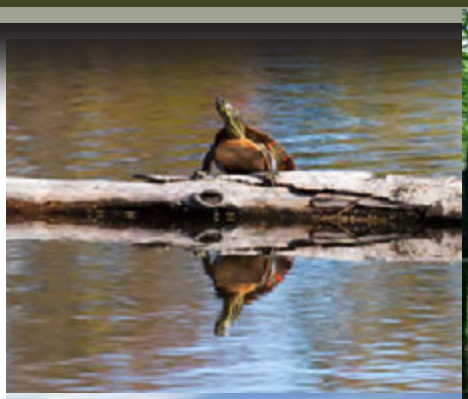
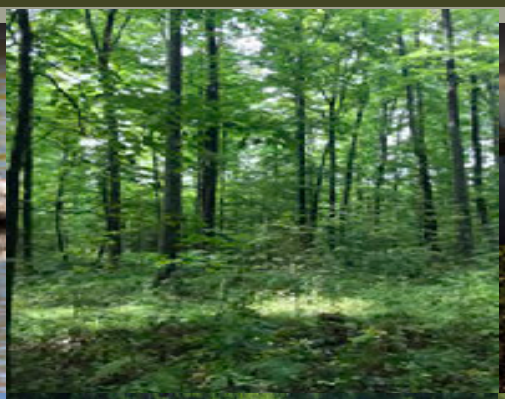
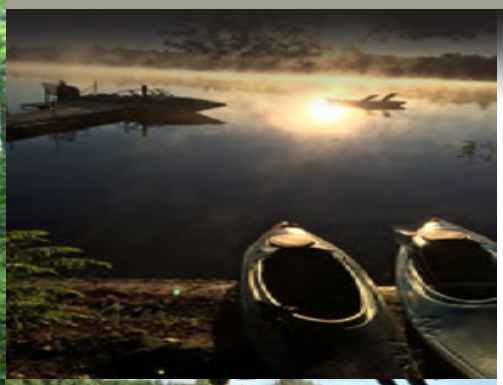
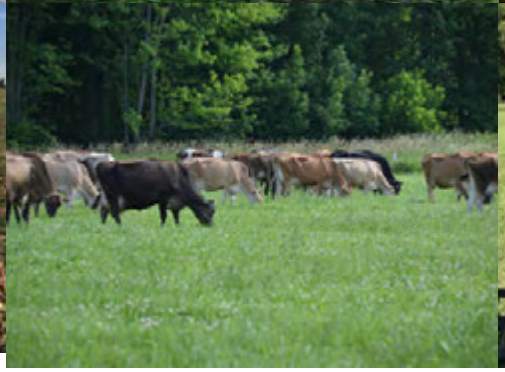
MARATHON COUNTY
LAND & WATER
Resource Management Plan

MARATHON COUNTY

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Foreword

The foundation of the Land and Water Resource Management Plan is to put in place an underlying assessment of the land and water resources with accompanying goals, objectives and strategies to achieve the county's overall goal to protect and improve our land and water resources. This must be done within the framework of protecting our community's land and environment because the economic strength and vitality of our community is dependent on the quality of our resources.

Through leadership, accountability, engagement of community stakeholders and collaborative partnerships this plan will promote thoughtful and deliberate use of the natural resources and innovative solutions to ensure Marathon County has healthy people, a healthy economy and a healthy environment today and tomorrow.

Paul Daigle

Land and Water Program Director

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CONTENTS

CONTENTS

LIST OF FIGURES

LIST OF INFOGRAPHICS

LIST OF TABLES

EXECUTIVE SUMMARY

The Marathon County Land and Water Resource Management Plan (LWRM Plan) represents a coordinated public and private investment effort to establish the framework to identify goals, objectives, and strategies for the implementation of soil and water conservation. This coordinated effort is intended to align county, state, federal and local desired outcomes aimed to protect and conserve natural resources by improving human interaction and use of these resources in a manner that is protective of the natural environment.

Conservation, Planning and Zoning Mission Statement

Protect our community's land and environment because the economic strength and vitality of our community is dependent on the quality of our resources. Through leadership, accountability, community engagement, and collaborative partnerships we promote thoughtful and deliberate use of resources and innovative solutions to ensure Marathon County has healthy people, a healthy economy, and a healthy environment today and tomorrow.

The vision and goals of the LWRM Plan embody a vision of the county's future to support resilient rural economic growth and development while improving the county's land and water quality. The initiatives found within, will guide the Conservation, Planning & Zoning Department's Land and Water Program over the next 10 years from 2021 through the year 2030. The focus and main body of the LWRM Plan is organized into five areas; introduction; resource assessment; plan goals, objectives, strategies, and measurable outcomes; plan implementation; and monitoring and evaluation.

Introduction

Chapter 1. Introduction - The 2021 LWRM Plan update is the county's third decennial major revision and represents a major revision to the county's LWRM Plan strategies since 2010. The introduction explains the plan development methodology, related plans and ordinances, and endeavors of the Marathon County Conservation, Planning & Zoning Department, with focus on the Land and Water Program area responsible with implementation, management, and interrelationships of the LWRM Plan for the continued planning and proper management of natural resources.

Resource Assessment

Chapter 2. Resource Assessment - provides information, figures, and data specific to Marathon County respective to soils, topography, groundwater, watersheds, surface water, shorelands, wetlands, land uses, water quality, agriculture, and population.

Plan Goals, Objectives, Strategies, and Measurable Outcomes

Chapter 3. Plan Goals, Objectives, Strategies, and Measurable Outcomes - Plan goals were identified by the Local Advisory Committee (LAC) through a facilitated meeting process to assure alignment with the County's Strategic Plan and the main thrust of the LWRM Plan. Objectives, strategies, measurable outcomes, and contributing partners support and clarify the most important operational components in pursuit of the major effort to target resources, and establish clear benchmarks to evaluate the specific outcomes of the Land and Water Program.

Plan Implementation

Chapter 4. Plan Implementation – Serves as a companion piece in conjunction with elements found in Chapter 3. This chapter provides particular attention to enhance the collaboration of both public and private partners for the advancement of identified goals, objectives, and strategies; various potential funding sources; and clarifies the Land and Water work plan to achieve and support plan implementation.

Monitoring and Evaluation

Chapter 5. Monitoring and Evaluation – Procedures and methods are discussed to confirm and verify existing water quality and habitat conditions and weighed against established measurable outcomes to determine whether the county and its partners are successful in terms of improving or conserving natural resources. Conversely, identifying threats to natural resources are always dynamic in nature, and proper monitoring could minimize adverse impacts.

Public Participation

The LWRM Plan is the product of the collaborative efforts of many individuals representing the county, conservation agencies, local watershed groups, health department, farmers, Wisconsin Department of Natural Resources, representatives from the USDA – Natural Resources Conservation Services, Department of Agriculture, Trade and Consumer Protection, and the University of Wisconsin-Madison Division of Extension who assisted staff in formulating this plan.

The LAC, established June 6, 2019 by the Marathon County Administrator and approved by the Marathon County Environmental Resources Committee (ERC), met seven times, in the fourth quarter of 2019 and the first quarter of 2020, to determine overarching goals, objectives, strategies, outcomes, and the implementation strategy for the plan. The Technical Advisory Committee (TAC) comprised of members from the Wisconsin DNR, Wisconsin Valley Improvement Company, USDA – Natural Resources Conservation Service, and the UW-Madison Marshfield Agricultural Research Station, Pheasants Forever, a private agronomist, Big Eau Pleine Citizens Organization (BEPCO), a biologist, and Conservation, Planning & Zoning Department staff, met four times via virtual meetings due to the COVID-19 pandemic to provide input and clarification of goals, strategies, objectives, and measurable outcomes on the following dates: March 25, 31, April 20 and 29, 2020. The LAC also met to review and provides comments of the draft plan in order to establish a final draft plan for public review and consideration. The ERC approved the draft LWRM Plan for public review at their Novermber 3, 2020 meeting.

Public Hearing

The Public Hearing was held on December 1, 2020 and January 5, 2021, and a quorum of the ERC was present to receive the comments. See Appendix X for the public hearing notice. On January 5, 2021, the ERC approved the LWRM Plan for submission to the Wisconsin Land and Water Board (LWCB), and forwarded to Marathon County Board for its favorable consideration by resolution.

The Marathon County Board of Supervisors adopted the LWRM Plan on TBD.

The LWRM Plan was presented to the LWCB on Date, 2021, and DATCP submitted a letter formally adopting the LWRM Plan on DATE, 2021.

Assessment of Water Quality, Soil Erosion, and Other Nonpoint Sources of Water Pollution

Surface Water Resources

Marathon County is the largest county in the State of Wisconsin with an approximate total square mile area of 1,584 or 1,013,760 acres. The county's Land Information Office calculated the total square mile area of Marathon County. Marathon County is primarily located within the Central Wisconsin River Basin with the exception of a small southeastern portion, approximately 65,000 acres, being divided by the Subcontinental Divide, which flows into the Fox-Wolf River Watershed of the Great Lakes Basin. The County has 202 lakes with a total surface area of 28,322 acres. The Big Eau Pleine Reservoir is the largest body of water with a potential area of 6,830 acres when full. Other lakes in the county include Lake Wausau, Half Moon Lake, and Lake DuBay and are the result of dams along river systems. Most natural lakes tend to be small and vary in depths ranging from one foot to thirty-four feet.

The county has 356 rivers and streams with a surface area of 3,748 acres. The Wisconsin River flows south through the

county. Several dams on the mainstream and tributaries, which are controlled by the Wisconsin Valley Improvement Corporation (WVIC), regulate the river. Major tributaries flowing from the east to west include the Trappe, Eau Claire, Little Eau Claire and Plover Rivers. The major tributaries flowing from west to east are the Little Rib, Big Rib, Big Eau Pleine, and the Little Eau Pleine Rivers. The county contains all or part of 21 Hydrologic Unit Code (HUC) -10 watersheds.

The two most significant wetland areas of the county include the Mead (33,000 acres) and the McMillan (5,700 acres) Wildlife Areas. These wetlands are important for nesting waterfowl, spawning fishes, flood protection, filtration, and natural resource areas for flora and fauna. Many lakes, reservoirs, rivers, and wetlands in the county support recreational uses, aquatic life, and flood protection. Local officials should look to protect these water bodies whenever there is evidence that existing controls may not be adequate to protect the continued use of the resource for recreational use purposes.

The complex interaction of surface water and nonpoint source pollution is a result of activities that take place on the land surface and the water dynamics that occur as a result e.g., how water runs off the land surface or is absorbed into the ground. Consequently, all land use activities have the potential to contribute to nonpoint source pollution problems. In rural Marathon County, the 2019 Wisconsin River Total Maximum Daily Load report has identified agricultural runoff as the major source of runoff pollution and cause of surface water impairment. There is an emerging realization that unchecked storm water runoff, carrying debris, nutrients, E-coli, Chemical Biological Oxygen Demand (CBOD), substances, oils and toxic materials from impervious surfaces, are in some cases a major contributor or polluted runoff to critical water resources.

Development Impacts

In 2019, population estimate for Marathon County is 136,517. Over the last decennial period, population changes or shifts occurred in Marathon County. Per the Wisconsin Department of Administration (WDOA) Demographic Services Center, Final 2018 Population Estimates, 48,140 or 35.41 percent of the people live in incorporated areas of the county. Since 1990, the population of Marathon County increased by 17.8 percent, from 115,400 to 135,922 in 2018. According to the Wisconsin Blue Book - 2017-2018, in 2016, Marathon County ranked 10th in terms of population with a population density of 87.7 people per square mile.

The WDOA projects the county population to increase from 134,063 to 152,790 between 2010 and 2040. The City of Wausau and its surrounding communities is the center of growth in terms of population and economic growth. These communities are located along 2 major transportation corridors along I-39/US-52 and STH-29 and contribute to the development pattern of the greater metropolitan area.

The communities along US-51 have grown toward each other and have become a contiguous metropolitan area. The City of Wausau has generally expanded to the west and east into the Towns of Stettin and Wausau, respectively. Rural and suburban areas on the fringe of the City of Wausau have experienced the effects of growth and development during the last decade with commercial, industrial, and residential growth. (2016 Marathon County Comprehensive Plan)

The combined population increase, and growth of residential, commercial, and industrial development including land use activities contribute to decreased water quality and increased stormwater runoff. The Cities of Marshfield, Mosinee, Schofield, and Wausau; Villages of Kronenwetter, Rothschild, Weston; Town of Rib Mountain; and Marathon County are all permitted Municipal Separate Storm Sewer System (MS4) communities and must comply with regulations to reduce stormwater pollution. Conversely, agricultural activities and changing trends negatively contribute to diminished water quality through the removal of buffering vegetation, increase in annual row crops, channelized ditches, increasing soil erosion, phosphorus and nutrient loading, and poor manure management.

Groundwater Resources

Groundwater is the major source of drinking water for 17 municipal-owned and operated water treatment facilities for public water supply for domestic, and industrial use in Marathon County. Groundwater is also the primary source for private, domestic, industrial, and agricultural water supplies not served by municipal water. According to the Wisconsin Department of Natural

Resources (WDNR), drinking water data, wells constructed since 1987 for private homeowners, approximately 11,470 private water wells were constructed in Marathon County. The availability of groundwater varies across the county depending on the local geology. Areas along the Wisconsin and Rib Rivers provide ample water supply from alluvial aquifers; however, adequate groundwater is limited in parts of the county where dense bedrock is close to the surface.

The need for clean groundwater is both a health and economic issue. Groundwater quality and quantity, in both rural and urban areas varies from location to location. Where groundwater becomes polluted, property values drop and a natural resource is diminished from its full potential. For this reason, local land use activities can significantly influence groundwater quality and quantity in terms of whether a valuable resource is protected and how all key-stakeholders have an important role in its protection.

Agricultural Trends

Agriculture in Marathon County, like the rest of Wisconsin, has experienced significant changes over the past 30 years. There are numerous reasons for these shifts in agricultural activities and practices including changes in economics, population growth, societal changes, operational practices, support services, and state and national policies. From 1987-2017 there has been a 19% decrease in acres of land in farms and a 27% decrease in the number of farm operations. Similar to most other farming areas in Wisconsin, farm operations have tended to become larger, with more acres per farm—an 11% increase. There has also been a decline in the number of dairy farms—a 68% decrease—and a subsequent decrease in traditional perennial dairy forage crops such as alfalfa and grass hay, with a shift to more annual cash grain crops like corn and soybeans with annual tillage.

Along with this shift in farm and crop rotations, there has been an increase in soil erosion and its negative impacts on soil health and water quality. The 2020 Soil Erosion Transect Survey conducted by Marathon County Conservation, Planning and Zoning (CPZ) indicates an increase in average county-wide cropland soil erosion from 1.6 tons/acre/year in 1999—the first year the survey was conducted—to 2.6 tons/acre/year in 2020, and a decrease in cropland fields meeting the Tolerable Soil Loss ("T" level) erosion rate from 86% in 1999 to 75% in 2020.

Polluted spring runoff carrying soil and manure into local streams

Mud Lake Marathon County

To address resource concerns such as soil health and water quality, this Land and Water Resource Management Plan will continue to rely upon proven farm conservation programs and practices such as the NR151 performance standards and prohibitions, nutrient management, soil health prinicples and managed grazing. This Plan will place greater emphasis on new and innovative engagement and adoption strategies to greatly increase the use of additional best management practices on not only on cropland but also adjacent to shorelands, stormwater, and any major land disturbance activity that can contribute to sediment and nutrient loadings into the water in order to align efforts to meet applicable Total Maximum Daily Load (TMDL) report and help meet water quality standards.

SUMMARY OF WORK PLAN

The following LWRM Plan goals, objectives, strategies, and measurable outcomes reflect a 10-year time period. They were developed by the LAC, with input, review and clarification by the TAC, both through a facilitated planning process include the following:

Plan Goals

The goals and supplemental details are also presented in an infographic and text format for a more user-friendly presentation for both readers and implementers of this document.

- **Goal 1:** Land resources are improved and protected county-wide.
- **Goal 2:** Surface water quality is improved and protected.
- **Goal 3:** Groundwater quality and quantity is improved and protected.
- **Goal 4:** Actively educate and engage all community stakeholders to develop an understanding of land, surface water, and groundwater quality concerns.

Water Quality Objectives in Consultation with the Department of Natural Resources

Coordination with the Wisconsin DNR is paramount to implement water quality objectives as outlined in the LWRM Plan and the Wisconsin River and Fox-Wolf River Total Maximum Daily Load (TMDL) reports for total phosphorus. TMDL is one important tool required by the Clean Water Act (CWA) and employed by Wisconsin DNR to quantitatively assess a stream's water quality and allocate allowable pollutant loads among sources along the stream. TMDLs must be developed for water bodies impaired by point sources and/or nonpoint sources.

Section 303(d) of the Clean Water Act and Title 40 of the Code of Federal Regulations, Part 130 require states to develop TMDLs for waters not meeting quality standards for its designated uses under technology-based controls for pollution. A TMDL helps determine how much pollution a water-body can assimilate and still meet water quality standards. The TMDL process quantitatively assesses a water bodies condition causes of impairment and reductions from both point and nonpoint sources, needed to restore and protect the quality of impaired water resources. The U.S. Environmental Protection Agency Region 5 approved the Wisconsin River Basin TMDL on April 26, 2019, and the Upper Fox and Wolf Basin TMDL on February 27, 2020. This LWRM Plan will support the Wisconsin River Basin and Fox-Wolf River Basin TMDL reports.

Agricultural Performance Standards and Prohibitions

Since the passing of legislation in 2002, Marathon County conservation programming is committed to develop programs and plans, provide financial and technical assistance to landowners, and regulatory ordinances to successfully implement Wisconsin's NR151 agricultural performance standards and prohibitions (APSP) , where required. APSP's will continue to be achieved through a mix of voluntary and regulatory approaches identified in the LWRM Plan to increase the land in Marathon County achieving compliance with these requirements.

Under the leadership of the Environmental Resources Committee, the implementation of the APSP is a primary focus of the conservation staff in terms of compliance monitoring and enforcement of the Waste Management Ordinance, Livestock Siting Facility Ordinance, and the Farmland Preservation Program. Achieving compliance with the APSP will aslo be a primary startegy used by conservation staff for implementing TMDL pollutant reduction goals.

Marathon County LWRM Plan Accomplishments – 2010-2020

Timeline of significant accomplishments that supported implementation of the 2010 LWRM Plan goals:

- **2010** – Led Wisconsin Conservation Observance Day in Marathon County, with over 200 in attendance, for Wisconsin Land and Water Conservation Association "Conservation Farmers of the Year".
- **2011(a)** – Initiated Eastern Marathon County Lakes Project with engaged Lake Associations, shoreland property owners, and sporting groups.
- **2011(b)** – Completed Big Eau Pleine Watershed and Reservoir Strategic Plan and began implementation efforts, including completion of new aeration system for the Reservoir.
- **2012** – Awarded $400,000 US EPA Brownfields Assessment Grant for River District remediation in Wausau.
- **2013(a)** – Joined Heart of America's Dairyland and Antigo Flats Agricultural Enterprise Areas-140,343 acres included and eligible for Farmland Preservation Program participation.
- **2013(b)** – Engaged community to update 1982 Farmland Preservation Plan-adopted by County Board.
- **2014(a)** – Adopted new Farmland Preservation Zoning District protecting 111,434 acres from conversion to other uses.
- **2014(b)** – Completed 28,000 acres of grazing plans on 389 farms since 1998 as part of Managed Grazing Program.
- **2015(a)** – Completed and adopted all eleven Eastern Marathon County Lakes lake management plans utilizing technical assistance and grants acquired by CPZ staff.
- **2015(b)** – Completed closure of 150th idle or failing waste storage facility as part of Safe Water Project.
- **2016(a)** – Initiated Fenwood Creek "Pilot" Watershed Project securing nearly $1,000,000 in grant funds.
- **2016(b)** – Completed certification of 265 farms meeting Agricultural Performance Standards and Prohibitions, insuring conservation performance in place and eligibility for Farmland Preservation Tax Credits for landowners.
- **2016(c)** – Ranked number one (and continuing through 2020) in total DATCP funding to county conservation departments for land and water conservation programming-up from number 16 in 2004.
- **2017(a)** – Provided the catalyst, vision and secured initial funding for the Eau Pleine Partnership for Integrated Conservation (EPPIC), Wisconsin largest community-led watershed partnership.
- **2017(b)** – Completed "Strategies for Reducing Fish Kills in the Big Eau Pleine Reservoir" strategic plan in partnership with Big Eau Pleine Citizens Organization.
- **2018(a)** – Completed Lake Wausau management plan.
- **2018(b)** – Developed metallic mining regulations to protect environment, especially the water resources, of the county.
- **2019(a)** – Completed Mission Lake and Lake Dubay lake restoration and demonstration projects.
- **2019(b)** – Educated and qualified/requalified over 105 different Marathon County farmers to develop their own Nutrient Management Plan through Wisconsin's largest multi-county Nutrient Management Farmer Education training program, over the last decade.
- **2020 -** Completed and closed out the last of 21 Environmetal Impact Fund projects.

Water Quality and Habitat Monitoring

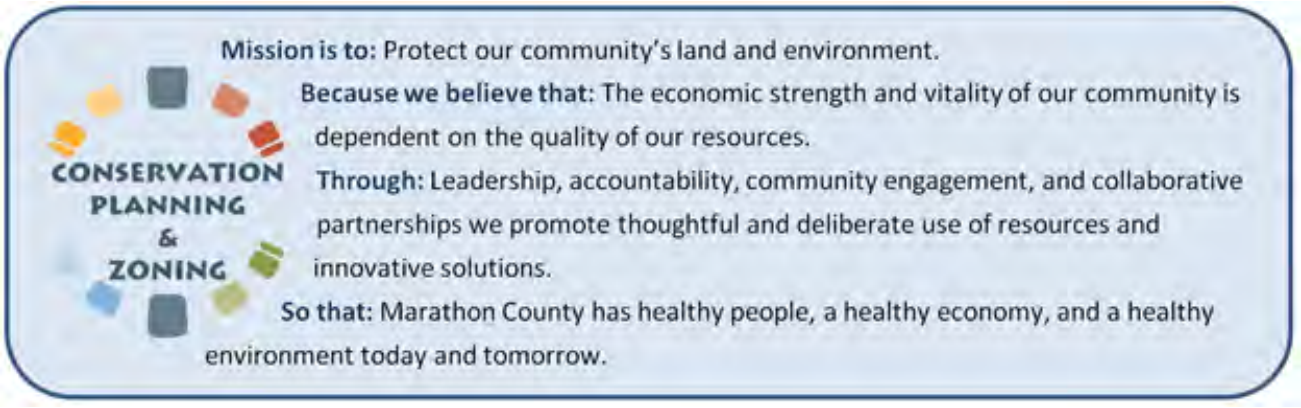
Water quality and habitat monitoring within selected watersheds are critical to assess, and recommend measures to improve agricultural practices, minimize nonpoint pollution, habitat destruction and soil loss. Continued analysis of impaired water resources can help prioritize and align conservation efforts to reduce phosphorus levels to target levels identified in the Wisconsin River and Upper-Fox Wolf River Basin TMDLs.

Various state, local government, private companies, and non-profit entities are key stakeholders in terms of collecting water quality and habitat data over the next decennial period. The Wisconsin Valley Improvement Company will continue to monitor water quality parameters in the Wisconsin River Basin, Eau Pleine Reservoir and Fenwood Creek Watershed to assess the water quality in relation to private, public water use along with outdoor and recreational uses that are being impaired by exceedances of phosphorus. Other lake groups and organizations will continue to promote sound land use and nonpoint source best management practices to protect their respective lakes. DNR Water Quality Biologists have been, and will continue to be, relied upon for technical assistance for completing water quality monitoring and measuring progress towards meeting TMDL reductions goals in specific watersheds in Marathon County.

Plan Evaluation

Progress Tracking

The 2020-2030 LWRM Plan moves beyond identifying goals, objectives, strategies, and measurable outcomes as identified by the local advisory committee. The operational component will be measured each year to assess progress toward each overarching goal of protecting the land and water resources. Annual work plan activities of the Land and Water Program will be reflective of progress in terms of meeting identified goals, objectives, strategies, and measurable outcomes of the LWRM Plan, but also align with the 2016 Marathon County Comprehensive Plan, and the approved Wisconsin River and Fox-Wolf River Basin TMDL Reports.



Wisconsin Chapter 92.10 and ATCP 50.12 provide guidance for counties to develop a land and water resource management plan. This plan revises and supersedes all previously approved plans and reflects an overall effort to strengthen conservation programs, available grant funding, and other resources to effectively address the land and water resource management issues facing Marathon County, with intended outcome of improving and protecting the land and water resources which the county's citizens, farmers, landowners, businesses and industries are dependent upon for their livelihood.

Marathon County's LWRM Plan is intended to complement and coordinate with existing plans, specifically the County's Comprehensive and Strategic Plans to ensure the county is proactive in enhancing health, safety, and prosperity by protecting the environment, and providing recreational and economic opportunities which make Marathon County a preferred place to live, work, visit, and do business.

The goals, objectives, strategies and measurable outcomes outlined in this plan will serve to guide and align CPZ's Land and Water Program initiatives through the year 2030. The outcomes of these measures help to further define success with respect to allocating various local, state and federal resources to further initiatives identified in annual work plans required of this plan.

Plan Development Process

With oversight provided by the Marathon County Environmental Resource Committee (ERC), the LWRM Plan is a product of the collaborative efforts of Conservation and Planning staff, and the LAC comprised of key individuals representing the stakeholders in soil health, lake and reservoir management, wildlife and diverse farming operations.

Marathon County Conservation staff provided pertinent input and assisted with the development of specific target areas, overall review, and authored elements of this plan. Seven meetings were held by the LAC to review and consider staff recommendations to determine and advance identified final overarching goals, objectives, strategies, outcomes, and the implementation strategy for the plan. The LAC also met to review, and provides comments of the draft plan in order establish a final draft plan for public review and consideration.

Local Advisory Committee meeting dates:

- August 21, 2019
- October 30,2019
- January 7, 2020
- January 28, 2020
- February 11, 2020
- February 25, 2020
- March 31, 2020

A Technical Advisory Committee (TAC) comprised of members from the Wisconsin Department of Natural Resources (DNR), Wisconsin Valley Improvement Company, United States Department of Agriculture (USDA) – Natural Resources Conservation Service, the University of Wisconsin – Marshfield Agricultural Research Station (MARS), wildlife groups, lake groups, and an agronomist met five times via virtual meetings due to the COVID-19 pandemic to review goals, strategies, objectives, and measurable outcomes on the following dates: March 25, 31, and April 20, 29, and finally on May 6, 2020. In addition, Conservation and Planning Staff had bi-weekly LWRM plan meetings beginning January 22, 2019. The staff provided detailed input and recommendations to both committees to have a plan that is clear to the committees and Marathon County. The 2020 LWRM Plan incorporates the most recent available data and maps from CPZ, DNR, Department of Agriculture, Trade and Consumer Protection (DATCP), Department of Administration (DOA), Environmental Protection Agency (EPA),

Natural Resources Conservation Service (NRCS), U.S. Census Bureau, and Geographic Information System data sources and updates resource information used in the 2010 where possible.

PLAN REQUIREMENTS

The Marathon County LWRM Plan was developed to meet the requirements of the county Land and Water Management Planning Program. ATCP 50.12 codifies specific standards for the approval of the LWRM Plan and was verified against the ARM-LWR-167 LWRM Plan Review Checklist, Wis. Stats. § 92.10 & Adm. Code § ATCP 50.12 (August, 2017).

The LAC's recommendations were presented to the Marathon County Environmental Resource Committee on June 2 and June 30, 2020 for the Committee's favorable consideration. The Environmental Resource Committee will hold a public hearing January 5, 2021. The ERC noticed and conducted a public hearing to solicit broad public input and recommendations. The notice of public hearing, and minutes can be found in Appendix X. The LWRM Plan was approved by County Board on XX, 2021.

PERFORMANCE STANDARDS & PROHIBITIONS

In NR151, the DNR established agricultural and non-agricultural performance standards and prohibitions to reduce runoff and protect water quality. In ATCP 50, the DATCP identified conservation practices that farmers must follow to meet the DNR standards. These standards require counties to consult with DNR and identify how they will assist landowners to achieve compliance with performance standards and prohibitions.

As a condition of the Marathon County's land and water program and state law, the CPZ staff must notify landowners and land users if APSP determinations are made. Landowners may receive individual determinations involving conditions on their property through a) conservation plans, b) compliance status reports, and c) compliance status letters authorized under the NR151 implementation strategy, and notices issued under NR151.09 or NR151.095. DNR staff may be consulted with before or after CPZ staff make NR151 compliance determinations.

Marathon County is devoted to develop programs and plans to successfully implement Wisconsin's agricultural performance standards and prohibitions(APSP). The blend of program coordination and plans add accountability and organization to the nonpoint program efforts. The agricultural nonpoint program relies upon the leadership of the ERC and the Conservation, Planning and Zoning Department staff to implement the standards consistent with State Statute 92.10(6)(a)5 and ATCP 50.12(2)(i) Wis. Adm. Code.

Since the adoption of NR 151, local conservation programming has been tied directly to providing technical and financial assistance to landowners required or wanting to comply with state APSP. APSP are measurable goals to be achieved by farm operators for specific production practices. Technical standards ensure that practices installed

emerging seeding from no-till cropland planting

managed grazing

on the land meet uniform design requirements to accomplish stated objectives and are outlined by ATCP 50.

The implementation of the APSP are a primary focus of the administration, compliance monitoring and enforcement of the Animal Waste Management Ordinance, Livestock Siting Facility Ordinance, and Farmland Preservation Program. These programs provide direct compliance and local enforcement of specific performance standards. Additionally, the Managed Grazing program and educational activities provide extensive outreach and application opportunities for landowners to apply best management practices to meet performance standards.

RELATED PLANS

Marathon County Groundwater Protection Guide – 2001

The Groundwater Protection Guide was first developed in 1988. In April 2001, the plan was updated to reflect the changing programs and policies within the county as well as to acknowledge the increased level of regulation by state agencies to protect the groundwater resources of Marathon County. The guide identifies sources of groundwater in the county as well as consumption trends for the various community users. Environmental protection programs and responsibilities for implementation are identified for all the various State and local departments and agencies. Along with conservation programming, the enforcement of performance standards, zoning, wellhead protection activities, and groundwater monitoring will be necessary to help protect the groundwater.

The residents and businesses of the county evaluate special considerations that recognize that groundwater is a primary source of all water consumption. As residential sprawl continues into the rural areas of the county and the scale of agricultural activities increasingly threatens the groundwater, the conservation efforts to protect the resource will need to increase. The Groundwater Plan and Central Wisconsin Basin Plan together identify risk concerns relative to type of pollutant sources present in specific watersheds as well as the relative risk of groundwater sources to potential problems.

Strategy A, Outcome Measure 1, of the 2018-2022 Marathon County Strategic Plan, requires the Marathon County Board adopt a new groundwater protection plan by December 31, 2022.

Marathon County Farmland Preservation Plan – 2014

The Marathon County Farmland Preservation Plan is required under Chapter 91 of the Wisconsin Statutes. The purpose of this plan is to guide and manage growth and development in a manner that will preserve the rural character; protect the agricultural base and natural resources; and contribute to the County's overall goal of promoting public safety, health and prosperity within the County. This plan is the primary policy document in directing preservation of agricultural production capacity, farmland preservation, soil and water protection, and future land development while respecting private property rights and individual units of government. The Marathon County Board adopted the Marathon County Farmland Preservation Plan on January 21, 2014.

Vision Statement and Goals

Marathon County agriculture will be diverse, sustainable, and profitable now and in the future. Through shared responsibility and stewardship of resources and community engagement/cooperation, we will enjoy a sufficient and sustainable supply of ground water, high quality water resources, and productive soil. Agriculture will be supported by adequate economic and structural infrastructure; access to technological advances in equipment, communication, and waste management; access to local, domestic, and international markets, ample land supply, and a balanced mix of land uses.

