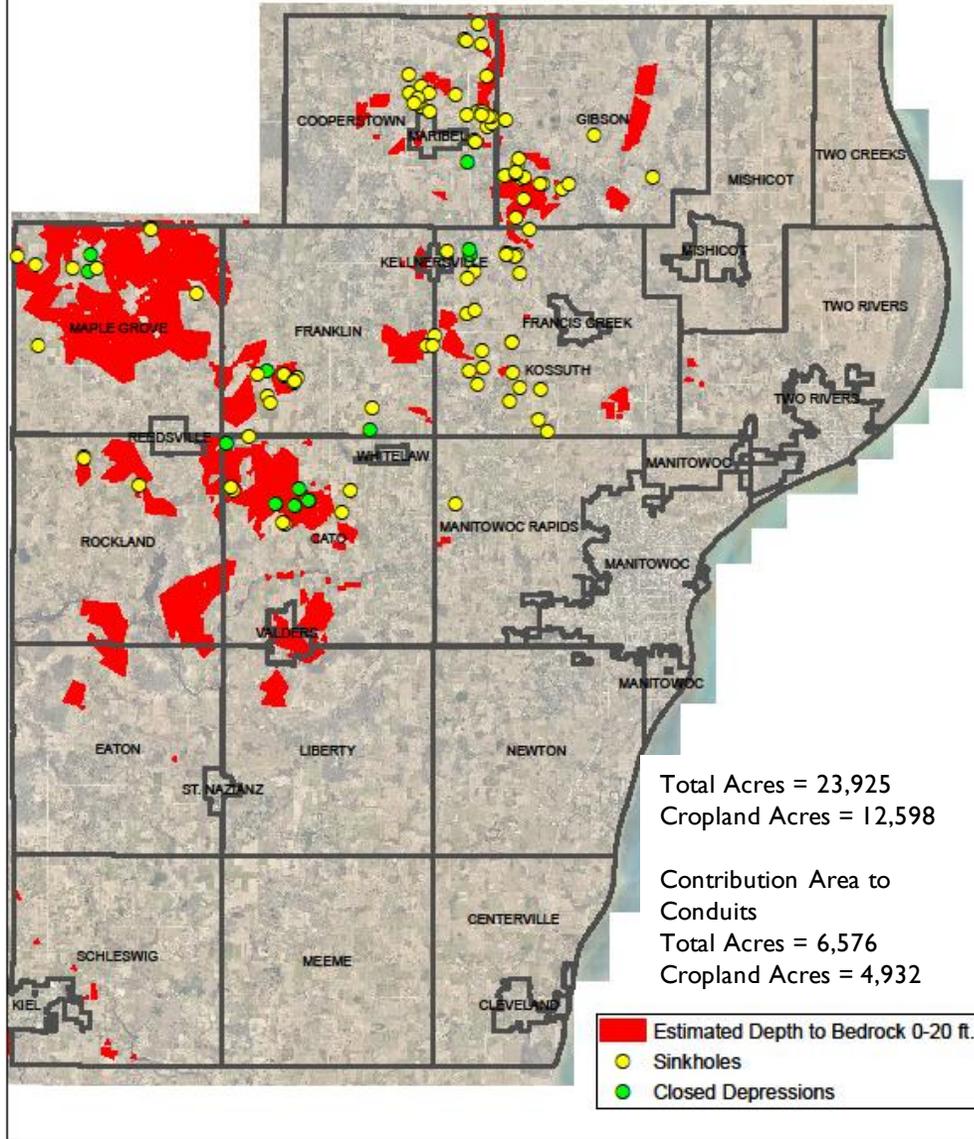
Manitowoc County Nitrate Screening Results 1994 - 2019

Nitrate Screening Results

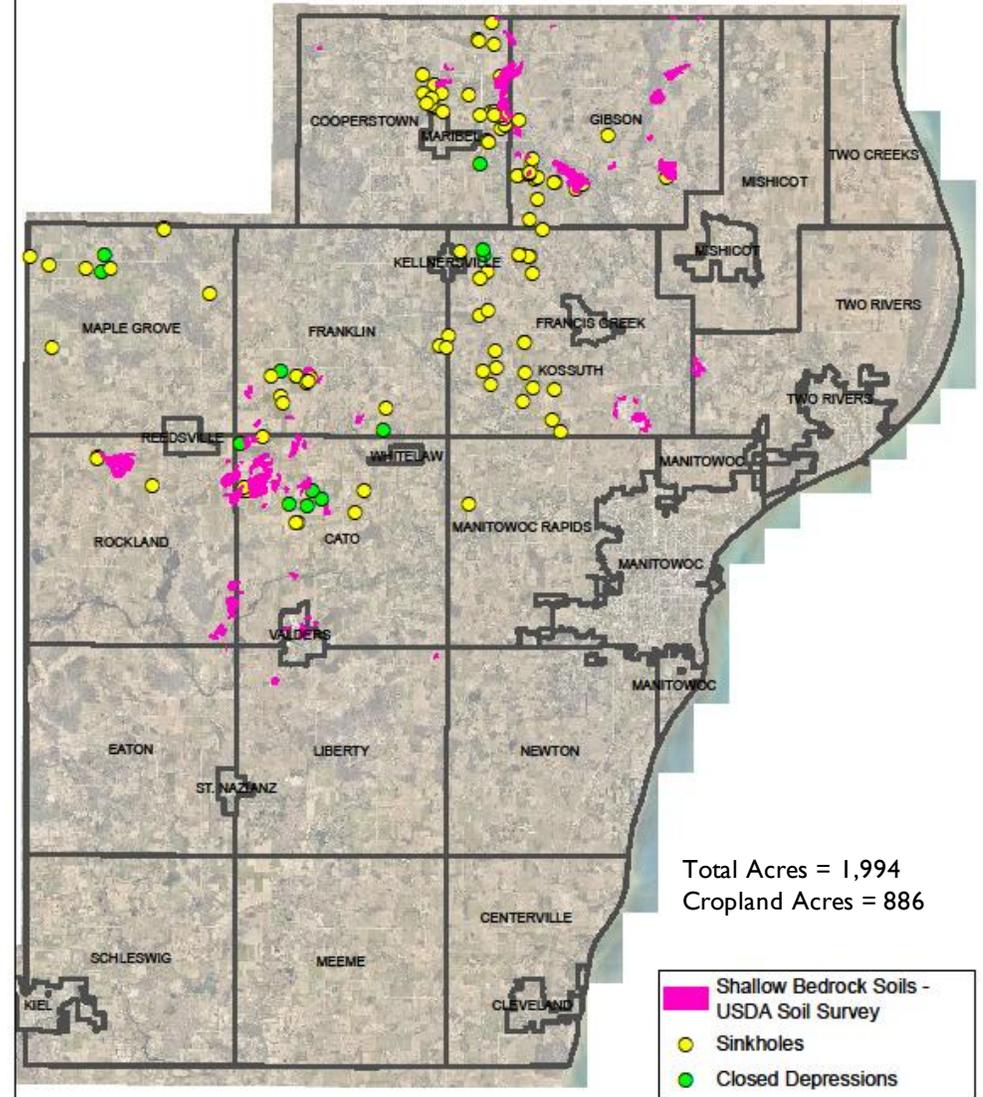
- > 10 mg/L - Unsafe
- 2.1 - 10 mg/L
- <= 2.0 mg/L
- No Samples