Agriculture Goals

General Goals

- Users of the land will be good stewards of the land
- Programs must fairly and equitably support a diverse and profitable agriculture
- Protect a sufficient and sustainable ground water quantity
- Protect and improve ground and surface water quality
- Support small farms and/or family farms
- Respect a balanced mixed land use
- Preserve the rural character and aesthetic quality of Marathon County
- Participation of all county communities to achieve the goals of the county's strategic plan
- Provide educational outreach on topics such as farmland preservation zoning and AEAs

Agricultural Preservation

- Minimize nonagricultural development on prime agricultural soils
- Maintain the integrity of agricultural economic clusters

Housing and Development

- Design and locate rural housing to minimize adverse impacts on agriculture
- Encourage higher-density residential development in non-farmland preservation areas
- Encourage nonagricultural industries to locate in areas where public utilities will be available

Residential development on prime farmland soils

Regional Food Distribution and Networks

- Support food distribution systems to access the local food initiatives of the community
- Provide education and technical support to small scale producers and direct marketers

Policies Related to Farmland Preservation Plan Requirements

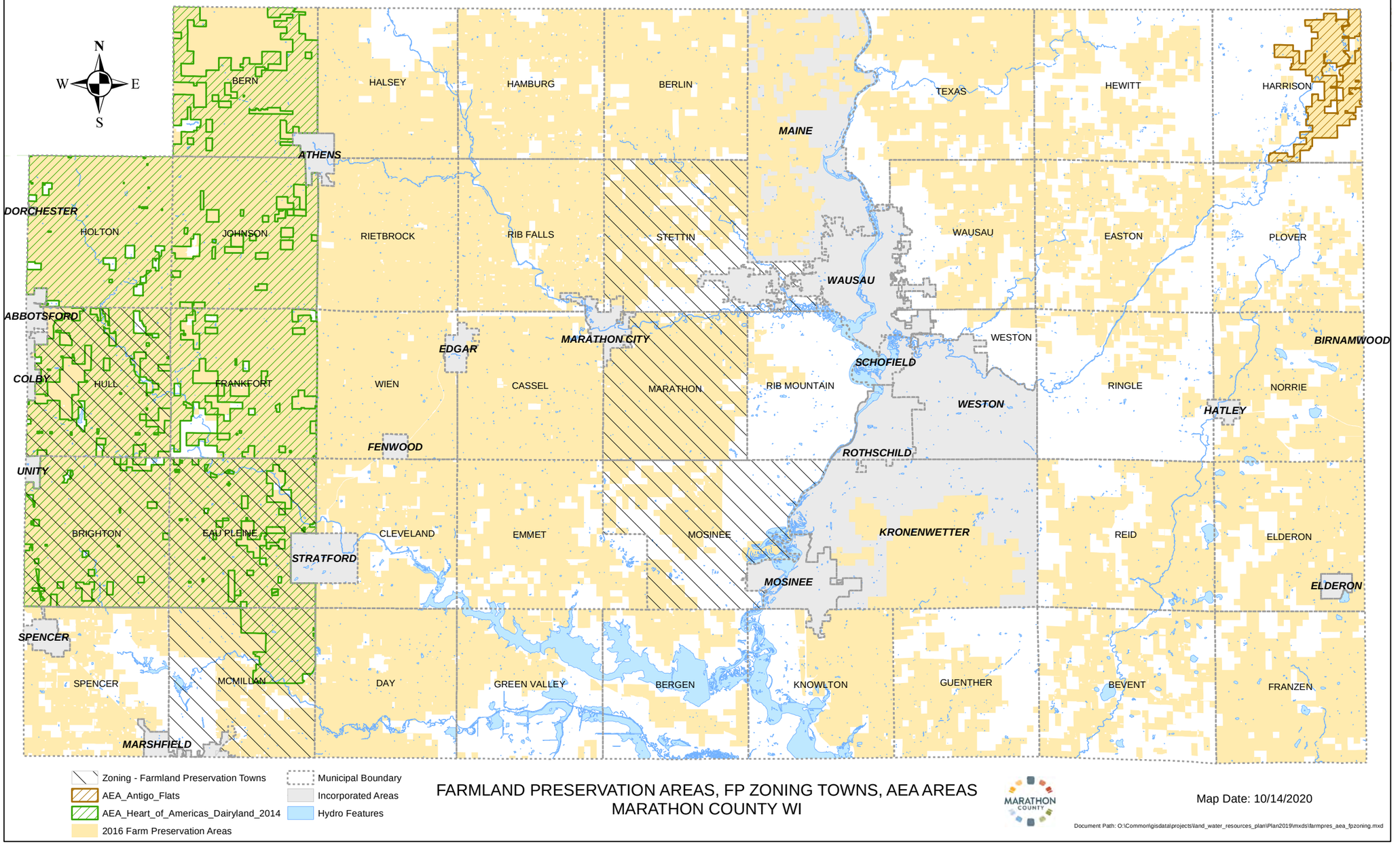
The farmland preservation plan is a significant policy for the Marathon County Board of Supervisors. It defines the importance of agriculture in the region relative to land use, culture, resource management, and economic contributions. As policy, the plan includes four components that Marathon County will initiate to preserve farmland and its contributions to the community. The four components include:

- Provision of services;
- Customization of services;
- Cost of services; and
- Prioritization of services.

In implementing the plan, the farmland preservation area will include eligible land for farmland preservation zoning and/or Agricultural Enterprise Areas (AEA). The county will continue to work with town officials, and landowner petitions to establish and delineate farmland preservation districts and AEAs.

Figure 1-1, illustrates the current towns participating in farmland preservation zoning: Brighton, Eau Pleine, Hull, Marathon, McMillan, Mosinee, and Stettin. There are also two AEAs in Marathon County: Antigo Flats in the Town of Harrison, and Heart of America's Dairyland in the Towns of Bern, Brighton, Eau Pleine, Frankfort, Holton, Hull, Johnson, and McMillan. As of August 2020, there are 111,464 acres in a farmland preservation zoning district, and 140,343 acres in the AEAs. The identified 2016 FP areas allow for the expansion of both FP zoning and AEA's.

FIGURE 1-1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WAUSAU
EASTON
PLOVER
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ABBOTSFORD
EDGAR
MARATHON CITY
WESTON
BIRNAMWOOD
SCHOFIELD
COLBY
HULL
FRANKFORT
WIEN
CASSEL
MARATHON
RIB MOUNTAIN
WESTON
RINGLE
NORRIE
HATLEY
FENWOOD
ROTHSCHILD
UNITY
BRIGHTON
EAU PLEINE
CLEVELAND
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MOSINEE
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Zoning - Farmland Preservation Towns
AEA_Antigo_Flats
AEA_Heart_of_Americas_Dairyland_2014
2016 Farm Preservation Areas
Municipal Boundary
Incorporated Areas
Hydro Features
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MARATHON COUNTY WI
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Fenwood Creek Watershed Management Plan – 2016-2026

The Fenwood Creek watershed is representative of the larger Big Eau Pleine (BEP) River watershed relative to resource concerns and is impacted primarily by nonpoint agricultural runoff. The Fenwood Creek watershed drains approximately 39 square miles (24,958 acres) of land into the BEP reservoir. All studies, research, and monitoring efforts point to two primary causes of water quality degradation: soil erosion and nutrient runoff, mainly phosphorus, from agriculture.

In 2014, -Marathon County initiated a pilot project for the Fenwood Creek watershed, which is a representative Hydrologic Unit Code (HUC) 12, dairy-based watershed within the BEP River watershed. The project involved working with DNR to develop a watershed-based plan consistent with the USEPA 9 key elements. This plan was completed and approved by DNR and USEPA in 2015 and has since secured DNR funds for implementation. Implementation of the pilot project started in 2016 and will end in 2026. Marathon County will document plan implementation over the 10-year project implementation schedule for the purpose of the 9 Key Element Plan. Initial and Intermediate outcomes for the Fenwood Creek project will focus upon grant funded and required APSP activities. Long-term outcomes will ultimately be determined through the Wisconsin River Total Maximum Daily Load (TMDL) plan. Ultimately, the Fenwood Creek watershed-based will help determine whether CPZ's nonpoint strategies to address impaired waters are effective and, if so, transferable to other impaired watersheds within the county. If not, CPZ needs to re-assess and evaluate non-point strategies until they are successful in the Fenwood Creek Watershed before expending additional resources in new watersheds.

Marathon County Comprehensive Plan – 2016

The Marathon County Board of Supervisors adopted the Comprehensive Plan in February 16, 2016. The Marathon County Comprehensive Plan will help guide County decision makers on a wide array of issues over the next twenty years in creating a preferred place to live, work, visit, and do business. The Marathon County Comprehensive Plan is a policy plan. The overall goal of the Comprehensive Plan is to add a county-level perspective and planning direction that complements and strengthens local planning efforts. The planning effort established six sub regions which contain similar land use, natural resources, terrain, population, and housing. Figure 1-2, is from Marathon County's 2016 Comprehensive Plan and provides a brief description of each sub region and include the following areas: Antigo Flats, Heart of America, Wisconsin River Influence, Wisconsin Central, Lumberjack, and Eastern Lakes regions. It will also provide guidance to the 41 towns, 15 villages and 6 cities within the County, along with community partners. All these communities, working together, make Marathon County a special place.

This plan moves in a new direction, while still addressing the requirements outlined in Wisconsin Statutes 66.1001, to the extent applicable. That law requires that at minimum these elements or issues be discussed: Issues & Opportunities, Natural, Agricultural & Cultural Resources, Housing, Transportation, Utilities & Community Facilities, Economic Development, Land Use, Intergovernmental Cooperation, and Implementation. New topics and chapters added to this plan cover Health and Human Services, Water Resources, and Community Character.

Marathon County Strategic Plan – 2018-2022

The Marathon County 2018–2022 Strategic Plan identifies 12 specific objectives from the Marathon County 2016 Comprehensive Plan, clarifying which broad objectives are most important over the next 5 years and linking our Comprehensive Plan to our annual budget and work plans. The Strategic Plan embodies the vital partnership that exists between elected County Board Supervisors, who are entrusted with setting policy, and county staff, who are charged with carrying out operations in support of that policy.

The policy set by the 2018–2022 Strategic Plan is in the form of the selection of the 12 priority objectives drawn from the Comprehensive Plan. As part of its prioritization process, the County Board of Supervisors sought input from community leaders throughout Marathon County, conducted a survey of County Board of Supervisors, and held a retreat to discuss the issues confronting us today and those we anticipate in the coming 5 years. The result of the County Board's deliberative process is the list of 12 priority objectives set forth in this Strategic Plan.

The operational components of the plan exist in the form of the strategies identified as necessary action steps in pursuit of each

Six Regions Terrain

Antigo Flats
The Antigo Flats region includes the towns of Harrison and Plover. The area is characterized by large tracts of publicly owned land and outdoor recreation areas (Bitzke Bird Walk, Dells of the Eau Claire, Ice Age Trail, and Plover River state fishery). Private lands are mixed agriculture and forest lands with scattered large lot residential development.

The agriculture industry in the Antigo Flats region is primarily seed potato and vegetable crops.

Heart of America
The Heart of America region is named after the Heart of America's Dairyland Agricultural Enterprise Area in eastern Clark and western Marathon counties. The region includes the towns of Bern, Halsey, Hamburg, Berlin, Holton, Johnson, Rietbrock, Rib Falls, Hull, Frankfort, Wien, Cassel, Marathon, Brighton, Eau Pleine, Emmet, Spencer, McMillan, and Day; the villages of Dorchester, Unity, Spencer, Stratford, Fenwood, Edgar, Marathon City, and Athens; and the cities of Marshfield, Abbotsford, and Colby. Pre-settlement, the area was dominated by wetlands, which were drained to make way for agriculture. The region is characterized by a flat to gently rolling landscape, with large tracts of contiguous farmland, and forest in the wetter areas and along streams.

Wisconsin River Influence
The Wisconsin River influence region includes the Big Eau Pleine Reservoir, Lake DuBay, Wisconsin River, Mead Wildlife Area, and the surrounding area in the towns of Cleveland, Green Valley, Bergen, and Knowlton. The region is characterized by a surface water features, forest, and farmland.

Wisconsin Central
Wisconsin Central region includes the cities of Wausau, Schofield, and Mosinee; the villages of Rothschild and Kronenwetter; and the towns of Stettin, Rib Mountain, Mosinee, and Guenther. The area is the urban center of the county and serves as the employment, higher education, goods and services provider, and social recreation center of the county. Agricultural lands in the Wisconsin Central region are historically under the most non-agricultural development pressure in the county due to the availability of urban amenities. With the downturn in the economy and resulting decreased housing construction, this development pressure has lessened in recent years. However, it is anticipated to return to pre-recession levels in the future.

The agriculture industry in the Wisconsin Central region includes greenhouses, grain, ginseng, dairy, and agribusinesses that provide agricultural services and products. Wisconsin Central serves as a regional marketplace for producers to sell goods at farmers markets and local businesses.

Lumberjack
The Lumberjack region includes the towns of Maine, Texas, Hewitt, Easton, Wausau, Weston, Ringle, and the village of Weston. The area is characterized by large tracts of forested lands with scattered smaller agricultural tracts, mixed with large lot residential development.

The agriculture industry in the Lumberjack region is smaller scale grain, beef, and "lifestyle farms". Lifestyle farming is characterized by family operations of small agri-tourism and activity farming such as corn mazes, pumpkin patches, and hayrides, etc.

Eastern Lakes
The Eastern Lakes region includes the towns of Norrie, Elderon, Franzen, Reid, and Bevent; and the village of Hatley. The area was glaciated, resulting in a forested landscape with many kettle lakes. The area is characterized by smaller tracts of forested and agricultural lands. Many residences are seasonal lake homes and hunting cabins. Residential development averages 1.8 acres, but lot size is highly variable due to the mix of larger residential area in agricultural areas, smaller residential area in the forested areas, and smallest residential area along lakeshores.

FIGURE 1-2

The Six Regions of Marathon County include many types of places.

priority objective and in the form of the outcome measures against which we will assess our progress. Our strategies are drawn from our elected officials and the many subject matter experts within each of our various county departments. The 2018–2022 Strategic Plan represents an evolutionary step forward in our planning efforts, moving beyond simply identifying goals and objectives, by incorporating specific outcome measures. These measures help to further define success with respect to our objectives and serve as targets toward which we can align our resources and benchmarks against which we can evaluate the effectiveness of our services.

Total Maximum Daily Load for Total Phosphorus in the Wisconsin (2019) and Fox-Wolf River Basins (2020)

Section 303(d) of the Clean Water Act established the TMDL program. The TMDL program identifies and restores polluted rivers, lakes, streams, and other surface water bodies by detailing in a quantitative assessment the water quality problems and contributing sources of pollution. The TMDL determines how much a pollutant needs to be reduced to meet water quality standards, and provides the foundation for taking actions locally to restore a water body to fishable and swimmable standards.

TMDLs must be developed for water bodies impaired by point sources and/or nonpoint sources. The TMDL is one important tool required by the Clean Water Act and employed by Wisconsin DNR to quantitatively assess a stream's water quality and allocate allowable pollutant loads among sources along the stream and/or river. U.S. EPA approved the Fox-Wolf River TMDL on February 27, 2020 and the Wisconsin River TMDL on April 26, 2019. The plans provide specific pollutant allocation limits for all dischargers in the watershed to achieve statewide water quality goals.

Marathon County Forest Comprehensive Land Use Plan 2006 – 2020

This plan includes recommendations to guide management of forest land in Marathon County in accordance with the Parks, Recreation and Forestry Department's mission to manage and protect the county forest on a sustainable basis for ecological, economic, educational, recreational, and research needs of present and future generations. It provides substantial information on existing forest resources, as well as information regarding the roles of the various agencies and regulatory framework related to forest management.

In the development of the Marathon County Forest Comprehensive Plan, there was strong resident support for purchasing more land wherever available for protection, recreation, and timber. One of the major issues identified was woodland fragmentation. The County recognizes that subdividing and parceling off large tracts of land for home construction contributes to the problem of fragmentation. The Plan also suggests that the County should strategically purchase forestland and wetland parcels in order to maintain a countywide network of linked open space/forestland/wildlife corridors. In some areas, particularly the eastern half of the County adjacent to County owned forestland, it is still possible to purchase more land to create larger corridors.

In accordance with the Marathon County Strategic Plan 2018 – 2022, the Parks, Recreation, and Forestry Department will support Objective 5.2: Promote sound land use decisions that conserve and preserve natural resources in decisions with economic development and growth. Strategy F – indicates an approach to acquire land for Public Park and forest use to retain natural landscapes and resources. Outcome Measure 3 – indicates that the County acquires an average of 320 acres of land per year through 2022.

Wausau Urban Area Sewer Service Plan 2040

The Marathon County Metropolitan Planning Commission adopted the Wausau Urban Area Sewer Service Plan in May 2018. This report is intended to update and replace the previous, 2025 Wausau Urban Area Sewer Service Plan for the City of Wausau and surrounding urban area. These types of plans are also known as area-wide water quality management plans.

The general purpose of this area-wide water quality management plan, herein referred to as Sewer Service Area Plan, is to maintain a twenty-year sanitary sewer service boundary for the Wausau Urban Area and an institutional structure for implementing the Plan and managing the extension of sanitary sewage services within this urban area.

The urban sanitary sewer service area boundary identifies the geographic land area within which sanitary sewer service could be made available by the year 2040 in a cost-effective, environmentally acceptable manner.

In addition to delineating an urban sewer service boundary, the Sewer Service Area Plan provides a framework for future planning at each individual municipal level. The data, trends, projections and findings developed in this Plan are consistent with detailed community plans for the Cities of Mosinee, Schofield & Wausau, the Villages of Brokaw, Kronenwetter, Maine, Rothschild & Weston, and the Town of Rib Mountain. The goals and policies developed throughout this planning process will also be applicable and useful in the development of local policy direction with respect to land use decisions within these communities.

Thus, the Sewer Service Area Plan will serve the following overall purposes:

- It establishes the geographic boundaries for possible sanitary sewer service to the year 2040;
- It provides a technical basis to anticipate future needs for wastewater collection and centralized treatment facilities for the planning area;
- It establishes an institutional structure for reviewing boundary and plan amendments and for approving sewer extensions and expansions of sewage treatment plants;
- It serves as a guide for community officials as they make land development decisions within their respective communities;
- It identifies areas to be protected from development by designating them as environmentally sensitive areas. Such areas will control and direct the growth of communities in order to protect environmental, social, and economic concerns; and
- The Plan will become a component of the Central Wisconsin River Basin Integrated Management Plan.

Central Wisconsin River Basin Plan - 2010

The Central Wisconsin River Basin Plan was updated in 2010. Findings from the Basin Plan were used to assure that the LWRM Plan addresses those impacted waters and targeted activities of the county with the greatest need. The Basin Plan identifies:

- Impacted Watersheds,
- Exceptional waters and outstanding waters,
- 303(d) waters, and
- Significant sources of pollutants or activities impacting the waters.

The Conservation, Planning and Zoning Department will continue to coordinate initiatives with appropriate agencies to address the following basin priorities:

- Develop monitoring programs with citizens and professionals to evaluate and track the quality of surface and groundwater resources within the county. Special consideration for monitoring shall target the Lower Big Rib River and the Big Eau

Pleine River Watersheds, as well as the Eastern Lakes Project.

- Encourage conservation measures for land use activities, water consumption and discharge activities to minimize resource impacts and to promote sustainable use.
- Evaluate impacts to water quality from non-metallic mining through permit compliance.
- Continue to monitor the sources and quantity of sediment delivery into the surface waters. Primary attention will be agricultural sediment sources of soil and manure.
- Promote the abandonment of unused wells on agricultural lands and agricultural transition areas.

Big Eau Pleine Reservoir

Big Eau Pleine Reservoir Lake Management Plan - 2017

Big Eau Pleine Citizens Organization's mission is: The purpose of the Big Eau Pleine Citizens Organization is to preserve, protect, and improve the quality of the Big Eau Pleine Reservoir. Land and water management programs address the water quality of the Big Eau Pleine Reservoir and its watershed area.

This plan is the result of a stakeholder-driven effort, which involved many partners combining insight, knowledge, and expertise throughout the process. More than 112 participants gathered at a series of community conversations, which provided opportunities to learn from one another and make suggestions about the fishery, water quality, habitat, and land management in the Big Eau Pleine watershed. The Big Eau Pleine Citizens Organization (BEPCO) hosted the meetings at venues throughout the watershed between February and July 2015. The Plan includes the following goals:

- Goal 1 - Sustain and Improve the Fishery of the BEP Reservoir,
- Goal 2 - Improve Water Quality in the BEP Reservoir and Watershed, and
- Goal 3 - Develop, Engage & Sustain Partnerships Necessary to Implement the Plan for Reducing Fish Kills in the BEP.

Marathon County Aquatic Invasive Species Plan (AIS) – A guide for Proactive AIS Management – 2018

In 2010, Marathon County CPZ collaborated with Golden Sands Resource Conservation & Development Council, Inc. (RC&D) to acquire grant funding from the DNR to support a Regional AIS program. Through the AIS Program, information was gathered about the status of AIS infestations in Marathon County, volunteer activity levels, training and education needs, and other information regarding AIS in Marathon County. The purpose of the AIS plan is to identify short-term and long-term goals toward establishing a coordinated, county-wide approach to protecting Marathon County's lakes.

The AIS Plan was revised in 2018, and contains the following recommended actions:

- County-wide promotion of native vegetation,

- Implement and enforce shoreland regulations,
- Provide technical assistance to shoreland owners for native shoreland buffers and invasive species removal,
- Apply for grants to fund lake protection projects,
- Review annually the funding for cost-sharing incentive programs,
- Continue to distribute informational packets to new lakeshore property owners, and
- Continue to promote native vegetation through: news articles, social media, educational handouts/resources, citizen organization newsletters, Lake District and Lake Association meetings, and press releases.

Marathon County Eastern Lakes Project – 2013 through 2015

The Eastern Lakes Project is a partnership of citizens, eastern Marathon County communities, Marathon County government, and the University of Wisconsin Stevens Point. This project effort created lake studies, lake management plans, and final summary lake reports for Bass Lake, Big Bass Lake, Lilly Lake, Lost Lake, Mayflower Lake, Mission Lake, Mud Lake, Norrie Lake, Pike Lake, Rice Lake, and Wadley Lake.

The three common land and water goals for the Eastern Lakes Management Plans include the following:

In-Lake Habitat and a Healthy Lake

- Fish Community – fish species, abundance, size, important habitat and other needs
- Aquatic Plant Community – habitat, food, health, native species, and invasive species
- Critical Habitat – areas of special importance to the wildlife, fish, water quality, and aesthetics of the lake

Landscapes and the Lake

- Water Quality and Quantity – water chemistry, clarity, contaminants, lake levels
- Shorelands – habitat, erosion, contaminant filtering, water quality, vegetation, access
- Watershed Land Use – land use, management practices, conservation programs

People and the Lake

- Recreation – access, sharing the lake, informing lake users, rules
- Communication and Organization – maintaining connections for partnerships, implementation, community involvement
- Governance – protection of the lake, constitution, state, county, local municipalities

Big Rib River, Marathon County

MARATHON COUNTY ORDINANCES

Animal Waste Management Ordinance – Chapter 11.02

Marathon County adopted its first Manure Storage Ordinance in 1985. Several revisions have occurred included the action taken by The Marathon County Board of Supervisors adopted an Amended ordinance what is now referred to as the "Animal Waste Management Ordinance" in June of 2020. The purpose of this ordinance is to regulate the location, design, construction, installation, alteration, operation, maintenance, closure, use, and application of animal waste from all waste storage facilities covered by this ordinance so as to protect the health and safety of residents and transients; prevent the degradation of surface and groundwater thereby preventing the spread of disease and promoting the prosperity and general welfare of the citizens of Marathon County; and protect the groundwater and surface water resources of Marathon County. It is also intended to provide for the administration and enforcement of the ordinance and provide penalties for its violations.

Dairy cattle in Marathon County produce an estimated 2.6 million gallons of manure per day or nearly one billion gallons annually (the equivalent of 1500 Olympic size swimming pools). To assure that this organic matter and nutrient source is contained and managed with sound practices, a permit is required to construct, install, modify or close a facility. On-going operation storage facilities are also required to insure facilities are in sound condition and that the animal waste stored in them are applied at the correct time, amount, and location through required Nutrient Management Plans which are required for all landowners with waste storage facilities.

On average, the county issues 12 permits per year. Since the adoption of the 1985 ordinance, the department has issued over 400 permits to constructed waste storage facilities.

The closure of idle or abandoned waste storage facilities is regulated by this ordinance and in the period from 1999 to 2018, the number of county dairy herds decreased by approximately 580. For example, in 1999 Marathon County had 63,000 cows with 1100 active dairy farms while in 2018, the total cows dropped to 61,000 with 520 active dairy farms.

concrete lined waste storage facility

In 2006, Marathon County initiated a targeted inventory and project to focus technical and financial resources toward the closure of abandoned waste storage facilities. Currently, Marathon County has enforced and assisted in the closure of approximately 160 idled facilities with financial assistance received from Soil and Water Resource Management and Targeted Runoff Management grants from DATCP and DNR, respectively.

The most recent ordinance revision (June, 2020) incorporated most of the APSP of the State. This gives CPZ more tools to address the most critical sources of runoff pollution to surface and ground waters, thereby safeguarding land and water resources.

Livestock Facilities Licensing Ordinance – Chapter 13

Marathon County adopted its first Livestock Facilities Licensing Ordinance, Chapter 13 of the General Code of Ordinances in October of 2006. The County Board of Supervisors adopted an amendment to Chapter 13 in September of 2019. The purpose of this ordinance is to comply with requirements of Section 93.90 of Wis. Statutes and Ch. ATCP 51, Wis. Adm. Code (ATCP51), and to establish standards and authority to protect the public health, environmental resources, and safety of the people of Marathon County. This ordinance sets forth the procedures for obtaining a license for the siting of new and expanded livestock facilities in Marathon County. It is also intended to provide for the administration and enforcement of the ordinance and provide penalties for its violations.

A license issued by the Department is required for new or expanded livestock facilities that has or will have 500 or more animal units. A livestock facility shall remain licensed under this ordinance until such time as the facility is designated as a Concentrated Animal Feeding Operation (CAFO) by the Wisconsin Department of Natural Resources (DNR), issued a Wisconsin Pollutant Discharge Elimination System (WPDES) permit by the DNR, and provides documentation to the county of its WPDES permit.

Since October of 2006, the County has reviewed, approved and issued 17 Livestock Facility Licensing Permits. Three new applications have been initiated. Currently, 12 farms in the county have a DNR issed WPDES Concentrated Animal Feeding Operation (CAFO) permit in 2019 with another one pending approval. Marathon County may have as many as 15 farms under (CAFO) permit in the next five years.

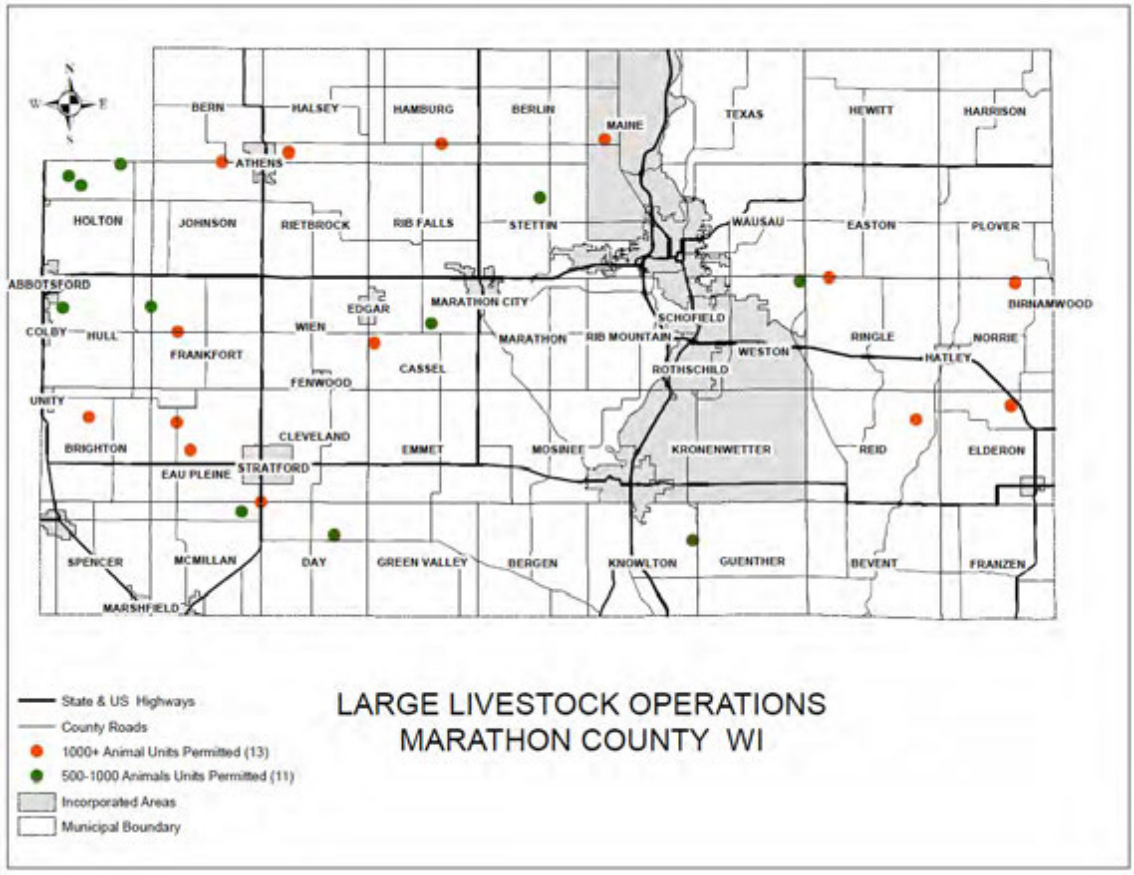


Figure 1-3 Source: CPZ GIS data records

The County may be involved in the review of facility and operational permits for an additional 30 farms that are between 500-1000 animal units.

An assessment on the effectiveness of this ordinance will be completed to determine if it is the most effective way to regulate medium sized livestock farms. DNR staff may be consulted with as part of completing this assessment.

Private Sewage System Ordinance - Chapter 15

In February 2019, the Marathon County Board of Supervisors approved a general text amendment to the county's Private Sewage Systems – Chapter 15. This ordinance is adopted to promote and protect public health and safety by assuring the proper siting, design, installation, inspection and management of private on-site wastewater treatment systems and non-plumbing sanitation systems, and to assure the timely repair or replacement of failing private sewage systems.

The code requires CPZ to ensure the replacement of failing POWTS. In 2018, it resulted in the replacement of 29 systems. Over the next six years, it is anticipated that approximately 7000 systems will be inspected to ensure there is not a surface discharge or a failing tank across the county. Of those systems approximately 1000 systems will need to be replaced. These systems, constructed prior to 1980, will be added to the maintenance program which requires regular inspection and if necessary pumping of the septic tank to keep them performing as designed.

Marathon County established a low interest loan program in 2019 for low-income residents and some small businesses to help cover part of the cost to replace their system. MCDEVCO is partnering with the county to administer the loan with assistance from CPZ. Available starting in 2020, the loan can be payable at the time of sale of the property. Nearly one million dollars is now available for this loan program with funding coming from the Environmental Impact Fund. The loan program is replacing the Wisconsin Grant fund program, which served a similar purpose since 1980.

In addition, the amendment aligns with the Marathon County Strategic Plan Objective 6.3 - To protect and enhance the quantity and quality of potable groundwater and potable surface water supplies, and Outcome measure 2: By December 31, 2022, the number of Private Onsite Wastewater Treatment Systems (POWTS) discharging to the ground surface will be reduced by 750 systems or more.

Zoning Code - Chapter 17

In February 2016, the Marathon County Board of Supervisors approved a comprehensive revision of the General Code of Ordinances for Marathon County Chapter 17 – Zoning Code. Chapter 17 is updated on an annual basis as required to address and improve regulation of zoning issues on a county-wide basis. In April, 2018, the Marathon County Board of Supervisors approved the Metallic Mining Amendment to be incorporated into Chapter 17 in response to 2017 WI ACT 134, which removed barriers to the initiation of nonferrous metallic mining in the State of Wisconsin.

In March 2019, the Board of Supervisors approved the latest revision of the Zoning Code. The purpose of the zoning code is to: promote the public health, safety, comfort, and general welfare of the residents of Marathon County; to establish and maintain zoning districts in order to protect the property rights of all individuals by assuring the compatibility and efficient relationships of uses and practices within districts; to preserve and protect natural resource areas, flood plains, stream corridors; and preserve the character and quality of agricultural areas from adverse impacts of land development.

Land Division and Surveying Regulations - Chapter 18

In December 2019, the Marathon County Board of Supervisors adopted Chapter 18 – Land Division and Surveying Regulations. Chapter 18 regulations are adopted under the authority granted by Wis. Stats. 59.02, 82.27(6), 281.31, Chapter 236 and Chapter 703 of the Wisconsin Statutes. The provisions of this Chapter apply to all unincorporated lands within Marathon County. Where a duly adopted town subdivision ordinance is more restrictive than this chapter, the town's greater restrictions shall apply.

The purpose of Chapter 18 is to regulate the division of land, and to promote the public health, safety, and general welfare of the community. These regulations are intended to secure and provide for Marathon County the following objectives:

- The proper arrangement of streets or highways in relation to existing or proposed streets and highways for safe and convenient vehicular and pedestrian movement.
- Adequate and convenient open spaces for traffic, utilities, access for firefighting apparatus, recreation, light and air, and air, and the avoidance of congestion of the population.
- The orderly, efficient, and appropriate development of land.
- The orderly and efficient provision of community facilities at minimum cost and maximum convenience.
- The promotion of public health, safety, comfort, convenience, prosperity, general welfare, and the protection of the environment.
- The accurate surveying of land, preparing and recording of plats.
- The equitable handling of all subdivision and condominium plats by providing uniform procedures and standards for observance by both the approving authority and subdivider as defined herein.

Big Eau Pleine Resevoir

Nonmetallic Mining Reclamation Code - Chapter 21

Marathon County first adopted a Nonmetallic Mining Ordinance in 1989, and recently received approval by the County Board of Supervisors to amend the Nonmetallic Mining Reclamation Code – Chapter 21 in December 2018. Nonmetallic mining is recognized as an important industry, which contributes to the county's economic and social well-being. However, the long-term damage to the physical environment and tax base that can be caused by nonmetallic mining must be reduced. It is the purpose of Chapter 21 to establish regulations for nonmetallic mining site reclamation that will restore the site to a purposeful and acceptable landscape appearance and use.

According to CPZ's records, historically, over 278 nonmetallic excavation sites operated within the County of Marathon. As of 2019, 166 nonmetallic mining operations have been reclaimed within the county assuring environmental impacts are minimized and the site is returned to a reasonable land use.

Currently in 2019, 123 active mining sites are in operation under NR 135, 17 additional mining sites are under the jurisdiction of NR 340, and six active mining sites are split between NR 135 and NR 340. The Village of Marathon City has two active mining sites are under their jurisdiction or authority. These mining sites are administered through the partnership of DNR and county regulations to protect surface and groundwater resources.

Shoreland, Shoreland-Wetlands & Floodplain Code - Chapter 22

The Marathon County Board of Supervisors adopted an amendment of the Shoreland, Shoreland-Wetland, and Floodplain Code in September 2018. These regulations are applicable in all unincorporated areas of the County. Wisconsin law mandates counties to adopt and administer a zoning ordinance that regulates land use in Shoreland, Shoreland-Wetland and Floodplain areas for the entire area of the county outside of villages and cities. The legislature of Wisconsin has delegated responsibility to the counties to further the maintenance of safe and healthful conditions; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses; and to preserve shore cover and natural beauty.

Areas regulated by this ordinance include lands within 1,000 feet of the ordinary high water mark of navigable lakes, ponds or flowages and areas within 300 feet of the ordinary high water mark of navigable rivers or stream or to the landward side of the floodplain, whichever distance is greater. When development is permitted in a wetland, the development should occur in a manner that minimizes adverse impacts upon the wetland.

Most of the development regulations are aimed at establishing buffers and minimizing runoff to protect water quality. While the County adopted and enforces shoreland regulations within Marathon County, the WDNR maintains oversight responsibilities to ensure compliance with State Statutes.

RELATED STATE AND FEDERAL REGULATIONS

Department of Agriculture, Trade and Consumer Protection (ATCP) 50: Wisconsin's Soil and Water Resource Management Rule

Per the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) website, "ATCP 50 is the administrative rule used by the DATCP to implement state and federal laws. It covers soil and water resource management grants to counties, county resource management planning, and conservation compliance for farmland preservation tax credits, local ordinances, nutrient management and other conservation practices. DATCP cooperates with the Wisconsin DNR, county land conservation committees and other agencies to administer conservation programs.

Effective February 1, 2018, ATCP 50 has been revised to incorporate the 2015 Natural Resources Conservation Service (NRCS) 590 Standard for nutrient management. Documents here and on our nutrient management pages reflect those changes."

ATCP 51: Wisconsin's Livestock Facility Siting

DATCP is responsible for maintaining and revising the standards in ATCP 51 used by local governments in issuing permits. As part of this responsibility, DATCP must review siting standards in ATCP 51 every four years based on criteria set forth in 93.90 (2)(b). Wisconsin State Statute 93.90 – Livestock facility siting and expansion provides uniform regulation of livestock facilities statewide.

According to the livestock facility siting law, a county, town, city or village ("political subdivision") may not prohibit or disapprove a new or expanded livestock facility of any size unless one of the following applies:

- The site is located in a zoning district that is not an agricultural zoning district.
- The site is located in an agricultural zoning district where the livestock facility is prohibited. A prohibition, if any, must be clearly justified on the basis of public health or safety. The livestock facility siting law limits exclusionary zoning based solely on livestock facility size.
- The proposed livestock facility violates a valid local ordinance adopted under certain state laws related to shoreland zoning, floodplain zoning, and construction site erosion control or stormwater management.
- The proposed livestock facility violates a local building, electrical or plumbing code that is consistent with the state building, electrical or plumbing code for that type of facility.
- The proposed livestock facility will have 500 or more "animal units."

Department of Natural Resources (DNR) NR 151: Runoff Management

Agricultural Runoff Management is described in subchapter II – APSP. These standards are intended to create good farming practices to reduce nonpoint source pollution runoff to protect water quality and include the following standards Under NR 151, either the CPZ or DNR may be required to make a "bona fide" offer of cost sharing when requiring farmers to meet these APSP:

- Sheet, rill and wind erosion.
- Tillage setback.
- Phosphorus index performance.
- Manure storage facilities.
- Process wastewater handling.
- Clean water diversion.
- Nutrient management.
- Cropland and livestock performance standards and prohibitions.

clean spring runoff diverted around farmstead

NR 216: Construction Site Erosion

Construction site erosion and uncontrolled storm water runoff from land disturbing activities can have significant adverse impacts upon local water resources. Under subchapter III of NR 216, Wis. Adm. Code, a notice of intent shall be filed with the DNR by any landowner who disturbs one or more acres of land. This disturbance can create a point source discharge of storm water from the construction site to waters of the State and is therefore regulated by the DNR. Agriculture is exempt from this requirement for activities such as planting, growing, cultivating, and harvesting crops for human or livestock consumption and pasturing or yarding of livestock, as well as sod farms and tree nurseries.

Agriculture is not exempt from the requirement to submit a notice of intent for one or more acres of land disturbance for the construction of barns, manure storage facilities or barnyard runoff control systems. Furthermore, construction of an agricultural building or facility must follow an erosion and sediment control plan consistent with NR 216.46, Wis. Adm. Code and including meeting the performance standards of s. NR 151.11, Wis. Adm. Code.

An agricultural building or facility is not required to meet the post-construction performance standards of NR 151.12, Wis. Adm. Code.

NR 243: Concentrated Animal Feeding Operations (CAFO)

The U.S. Environmental Protection Agency (EPA) delegate's implementation of the Clean Water Act (CWA) and Federal NPDES CAFO permit program to states. In Wisconsin, animal feeding operations with 1,000 animal units or more also called a Concentrated Animal Feeding Operation (CAFO) is required to have a Wisconsin Pollutant Discharge Elimination System (WPDES) permit in place when they to operate. WPDES permits requirements under NR 243 include the following:

- Zero discharge standard for runoff to navigable waters from production areas.
- Manure and process wastewater storage and handling systems.
- Manure and non-manure spill response plan.
- A plan for manure and process wastewater application on cropped fields.
- Manure application restrictions.

- Manure storage.
- Inspection, monitoring and reporting requirements.

DNR: Wisconsin's Managed Forest Law

Enrollment into the Managed Forest Law (MFL) program is open to all private owners of forested land. To be eligible for the MFL program, a landowner must have a minimum of 20 acres of contiguous land and at least 80 percent of that land must be productive forestland. To participate in the MFL program, landowners designate property as "Open" or "Closed" to public access for recreation, and commit to a 25 or 50-year sustainable forest management plan. According to the Wisconsin DNR Forest Crop Law & Managed Forest Law – 2019 Master Listing, 14,727.4 acres are listed as "open" and 97,636.4 acres are listed as "closed."

The MFL program provides incentives to protect privately owned woodlands from destructive timber cutting practices and over harvesting and prevents land from becoming developed and/or converted to agricultural land use. Lands are enrolled in the MFL program; these properties are no longer susceptible to further subdivision and continued residential housing sprawl, without penalty and withdrawal.

The United States Environmental Protection Agency (USEPS):

Storm Water Phase II: Municipal separate storm sewer systems

The USEPA Storm Water Phase II Final Rule was promulgated on December 8, 1999 (64FR68722), effective March 10, 2003, is designed to significantly control off lot discharges. Municipal separate storm sewer systems (MS4s) generally serving populations of covers urbanized areas that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile and areas outside of an urbanized area of at least 10,000 and a population of at least 1,000 people per square mile.

A Wisconsin Pollution Discharge Elimination System (WPDES) storm water program address impairments caused by polluted runoff, the Clean Water Act (CWA) of 1990 established a program to address storm water quality coming from developed urbanized areas to reduce contamination of storm water runoff and prohibit illicit discharges. MS4 program communities include the following six minimum control measures:

- Public Education and Outreach
- Public Participation/Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post-Construction Runoff Control
- Pollution Prevention/Good Housekeeping

The USEPA: Clean Water Act (CWA) Section 303(d): Total Maximum Daily Load (TMDL)

Section 303(d) of the CWA established the TMDL program. The TMDL program identifies and restores polluted rivers, lakes, stream, and other surface waterbodies by detailing in a quantitative assessment the water quality problems and contributing sources of pollution. It is required of all waterbodies that do not meet Wisconsin's water quality standards. The document determines how much a pollutant needs to be reduced to meet water quality standards, and provides the foundation for taking actions locally to restore a waterbody to fishable and swimmable standards.

Wisconsin is required by the Clean Water Act to submit a prioritized list of impaired waterbodies to the U.S. EPA every two years. A TMDL is the amount of pollutant that can be assimilated by a water body without a violation of water quality standards,

and includes wasteload allocations for point sources, load allocations for nonpoint sources, and a margin of safety.

Federal Soil and Water Conservation Programs:

CPZ's Conservation Program works closely with other Federal Soil and Water voluntaryprograms including the following:

- *Conservation Reserve Enhancement Program (CREP)*. CREP provides annual payments up to 15 years for taking cropland near surface water out of production. A strip of land adjacent to streams must be planted and maintained in vegetative cover consisting of certain mixtures of tree, shrub, forbs, and/or grass species. Incentives and technical assistance are provided for planting and maintenance of the vegetative strips.
- *Conservation Reserve Program (CRP)*. CRP is a program available to agricultural producers to help them safeguard environmentally sensitive land. Producers enrolled in CRP plant long-term, resource conserving covers to improve the quality of water, control soil erosion, and enhance wildlife habitat. In return, the Farm Service Agency (FSA) provides participants with rental payments and cost-share assistance.
- *Environmental Quality Incentive Program (EQIP)*. EQIP is a federal cost-share program administered through the Natural Resources Conservation Service (NRCS) that provides farmers with technical and financial assistance. Farmers receive flat rate payments for installing and implementing runoff management practices.

MARATHON COUNTY CONSERVATION, PLANNING & ZONING DEPARTMENT

The Conservation, Planning and Zoning Department is comprised of 3 main public service areas providing a myriad of regulatory, professional, educational and technical services to the general public and local governments of Marathon County. These program and service areas include the following:

Land and Water Services

The Land and Water staff provides the implementation and administration of County policy established to protect land and water resources, balance sustainable land use with economic opportunities, promote community health and safety, protect public infrastructure, and minimize land use conflicts.

local stream with proper vegetated riparian buffer

deer grazing

Land and Water Program Includes:
Animal waste storage and nutrient management, brownfields assessment and remediation, comprehensive zoning, farmland preservation, lakes and rivers classification and management, land division, livestock facility siting, managed grazing, non-metallic mining, metallic mining, private on-site treatment sewage system management, shoreland, wetland, and floodplain protection, and non-metallic mining reclamation.

Planning Services

The Planning staff provides the leadership and expertise to Marathon County, local officials, local municipalities and communities, and advocate groups to develop policies and plans to address community and resource concerns and promote community and economic development.

Planning Program Includes:
Community development and planning (comprehensive), strategic planning, farmland preservation, hazard mitigation, lake and river management, land and water resource management, land division, re-districting, storm water management, transportation planning & the Wausau Metropolitan Planning Organization (MPO), and Wausau area sewer service.

Land Information Services

The Land Information staff provides the data, data analysis, maps and tools to support the implementation of policies related to improved public safety response, economic development, land use, resource protection, and the protection of private property.

Land Information Services Includes:
Property mapping, community mapping, county-wide (departmental) mapping and database support, data distribution/sale of land information (government agencies and private businesses), emergency services mapping (address, response districts, dispatch location), floodplain mapping, Geographic Information System (GIS), Land Information Office (LIO), and County Surveyor Office, public access (intranet, internet, and public access terminal), resource protection mapping: protected areas and land conversion, survey corner section re-monumentation, and watershed protection analysis.

Land & Water Conservation Program Responsibilities

Land & Water Conservation Services, is driven by Marathon County's LWRM Plan. The LWRM Plan outlines a comprehensive strategy for the implementation of soil and water conservation in Marathon County from 2020 through 2030. The county's conservation responsibilities include the following:

- First and foremost, implement the Land and Water Resource Management Plan.
- Conserve, protect, and enhance the quality of natural resources such as water, ground water, land, and the environment to ensure public health and safety.
- Prevent adverse land use activities, minimize conflicts, maximize investments, and protect rural character. Ensure compliance with federal, state, and local regulatory programs.
- Provide sound financial and technical assistance, and effective forward-thinking education activities promoting innovative agricultural practices.

Financial and Technical Assistance

To implement conservation practices of the LWRM Plan the county will access available grants from county, state and federal sources to support staffing expenditures and to fund grants for landowners to implement best management practices (BMPs). Along with the county conservation staff, the CPZ Department rely upon the DNR, USDA-NRCS and Farm Services Agency (FSA), UW-Extension, DATCP, USEPA to provide specialized and technical assistance to local conservation program delivery. Progress toward various program objectives are tracked by conservation staff to ensure compliance.

Technical Review for State and Local Regulatory Programs

Conservation program staff provides oversight and coordination of conservation programs, monitoring of program and regulatory compliance requirements, enforcement activities, preparation of resource management plans, special project studies and educational activities. Staff provides review of designs for standards and construction, project implementation oversight, proper certification, inspection and construction oversight, livestock licensing, verification for cost share funding, assist financial management and reimbursement, farmland preservation certification, and verify compliance with the NR 151 agriculture performance standards and prohibitions.

Educational Activities

The Eau Pleine Partnership for Integrated Conservation (EPPIC)

EPPIC is a watershed group dedicated to finding solutions to water resource concerns in Western Marathon County. CPZ, along with several other partners, initiated the formation of this group in 2017, which now includes representatives from the Big Eau Pleine Citizens Organization (BEPCO), CPZ, Dairy Grazing Apprenticeship Program, Farm Bureau, Farmers Union, UW-Marshfield Agricultural Research Station, Natural Resources Conservation Service, Pheasants Forever, River Alliance of Wisconsin, University of Wisconsin–Extension, Wisconsin Department of Natural Resources, Wisconsin Valley Improvement Company, as well as local farmers and agronomists.

EPPIC's Mission Statement, "Integrating resilience into the natural resources, community, and economy of the Eau Pleine Watershed," recognizes the need for community-wide landowner involvement (beyond producer led or special interest groups) in practices that protect land and water resources from agricultural, homeowner, industrial and other pollution sources. EPPIC leads educational efforts in the Eau Pleine Watershed by engaging citizens, landowners and farmers through events, peer group learning, demonstration fields, social media, public service announcements and economic analysis of conservation practices. These efforts are funded through several public and private grant programs.

Lakes Program

Marathon County Conservation, Planning and Zoning (CPZ) Department's Lake Program builds surface water resource health by educating landowners and fostering local partnerships.

Education and outreach efforts focus on engaging shoreland owners to adopt practices that benefit water quality and wildlife habitat, such as shoreland buffers and native vegetation, removal of aquatic invasive species, and stormwater management. Landowners are educated and engaged through various platforms, such as: educational events, shoreland buffer and rain garden demonstration sites, shoreland owner guides, newsletters, social media, and staff technical assistance. CPZ also partners with lake groups and organizations to address goals and objectives listed within Lake Management Plans.

A shoreland buffer restoration cost-share program was offered to shoreland owners from 2016-2018 (funded by the Wisconsin Department of Natural Resources Surface Water Lake Protection Grant), in which over 1,000 feet of shoreland was restored on the Eastern Lakes (Mission, Big Bass, Mayflower, and Pike), and Lake DuBay. CPZ received a second Lake Protection Grant for 2019-2021 to continue Lake Program efforts and projects.

Lake Management Plans for the Eastern Lakes, Lake Wausau, and the Big Eau Pleine Reservoir provide the framework for cultivating partnerships with groups like the Lake Wausau Association, Big Bass Lake Protection and Rehabilitation District, Mayflower Lake District, Sportsman Clubs, the Big Eau Pleine Citizens Organization, Golden Sands Resource Conservation and Development Council, and other local groups and organizations. By building partnerships with citizens and organizational leaders, CPZ strives to create communities that value and protect surface water resources.

Source: EPPIC

ADDITIONAL CONSERVATION, PLANNING & ZONING DEPARTMENT AND RELATED COUNTY PROGRAMS

Farmland Preservation Program

Marathon County adopted its first Farmland Preservation Plan in 1982. The goals of the program are twofold, to preserve Wisconsin farmland for production of commodities by means of local land use planning and soil conservation practices and to provide tax relief to landowners. For the landowner to receive tax credits they must be in compliance with current applicable NR 151 Agricultural Performance Standards and Prohibitions.

In 2008, the State created the Working Lands Initiative to update and enhance the Farmland Preservation Program. In 2013, Marathon County completed an update of its Farmland Preservation Plan to incorporate the new program opportunities of the Working Land Initiative into local programming.

The protection of agricultural cropland and woodland land uses are important to maintaining the rural and cultural integrity and diversity of Marathon County, but more importantly assure that the economic benefits of these sectors is maintained and enhanced. Sound land use requires policies that conserve resources and allow for the profitable use of the land. Conversion and fragmentation of agricultural cropland and woodlands from productive use are continuing concerns in Wisconsin and Marathon County.

The Farmland Preservation Program in Marathon County has a 42-year history of incentivizing adoption and implementation Enterprise Areas—Heart of America's Dairyland, and Antigo Flats--are eligible through 15-year Farmland Preservation Agreements. Additionally, there are areas where Farmland Preservation Zoning and the Agricultural Enterprise Areas overlap, where landowners are eligible through both Farmland Preservation Zoning and the Agricultural Enterprise area.

The state income tax credit incentives that Farmland Preservation Program participants are eligible for range from $5.00 to $10.00 per acre per year, depending on where in the county the land is located and what level of participation a landowner chooses. Participants with land in an Agricultural Enterprise Area who enroll in a Farmland Preservation Agreement are eligible for $5.00 per acre per year. Participants with land in a Farmland Preservation Zoning district are eligible for $7.50 per acre per year. And participants with land in both are eligible for $10.00 per acre per year. Figure 1-3 illustrates these eligibility areas and state income tax credit incentive levels.

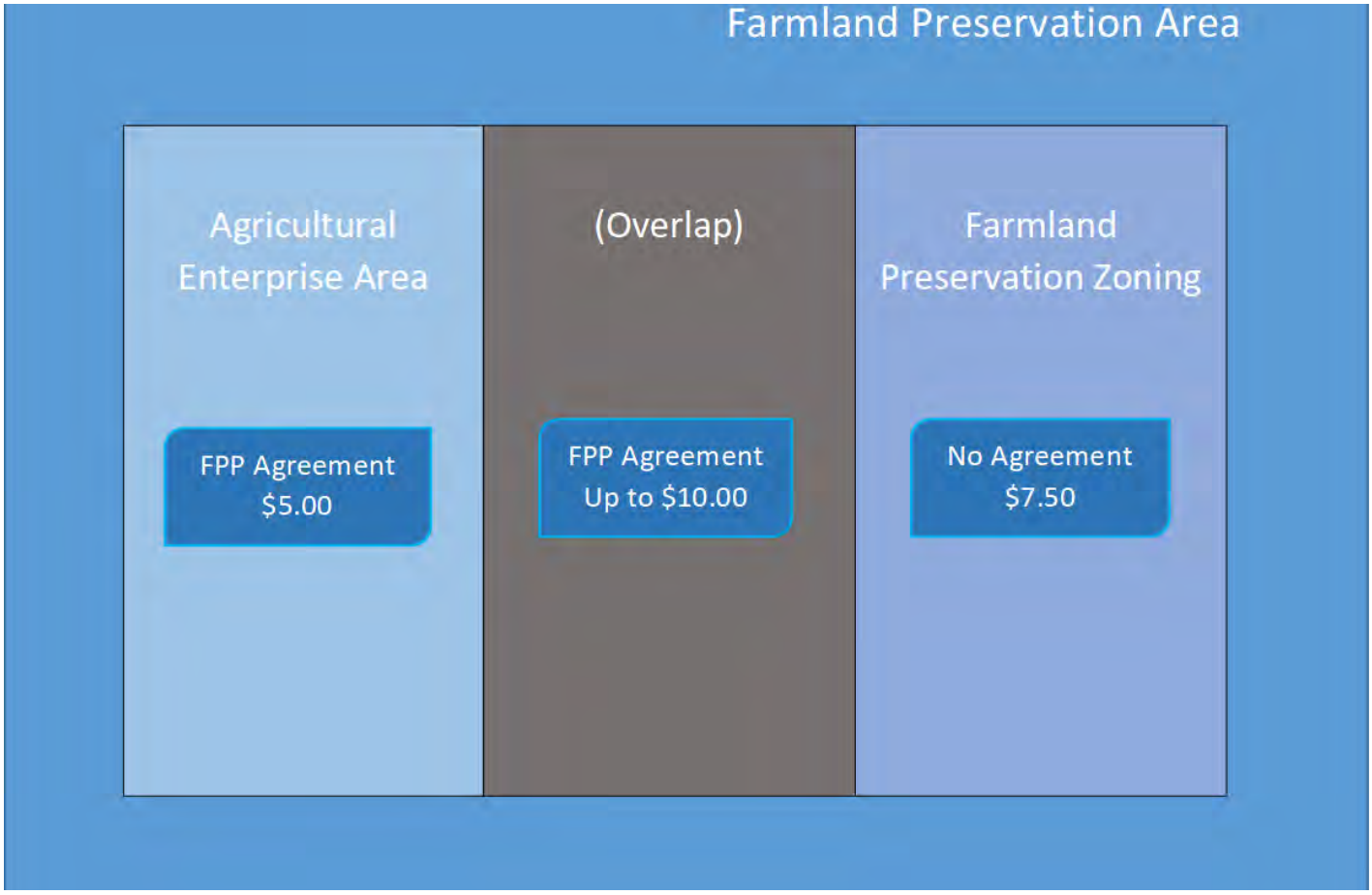
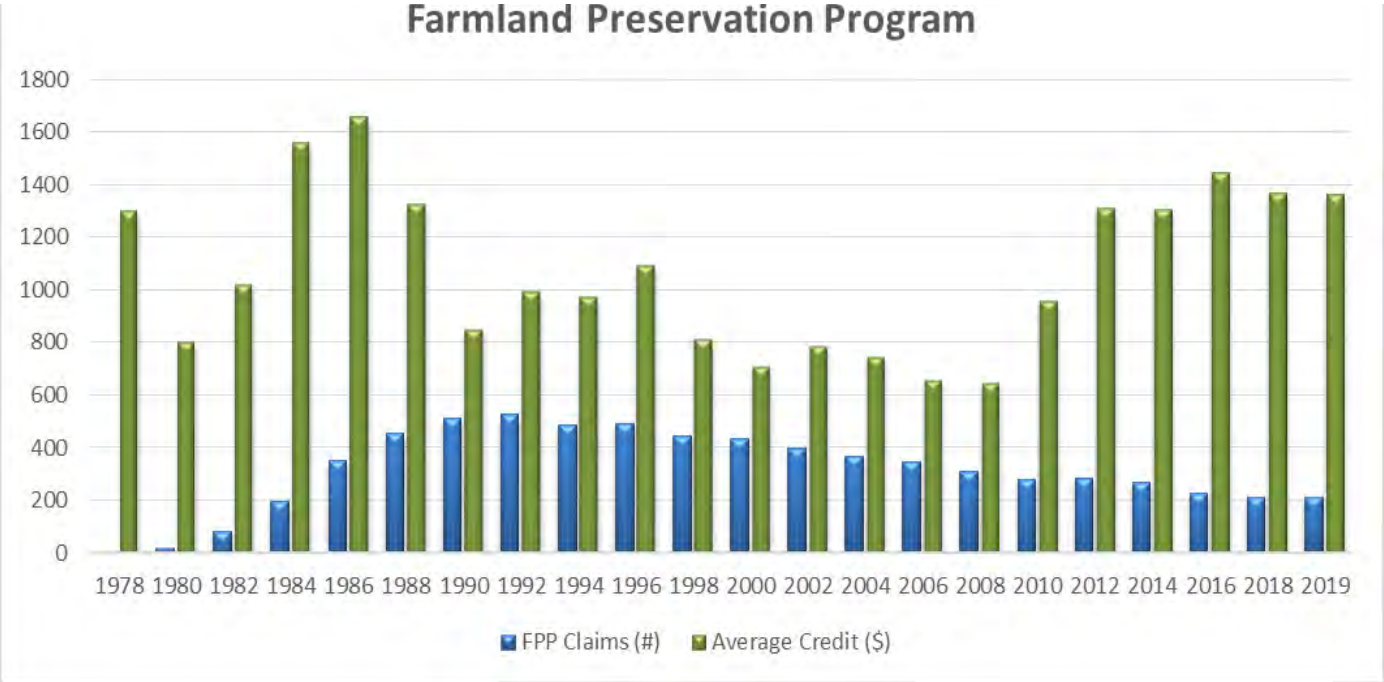


FIGURE 1-4

As of August 2020, Marathon County landowners had 9,957 acres enrolled in Farmland Preservation Agreements and 40,093 acres participating through Farmland Preservation Zoning. There were also 4,148 additional acres enrolled and participating through both a Farmland Preservation Agreement and Farmland Preservation Zoning, totaling 54,198 acres in the Farmland Preservation Program in the county. In 2019, 209 participating landowners claimed state income tax incentive credits totaling $285,381. Figure 1-4 shows Farmland Preservation claims and the average annual credit per claim, from the beginning of the program in 1978.

The Marathon County CPZ staff is responsible for administering each participant's soil conservation plan and monitoring compliance with soil and water conservation standards. CPZ conducts compliance "spot checks" on 25% of the program participants annually. The tax credits are intended as an incentive to keep land in active farming and meeting soil and water conservation standards.

The county will continue to implement the farmland preservation program in accordance with Chapter 91, Wisconsin statutes. Figures 1–5 and 1-6 illustrates the Farmland Preservation Program participation distribution within Marathon County as of August 2020.



Source: WI DATCP and DOR Farmland Preservation Tax Credit Statistics

FIGURE 1-5

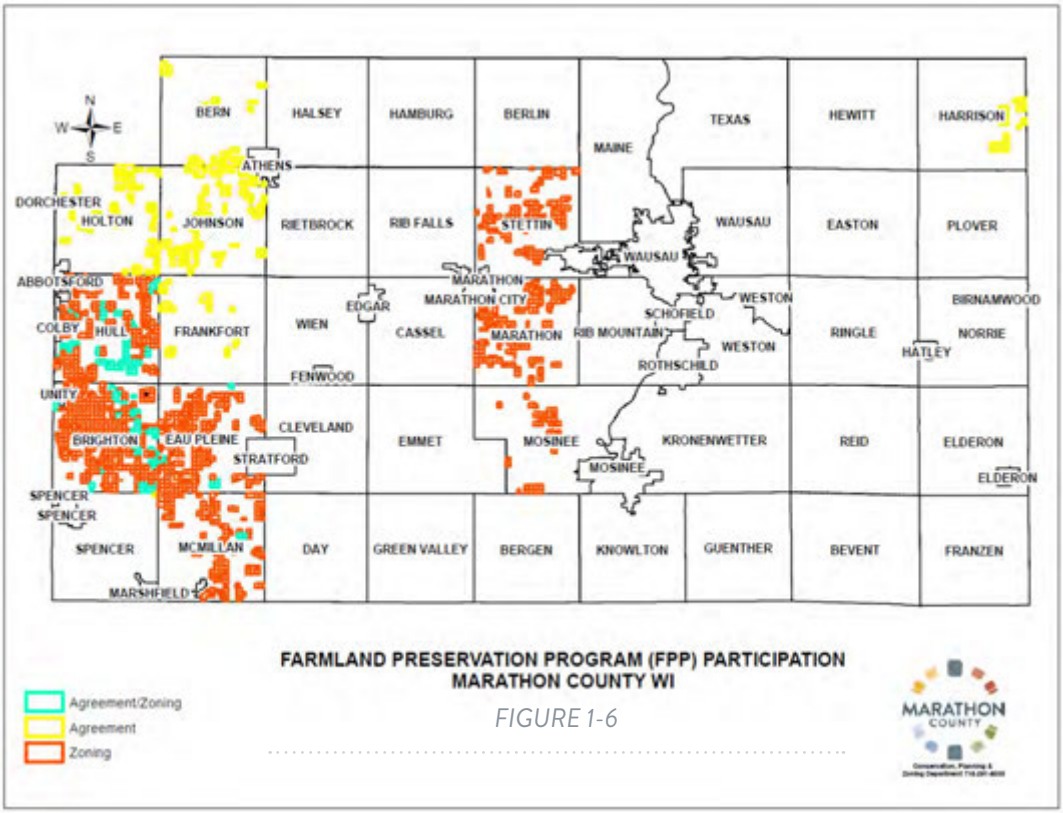


FIGURE 1-6

Nutrient Management Program

Nutrient management is defined as managing the amount, form, placement, and timing of applications of animal waste and commercial fertilizer to provide essential plant nutrients. The purpose is to ensure a proper supply of plant nutrients for crop production while minimizing the entry of nutrients to surface water and groundwater. Under the NRCS Nutrient Managment Technical 590 standard for Wisconsin, nutrient management plans must also minimize soil erosion and phosphorus loss from cropland to surface waters.

Marathon County requires nutrient management plans for landowners constructing and operating waste storage facilities, as well as for other programs such as the Farmland Preservation Program. As of 2008, all landowners that apply manure and/or fertilizer to cropland are required to have a nutrient management plan for those activities as outlined in NR 151.07. In 2019, 404 Marathon County landowners have nutrient management plans on 169,363 acres (57%) of cropland; please refer to nutrient management plan Figure 1 - 7. Since 2007, Marathon County has worked with the UW-Extension, North Central Technical College, and Wisconsin Nutrient and Pest Management Program to train and prepare 198 different Marathon County landowners to develop their own nutrient management plans. This effort has been very successful and will be continued.

CPZ staff will work with DNR staff to implement and enforce the nutrient management plan requirements by conducting complaint investigations with DNR staff, providing compliance reports, providing administration of grants and tracking implementation. Efforts will also be taken to monitor the land spreading activities of off-farm generated waste sources such as industrial, municipal and septic producers. These land-spreading activities must comply with specific State and local regulations and be consistent with agricultural best management practices.

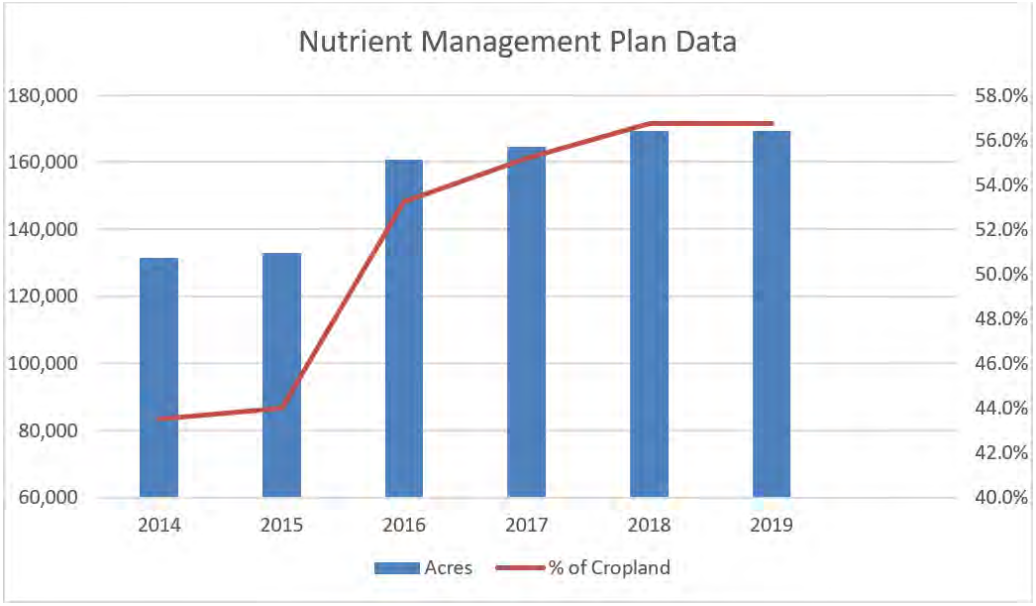


FIGURE 1-7 Source: CPZ, Nutrient Management Plan records and National Agricultural Statistics Service

Managed Grazing Program

Marathon County Conservation, Planning and Zoning Department, Lincoln Land Conservation Department, UW-Extension, and the Natural Resources Conservation Service have been partners along with farmers and farm business in supporting the Central Wisconsin River Graziers Network. Marathon and Lincoln County embarked upon a joint grazing project in 1998 to meet the increased technical and educational needs of the landowners in both counties. The objectives of the project are still relevant today and include:

managed grazing local dairy herd

- Provide one-on-one farm planning assistance to farmers wanting to implement Managed Grazing. This would include fencing design and layout, travel lanes, and watering systems.
- Educate farmers and agricultural professionals about the benefits of Managed Grazing through pasture walks, winter conferences, and media.
- Educate local agricultural lenders, educators, and leaders about the benefits of Managed Grazing.