Manitowoc County



Manitowoc County



FARMLAND PRESERVATION PROGRAM

2016-2020 Program Activities

113,000 Acres Cropland in FP

907

Compliance Certificates

680

Landowner Participants

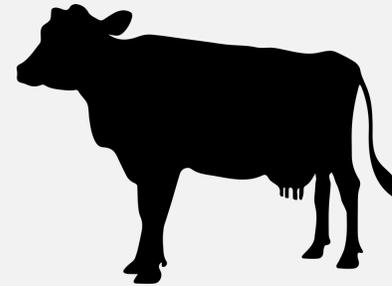
\$850,00.00

Tax Credit Dollars Generated

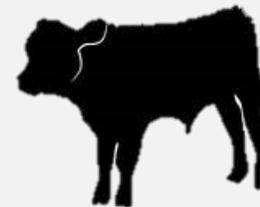


LIVESTOCK FACILITY SITING

2016-2020 Program Activities



32,000 Dairy Cows



17,000 Youngstock

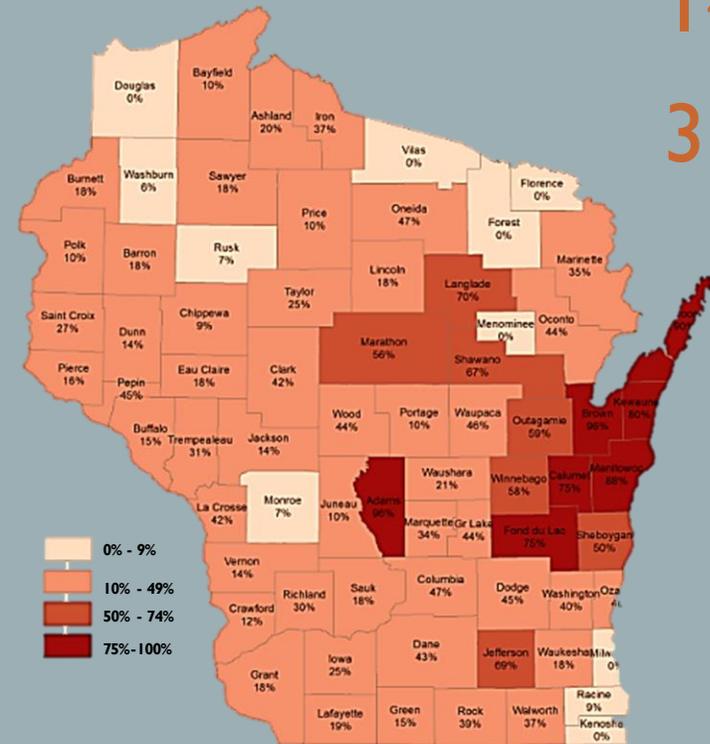
NUTRIENT MANAGEMENT PLANS

2016-2020 Program Activities

85% Cropland with NMPs

149,000 Acres

3 Prepare Your Own NMP Classes



COUNTY ORDINANCES

2016-2020 Program Activities

6

Violations/Year

2

Citations/Year

GROUNDWATER

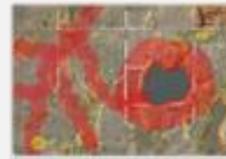
2016-2020 Program Activities



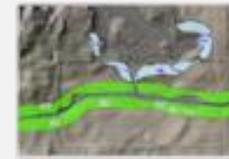
25 One-on-One Meetings with landowners per year



25 Reviews of existing NMPs to determine if 590 criteria and targeted performance standards are in the plan per year



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 LIDAR Tree Canopy Heights

LIDAR Locate sinkholes, closed depression and contribution areas.