Between 1998 and 2019, 467 managed grazing plans for 32,914 acres of pasture have been developed. These plans provide design assistance to landowners for practices such as cattle travel lanes, watering systems, fencing and pasture management. A key part of this project is to provide educational and technical support on the farm to individual farmers during their transition to grazing. Farmers new to rotational grazing receive bi-weekly on-farm technical assistance for the first 2 years to implement the new practices and develop grazing skills. Each year project staff visit 60 - 100 farmers to assure that their transitions are successful and proper management is being carried out.

Local Tree Planting Program

In cooperation from the Department of Natural Resources, CPZ has promoted the planting of trees for forestry, windbreak and wildlife benefits to the private landowners of Marathon County. Specifically, the DNR has provided forest plan assistance, access to State tree nurseries and ordering assistance to landowners to plant trees. Marathon County rents two tree planters to local landowners with large plantings.

Land Use Code Administration & Enforcement

The administration and enforcement of the land use code is to promote the public health, safety, comfort, and welfare of the residents of the County of Marathon and to establish and maintain zoning districts in order to protect the property rights of all individuals by assuring the compatibility and efficient relationships of uses and practices within districts. The authority is granted by Wisconsin State Statutes.

Comprehensive Planning

Marathon County has a strong tradition of planning to become the healthiest, safest and most prosperous county in the state. Obviously, planning efforts are much more than just developing a county-wide Comprehensive Plan that meets the requirements outlined in Wisconsin Statute 66.1001, and other relevant statutes. For the reason, the 2016, Comprehensive Plan incorporated new topics to address Health and Human Services, Water Resources, and Community Character of the county.

Land Information

In partnership with the Wisconsin Land Information Program (WLIP), administered by the Division of Intergovernmental Relations within the Department of Administration (DOA), CPZ serves as the Land Information Office for Marathon County under the authority Wisconsin Statutes.

Marathon County Land Information Officer

Performs all duties to ensure modernization of local land records as governed by state statutes 16.967 and 59.72, as well as Administrative Rule Chapter Adm. 47.

Marathon County Surveyor

Performs all duties required by Wisconsin Statutes Chaper 59.45, which includes working with town and municipal officials to prevent disturbing and destruction of survey monuments because of road construction or re-building. Review certified surveys, preliminary and final county palts, and repliminary and final state plats to assure compliance with Wisconsin Statutes Chapter 236 and the Marathon County Land Division Ordinance.

POWTS

Maintenance Program

Marathon County adopted a POWTS maintenance program in 1980 and currently administers a program, which includes all POWTS installed since 1980. The Wisconsin Administrative Code mandates that all counties now include every POWTS, regardless of age, in their maintenance program as governed under Chapter SPS 383, Wisconsin Administrative Code.

Health Department

Environmental Services

This county program responds to reports or concerns from the public or other agencies about potentially hazardous situations. The range of possible hazards includes garbage, unsafe structural housing, hoarding, environmental contamination, pet/rodent/insect issues, asbestos, mold, lead, blastomycosis, blue-green algae, pests, groundwater contamination, methamphetamine drugs, and animal manure affecting property or groundwater.

Marathon County Water Testing Laboratory

The Marathon County provides convenient, reliable, and reasonably priced water-testing services to the citizens of Marathon County and surrounding counties, with the goal of safer water supplies. The lab is involved in monitoring public drinking water supplies which include municipal community water systems and those involved in our Department of Natural Resources (DNR) transient non-community water (TNC) systems program.

Clean, safe drinking water is one of the most important elements of good health. Testing well water on an annual basis is one of the easiest things a private well owner can do to protect their health. It's estimated that 20-25% of Wisconsin wells have bacterial contamination, so Marathon County Health Department advises all private well owners to have their well water tested for coliform bacteria. If there are infants under six months of age or women of childbearing age drinking the water, it should also be tested for nitrates.

Solid Waste Department – Recycling

The Solid Waste Department (SWD) provides a wide range of solid waste and recycling services for local residents, businesses and municipalities of central and north-central Wisconsin. From programs to help reduce waste volume and recycle more materials, to state-of-the art landfill disposal including leachate treatment and landfill gas-to-energy production, the SWD provides cost-effective means to dispose of or effectively manage waste – including hazardous materials and industrial byproducts – while protecting public health and the environment. The SWD is a member of state and national waste organizations, looking always to expand services that will extend the life and effectiveness of our waste management investments in Marathon County.

Parks, Recreation, and Forestry Department

Marathon County has nine forest units totaling 30,195 acres. The Marathon County park system is based on large parks that typically focus upon a high quality natural feature and provide limited areas of development that support low intensity recreation uses, such as picnicking, hiking, fishing, swimming, and camping. These parks serve large areas of the county. The county park system also provides specialized facilities that serve the entire county or major populations within the county, such as the fairgrounds, shooting range, softball complex, and indoor ice-skating.

The park and forest recreation system is intended to meet the needs of current and future gernerations, preserve and protect the county's open space, water, historical, cultural, and natural resources; and provide recreation opportunities that are designed to enhance the county's quality of life.

algae bloom from excess phosphorus
Source: Marathon County Health Department

Photo by Roger Zimmermann.

Marathon County, the largest county in the state, is located in the north central area of Wisconsin (Figure 2 - 1). Moving in a clock-wise direction, the county is surrounded by Lincoln County to the north, Langlade County to the northeast, and Shawano County to the east, and Waupaca County to the southeast, and Portage County to the southeast, and Wood County to the southwest, and Clark County to the southwest, and Taylor County to the northwest.

In an attempt to illustrate the latest available land cover data for Marathon County, Figure 2 – 2: Land Cover, provides land cover data obtained from DNR. Based on land cover data generated for the State of Wisconsin, the acreage for each land cover type such as urban, agricultural, grassland, forest, open water, wetland, barren, and scrubland are included in the legend of Figure 2-2.

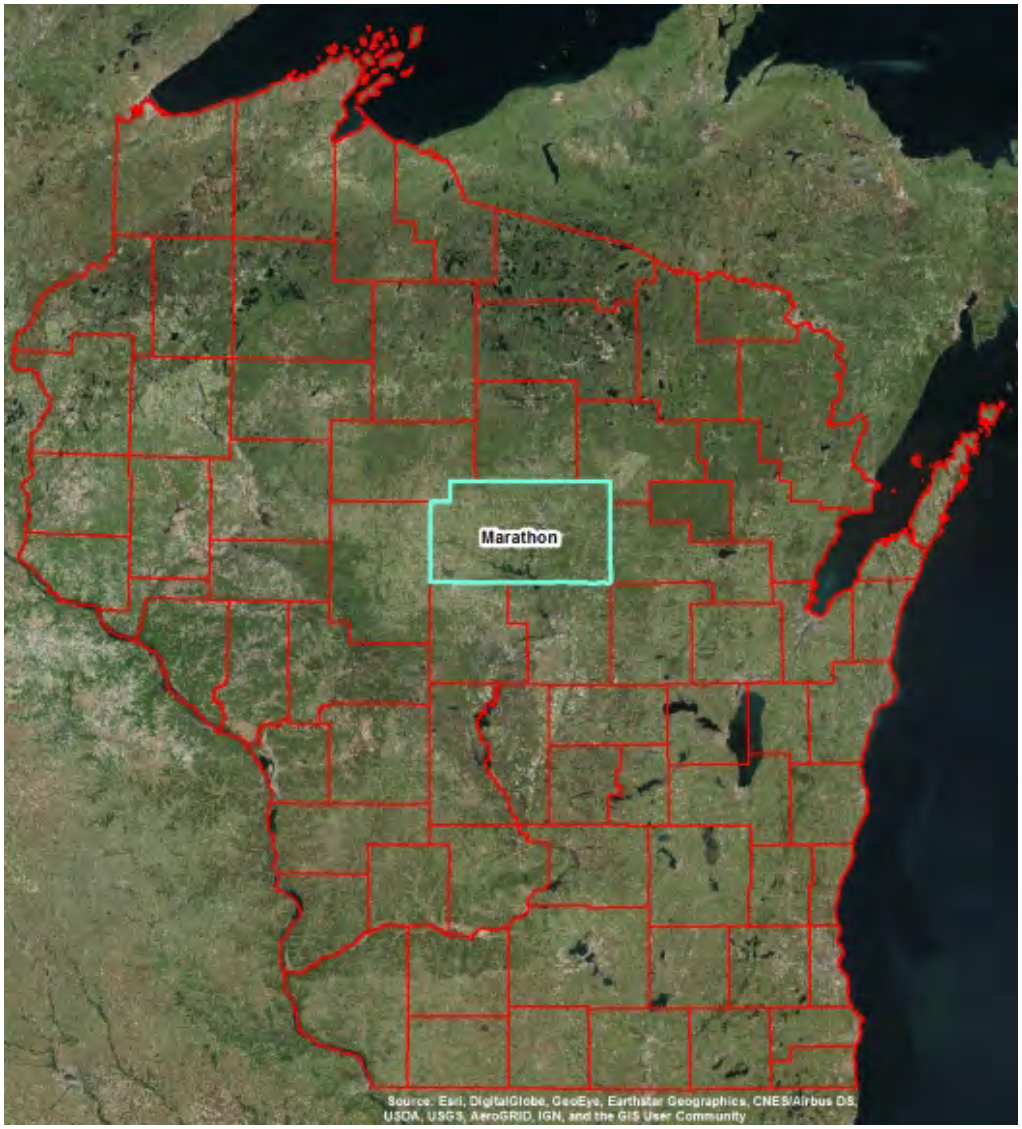
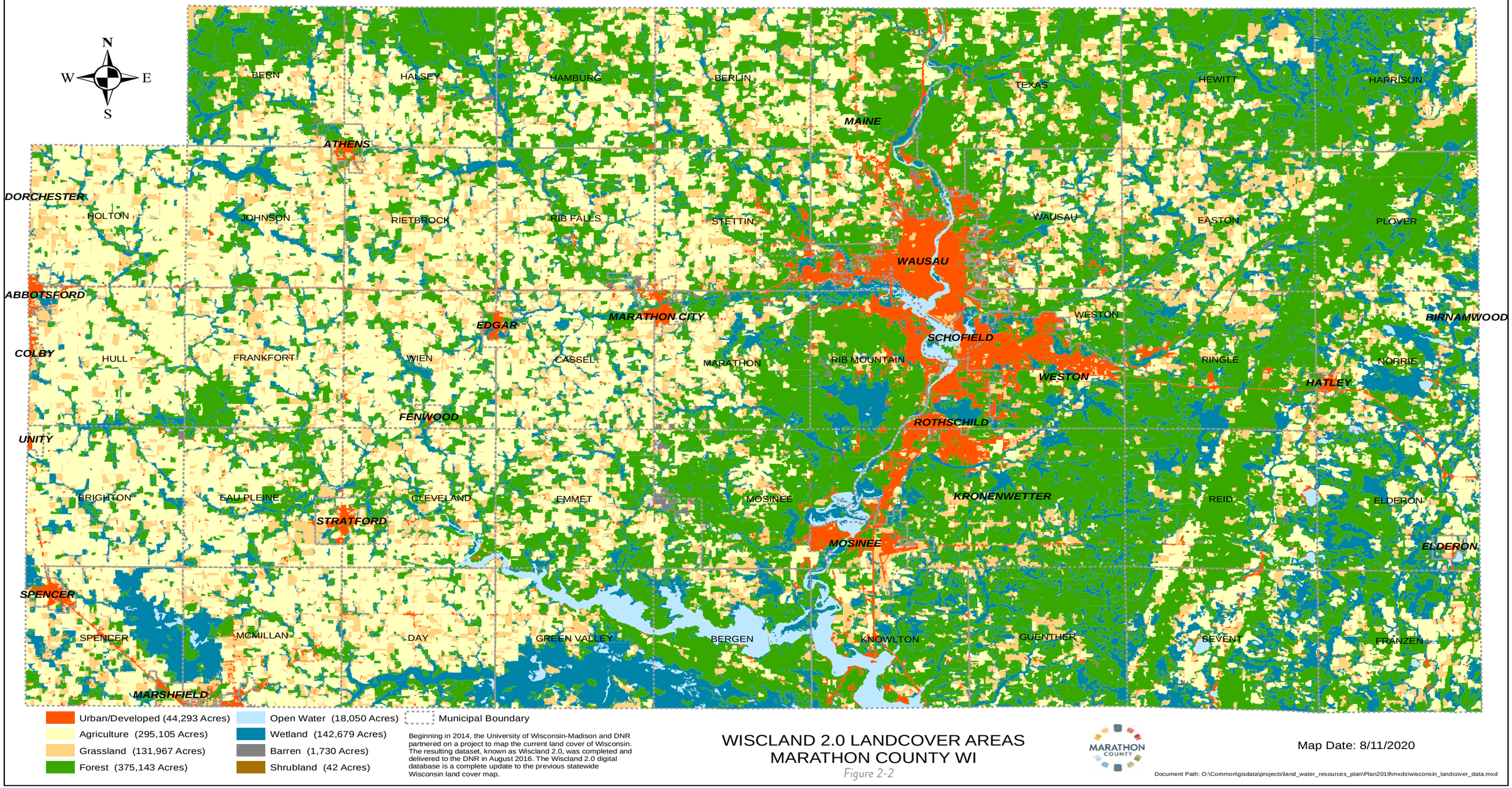


Figure 2-1 Location of Marathon County, WI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RIB FALLS
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WAUSAU
EASTON
PLOVER
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ABBOTSFORD
EDGAR
MARATHON CITY
WESTON
BIRNAMWOOD
SCHOFIELD
COLBY
HULL
FRANKFORT
WIEN
CASSEL
MARATHON
RIB MOUNTAIN
RINGLE
NORRIE
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GREEN VALLEY
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GUENTHER
BEVENT
FRANZEN
MARSHFIELD
Urban/Developed (44,293 Acres)
Agriculture (295,105 Acres)
Grassland (131,967 Acres)
Forest (375,143 Acres)
Open Water (18,050 Acres)
Wetland (142,679 Acres)
Barren (1,730 Acres)
Shrubland (42 Acres)
Municipal Boundary
Beginning in 2014, the University of Wisconsin-Madison and DNR partnered on a project to map the current land cover of Wisconsin. The resulting dataset, known as Wiscland 2.0, was completed and delivered to the DNR in August 2016. The Wiscland 2.0 digital database is a complete update to the previous statewide Wisconsin land cover map.
WISCLAND 2.0 LANDCOVER AREAS
MARATHON COUNTY WI
Figure 2-2
MARATHON COUNTY
Map Date: 8/11/2020
Document Path: O:\Common\gisdata\projects\land_water_resources_plan\Plan2019\mxds\wisconsin_landcover_data.mxd

Topography and Soils

Topography

Marathon County's terrain is primarily the result of glaciation. The far northern and western areas of the county are broad, nearly level to sloping ground moraines. The central area, except for the Wisconsin River Valley, is a mixed terrain of ground moraines and uplands underlain by bedrock at a depth of 2 to 20 feet. The Wisconsin River Valley is composed of nearly level to very steep outwash terraces and nearly level and gently sloping flood plains. The southeastern area of the county consists mainly of nearly level to steep outwash plains and stream terraces and undulating to very hilly moraines and drumlins. Figure 2 – 3: Terrain – Elevation map illustrates the variation in elevation found within the County.

Soil Associations

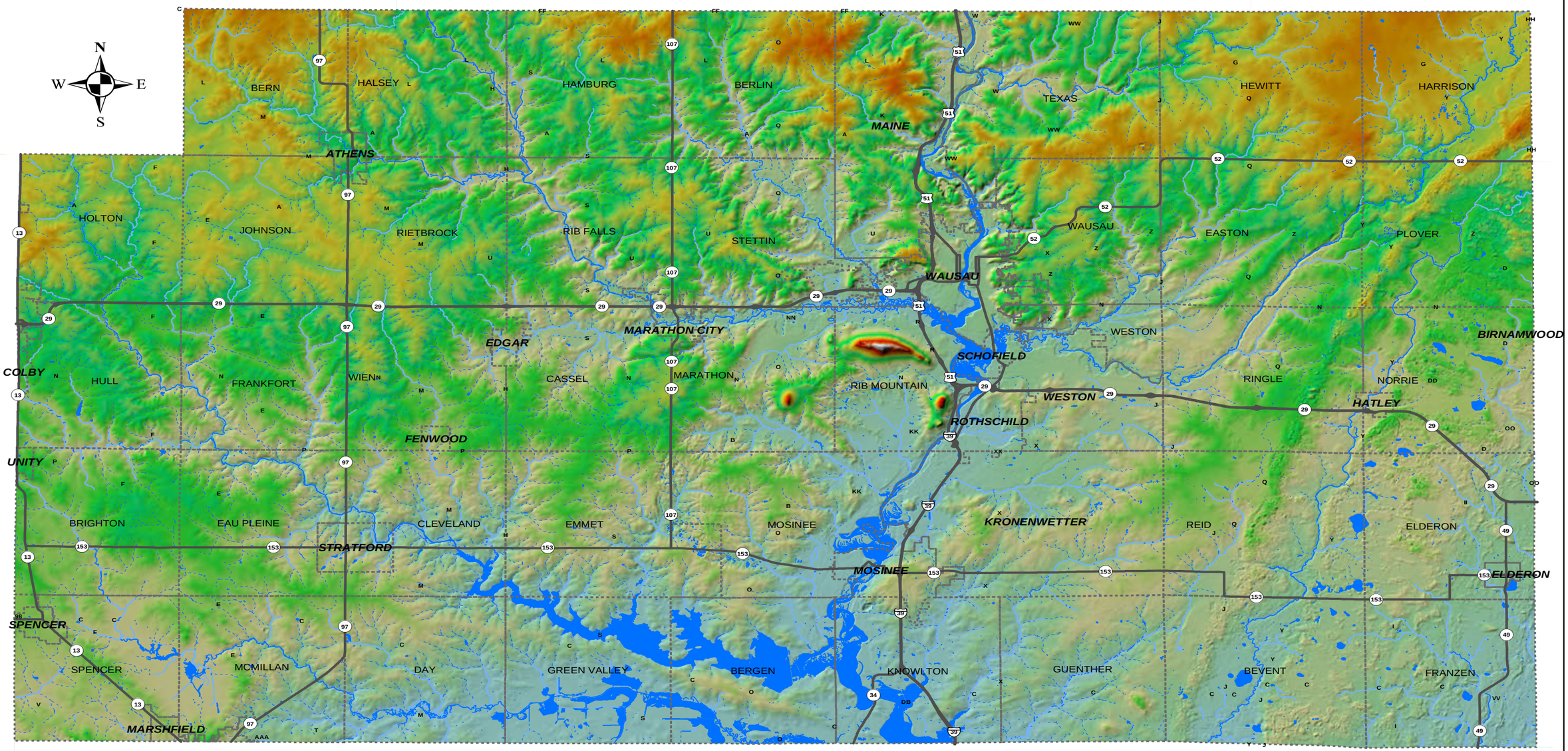
Most of the soils found in the county are best used for cropland and woodlands. The soils of Marathon County are primarily derived from the weathering of glacial drift, outwash, and bedrock. A few soils have formed in glaciolacustrine deposits, alluvial deposits, or organic material. The U.S. Department of Agriculture's Natural Resources Conservation Service conducted a Soil Survey, which described the kinds of soils that exist in an area. Soils are described in terms of their location on the landscape, profile characteristics, relationship to one another, suitability for various uses, and needs for particular types of management. The Survey identified 10 primary soil associations (Figure 2 – 4: Generalized Soils Map) in Marathon County. These soil association include the following: Cathro-Seelyville, Chetek-Rosholt-Oesterle, Fenwood-Rietbrock-Rozellville, Kennan-Hatley, Loyal-Withee-Marshfield, Magnor-Cable, Mahtomedi-Fordum-Sturgeon, Mahtomedi-Graycalm-Meehan, Marathon-Mylrea-Moberg, and Mosinee-Meadland-Dancy.

Another method of describing soils is through hydrologic soil groups. Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms. Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover.

Soils play a significant role in determining the suitability for a site for development. Most soils in Marathon County are suitable for agriculture, except those with excessive slopes or areas that are poorly drained. The United States Department of Agriculture (USDA) has identified areas most suitable for agriculture production, with minimal limitations and requiring minimal inputs for successful production as "prime farm lands". Not all lands classified as prime farm soils are used for farming; some have been developed with residential or other uses. The western half of the County is home to most of the prime farmland. However, several areas of prime farmland are found east of the Wisconsin River, particularly northeast of the City of Wausau and along the Eau Claire and Plover Rivers. The Marathon County Farmland Preservation Plan includes more detailed information on prime farm soils.

Eau Claire Dells, Marathon County, WI

trout stream in Marathon County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Elevation Information from 2012 LiDAR Data
Elevation Ranges from approximately 1058' to 1941'
TERRAIN - ELEVATION
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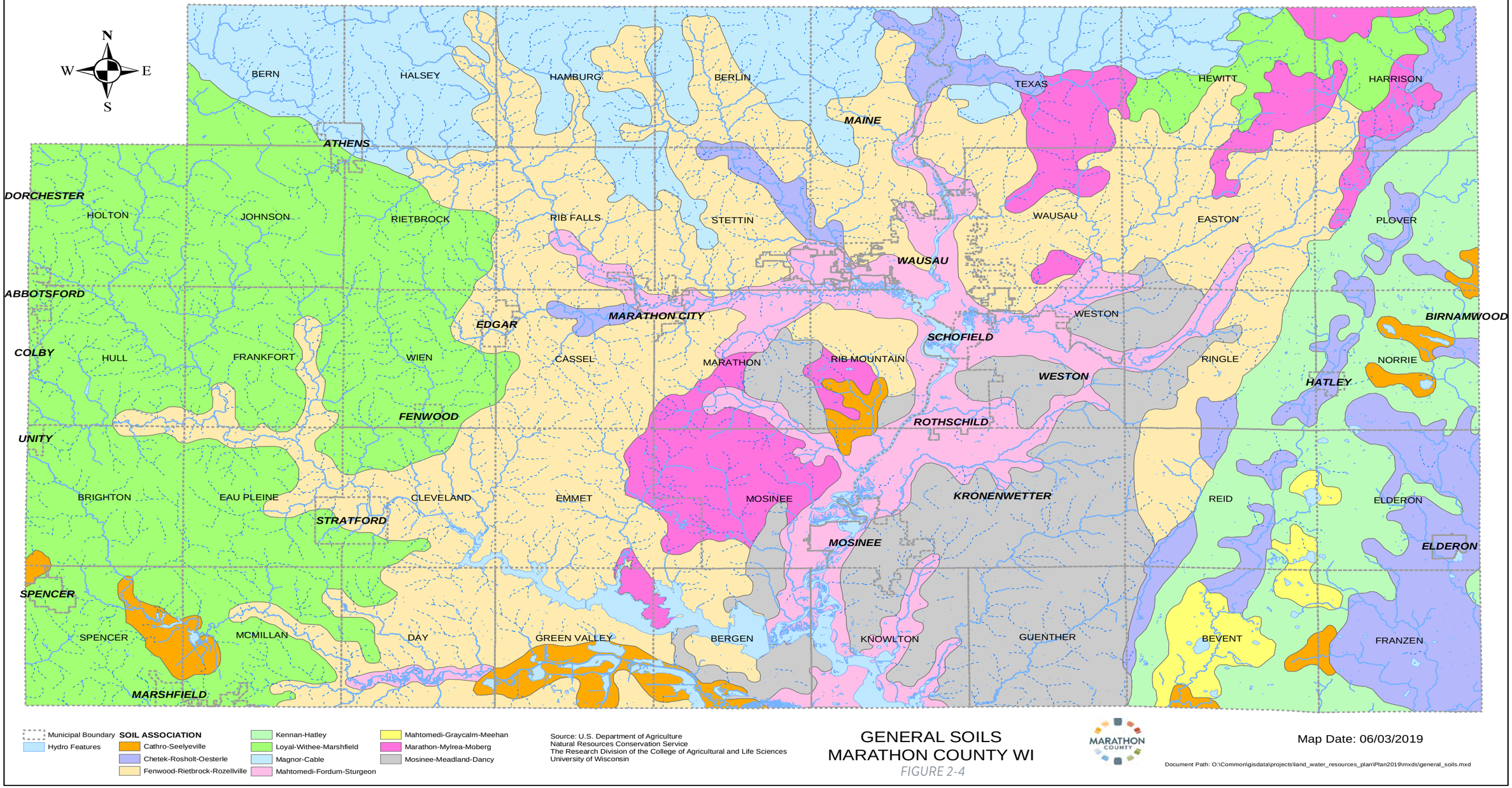

Source: U.S. Department of Agriculture
Natural Resources Conservation Service
The Research Division of the College of Agricultural and Life Sciences
University of Wisconsin

GENERAL SOILS
MARATHON COUNTY WI
FIGURE 2-4

Map Date: 06/03/2019

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Topography and Soil Associations

In an effort to illustrate the complex relationship among various soils associations, terrain and elevation, and the hydrologic transport system of watersheds within Marathon County. The connectivity with potential intense land use activities, the importance of soil retention, soil types, drainage patterns and hydrology, and how nonpoint source stormwater, phosphorus and nutrients can travel quickly through the hydrologic system within watersheds which influence the overall water quality, aquatic health, and biodiversity of a watershed.

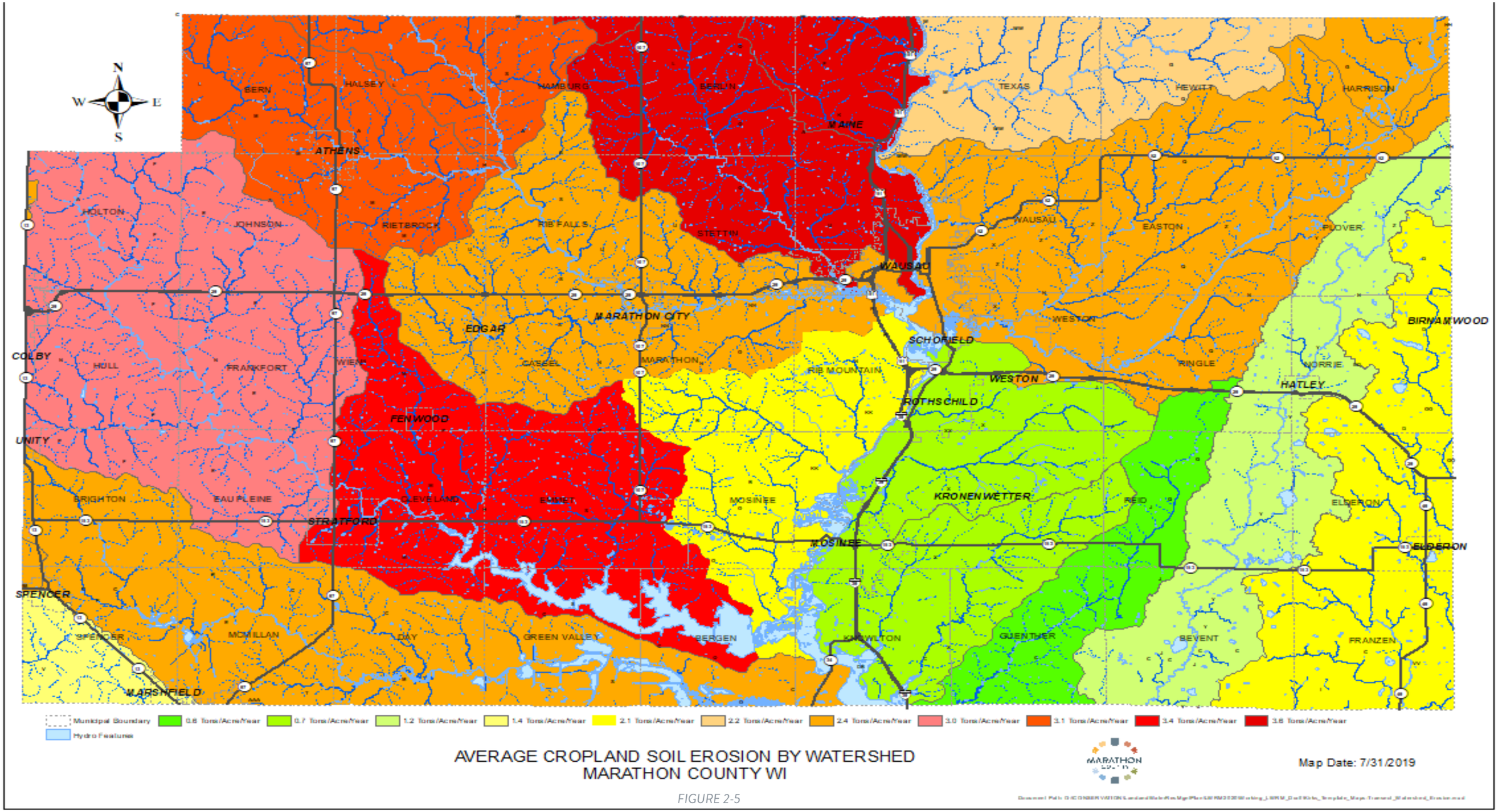
Soil Erosion

The primary concerns with soil erosion are the potential loss of productive farm soils and the impact of sediment and nutrient runoff on water quality in relation to the eroded soil. To maintain long-term soil productivity, an average soil erosion rate of three to five tons per acre per year for cropland, depending on soil type, is considered allowable or tolerable ("T" level) in Marathon County. The 2020 average soil loss rate for Marathon County cropland is 2.6 tons per acre per year. To preserve water quality, the County's goal is to keep soil erosion rates below "T" levels, particularly in water-quality management areas. Most soil erosion in Marathon County is associated with agricultural activities. Soil erosion can also be a problem related to mining, development of buildings and roads, and forest clearing.

A variety of efforts are currently used or encouraged to control and minimize soil erosion include conservation tillage, stormwater permitting requirements, management intensive grazing, crop rotations, development restrictions on steep slopes, and construction best management practices.

Soil erosion has many potential sources within the county but based upon the resource assessments agricultural land is the primary contributor. With 298,524 acres of cropland within the county, agricultural soil erosion has been a longtime concern for the CPZ Department. However, other land disturbances such as mining, residential and commercial construction, roads and forestry have the potential to deliver significant amounts of sediment to waterways. Soil erosion delivers soil sediment, organic material and nutrients to surface waters and is considered the primary nonpoint source of pollutant to our waterways. Figure 2-5 illustrates the average cropland erosion by watershed in 2018.

Source: Matt Oehmichen, 2019 gully soil erosion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2.1 Tons/Acre/Year
2.2 Tons/Acre/Year
2.4 Tons/Acre/Year
3.0 Tons/Acre/Year
3.1 Tons/Acre/Year
3.4 Tons/Acre/Year
3.6 Tons/Acre/Year
AVERAGE CROPLAND SOIL EROSION BY WATERSHED
MARATHON COUNTY WI
MARATHON COUNTY
Map Date: 7/31/2019

FIGURE 2-5

Soil Erosion Transect Survey

In June 1999, Marathon County conducted its first transect survey. The survey was repeated every year from 1999 to 2004 and has been repeated every other year from 2006 to 2020. The cropland average annual "tolerable" soil loss rate ("T" level) for Marathon County is 3.7 tons per acre per year, which is the highest recorded erosion rate since soil erosion transect survey began in 1999. The current estimated average county-wide cropland soil erosion rate is 2.6 tons/acre/year, with an upward trend. It is important to understand that soil loss calculations and acceptable "T" are performance values based on maintaining soil productivity, not protecting water quality, which creates an inherent conflict among local, state, and federal agencies in terms of achieving water quality standards as specified in the Wisconsin River and Upper-Fox Wolf River TMDLs. The following trends can be identified from the Transect Survey, and are illustrated in Figures 2-6 thru 2-8 below:

1. Cropland soil erosion rates are increasing over the last ten years.
2. Cropping practices are trending toward more annualand erodible crop types being grown.
3. Tillage practices are trending toward less erodible methods being used, but a higher percentage of cropland is being tilled annually.

Based on these trends identified by the Transect Survey, the following conclusion can be drawn: the increase in erodibility of the crop types being grown, and the increase in cropland being tilled annually, more than offset the decreased erodibility of the tillage methods being used.

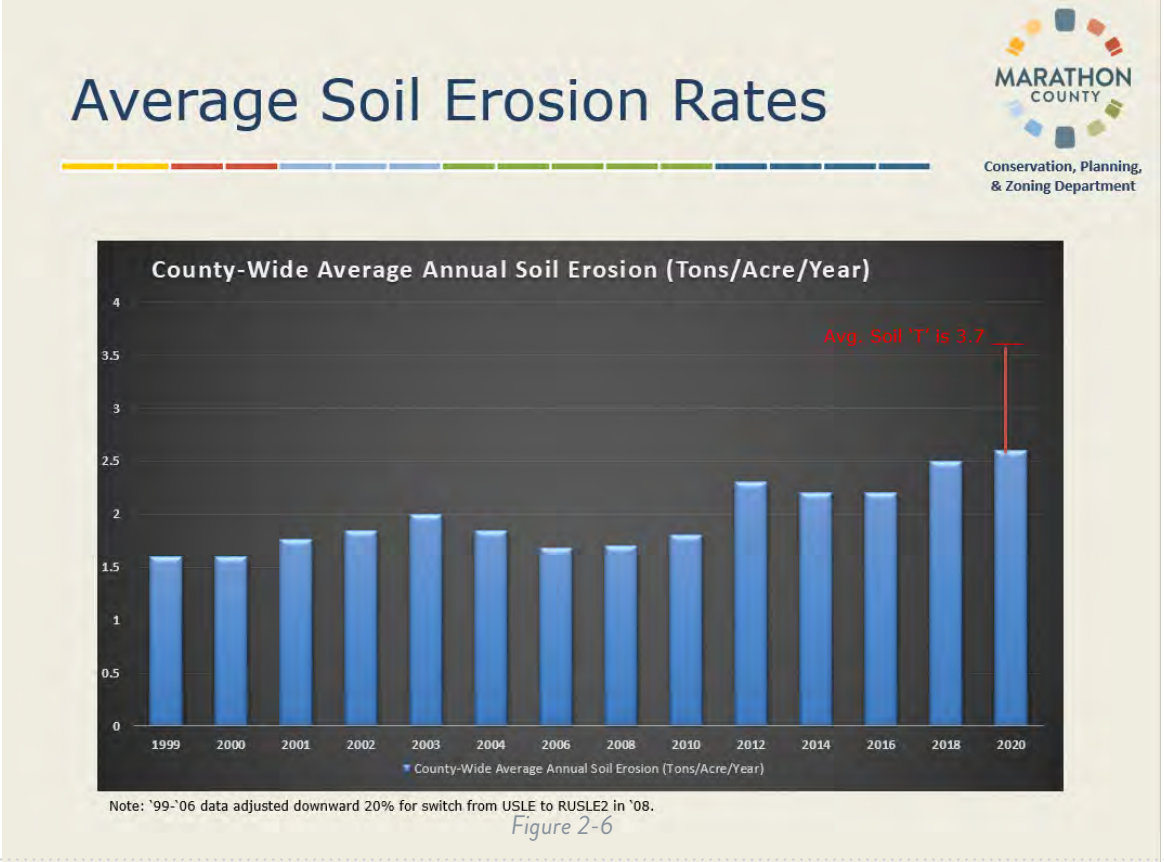


Figure 2-6

Crop Types – 1999 vs. 2020

MARATHON COUNTY
Conservation, Planning, & Zoning Department

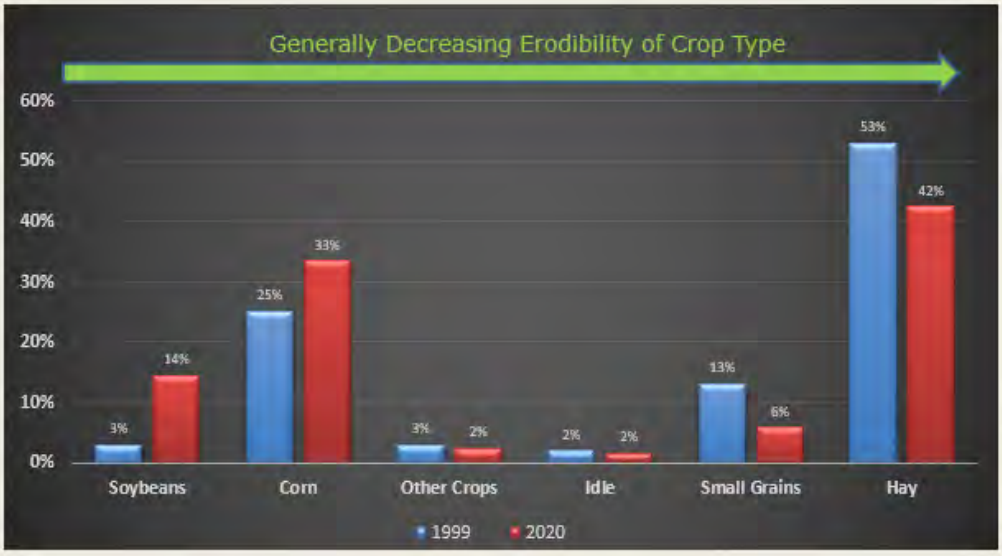


Figure 2-7

Tillage Methods – 1999 vs. 2020

MARATHON COUNTY
Conservation, Planning, & Zoning Department

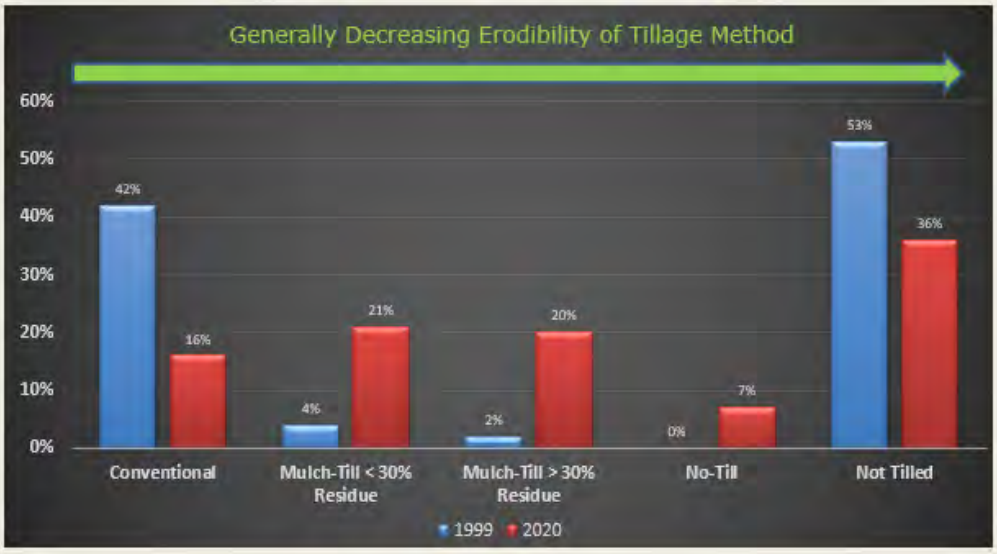


Figure 2-8

Soil and Wastewater from POWTS

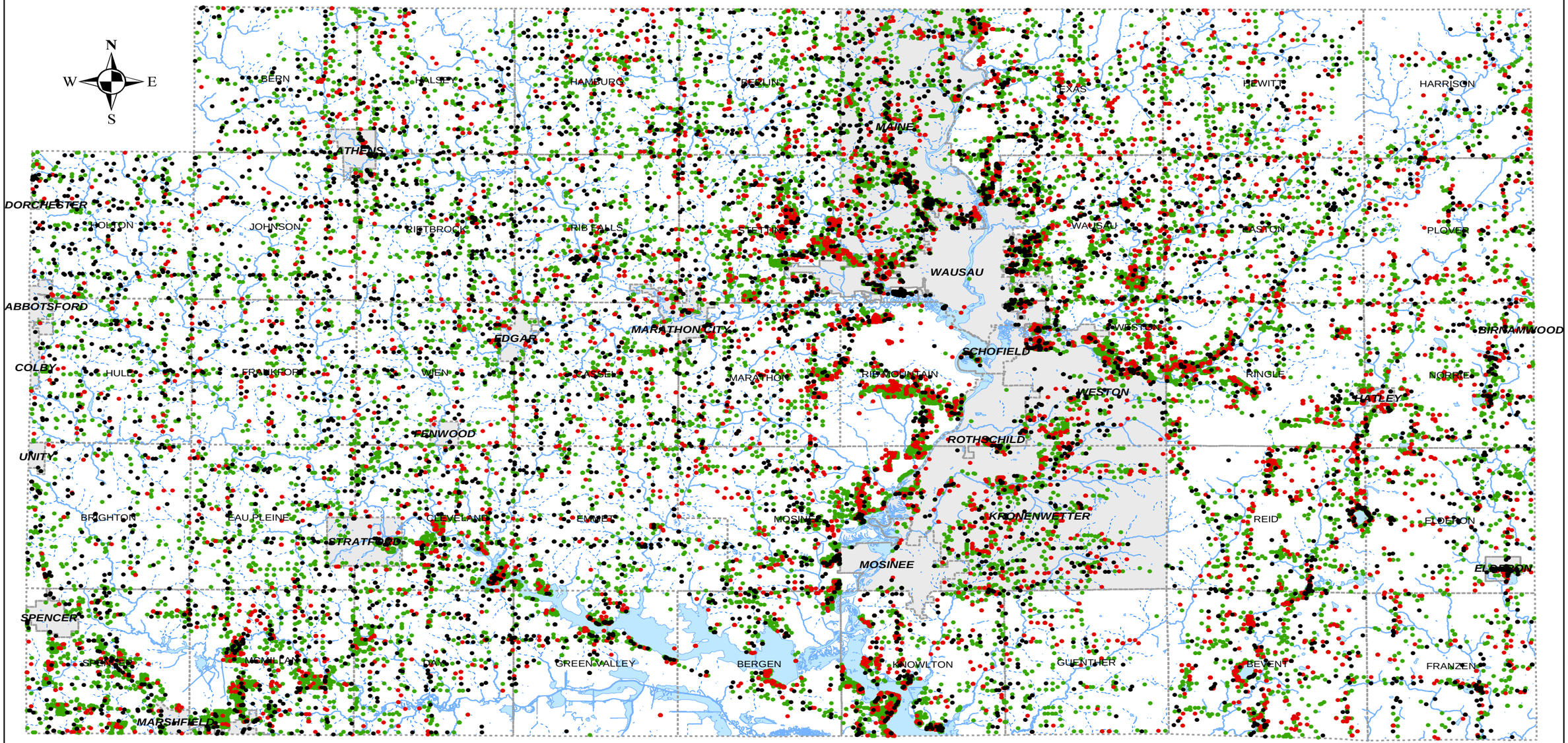
Current regulations rely heavily on the ability of the soil to treat and disperse wastewater (effluents) discharged from a POWTS. Chapter SPS 385 establishes requirements for evaluating and reporting soil and site characteristics that may affect the treatment or dispersal of wastewater. Chapter SPS 383 establishes uniform standards and criteria for design and installation of POWTS appropriate for the soil & site characteristics of each individual site. The attached map (Figure 2-9) shows the locations of existing POWTS in Marathon County. Of the POWTS installed in the last five years, only 21.1% had soil conditions suitable for a conventional (in-ground) system; 47.9% required mound systems, due to shallow depths to groundwater or bedrock; and 29.5% installed holding tanks, because the site did not meet minimum standards for another type of POWTS.

POWTS installed prior to county adoption of the Private Sewage System Ordinance (Figure 2-9) or installed before adoption of current versions of Chapters 381-391 (primarily those identified as "Pre July 1st, 1980" on Figure 2-9) were installed without the benefit of a Soil & Site Evaluation or system design, installation and inspection specified by current regulations. These POWTS may not conform to current standards and may be "failing" POWTS, as defined in s145.245, Wisconsin Statutes. When a POWTS is identified as failing system, installation of a replacement POWTS, which complies with current versions of the regulations referenced above, will be required.

POWTS, commonly referred to as "septic systems", in Marathon County, are regulated by the Private Sewage Systems Ordinance (Chapter 15 of the General Code of Ordinances for Marathon County). The purpose of this ordinance is, "to promote and protect public health and safety by assuring the proper siting, design, installation, inspection and management of private sewage systems and non-plumbing sanitation systems, and to assure the timely repair or replacement of failing private sewage systems". This ordinance is administered by the Conservation, Planning & Zoning Department in accordance with Chapter 145, Wisconsin Statutes, and Chapters SPS 381-391, Wisconsin Administrative Code.

finished mound septic system

finished conventional septic system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MARSHFIELD
POWTS NO RECORD (6024)
POWTS 1969-1980 (7337)
POWTS 1980 OR NEWER (17866)
Municipal Boundary
Incorporated Areas
Hydro Features
POWTS DATA FROM 12/2016
PRIVATE ONSITE WASTE SYSTEMS (POWTS)
MARATHON COUNTY WI
MARATHON COUNTY
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FIGURE 2-9

Municipal Separate Storm Sewer System (MS4)

Wis. Administration Code NR 151, "Non-agricultural Performance Standards" requires that Best Management Practices - BMPs be followed on all construction sites exceeding one acre in size. Furthermore, changes in NR 216 – Storm Water and Erosion Control will minimize the issues of storm water control and treatment. Nonpoint problems are both water quality and quantity based. Nonpoint pollution is a result of activities that take place on the land surface, and how water runs off the land surface or seeps into the ground. Most land use activities have the potential to contribute to nonpoint pollution problems. There is an emerging realization that unchecked storm water runoff from more intensively used land surfaces are also a major threat to water resources. This occurs due to the alteration of the surface runoff regime and alteration of the hydrologic processes involved in groundwater recharge.

The solution to nonpoint source and storm water runoff problems is watershed specific. Therefore, successful solutions must be carried out using a watershed approach, which often involves multiple governmental jurisdictions. Also, the nonpoint management programs that need to be utilized in any given watershed will vary depending upon the type of water resources present, the threats to those resources that exist locally, the existing land use, the future land use trends, the governmental structure having jurisdiction over land use decisions, and the level of citizen involvement.

To address impairments caused by polluted runoff, the Clean Water Act (CWA) of 1990 established a program to address storm water quality coming from developed urbanized areas. Each community that is included must develop and implement a storm water management program (SWMP) to reduce contamination of storm water runoff and prohibit illicit discharges. Phase II of the WPDES Storm Water Program requires permits for small MS4s that are located in an "urbanized area" as determined by the Bureau of the Census.

For urban runoff, the highest priority in Marathon County is the implementation and compliance with Municipal Separate Storm Sewer System (MS4). A Municipal Separate Storm Sewer System is a federally mandated program. Marathon County is a WPDES permittee regulated under Wis. Adm. Code NR 216. As part of the WPDES permit strategy, the County has developed a Memorandum of Agreement with Wausau Metropolitan communities to form a Storm Water Coalition to coordinate the educational and technical requirements of the permit. Through this coalition the urban communities will advance consistent model ordinances, educational strategies, and monitoring of storm water and construction site activities.

The Phase II Rule defines six minimum control measures that, when administered in concert, are expected to result in reduction of the discharge of pollutants into receiving streams or lakes. The management of storm water runoff is a complex and inexact, undertaking implementation of best management practices and the achievement of measurable goals to satisfy each of the following six minimum control measures:

- Public Education and Outreach
- Public Participation/Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post-Construction Runoff Control
- Pollution Prevention/Good Housekeeping

Nonmetallic Mining

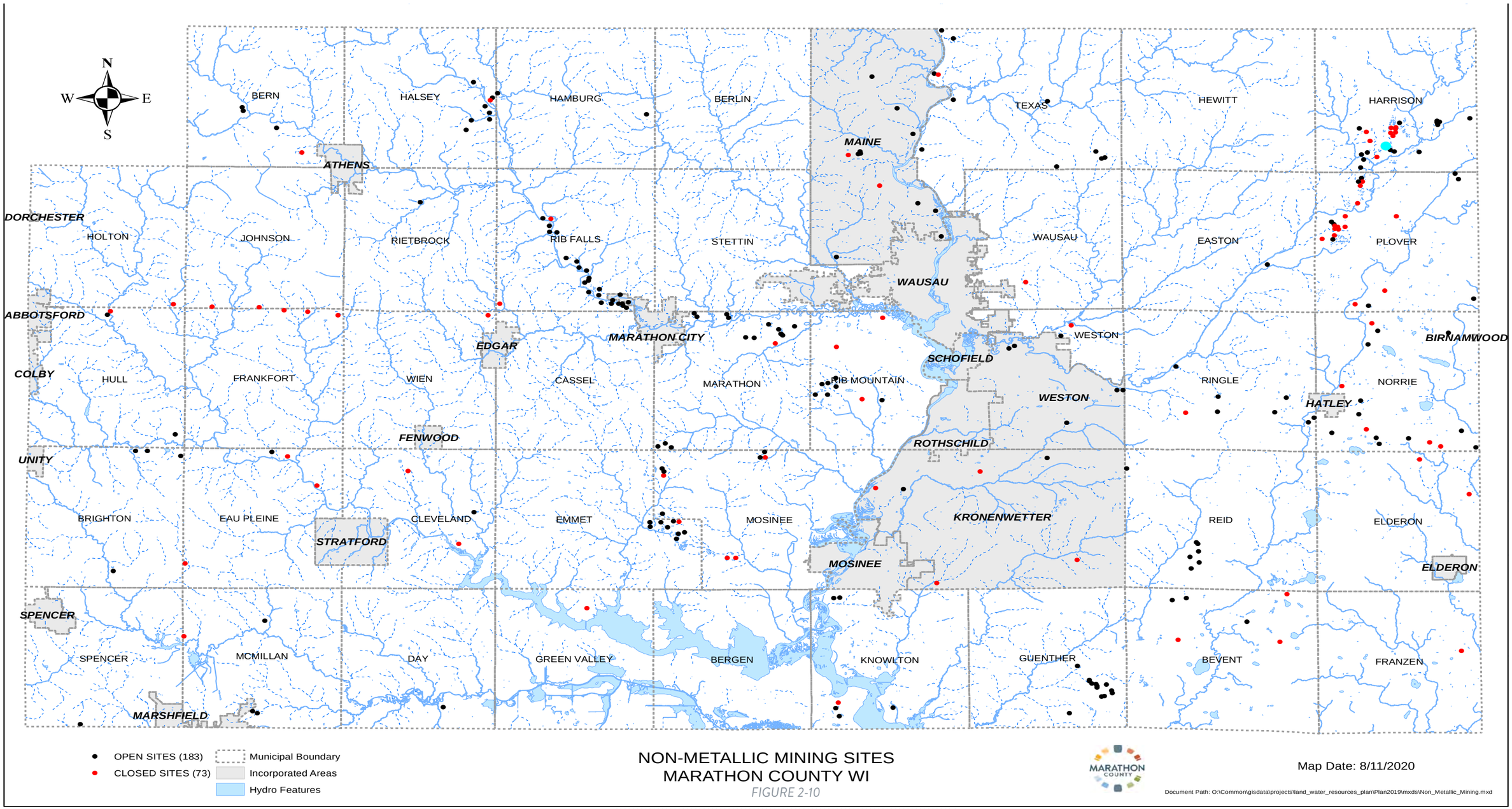
As shown in Figure 2-10, non-metallic mining is an important industry in Marathon County. Sand and gravel is removed from the sandy outwash areas along the rivers. Additionally, rotten granite for road material and landscaping is mined in several areas of the county. Hard rock quarrying is done for road material, granite monuments, buildings, landscaping and roofing granules. Each of these activities has the potential to contribute sediment to surface waters.

Marathon County first adopted a Nonmetallic Mining Ordinance in 1989, and recently received approval by the County Board of Supervisors to amend the Nonmetallic Mining Reclamation Code – Chapter 21 in December 2018. Nonmetallic mining is recognized as an important industry, which contributes to the county's economic and social well-being. However, the long-term damage to the physical environment and tax base that can be caused by nonmetallic mining must be reduced. It is the purpose of Chapter 21 to establish regulations for nonmetallic mining site reclamation that will restore the site to a purposeful and acceptable landscape appearance and use.

According to CPZ's records, historically, over 278 nonmetallic excavation sites operated within the County of Marathon. As of 2019, 166 nonmetallic mining operations have been reclaimed within the county assuring environmental impacts are minimized and the site is returned to a reasonable land use.

Currently in 2020, 125 active mining sites are in operation under NR 135, 17 additional mining sites are under the jurisdiction of NR 340, and six active mining sites are split between NR 135 and NR 340. The Village of Marathon City has two active mining sites are under their jurisdiction. These mining sites are administered through the partnership of DNR and county regulations to protect surface and groundwater resources.

Sand and Gravel Nonmetallic Mine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OPEN SITES (183)
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NON-METALLIC MINING SITES
MARATHON COUNTY WI
FIGURE 2-10
MARATHON COUNTY
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Metallic Mining

Gold was discovered in Marathon County in the 1920s in what is called the Reef deposit, located in the Town of Easton. A Canadian company owns the mining rights and has done exploratory drilling as recently as 2012. According to the Wisconsin Geological and Natural History Survey, the Reef deposit contains between 120,000 and 140,000 ounces of gold. High gold prices could lead to mining in the future, although the company doesn't have current plans to mine the site.

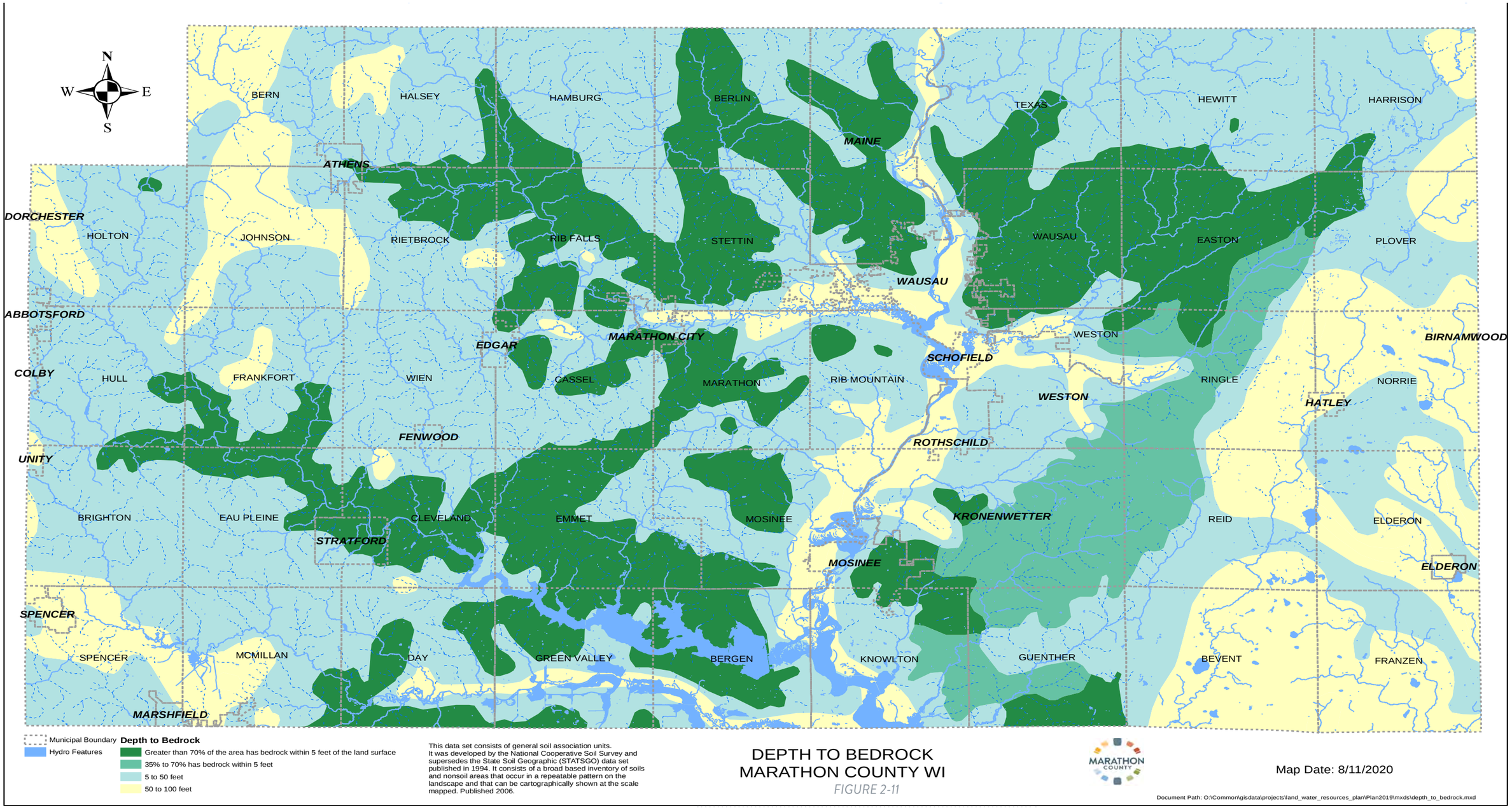
In response to 2017 WI ACT 134, which removed barriers to the initiation of nonferrous metallic mining in the State of Wisconsin, Marathon County Board of Supervisors, in April, 2018, approved the Metallic Mining Amendment to be incorporated into Chapter 17, the zoning code ordinance. If not properly regulated, metallic mineral mining could have an adverse impact on the environmental character and quality of the affected communities in Marathon County. The purpose of regulating metallic mining is to promote the public health, safety, and general welfare and accomplish the purposes under WI Stats. 59.69(1), including but not limited to the protection of water, groundwater, forest and other natural resources, and the protection of property values and the property tax base.

Source: Tom Quigley- Aquila Resources Inc., An example of gold bearing quartz from the Reef Deposit

Groundwater

The need for clean groundwater is both a health and economic issue. Groundwater quality and quantity, in both rural and urban areas can vary in any location at any time. Where groundwater becomes polluted, property values drop and a natural resource is diminished from its full potential. For this reason, local land use activities can significantly influence groundwater quality and quantity in terms of whether a valuable resource is protected and how all key stakeholders have an important role in its protection.

The availability of groundwater varies across the county depending on the local geology. Areas along the Wisconsin and Rib Rivers provide ample water supply from alluvial aquifers; however, adequate groundwater is limited in parts of the county where dense bedrock is close to the surface as shown in figures (Figure 2 – 11: Depth of Bedrock, Figure 2 – 12: Generalized Groundwater Availability, and Figure 2-13: Depth to Groundwater, respectively). Areas along the Wisconsin River, Rib River, and Eau Claire River, the Mahtomedi-Fordum-Sturgeon Association is dominant. This association, with its coarse texture soil type, has a high infiltration rate and high permeability rate because of its large pore space.



This data set consists of general soil association units. It was developed by the National Cooperative Soil Survey and supersedes the State Soil Geographic (STATSGO) data set published in 1994. It consists of a broad based inventory of soils and nonsoil areas that occur in a repeatable pattern on the landscape and that can be cartographically shown at the scale mapped. Published 2006.

DEPTH TO BEDROCK
MARATHON COUNTY WI

FIGURE 2-11

Map Date: 8/11/2020

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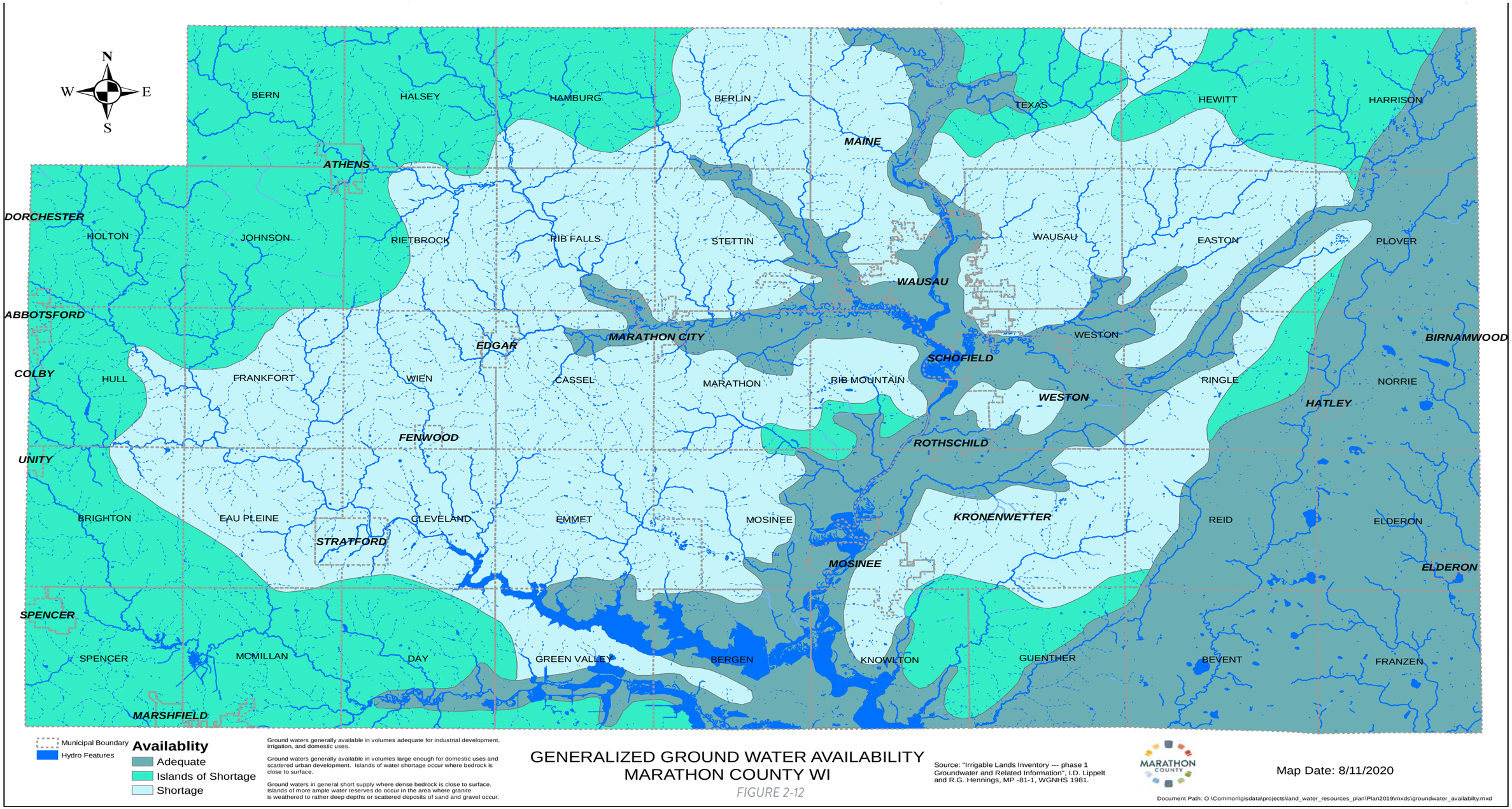

GENERALIZED GROUND WATER AVAILABILITY
MARATHON COUNTY WI

FIGURE 2-12

Source: "Irrigable Lands Inventory --- phase 1 Groundwater and Related Information", I.D. Lippelt and R.G. Hennings, MP -81-1, WGNHS 1981.

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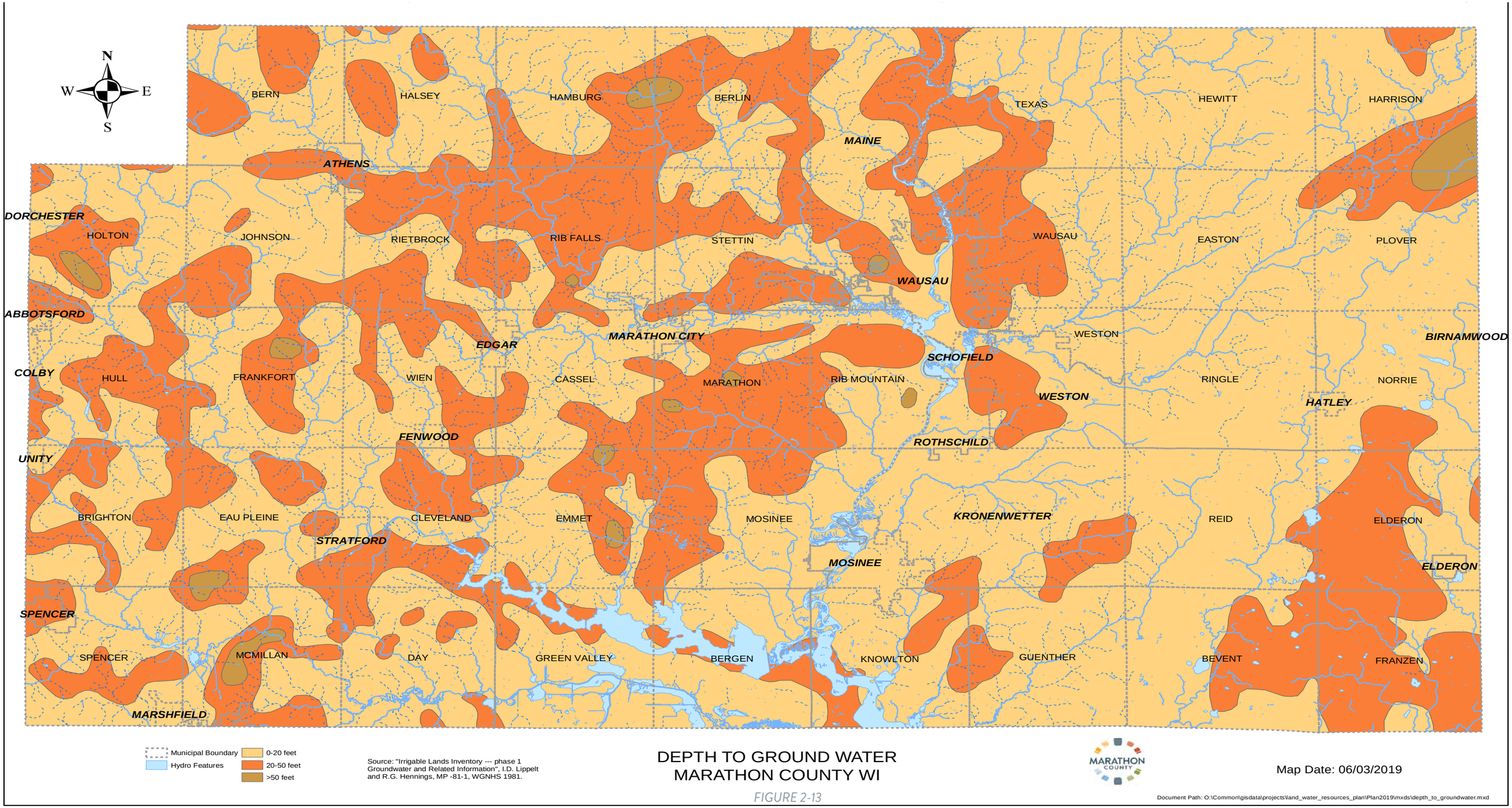
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Hydro Features
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20-50 feet
>50 feet
Source: "Irrigable Lands Inventory --- phase 1 Groundwater and Related Information", I.D. Lippelt and R.G. Hennings, MP -81-1, WGNHS 1981.
DEPTH TO GROUND WATER
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MARATHON COUNTY
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FIGURE 2-13

Groundwater Use

The Wisconsin Water Use 2017 Withdrawal Summary, developed by DNR, indicates Marathon County as ranking 8th in the state for groundwater withdrawal. Marathon County is one of four counties withdrawing greater than 10 billion gallons as shown in Figure 2-14.