SURFACE WATER

2016-2020 Program Activities

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

11.5% Reduction in Sediment
21.9% Reduction in Phosphorus

Goal 2:
Improve streambank stability

Goal 3:
Increase public awareness & participation in watershed conservation activities



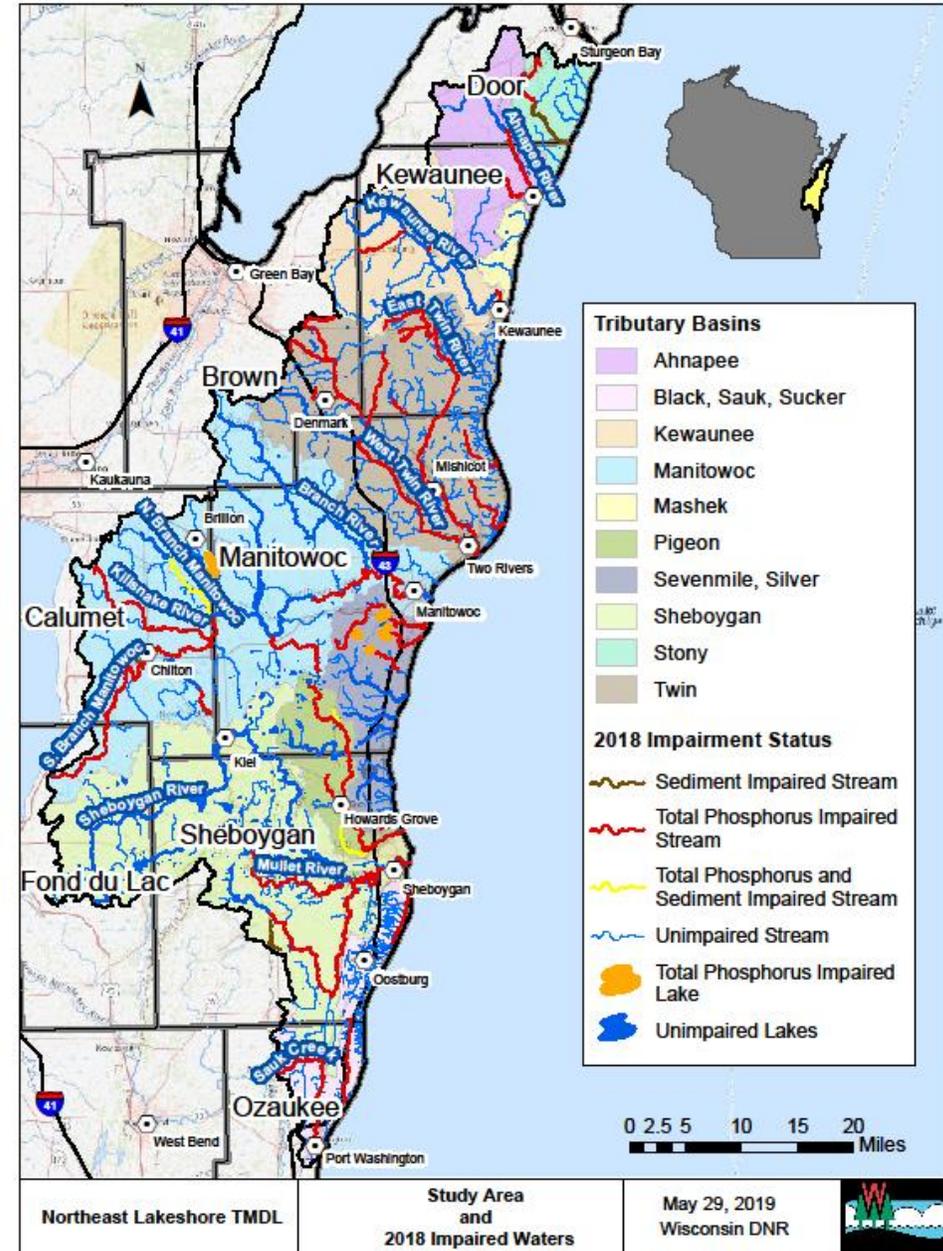
PINE CREEK
9 Key Element
PLAN



SURFACE WATER

2016-2020 Program Activities

Northeast Lakeshore TMDL



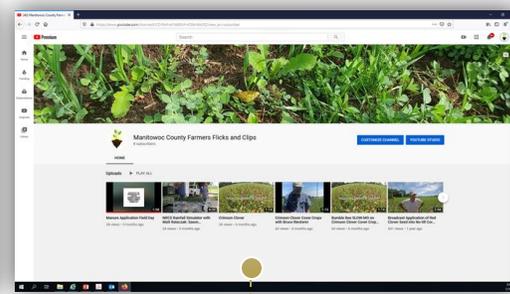
INCREASE EDUCATION EFFORTS

2016-2020 Program Activities

- Hire 60% Education Coordinator
- Field Demonstrations Annually
- Soil Health Forums Annually
- Social Media
- Discussions with custom manure haulers & CCA's annually
- Nutrient Management Plans 10-12 landowners/year