The number indicates ranking of total withdrawal by county (#1 = highest, #71 = lowest)

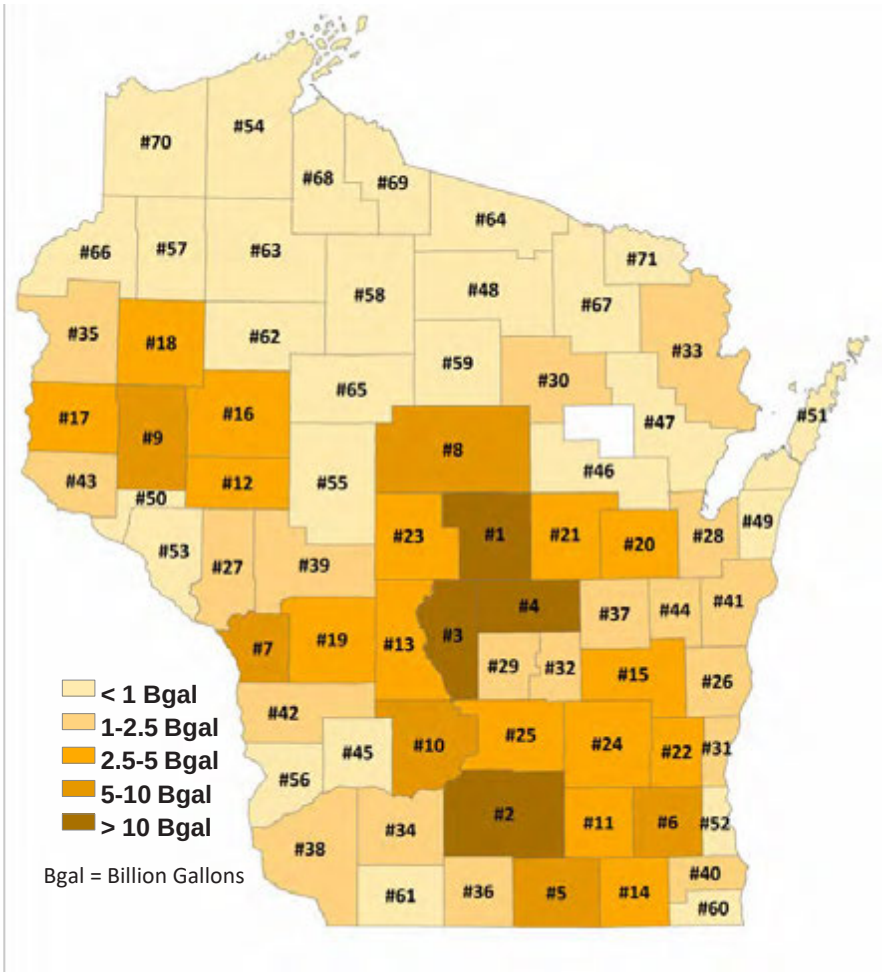


Figure 2-14 Average Groundwater Withdrawals by County 2011-2017

Source: https://dnr.wi.gov/topic/WaterUse/documents/WithdrawalReportDetail2017.pdf

Groundwater Use

Groundwater is the major source of 17 municipal-owned and operated water treatment facilities for public water supply for domestic, and industrial use in Marathon County. Groundwater is also the primary source for private, domestic, industrial, and agricultural water supplies not served by municipal water. According to the Wisconsin Department of Natural Resources (WDNR), drinking water data, there were 11,501 wells constructed since 1987 for private homeowners in the county.

Most water used in Marathon County is drawn up from groundwater via high capacity wells. A high capacity well system is a water supply system that has the potential to draw over 100,000 gallons per day or 70 gallons/minute. The DNR High Capacity Well data displays high capacity wells by number of wells per square mile according DNR's (424 (306 https://dnr.wi.gov/wateruse/pub_v3_ext/Source) high capacity wells in Marathon County: Source DNR, July, 2015). The largest numbers of wells are found in the Wausau metro area and in the agricultural area in the southeastern portion of the County. The four largest wells reported quantities of water higher than most wells by several million gallons. These highest use wells are the Weston Power Plant, the Domtar Mill, the Mosinee Paper Mill, and the City of Wausau.

Groundwater and Agriculture

Farms are major users of water; crop farming in the eastern half of Marathon County requires irrigation and accounts for most of the high capacity wells found in that area. However, on dairy farms, water is used for animal consumption, milk cooling, cleaning and sanitizing equipment, cow cooling, irrigating crops, producing value added products, moving manure, and cleaning barns through flush systems. The average dairy cow drinks 43.6 gallons of water per day and requires 6.3 gallons per day for cleaning, a total of almost 50 gallons per cow.

Marathon County is home to twelve permitted CAFOs as of 2019 according to the WDNR. CAFOs congregate animals, feed, manure and urine, and production operations on a small land area. These operations require large quantities of water for animal consumption, cleaning, and other uses. Runoff from CAFOs can have negative impacts to water quality due to the amount of animal waste on site.

Groundwater Contamination Susceptibility

The porosity of soil profiles, textures of soil materials, and depth of the soil influence groundwater characteristics of the various soil associations. These unique soil characteristics play a functional role in both quality and quantity of groundwater resources. However, because of high infiltration and permeability rates of coarse soil types, the groundwater is vulnerable to contamination because of a low attenuation potential. Attenuation potential of a soil indicates the natural capability of a soil to reduce the impact of a contaminant by nature of its filtering characteristics.

Susceptibility of groundwater to pollutants is the ease with which a contaminant can be transported from the land surface to groundwater. Many materials that overlie the groundwater offer good protection from contaminants that might be transported by infiltrating waters. The amount of protection offered by the overlying material varies depending on the materials. In some areas, the overlying soil and bedrock materials allow contaminants to reach the groundwater more easily than in other areas.

Five physical resource characteristics are used to determine how easily a contaminant can be carried through overlying materials to the groundwater. These characteristics are depth to bedrock, type of bedrock, soil characteristics, depth to water table, and characteristics of surficial deposits. Figure 2-15: Groundwater Contamination Susceptibility, shows a composite map compiling all five of these characteristics into one map which shows the combined suscenptibility score for each area.

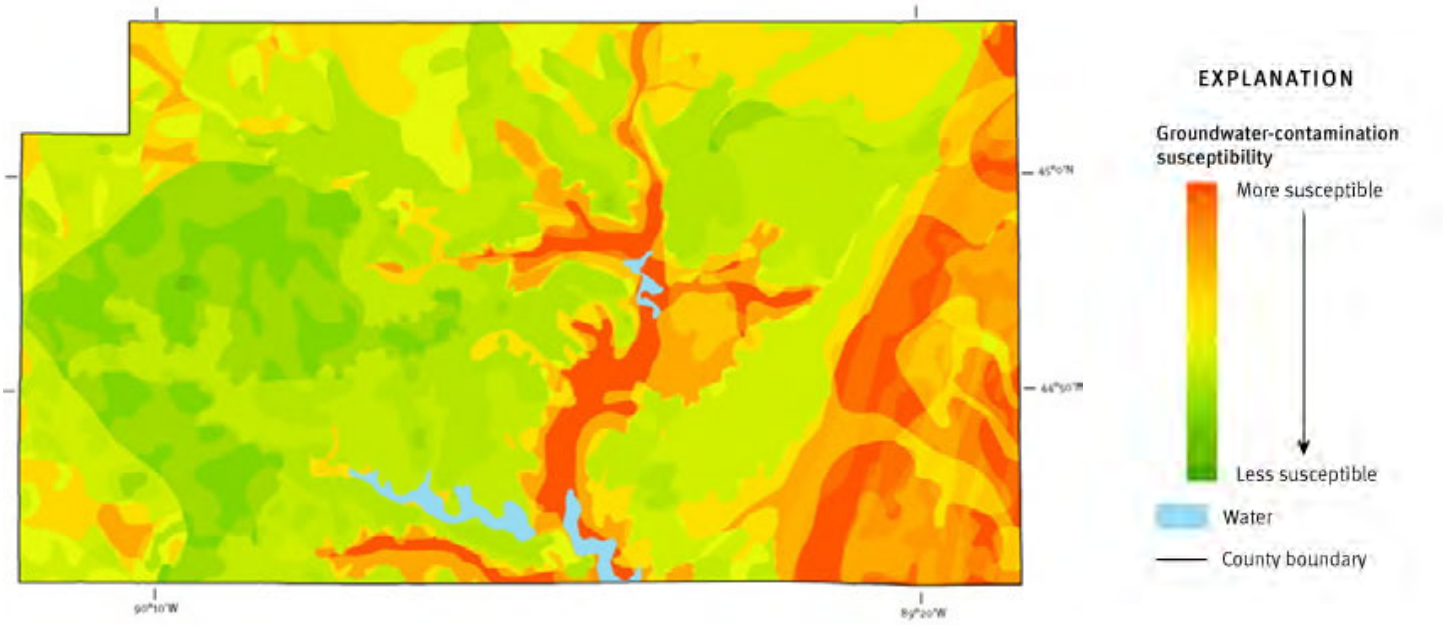


Figure 2-15: Groundwater Contamination Susceptibility

This groundwater-contamination susceptibility map is a compostie of five resource characteristic maps, each of which was derived from generalized statewide information at small scales, and cannot be used for any site-specific purposes.

Map source: Schmidt, R.R., 1987, Groundwater contamination susceptibility map and evaluation: Wisconsin Deparmtment of Natural Resources, Wisconsins's Groundwater Management plan Report 5, PUBL_WR-177-87, 27p.

Figure created for the "Protecting Wisconsin's Groundwater Through Comprehensive Planning" website, 2007, http://wi.water.usgs.gov/gwcomp/

Source Water Protection

On December 20, 2018, the U.S. President signed the Agriculture Improvement Act of 2018, commonly known as the Farm Bill. The Bill earmarked source water protection a priority within U.S. Department of Agriculture conservation programs and to designate significant funding towards those efforts. NRCS is an agency within the U.S. Department of Agriculture (USDA) that works with private landowners including farmers and ranchers.

Under the new Farm Bill, ten percent of spending on Conservation Title programs is to be directed to source water protection, providing at least $4 billion over the next 10 years. These programs are intended to assist farmers, ranchers, and forest landowners protect and enhance environmental outcomes that have benefits both on and off-farm. Moreover, there is a now a directive for USDA to work closely with utilities to identify and prioritize areas that need source water protection.

Protecting sources of drinking water is an effective way to reduce risks to public health, control water treatment costs, and address water quality concerns at the source. Private landowners support safe drinking water through conservation practices to protect source water. The USDA's Natural Resources Conservation Service (NRCS), which helps farmers, ranchers and agricultural landowners address source water protection and other resource concerns, is launching a new effort in Wisconsin.

Figure 2-16 Illustrates Wisconsin's effort to target eight watersheds that will be eligible for special source protection efforts.

Figure 2-16

In Marathon County, the Plover River Watershed is a proposed source water protection watershed. The Plover River Watershed is located in the southeast portion of Marathon County and is an important water resource in the County.

Drinking Water

Drinking Water Quality

The Marathon County Strategic Plan 2018-2022 contains Objective 6.3: Protect and enhance the quantity and quality of potable groundwater and potable surface water supplies. Under Objective 6.3, five strategies include the following:

Strategy A Update the 2001 Groundwater Protection Plan.

Strategy B Continue to develop and implement watershed management plans and targeted management plans to minimize the impacts on water quality.

Strategy C Evaluate the county's role in conducting tests and analysis of contaminants in private wells and in evaluating whether such tests should be mandatory instead of voluntary.

Strategy D Explore alternative methods for snow and ice removal from hard surfaces to reduce the impact of salt on surface water and groundwater.

Strategy E Create partnerships with agencies and organizations to further efforts to protect surface water and groundwater.

Groundwater is the major source of public water supply for private, domestic, agricultural, and industrial use in Marathon County. Areas along the Wisconsin and Rib Rivers provide ample water supply from alluvial aquifers; however, adequate groundwater is limited in parts of the county where dense bedrock is close to the surface.

The need for clean groundwater is both a health and economic issue. Groundwater quality and quantity, in both rural and urban areas can vary in any location at any time. Where groundwater becomes polluted, property values drop and a natural resource is diminished from its full potential. For this reason, local land use activities can significantly influence groundwater quality and quantity in terms of whether a valuable resource is protected and how all key stakeholders have an important role in its protection.

According to WI Department of Agriculture, Trade and Consumer Protection website, 4,395 acres of land in west central Marathon County is located in an Atrazine Prohibited Area. The University of Wisconsin-Stevens Point, Center for Watershed Science and Education, WI Well Water Quality Viewer indicates of 93 samples tested for atrazine, 21 samples or 23 percent detected atrazine while 4 samples or 4% exceeds the 3.0 ppb total atrazine standard. In addition, 1,256 samples were tested for Nitrate, 116 or 9% exceeds the health standard of >10mg/L N. A total of 540 samples were tested for bacteria, 121 or 22% tested positive for bacteria while 81 samples were tested for E. coli, 7 or 9% of the 81 samples tested positive.

The University of Wisconsin-Stevens Point, Center for Watershed Science and Education, provides a portal through the university's website to view water quality data for all counties in the State of Wisconsin. The Wisconsin Well Water Quality Viewer

for Private Well Data offers information regarding general well water data for Marathon County; however, drinking water quality data for Marathon County is still limited and would require more sampling or testing data to establish a better understanding of possible water quality concerns that may or may not exist within the county. Therefore, it must be carefully considered whether a well testing program is required to make better-informed decisions regarding public health.

Surface Water Resources

Marathon County is the largest county in the State of Wisconsin with an approximate total square mile area of 1,584 or 1,013,760 acres. The county's Land Information Office calculated the total square mile area of Marathon County. Marathon County is primarily located within the Central Wisconsin River Basin with the exception of a small southeastern portion, approximately 65,000 acres, being divided by the Subcontinental Divide, which flows into the Fox-Wolf River Watershed of the Great Lakes Basin. The County has 202 lakes with a total surface area of 28,322 acres. The Big Eau Pleine Reservoir is the largest body of water with a potential area of 6,830 acres when full. Other lakes in the county include Lake Wausau, Half Moon Lake, and Lake DuBay and are the result of dams along river systems. Most natural lakes tend to be small and vary in depths ranging from one foot to thirty-four feet.

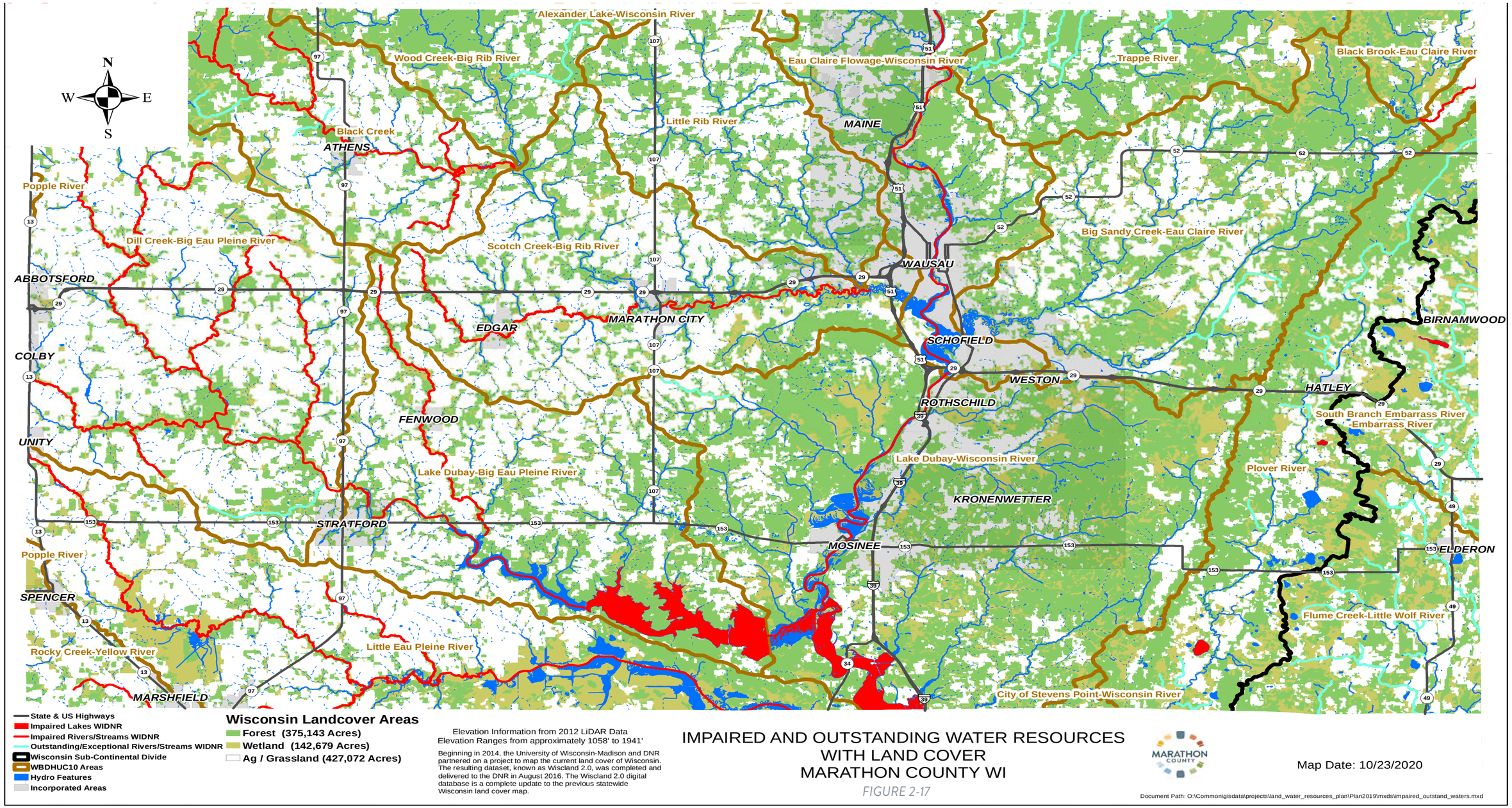
The county has 356 rivers and streams with a surface area of 3,748 acres. The Wisconsin River flows south through the county. Several dams on the mainstream and tributaries, which are controlled by the Wisconsin Valley Improvement Corporation (WVIC), regulate the river. Major tributaries flowing from the east to west include the Trappe, Eau Claire, Little Eau Claire and Plover Rivers. The major tributaries flowing from west to east are the Little Rib, Big Rib, Big Eau Pleine, and the Little Eau Pleine Rivers. The county contains all or part of 21 Hydrologic Unit Code (HUC) -10 watersheds as shown on Figure 2-17.

The two most significant wetland areas of the county include the Mead (33,000 acres) and the McMillan (5,700 acres) Wildlife Areas. These wetlands are important for nesting waterfowl and spawning fishes. Many lakes, reservoirs, rivers and wetlands in the county support recreational uses. Local officials should look to protect these water bodies whenever there is evidence that existing controls may not be adequate to protect the continued use of the resource for recreational use purposes.

The complex interaction of surface water and nonpoint source pollution is a result of activities that take place on the land surface and the water dynamics that occur as a result e.g., how water runs off the land surface or is absorbed into the ground. Consequently, all land use activities have the potential to contribute to nonpoint source pollution problems. In particular, there is an emerging realization that unchecked storm water runoff, carrying debris, nutrients, E-coli, CBOD, substances, oils and toxic materials from impervious surfaces, is in some cases a major stressor of critical water resources.

In Marathon County, many lakes, reservoirs, rivers, intermittent streams, headwater areas, and wetlands support recreational and other uses. Each of these resource areas are subject to its geographic location in terms of the type of stressors it may encounter. For example, whether a resource is located in an agricultural or urban area is important in terms of how different land use and human activities may have a positive or negative impact on the resource.

The need for careful judgment to facilitate the management and protection of regionally important water resource systems, which are sensitive to local environmental impacts and provide important benefits to Marathon County residents and the region, is essential. A number of protective measures were identified as possible means of enhancing water quality protection in the county under the auspices of the LWRM Plan. State and federal governments have identified water resources that warrant special protection through special water quality designations. The special protection available to these waters includes programs such as the TMDL study for the Wisconsin River, and classification designations established by DNR.


N
W
E
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Alexander Lake-Wisconsin River
Wood Creek-Big Rib River
Eau Claire Flowage-Wisconsin River
Trappe River
Black Brook-Eau Claire River
Little Rib River
Black Creek
ATHENS
MAINE
Popple River
Dill Creek-Big Eau Pleine River
Scotch Creek-Big Rib River
Big Sandy Creek-Eau Claire River
ABBOTSFORD
WAUSAU
EDGAR
MARATHON CITY
BIRNAMWOOD
SCHOFIELD
COLBY
WESTON
HATLEY
ROTHSCHILD
FENWOOD
South Branch Embarrass River
Embarrass River
UNITY
Lake Dubay-Wisconsin River
Lake Dubay-Big Eau Pleine River
Plover River
KRONENWETTER
STRATFORD
MOSINEE
ELDERON
Popple River
SPENCER
Flume Creek-Little Wolf River
Rocky Creek-Yellow River
Little Eau Pleine River
City of Stevens Point-Wisconsin River
MARSHFIELD
State & US Highways
Impaired Lakes WIDNR
Impaired Rivers/Streams WIDNR
Outstanding/Exceptional Rivers/Streams WIDNR
Wisconsin Sub-Continental Divide
WBDHUC10 Areas
Hydro Features
Incorporated Areas
Wisconsin Landcover Areas
Forest (375,143 Acres)
Wetland (142,679 Acres)
Ag / Grassland (427,072 Acres)
Elevation Information from 2012 LiDAR Data
Elevation Ranges from approximately 1058' to 1941'
Beginning in 2014, the University of Wisconsin-Madison and DNR partnered on a project to map the current land cover of Wisconsin. The resulting dataset, known as Wiscland 2.0, was completed and delivered to the DNR in August 2016. The Wiscland 2.0 digital database is a complete update to the previous statewide Wisconsin land cover map.
IMPAIRED AND OUTSTANDING WATER RESOURCES
WITH LAND COVER
MARATHON COUNTY WI
MARATHON COUNTY
Map Date: 10/23/2020
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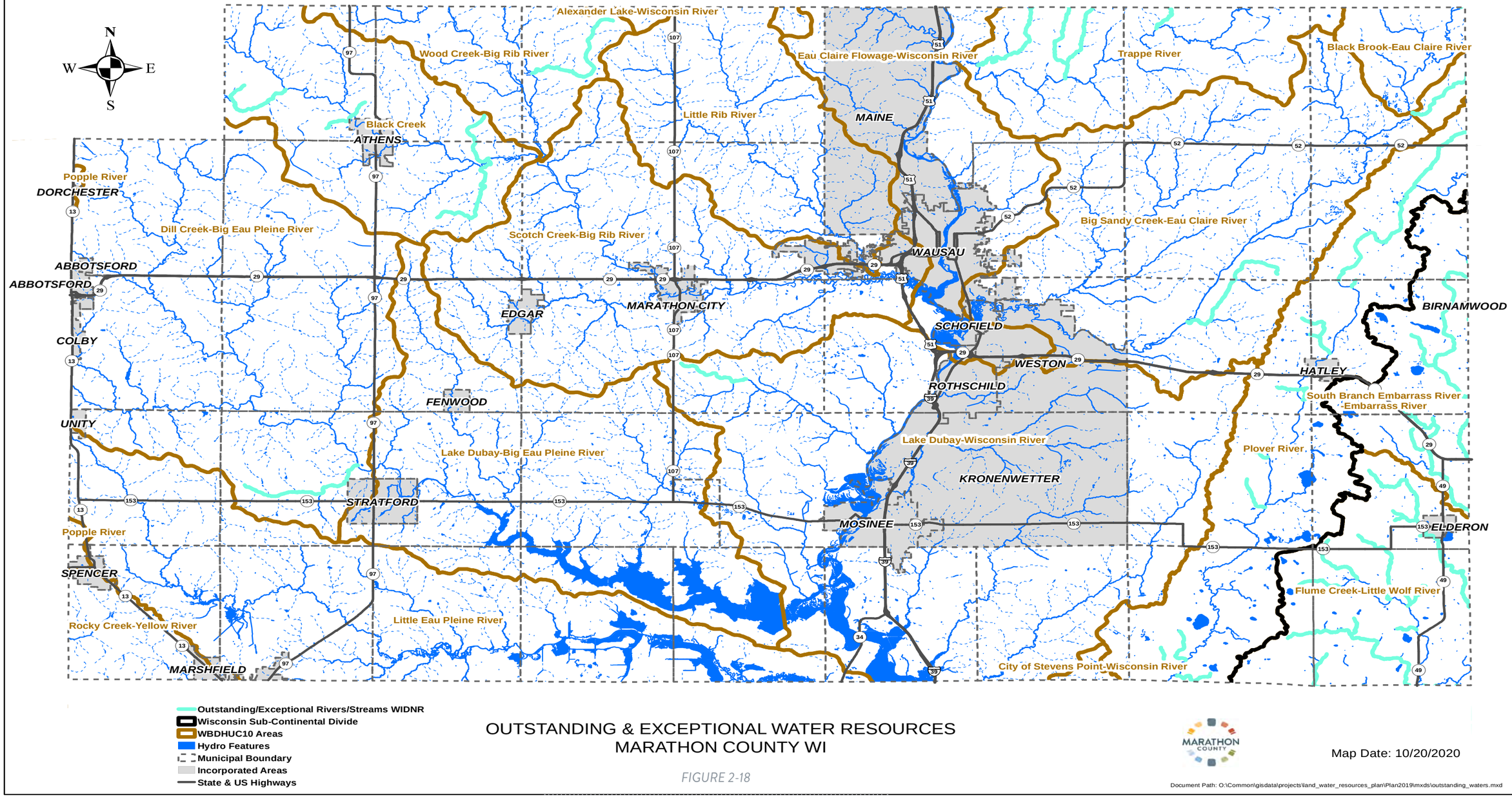
FIGURE 2-17

Watershed Water Quality Conditions

Outstanding and Exceptional Resource Waters

An Outstanding Resource Water (ORW) is a lake, stream or flowage having excellent water quality, high recreational and aesthetic value and high quality fishing. ORW waters are free from point source or nonpoint source pollution. An Exceptional Resource Water (ERW) is a lake, stream, or flowage exhibiting the same high quality resource values as outstanding waters, but may be affected by point source pollution. Several streams in the County are classified as ORW or ERW as shown in (Figure 2-18). Outstanding and exceptional resource waters, found in Appendix D, is data collected from DNR and provides greater detail of each outstanding or exceptional water resource in Marathon County.



OUTSTANDING & EXCEPTIONAL WATER RESOURCES
MARATHON COUNTY WI

FIGURE 2-18

Map Date: 10/20/2020

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Eastern Lakes Project

The Eastern Lakes Project is a partnership of citizens, eastern Marathon County communities, Marathon County government, and the University of Wisconsin Stevens Point. The project will assess the lakes of Eastern Marathon County and plan for lake management and protection.

The Eastern Lakes Project includes lake studies, lake management plans and final summary lake reports for the following lakes: Bass, Big Bass, Lilly, Lost, Mayflower, Mission, Mud, Norrie, Pike, Rice, and Wadley Lakes. For review each plan, visit the Marathon County website at: http://www.co.marathon.wi.us/Departments/ConservationPlanningZoning/ConservationServices/WatershedInformation.aspx.

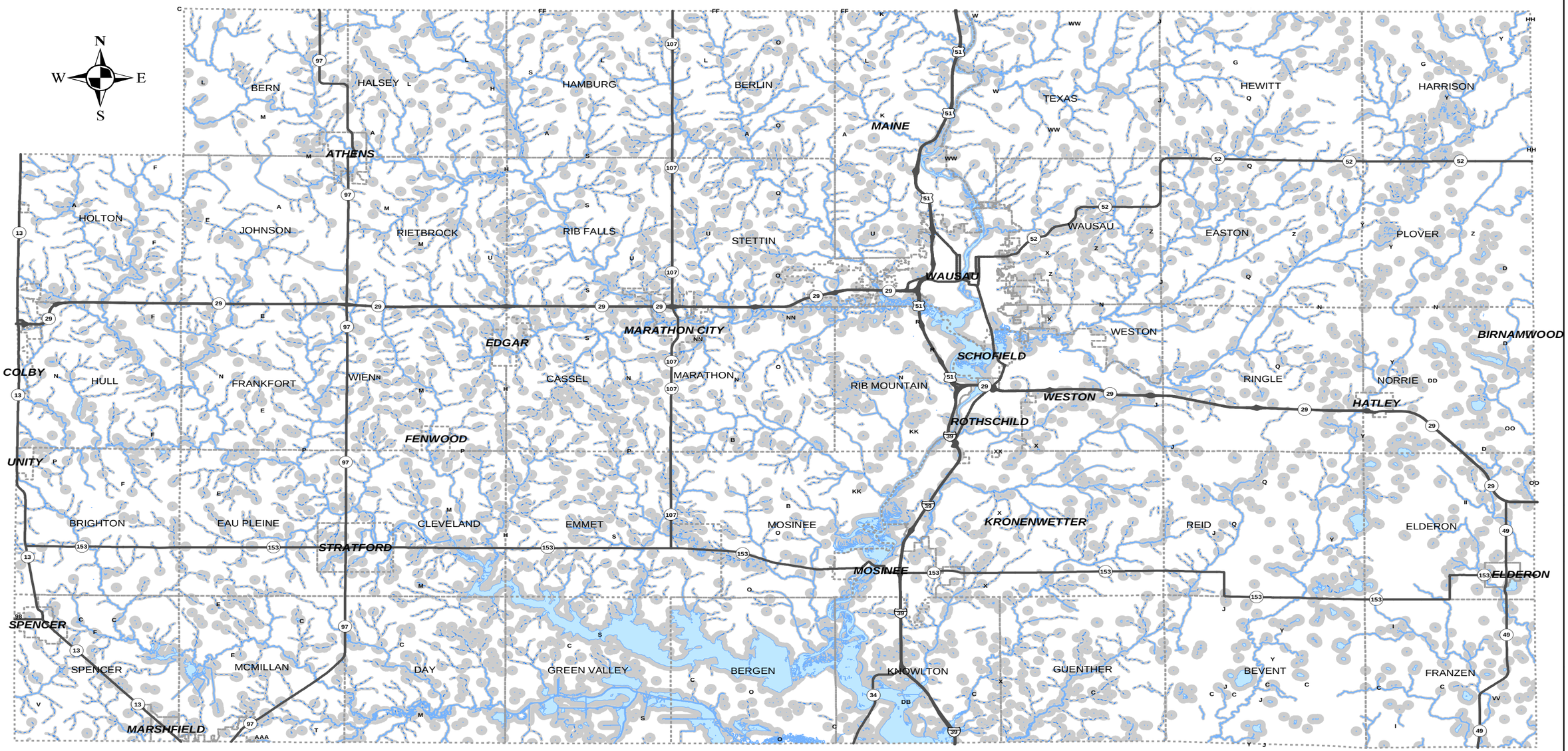
Shoreland Areas

Water Quality Management Areas (WQMA's)

A WQMA or shoreland area is defined as an area located within 1000 feet from the ordinary high-water mark of navigable ponds, lakes, or flowages and areas within 300 feet from the ordinary high-water mark of navigable rivers and streams or landward edge of a floodplain. Marathon County has delineated the WQMA's areas greater than five acres in size as shown in Figure 2-19.

Wisconsin Administrative Code NR115 dictates the shoreland management program, which requires counties to protect the natural buffer, and to manage the disturbance of critical habitat and reduce erosion and runoff into these resource areas.

spring runoff in impaired watershed



WATER QUALITY MANAGEMENT AREAS
MARATHON COUNTY WI

FIGURE 2-19

Map Date: 8/11/2020

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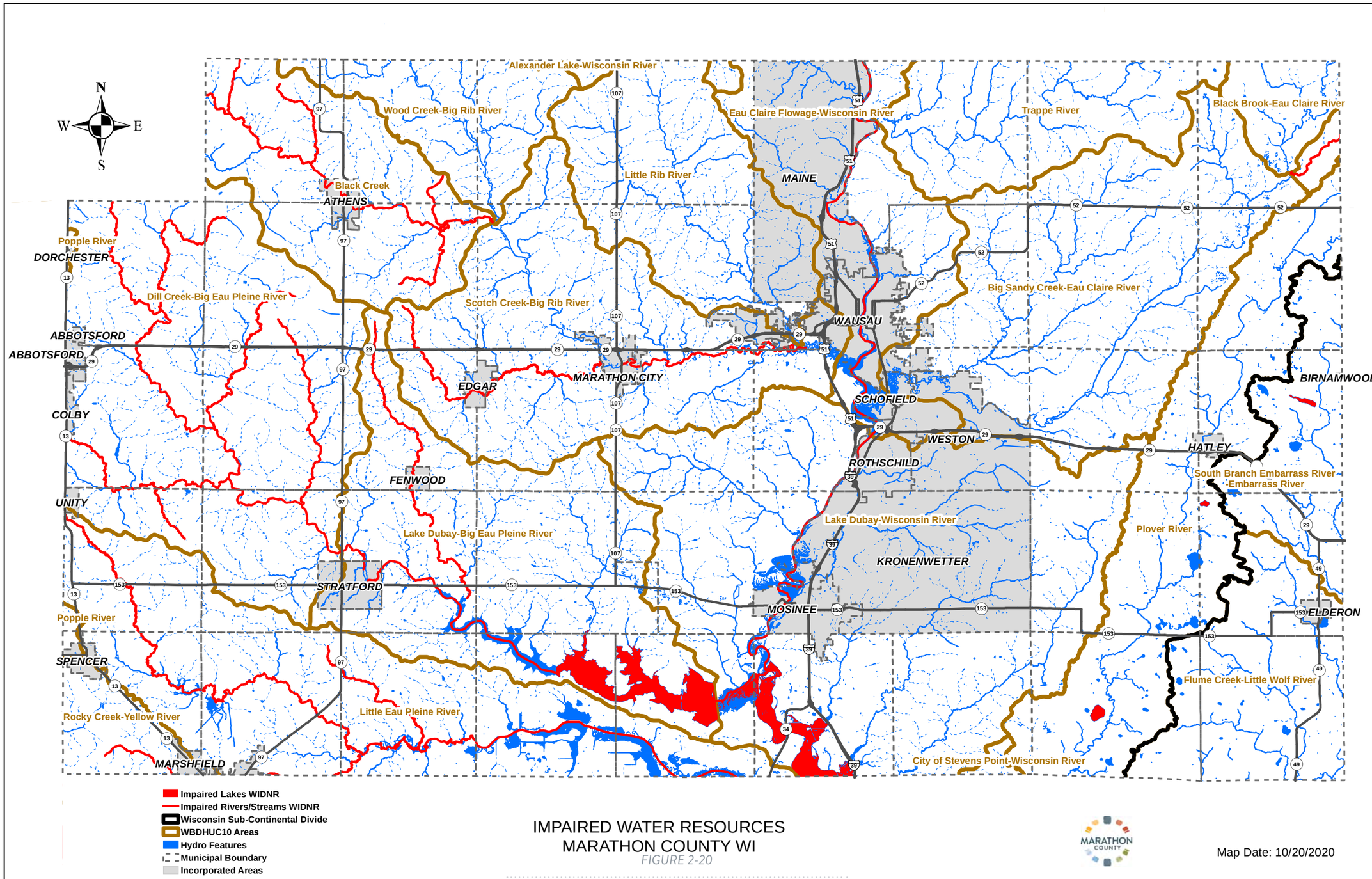
Impaired Water Quality Conditions

Marathon County encompasses portions of 22 watersheds (Figure 2-20) that comprise a network of rivers, streams and creeks. Several surface waters within these watersheds have been identified as "impaired waters" on the "303 (d) list" of the U.S. Clean Water Act. The list identifies waters that do not meet current water quality standards and merit water quality improvement and protection.

Appendix E, is a complete list of Section 303(d) listed impaired water resources as determined by the WI DNR. Impaired waters within Marathon County are typically located west of the Wisconsin River including the Wisconsin River itself and the impairment is primarily caused from low dissolved oxygen and phosphorus associated with agricultural nonpoint runoff.

The list, required by the Environmental Protection Agency (EPA) under the Clean Water Act, identifies water bodies that do not meet water quality standards. The Department of Natural Resources uses the 303(d) list as the basis for establishing strategies to improve water bodies using total maximum daily loads.

runoff in Big Eau Pleine River



IMPAIRED WATER RESOURCES
MARATHON COUNTY WI
FIGURE 2-20

Map Date: 10/20/2020

Wisconsin River TMDL

Section 303(d) of the Clean Water Act established the TMDL program. The TMDL program identifies and restores polluted rivers, lakes, streams, and other surface waterbodies by quanitatively assessing the water quality problems and contributing sources of pollution. The TMDL determines how much a pollutant needs to be reduced to meet water quality standards, and provides the foundation for taking actions locally to restore a waterbody to fishable and swimmable standards.

TMDLs must be developed for waterbodies impaired by point sources and/or nonpoint sources. The TMDL is one important tool required by the Clean Water Act and employed by Wisconsin DNR to quantitatively assess the quality of a waterbody and allocate allowable pollutant loads among sources along the stream and/or river. The U.S. EPA approved the Wisconsin River TMDL in 2019. This plan specifies pollutant load allocations for all dischargers in the watershed to achieve statewide water quality goals.

According to Wisconsin DNR, the Wisconsin River TMDL study includes an area from Vilas County to Lake Wisconsin in Columbia County, covering 9,156 square miles – approximately 15 percent of the state. The project area also encompasses:

- More than 110 wastewater dischargers
- 2nd & 5th largest inland lakes in Wisconsin
- 4 reaches impaired for suspended solids
- 16 reaches impaired for phosphorus
- 85 Cities and Villages
- 25 major tributaries
- 21 Counties

The Wisconsin River Basin TMDL report indicates that Marathon County should focus efforts to reduce exceedances of phosphorus limits. As expected phosphorus reductions vary across the county based on parameters set for rivers, streams, reservoirs, and lakes. In Marathon County, the Upper Wisconsin River main stem has a phosphorus criterion of 100 µg/L, while the Big Eau Pleine and Little Eau Pleine River TP standard is 75 µg/L. For Lost Lake, Big Eau Pleine Reservoir, and Lake Du Bay, the TP standard is 20, 30 and 100 µg/L, respectively.

Figure 2-21 indicates a trend of increasing stream miles as being phosphorus impaired.

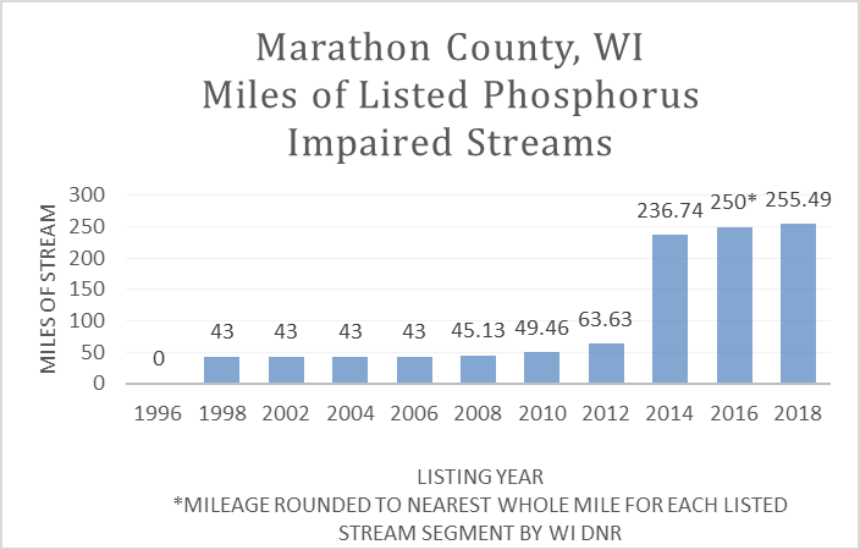


Figure 2-21 Source: Wisconsin Department of Natural Resources

Figure 2-20, illustrates the subbasins or stream reaches as designated by the Wisconsin River Watershed TMDL report which influence Marathon County. The subbasins impaired by exceedances of phosphorus as per DNR data and the approved TMDL are outlined in red and are generally located in the western portion of the county. In addition, WISLAND2.0 land cover data clearly demonstrates a correlation or strong association in terms of land cover type (agriculture) and phosphorus impaired subbasins within Marathon County. According to CPZ's GIS analysis, Marathon County's overall land cover in descending order indicates the following breakdown; Forest – 37%, Agriculture – 29%, Wetland – 14%, Grassland -13%, Urban – 5%, and Open Water – 2%, respectively.

Further analysis of the TMDL and land cover data indicates an increasing trend of total subbasin acreage being located in a watershed reach impaired by phosphorus. For example, in 2008, 82,071.38 acres were located in an identified 303(d) impaired subbasin and in 2018 509, 967.79 acres were located in a 303(d) impaired sub-basin. This six-fold increase over a ten year period, reveal a discouraging trend in Marathon County. Various factors influence the increase of total acreage within phosphorus impaired sub-basins, and greater attention and analysis should be directed on a reach-by-reach investigation toward limiting or reversing this negative trend. This trend also indicates that the current NR 151 APSP are not sufficient to improve water quality conditions on a watershed level basis.

Appendix J-Allocations Current Criteria, Table J-5 of the TMDL report identifies the annual total phosphorus reductions from baseline conditions in order to meet local and downstream criteria for each TMDL reach. The Big Eau Pleine River Watershed is 358.1 square miles and is located in Clark, Marathon and Taylor Counties with an average annual phosphorus load of 69.8 tons. The impaired waters within this watershed include; Big Eau Pleine River, Dill Creek, East Branch Big Eau Pleine River, Fenwood Creek, Hamann Creek, Raeder Creek, Randall Creek, West Branch Big Eau Pleine River, and the Big Eau Pleine Flowage. To achieve the total phosphorus reductions goal, the Big Eau Pleine Reservoir calls for an 84% downstream reduction of phosphorus to meet the reservoir water quality TP standard of 30 µg/L and indicates a total phosphorus reduction of 113,031 pounds per year.

The Little Eau Pleine River Watershed is 250 square miles and is located in Clark, Marathon, Portage, and Wood Counties with an average annual phosphorus load of 38.3 tons. The impaired waters in this watershed include Little Bear Creek, Little Eau Pleine River, Squaw Creek, and Wild Creek. To achieve the total phosphorus reductions goal, the Petenwell Reservoir, with a TP standard of 40 µg/L, calls for a 79% downstream reduction of phosphorus is required and indicates a total phosphorus reduction

of 57,746 pounds per year.

The Rib River Watershed is 488.2 square miles and is located in Taylor, Marathon, and Lincoln Counties with an average annual phosphorus load of 52.2 tons. The impaired waters include Black Creek and Scotch Creek. To achieve the total phosphorus reductions goal, the Petenwell Reservoir calls for a 79% downstream reduction of phosphorus is required and indicates a total phosphorus reduction of 67,366 pounds per year.

The Upper Wisconsin River Corridor is 539 square miles and is located in Lincoln, Marathon, and Portage Counties with an average annual phosphorus load of 65.3 tons. Impaired waters within this watershed include the Wisconsin River, Eau Pleine Reservoir, and Lake Du Bay. The total phosphorus reductions goal calls for a 79% downstream reduction of total phosphorus reduction of 3,798 pounds per year.

Appendix N of the TMDL focuses on the agricultural phosphorus load allocations that reflect the phosphorus yields at the edge of field for each reach in Marathon County. The purpose of appendix N is to help provide agricultural practitioners, and producer's meaningful data to attain TMDL phosphorus-loading targets on cropland. Target levels vary per reach or subbasin and will require site-specific practices to be incorporated in order to achieve identified phosphorus reductions. It should be noted that compliance with total TMDL phosphorus reduction targets is voluntary unless the targets are adopted by county ordinance and DNR revision of the current NR 151 performance standards to reflect TMDL cropland reduction goals. Currently, NR 151 has an agricultural performance standard for phosphorus loss from cropland and pastures (i.e. fields must bemanaged to maintain a (P-Index score) 6. If a lower P-Index performance standard is not established by the State, Marathon County will never meet its phosphorus reduction goals to improve water quality standards in TMDL and 303(d) listed watersheds.

Appendix F of the TMDLs report contain tables showing HUC12 watersheds within Marathon County and the recommended phosphorus reduction necessary to meet water quality standards. The site-specific criteria (SSC) within the tables, allow aquatic parameters to be adjusted to local conditions and are often less costly to meet federal or state water quality standards.

Fenwood Watershed Pilot Project

Fenwood Creek Subwatershed is representative of the larger Big Eau Pleine (BEP) River Watershed relative to phosphorus loading, natuarl resource concerns and from primarily by nonpoint agricultural runoff. The Fenwood Creek Watershed drains approximately 39 square miles (24,958 acres) of land into the BEP reservoir. All studies, research, and monitoring efforts point to two primary causes of water quality degradation: soil sedimentation and nutrient enrichment, primarily from agriculture.

Marathon County initiated a pilot project in the Fenwood Creek watershed, which is a representative HUC 12 dairy industry-based watershed within the BEP River watershed. CPZ has and will continue to secure staff and cost share funding to implement and document improvements in the watershed. The Fenwood Creek wastershed has an EPA and DNR approved 9 Key Element Watershed-Based Plan. Initial and Intermediate outcomes for the Fenwood Creek plan will focus upon grant funded activities. Long-term outcomes will be administered through the proposed Wisconsin River Total Maximum Daily Load (TMDL) plan.

Water Quality monitoring by the DNR for the Upper Wisconsin TMDL provided four years (2010-2013) of water data in the Fenwood Creek to measure current nutrient loading levels. Based upon the median phosphorus concentration of the Fenwood Creek, the predicted average annual phosphorus load delivered to the Big Eau Pleine Reservoir is 11,288 pounds. In 2015, WI Department of Natural Resources staff determined that the current estimated phosphorus concentration (expressed as the flow-weighted mean) for Fenwood Creek is 187 µg/L. Furthermore, the DNR staff estimated that a 45% reduction in the flow-weighted mean concentration is needed to reach median concentration of 75 µg/L, the water quality goal for the Fenwood Creek. A 45% reduction of in-stream phosphorus represents nearly 5,080 pounds (based on the 11,200 pound 4 year average) determined by DNR 2010-2013 stream monitoring.

During the development of this report, CPZ staff conducted a simple qualitative habitat evaluation of land cover using WISCLAND2.0 data in a 60 meter buffer of all streams in the Fenwood Creek Watershed in a typical Marathon County

phosphorus impaired watershed, see Figures 2-22 and 2-23. The Fenwood Creek Watershed area includes the following Wisconsin River TMDL stream reaches 88, 89, 90, 325, and 326. The intent of this exercise was to evaluate land cover within the 60-meter buffer in comparison of all the overall land cover in the watershed. The findings within the buffer indicate the following land cover breakdown by percentage: 34% wetland, 30% forest, 23% agriculture, 13% grassland, with zero percentage for urban, open water, barren, and shrubland. Conversely, the land cover for the entire Fenwood Creek watershed had the following results: 51% agriculture, 24% forest, 14% grassland, 10% wetland, 1% urban with a zero percentage of open water, barren, and shrubland.

The initial observation of approved USEPA TMDL phosphorus data for the Fenwood Creek Watershed in comparison with land cover data appear to indicate that the dynamics and balance of land use and land cover is overloading the watershed's hydrologic and wetland complex system, thereby, preventing the ability of the natural system to function properly. This overloading and/or loss of function to assimilate nutrient loading within the Fendwood Creek watershed is also common in other 303(d) phosphorus impaired watersheds in Marathon County.

completed wetland restoration project

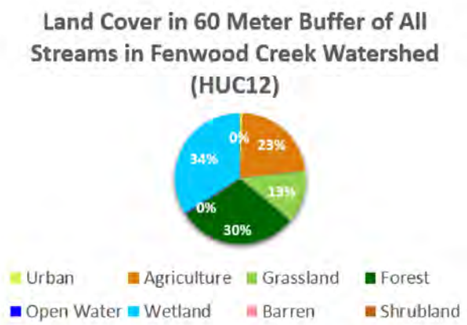
Wetland Conditions

According to WISLAND 2.0 digital data, Marathon County has 142,679 acres of wetland. The Mead (33,000 acres) and the McMillan (5,700 acres) Wildlife Areas are the most extensive wetland and grassland regions located in the county. Wetlands are important for nesting waterfowl and spawning fishes. The flowages in these areas were developed to create waterfowl nesting sites and feeding areas for migratory waterfowl.

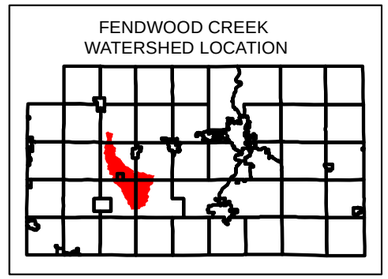
The Wisconsin Wetland Inventory (WWI) completed for the state in 1985 using aerial photography from 1978-79, shows approximately 5.3 million acres of wetlands remaining in the state representing a loss of about 47% of original estimated 10 million wetland acreage; however, this figure excludes small wetlands typically under 2 acres. A similar trend occurred in Marathon County, as wetlands were drained from the late 1940's through the 1970's, on the west side of the county for cropland through constructed "w"-shaped surface ditches. These long, narrow drainage channels improved crop production, but also increased runoff rates and the flashy nature of the streams. The majority of "w"-shaped surface drainage ditches still function in agriculture areas. As a result, many functions of wetlands have been disrupted in terms of providing critical habitat, water storage to help prevent flooding, groundwater recharge areas, and capacity to filter pollutants.

FENWOOD CREEK WATERSHED
LAND COVER IN 60 METER
BUFFER OF ALL STREAMS

MARATHON COUNTY, WI



WISCLAND2.0 LAND COVER
Beginning in 2014, the University of Wisconsin-Madison and DNR partnered on a project to map the current land cover of Wisconsin. The resulting dataset, known as Wiscland 2.0, was completed and delivered to the DNR in August 2016. The Wiscland 2.0 digital database is a complete update to the previous statewide Wisconsin land cover map.



Legend

TMDL Subbasins
Fenwood Creek Watershed

Land Cover - 60 M Buffer (Fenwood)

Wetland
Urban/Developed
Shrubland
Open Water
Grassland
Forest
Barren
Agriculture

MARATHON COUNTY

Map Date: 01/30/2020

FIGURE 2-22

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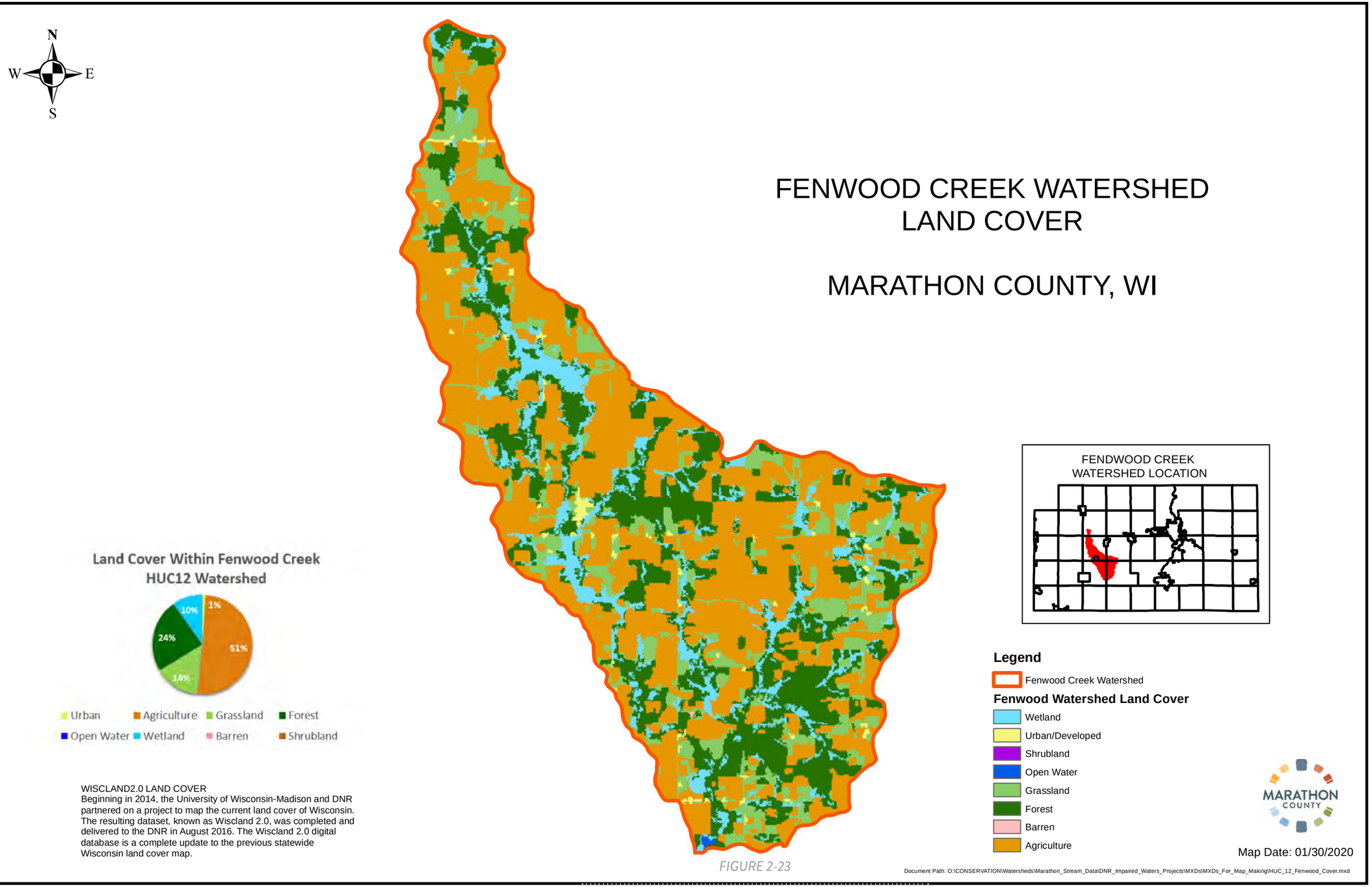
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FENWOOD CREEK WATERSHED
LAND COVER
MARATHON COUNTY, WI
Land Cover Within Fenwood Creek
HUC12 Watershed
1%
51%
14%
24%
10%
Urban
Agriculture
Grassland
Forest
Open Water
Wetland
Barren
Shrubland
WISCLAND2.0 LAND COVER
Beginning in 2014, the University of Wisconsin-Madison and DNR partnered on a project to map the current land cover of Wisconsin. The resulting dataset, known as Wiscland 2.0, was completed and delivered to the DNR in August 2016. The Wiscland 2.0 digital database is a complete update to the previous statewide Wisconsin land cover map.
FENDWOOD CREEK
WATERSHED LOCATION
Legend
Fenwood Creek Watershed
Fenwood Watershed Land Cover
Wetland
Urban/Developed
Shrubland
Open Water
Grassland
Forest
Barren
Agriculture
MARATHON COUNTY
Map Date: 01/30/2020
Document Path: O:\CONSERVATION\Watersheds\Marathon_Stream_Data\DNR_Impaired_Waters_Projects\MXDs\MXDs_For_Map_Making\HUC_12_Fenwood_Cover.mxd

FIGURE 2-23

Marathon County Chapter 22, Shoreland, Shoreland-Wetland, and Floodplain regulate wetlands; however, consideration should be given to establish greater protections in order to safeguard the remaining wetlands. The federal government and the DNR restrict development in wetlands through Section 404 of the Clean Water. Wetlands meeting the state definition are subject to DNR regulations and federal regulations may apply in addition to or instead of state regulations.

Woodland Conditions

According to DNR's Wisland 2.0 data, Marathon County has approximately 375,143 acres of forest. Much of the forest areas are managed and owned by private landowners. The county's Parks, Recreation, and Forestry Department manage nine forest units totaling 30,195 acres. The mission of the Marathon County Forest program is to manage and protect these natural resources on a sustainable basis for ecological, economic, educational, recreational, and research needs of present and future generations.

In the Marathon County Strategic Plan 2018 – 2022, the Parks, Recreation, and Forestry Department will support:

Objective 5.2: Promote sound land use decisions that conserve and preserve natural resources in decisions with economic development and growth.

Strategy F: Acquire land for Public Park and forest use to retain natural landscapes and resources.

Outcome Measure 3: The County acquires an average of 320 acres of land per year through 2022.

The long-term goal is to administer the Marathon County Forest Program, considering the recommendations of interested citizens, in a manner consistent with the mission statement and the purpose of the County Forest Law:

". . . to provide the basis for a permanent program of county forests and to enable and encourage the planned development and management of the county forests for optimum production of forest products, together with recreational opportunities, wildlife, watershed protection and stabilization of stream flow, giving full recognition to the concept of multiple use to assure maximum public benefits; to protect the public rights, interests and investments in such lands; and to compensate the counties for the public uses, benefits and privileges these lands provide; all in a manner which will provide a reasonable revenue to the Towns is which such lands lie." (Sec.28.11, Wis. Statutes)

The DNR MFL program provides incentives to protect privately owned woodlands from unmanaged timber practices, improper harvesting and prevents land from becoming developed and/or converted to agricultural land use. Lands are enrolled in the MFL program; these properties are no longer susceptible to further subdivision and continued residential housing sprawl, without penalty and withdrawal. According to the Wisconsin DNR Forest Crop Law & Managed Forest Law – 2019 Master Listing, Marathon County has 14,727.4 acres listed as "open" and 97,636.4 acres are listed as "closed."

Rare, Endangered, and Threatened Species and Communities

The Wisconsin Natural Heritage Inventory, last updated in August 2018, is a working list containing known species to be rare, endangered or threatened in the state along with natural communities native to Wisconsin. It includes species legally designated as "endangered" or "threatened." The DNR's Natural Heritage Conservation Program policy recommends that the **endangered** and **threatened** list should be reviewed every five years or earlier, as needed. Marathon County data is available at the county or township level and should be used for land management, master planning, community planning, conservation planning and review of public and private activities across the state in order to protect these threatened species and communities.

Source: https://dnr.wi.gov/topic/NHI/Data.asp

https://dnr.wi.gov/topic/NHI/documents/NHIWorkingList.pdf

Agricultural Land Conditions

Agricultural Land

According to the 2013 Marathon County Farmland Preservation Plan, agriculture in Marathon County, like the rest of Wisconsin, has experienced significant changes over the past 30 years. There are numerous reasons for these shifts in agricultural activities and practices including changes in economics, population growth, societal changes, operational practices, support services, and state and national policies. From 1987-2017 there has been a 19% decrease in acres of land in farms and a 27% decrease in the number of farm operations. Similar to most other farming areas in Wisconsin, remaining farm operations have tended to become larger with more livestock per farm (Figure 2-24), and more acres per farm—an 11% increase. There has also been a large decline in the number of dairy farms—a 68% decrease—(Figure 2-25) and a subsequent decrease in traditional perennial dairy forage crops such as alfalfa and grass hay, with a shift to more annual cash grain crops like corn and soybeans and more frequent tillage (Figure 2-26).

Along with this shift in crops has come an increase in soil erosion and its negative impacts on soil health and water quality. The soil erosion transect survey conducted by Marathon County CPZ indicates an increase in average county-wide cropland soil erosion from 1.6 tons/acre/year in 1999—the first year the survey was conducted—to 2.6 tons/acre/year in 2020, and a decrease in cropland fields meeting the Tolerable Soil Loss "T" erosion rate from 86% in 1999 to 75% in 2020.

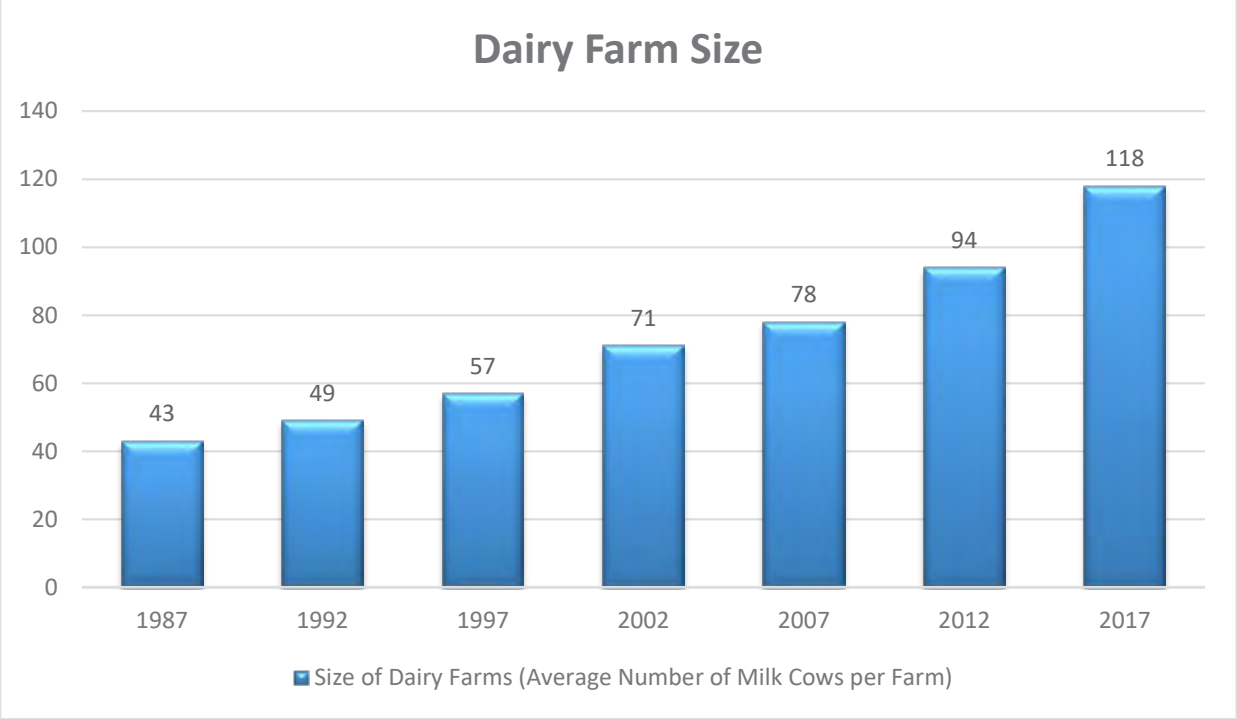


FIGURE 2-24 Source National Agricultural Statistics Service

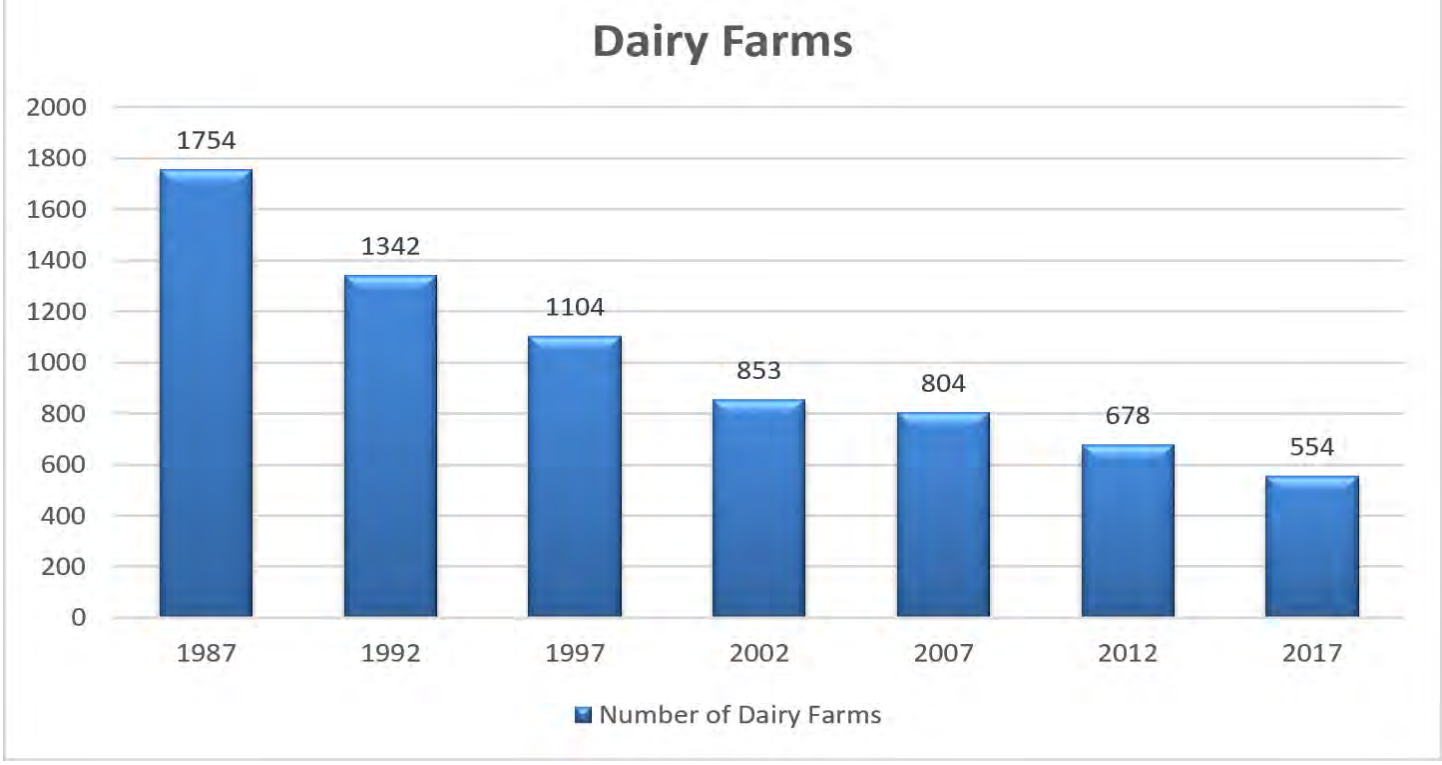


FIGURE 2-25 Source National Agricultural Statistics Service

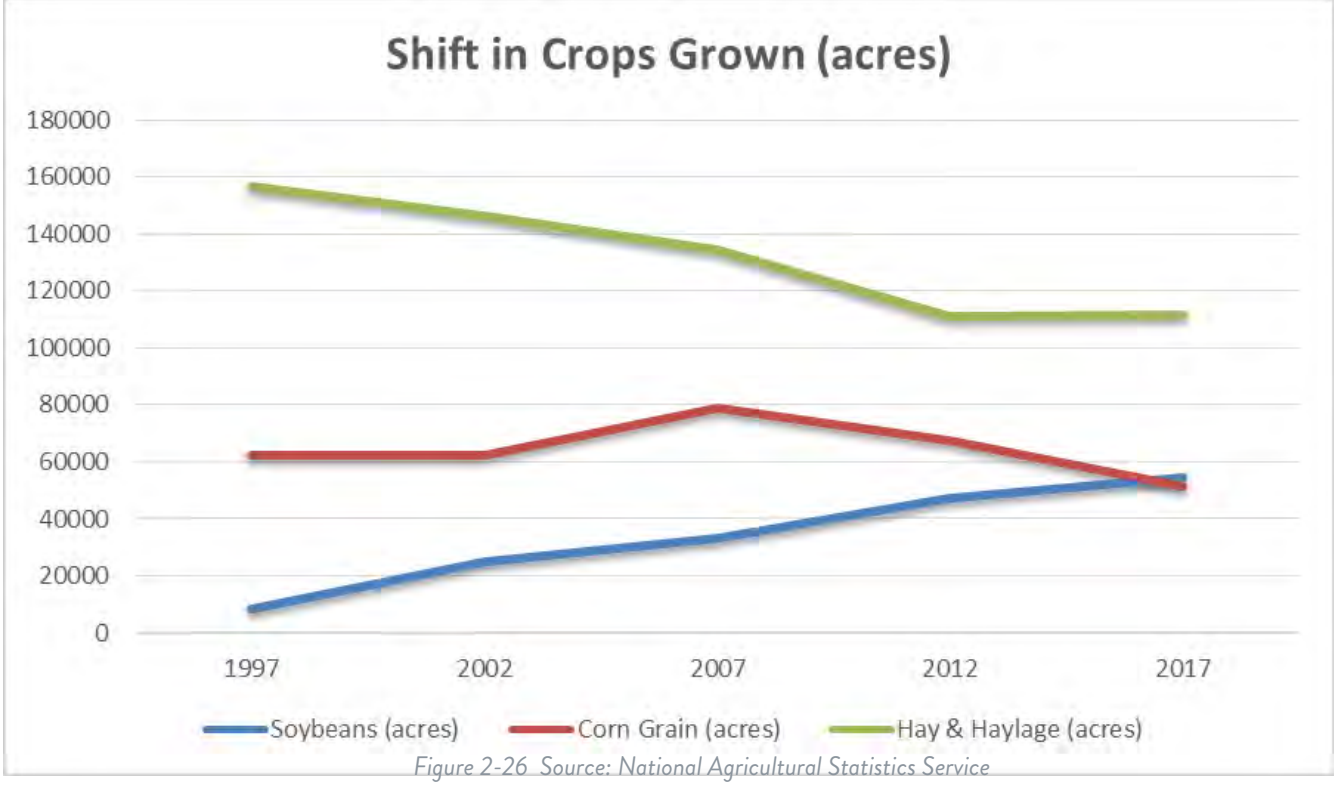


Figure 2-26 Source: National Agricultural Statistics Service

Winter manure spreading

To address resource concerns such as soil health and water quality, this LWRM Plan will continue to rely upon farm conservation programs and practices, both new and innovative and tried-and-true, such as the Farmland Preservation Program.