- Participation in NRCS Demo Farm: Between the Lakes



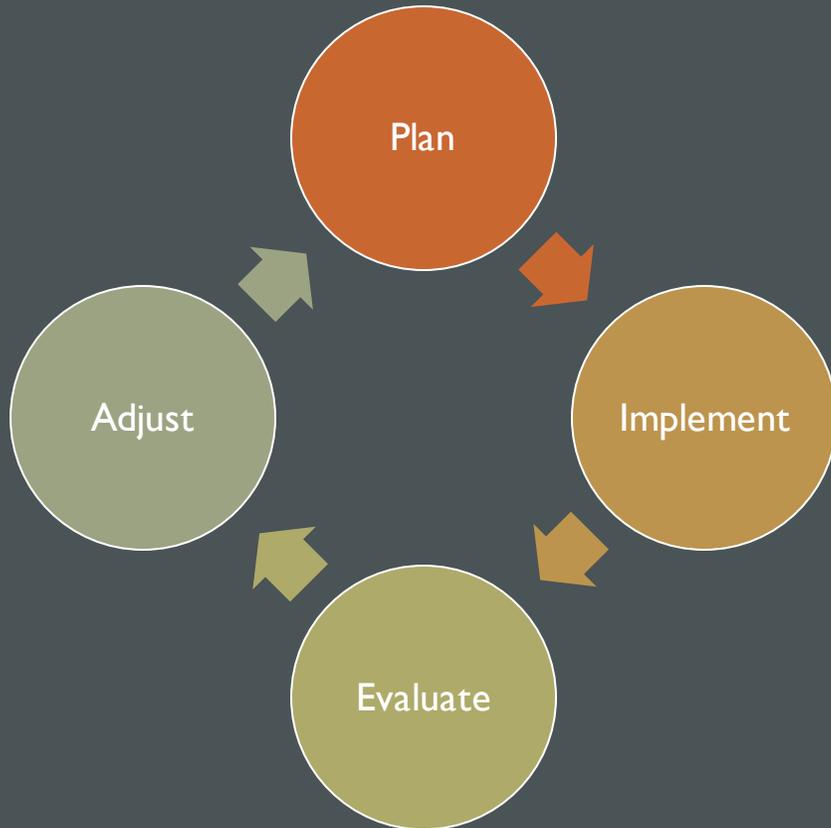
SOIL HEALTH AND WATER QUALITY FOCUS TEAMS



- Cover Crop Signs
- Soil Health Forum
- Farmers Flicks and Clips
- Field Days
- Farmer to Farmer Mentoring



LOCAL AND TECHNICAL ADVISORY COMMITTEE INPUT



- Farm owners
- Farm managers
- Agronomists
- Land Conservation Committee Members
- Farm Service Agency Representative
- Fish and Game Association
- Engineers
- U.W. Discovery Farms Co-Director
- WDNR Agricultural Runoff Management Specialist

- U.W. Extension Agricultural Agent
- WDNR Forester
- USDA-NRCS District Conservationist
- WDNR Forester
- Planning and Zoning Director
- Silver Lake College Professor
- Lake property owners

QUESTIONS AND DISCUSSION

Thank You!