Animal Waste Management

According to the most recent WI DNR TMDL Watershed and 303(d) reports, phosphorus levels are increasing in streams and water bodies within the county. A new approach is needed that has the potential to lower phosphorus from manure spread during high risk times of the year (frozen, snow covered and saturated conditions). A primary goal of this plan will be to shift the application of manure outside of high risk times of the year over the next ten years. It has been estimated this will reduce phosphorus runoff on agricultural lands, by 250-360% during high risk times of the year (Peter A. Vadas USDA-ARS). The outcome of this new approach is to take steps to reach the goals of the Comprehensive Plan of Marathon County which identifies the reduction of agricultural nonpoint runoff to surface water (soil sediment, organics, and nutrients), in addition, the Strategic plan objective 5.2 and 6.3, and the Big Eau Pleine Strategic plan calls for the reduction and elimination of manure spread during high risk runoff conditons. Implementation of a much stronger strategy to eliminate manure spreading during high risk times is needed to reduce phosphorus runoff.

Currently, Marathon County is home to 145,000 head of cattle, 61,000 of which are milk cows and approximately 61,000 dairy replacement heifers. This is the second highest number of dairy livestock in the State. Livestock generate a large volume of manure each year, which is a great soil amendment but it is also rich in phosphorus. When properly managed, manure can be a great source of nutrients for growing crops, but when manure and its nutrients runs off of fields into local surface waters, it impairs local streams and significantly impacts water quality. The Wisconsin River TMDL study has now identified four main streams in the county as impaired from phosphorus, two of these are new additions in the last ten years. The chart (Figure 2-27) identifies the sources of phosphorus in the Big Eau Pleine watershed, which is reflective of most phosphorus impaired watersheds in the county. (Source: Wisconsin River TMDL study).

Unfortunately, the financial resources to address these problems from the State and Federal sources have continued to decrease over the last two decades. The county has continued to increase funding through the use of tax levy, program fees, and grants to address these problems, but overall financial resources have been decreasing. Eliminating or greatly restricting the spreading of manure when it is the highest risk time of the year is a strategy identified many times in various plans, but has yet to be implemented consistently at the county or state level.

The implementation of this strategy by the county will require a correct mix of regulation and voluntay efforts and will help to significantly reduce phosphorus during the highest time of the year for small and medium sized farms. DNR nonpoint source staf

fwill also play a critical role in this effort. A policy discussion by the Environmental Resources Committee on the correct mix of regulation and voluntary efforts is needed to address this large source of pollution.

Marathon County has attempted a variety of efforts to reduce runoff of manure during high risk times of the year. There has been over a sixty year effort to reduce both runoff of sediment and phosphorus from agricultural lands. Past efforts have included the following: Priority Watershed program, Animal Waste and Nutrient Management Ordinance, Livestock Facilities Licensing Ordinance, Nutrient management planning and cost sharing, Targeted Resource Management grants, Environmental Quality Incentive Program, Conservation Stewardship Program, Conservation Reserve Enhancement Program, Soil and Water Resource Management Program, and Managed Grazing. While these efforts have had local improvements and documented reductions, the gains have been lost to larger trends and the water resources slowly continue to degrade.

There are opportunities for new approaches to stem this tide of pollution. Conservation staff shall be directed to develop voluntary and regulatory options for county consideration with the intended outcome to greatly reduce the risk of runoff from manure during the high risk times of the year and through management changes which manure applications to move them to low risk times of the year.

By managing the amount of manure spread during high risk times, Marathon County can put in place a critical strategy to reduce phosphorus identified in the previously mentioned plans. The immediate goals of the Strategic Plan identifies the protection of surface and ground water as high priorities. Specifically Strategy B, the implementation of watershed plans, we can achieve improved water supplies that are not only safe for drinking but also for recreation, especially for fishable and swimmable waters with minimal cost.

If implemented, this new safeguard is estimated to reduce phosphorus runoff into the waters of Marathon County by up to 250-360% from farms that change their spreading practices each year.

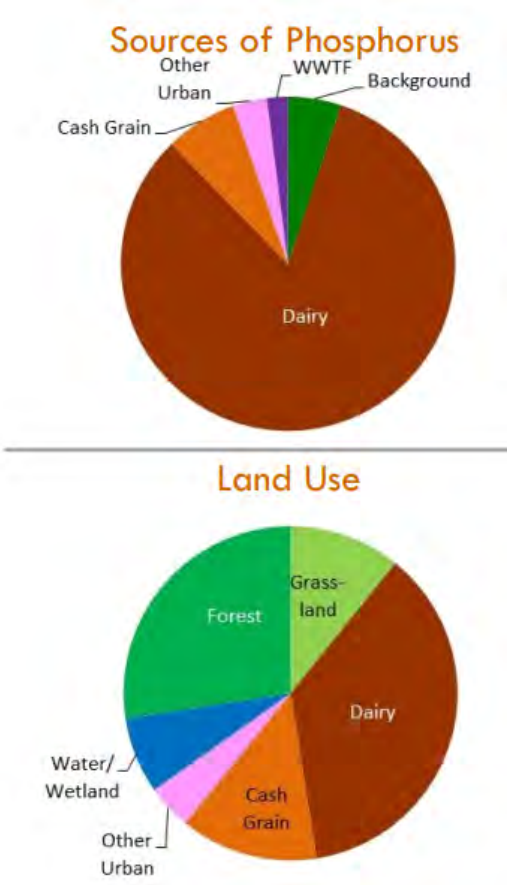


FIGURE 2-27
phosphorus contributions in the Big Eau Pleine watershed

POPULATION

According to Demographic Services, Wisconsin Department of Administration and the United States Census Bureau (American Fact Finder), Marathon County had a population of 125,834 residents in 2000, and increased to 134,063 in 2010. In 2019, the population estimate has slowly increased to 136,517, and is projected to increase to an estimated population of 150,130 by 2030 with a percentage increase rate of 5.6. The Wausau urban area heavily influences the population growth and development patterns. Ten communities indicated a loss of population change while the majority saw a very modest increase of population ranging between 0 to 4.99 percent. Only three communities; the City of Marshfield, the Village of Kronenwetter, and the Town of Weston had a population increase over 5 percent.

According to the State of Wisconsin Department of Administration's Demographic Services Center, Marathon County population increased by 1.83 percent for the period 2010 – 2019 with a final population estimate of 136,517.

historical farm field with small town in the background

IDENTIFICATION OF CONCERNS AND PRIORITIES

The Marathon County 2021-2030 Land & Water Resource Management Plan concentrates on updating resource data, incorporating information generated by the 2019 Wisconsin River Basin TMDL, review of goals, objectives, accomplishments, and implementation strategies to improve land and water natural resources. The LAC and Conservation staff reviewed goals, objectives, and existing water quality concerns to help align efforts to achieve the desired outcomes and goals over the 10-year planning period.

Marathon County Accomplishments (2010 – 2020)

The County's highlights regarding our endeavors and accomplishments over the last 10 years are illustrated below to demonstrate significant achievements toward implementation of the 2010 LWRM Plan goals, and include the following:

LWRM PLAN ACCOMPLISHMENTS

2010

- Led Conservation Observance Day for WI Conservation Farmers of the Year

2011

- Initiated Eastern Marathon County Lakes project

2012

- Awarded $400,000 US EPZ Brownfields Assessment Grant for Wausau River District remediation

2013

- Joined Heart of America's Dairyland and Antigo Flats Agricultural Enterprise areas

2014

- Adopted new Farmland Preservation Zoning District protecting over 111,000 acres from conversion to other uses

2015

- Completed closure of 150th idle or failing Waste Storage Facility as part of Safe Water project

2016

- Initiated Fendwood Creek Pilot Watershed project securing newarly $1,000,000 in grant funds

2017

- Provided Catalyst and Vision and secured initial funding for Eau Pleine Partership for Integrated conservation community-led watershed partnership

2018

- Developed Metallic Minng regulations to protect the environment of the county

2019

- Educated and qualified/requalified over 105 diiferent Marathon County farmers to develop their own Nutrient Management Plan

2020

- Completed and closed out the last of 21 Environmental Impact Fund projects

Select Accomplishments by 2010 LWRM Plan Goal

Goal 1: Reduce Agricultural Nonpoint Runoff

Objective: Reduce the discharge of soil sediment, organic materials, pesticides and nutrients into surface and ground waters. This runoff includes specific concerns about soil erosion rates on cropland and the loss of organic matter in the topsoil.

Strategies to address this resource concern include:

a. Reduce non-point runoff leaving the cropland; Accomplishment: Led efforts to educate farmers about the benefits of managed grazing, reduced and no-till farming methods to reduce runoff from cropland and increased implementation oncropland. Increased acreage of all three cropland practices over the last decade.

b. Improve nutrient management activities of livestock farms; Accomplishment: County cropland with a nutrient management plan increased from 45 % in 2010 to 57% in 2019, well above the state-wide percentages.

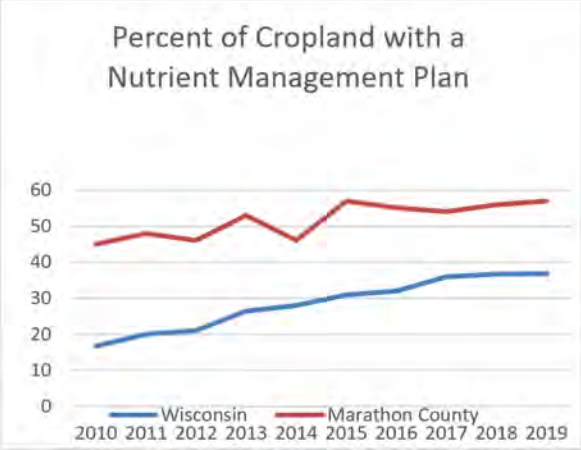


FIGURE 2-28 Source: Wisconsin DATCP records

c. Educate landowners about their compliance status with State Agricultural Performance Standards and best management practices, including enforcement strategies; Accomplishment: All Farmland Preservation participants, cost share recipients, and ordinance permittees were provided status reviews of their farms for compliance.

d. Minimize bare, unprotected soil during critical soil erosion periods; Accomplishment: Managed grazing is one of the most effective farming practices to keep soil covered with vegetation year-round. Land in the county planned for managed grazing increased from 23,602 acres in 2010 to 32,914 acres in 2019.

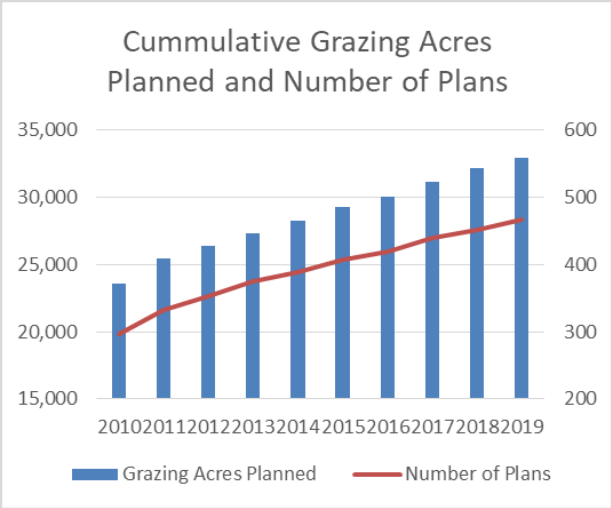


FIGURE 2-29 Source: CPZ, Managed Grazing records

e. Provide adequate program and financial incentives to implement best management practices; Accomplishment: CPZ provided county farmers between approximately $126,000 and $204,000 of DATCP-allocated cost share payments annually between 2010 and 2019. Secured just over $4,000,000 of DNR cost share funds that went directly to landowners to complete large projects.

f. Promote and educate landowners about new manure management technologies.

FIUGRE 2-30 Source: CPZ, cost-sharing reecords

Outcomes: Promote best management practices that lower the soil erosion rate on cropland. This includes managed grazing, residue management, and crop rotation.

- Reduce soil sedimentation delivery rates. Where upland treatment of cropland erosion is not adequate to protect water quality, promote the development of wetlands and sediment basins along field edges to collect sediment and minimize nutrient delivery to waters.

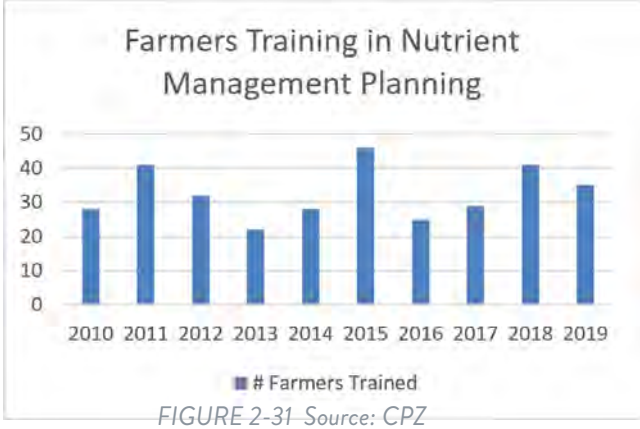


FIGURE 2-31 Source: CPZ

Increase nutrient management education and implementation efforts. This includes education relative to the profitability associated with best management practices such as Managed Grazing and nutrient management planning. Accomplishment: Trained 22-45 farmers per year to write or update their own nutrient management plans for their farm operation.

- Create a Farmer Advisory Group. This group representing diverse interests and program participation would provide suggestions and accountability to program delivery and effectiveness, as well as serve as ambassadors to the program outcomes. Accomplishment: In 2017, CPZ was a key catalyst, provided vision, and secured funding for the Eau Pleine Partnership for Integrated Conservation (EPPIC), Wisconsin's largest community-led watershed partnership.

- Develop new local ordinance authority to require winter spreading plans for manure applications in critical areas. The staffs would develop education and criteria for the development of winter spreading plans in critical watersheds where water quality is compromised by manure applications on frozen and snow-covered ground and spring runoff period. Accomplishment: Environmental Resources Committee (ERC) was provided with a policy paper on high risk manure spreading activities, and initial recommended changes. ERC chose not to discuss policy changes to current efforts.

Goal 2: Groundwater (Quality and Quantity)

Objective: A growing population and industrial base has led to a growing concern about both the supply and quality of our groundwater resources. Cropland irrigation and large livestock operations are high quantity agricultural water users, but urban centers need to reach farther and farther out into rural areas to access water. Industrial growth is now contingent upon access to outside-sourced water. Wellhead protection and infrastructure proposals to distribute water to rural communities are increasingly important.

Strategies to address this resource concern include:

a. Educate the public and users about groundwater use and challenges; Accomplishment: Enacted Metallic Mining Ordinance for Eastern Marathon County. Educated ERC on discharges of septage to surface water, ground water, bedrock. ERC took action to address all POWTS installed prior to 1980 with failing tanks and surface discharges. Established low interest revolving loan program to cover cost of replacement.

b. Maintain the current groundwater levels in our aquifers;

c. Increase the infiltration of rain and snowmelt to replenish aquifers; Accomplishment: Began soil health efforts on cropland which increase infiltration. Continued to protect wetlands and floodplains from development, which serve to recharge aquifers.

d. Maintain and improve the functioning of wetlands; and

e. Protect wellhead recharge areas from pollution. Accomplishment: Safe Water Project implemented to accelerate efforts to close idled waste storage facilities, to protect groundwater and surface water.

A SAFE WATER PROJECT:

AN ACCELERATED EFFORT TO CLOSE LIVESTOCK WASTE STORAGE FACILITIES IN HIGH RISK ENVIRONMENTAL SITES

January 2011

Prepared by:

Marathon County
Land Conservation & Zoning Committee

Excavator scraping grass mat off surface of an idle waste storage facility so manure/liquids can be agitated and pumped.

Idle manure storage facilities are a safety hazard and a threat to surface and groundwater

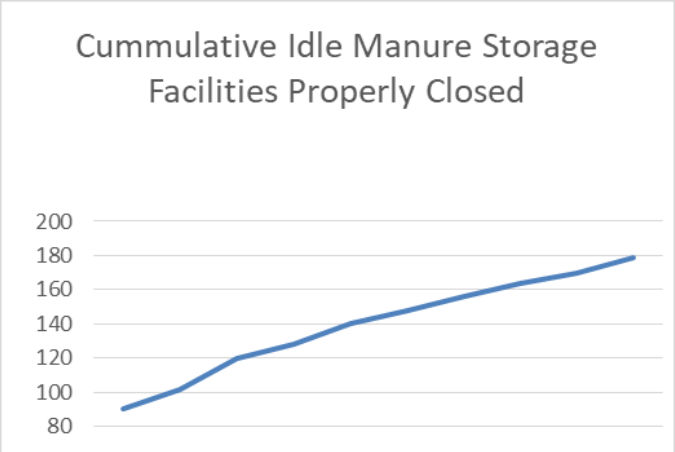


FIGURE 2-32 Source: CPZ, Safe Water Program and GIS database

Accomplishment: Adopted Wellhead Protection overlay zoning district to institute land use regulations to protect municipal water supplies in county-zoned towns, as part of the county's 2016 comprehensive zoning revision.

Outcomes:

- Develop education and incentive strategies to increase conservation of water in both urban and rural areas.

- Incorporate groundwater education and well sampling opportunities into farm visits by staff.

- Review and update Marathon County Groundwater Protection Plan (2001) Accomplishment: Marathon County has identified the need to update the plan. A timeline for plan completion has been developed and early steps have begun with a proposed

completion date of December 2022.

Goal 3: Forestry

Objective: There are approximately 400,000 acres of forest land use in Marathon County. Much of the management of these lands rests with private landowners. Forests need to be managed and promoted to provide large blocks of habitat and maintain sound watershed management, including maximizing groundwater recharge.

Strategies to address this resource concern include:

a. Reforestation of barren lands and idled cropland;

b. Maximize participation in Managed Forest Land program (MFL);

c. Keep large tracts of forest land;

d. Sustainable and healthy private and public forests;

e. Healthy school forest centers; and

f. Minimize invasive species.

Outcomes:

- Increase education and participation with local 4-H groups and schools to promote tree plantings (urban and rural). Includes promotion of planting projects for groups.

- Educate farmers about forest management and economic opportunities during farm visits.

- Officials and staff need to increase participation in regional and state program development and policy.

- Develop a strategy to identify and target land parcels that could benefits from woodland development. (Examples include fallow cropland and urban-rural transition areas). Promote tree planter use and planning for these landowners. Accomplishment: Marathon County continued providing tree planters as a cost-effective means for landowners to for woodland development. Rental of planters assisted in the planting of over 30,000 trees.

Source: CPZ, Tree Planter

Accomplishment: Worked with Golden Sands RC&D on forestry and deer management plans through the Cooperating for Woods and Wildlife program.

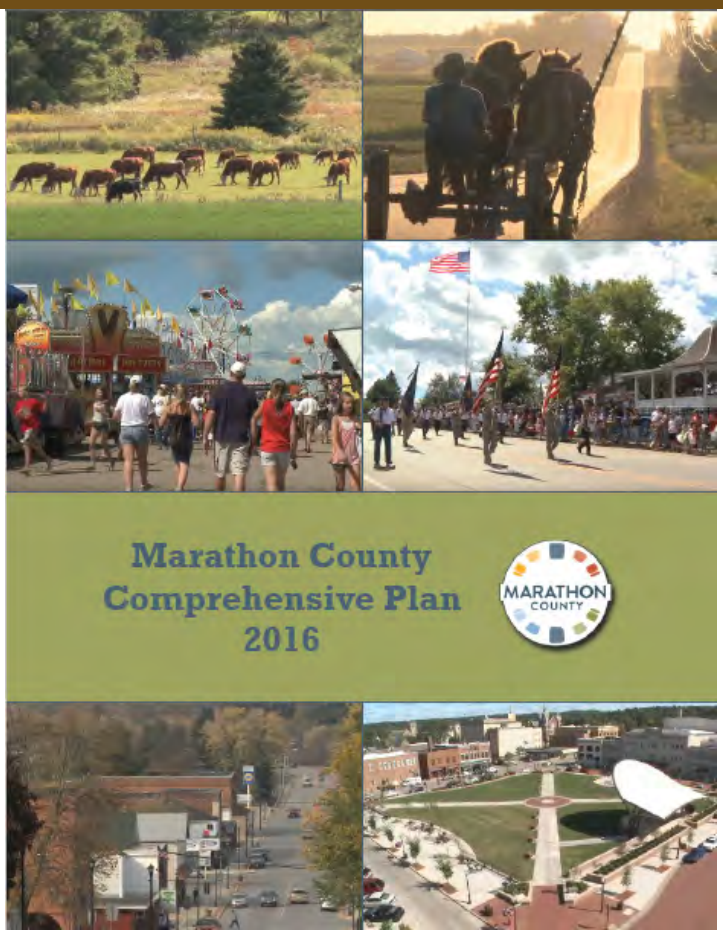
Outreach in a forest unit

Goal 4: Land Conversion

Objective: Conversion and fragmentation of agricultural cropland and woodlands from productive use is a continuing concern in Wisconsin and Marathon County. The protection of these cropland and woodland land uses are important to maintaining the rural and cultural integrity of our communities, but more importantly assure that the economic benefits of these sectors are realized. Sound land use requires policies that conserve resources and allow for the profitable use of the land.

Strategies to address this resource concern include:

a. Update Marathon County Comprehensive Plan to address the intent of the Working Lands Initiative and local implementation strategies; Accomplishment: 2016 update to Marathon County Comprehensive Plan included elements of the Working Lands Initiative as objectives and strategies of the plan.



Marathon County Comprehensive Plan

b. Maintain prime farmland in production

c. Minimize fragmentation of cropland by housing developments; and

d. Provide producers with viable opportunities to protect farmland from conversion.

Outcomes:

- County officials must be actively engaed in regional and statewide groups to provide leadership in this land use effort.

- Provide administrative and educational support to local municipal and Town officials in presenting initiatives through the Working Lands Initiative. Specifically, the County (staff and officials) must be available to discuss zoning ordinances, enterprise areas, and conservation easements. Accomplishments: Updated Farmland Preservation Plan, General Zoning Ordinance and Comprehensive Plan. Implemented strategies in these plans, all of which support a, b, and c above along with outcomes listed.

- Identify a tracking and selection process for location of Agricultural Enterprise Areas and conservation easements to maximize the effectiveness of the program opportunities. Accomplishment: Successfully petitioned and joined Heart of America's Dairyland and Antigo Flats Agricultural Enterprise Areas, designating 140,343 acres for landowner program opportunities including Farmland Preservation Program eligibility.

Antigo Flats Agricultural Enterprise Area

Goal 5: Lake and Reservoir Management

Objective: The management of our lake and reservoir resources is growing concern to the shore land residents, users, and local businesses. This resource concern encompasses the areas of wetland management and aquatic invasive species. There is a great participation by local landowners in securing information and resources to better protect our water resources.

Strategies to address this resource concern include:

a. Maintain existing wetlands;

b. Restore critical drained wetland areas along surface waters;

c. Keep sediments and nutrients out of wetlands to maintain function;

d. Improve awareness of public about the value and importance of wetlands; and

e. Develop a county-wide inventory and status report for aquatic invasive species. Accomplishment: Completed and implemented Aquatic Invasive Species plan.

Aquatic Invasive Species

Outcomes:

- Develop an Operation and Maintenance Plan for the aerator system at the Big Eau Pleine River Reservoir that assures the long-term operations and effectiveness of the equipment. Accomplishment: The Big Eau Pleine Aeration Task Force reviewed and updated the Big Eau Pleine Aerator System Operation Memorandum of Agreement. A new system was installed and is being operated when needed, through a diverse partnership.

- Develop a long-term strategy to minimize the agricultural nonpoint runoff contributions to the Big Eau Pleine River and Reservoir. Accomplishment: "Strategies for Reducing Fish Kills in the Big Eau Pleine Reservoir" strategic plan laid the groundwork for innovative strategies to address agricultural runoff in the Big Eau Pleine watershed, such as the EPPIC producer-led watershed group.

- Develop Lake Management Plan for the Eastern Lakes Project utilizing community contributions and assessment data gathered from the Eastern Lakes Project. Accomplishment: Completed and adopted eleven Eastern Marathon County Lake management plans utilizing leadership, technical assistance and grants acquired by CPZ staff.

Source: BEPCO, Installation of the new Aeration system in the Big Eau Pleine Reservoir

- Develop Lake Management Plan for Big Eau Pleine River and Reservoir from land use and water quality assessment data gathered by DNR, WVIC, and Marathon County. Accomplishment: Completed and began implementation of "Strategies for Reducing Fish Kills in the Big Eau Pleine Reservoir" strategic plan in partnership with Big Eau Pleine Citizens Organization.

- Educate landowners about the health of existing resources and efforts that the community can take to improve the concerns.

- Provide educational and technical support to lake residents and citizen groups in caring for lakes and reservoirs. Accomplishment: Created and filled a Water Resources Technician staff position to work with lake residents and citizens groups on implementing

Source: UWSP, Big Eau Pleine Reservoir

lake located in eastern Marathon County

the lake management plans, shoreland buffers and educational efforts that were developed as part of the Eastern Marathon County Lakes project.

Source: Tyler Betry, Completed Shoreland buffer on public lands

Agricultural Performance Standards and Prohibitions Accomplishments

Although compliance with the NR 151 APSP by farmers and other rural landowners was not a specific goal of the 2010 LWRM Plan. However, implementation of the various conservation practices and strategies designed to meet the five 2010 LWRM plan goals inherently led to progress toward meeting the APSP. Because meeting the APSP is, in fact, an integral part of achieving and meeting the specified goals of the 2020 LWRM Plan, following is a baseline analysis/status of compliance with the APSP in Marathon County over the 2010-2019 implementation period of the 2010 LWRM Plan, where data was available. This will serve as a benchmark to measure continued progress toward meeting the APSP during the implementation period of the 2021-2030 LWRM Plan.

1. Cropland and Pasture Soil Erosion Control

TABLE 2-1 Goal: 100% of cropland and pastureland meets Tolerable Soil Loss "T".

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
%*	87	-	81	-	83	-	79	-*	78	-*

(Data Source: Marathon County Soil Erosion Transect Survey)

* No data available for odd number years.

2. Cropland and Pasture Nutrient Management

TABLE 2-2 Goal: 100% of cropland and (required) pastureland has a Nutrient Management Plan.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
%	45[1]	48[1]	46[1]	53[1]	46[2]	57[2]	55[2]	54[2]	56[2]	57[3]
Acres*	131,000	141,000	134,000	153,000	140,000	171,000	166,000	164,000	169,000	169,000

(Data Source: DATCP annual Wisconsin Nutrient Management Update publications)

* DATCP reported acres.

1 Based on 2007 NASS harvested cropland acres. 292,078 acres.
2 Based on 2012 NASS harvested cropland acres. 302,081 acres.
3 Based on 2017 NASS harvested cropland acres. 298,524 acres.

Source: CPZ, Low-disturbance liquid manure injection

3. Cropland and Pasture Phosphorus Index (PI)

TABLE 2-3 Goal: 100% of cropland, pastureland, and winter grazing areas meet PI of average of 6 or less over the accounting period, or 12 or less in any one year.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
%*	45	48	46	53	46	57	55	54	56	57

(Data Source: DATCP annual Wisconsin Nutrient Management Update publications)

* % listed is based upon % of harvested cropland acres under nutrient management plan. Actual % is likely much higher, but has not been inventoried at this time.

4. Cropland Tillage Setback

TABLE 2-4 Goal: 100% of tillage operations meet a minimum 5 foot setback from surface waters.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
%*	45	48	46	53	46	57	55	54	56	57

(Data Source: DATCP annual Wisconsin Nutrient Management Update publications)

* % listed is based upon % of harvested cropland acres under nutrient management plan. Actual % are likely very close to 100% due to topographic and hydrologic conditions in the county. I.e. Broad, wet river bottoms and riparian wetlands.

Source: Unknown, Streambank protected with vegetative cover.

5. Manure Storage Facilities

a. New construction or substantial alterations meet standards

TABLE 2-5 Goal: 100% of new construction and substantial alterations meet NRCS standards.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
%	100	100	100	100	100	100	100	100	100	100

(Data Source: CPZ Animal Waste Storage Facility tracking)

Source: CPZ, prepping for a new manure strorage facility

b. Closure within two years of becoming idle

TABLE 2-6 Goal: 100% of idle manure storage facilities are safely closed according to standards.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
%*	60	68	80	85	64	68	71	75	78	82
Closed	90	102	120	128	140	148	156	164	170	179
Idle	61	49	31	23	79	71	63	55	49	40
Idle + Closed	151	151	151	151	219	219	219	219	219	219

(Data Source: CPZ Safe Water Project data; CPZ Animal Waste Storage GIS database)

* This % represents the % closed vs idle and still requiring closure.

cleaning out contaminated soil during the abandonment of an idle storage pit

c. Failing or leaking facilities must be upgraded, replaced, or closed

TABLE 2-7 Goal: 100% of failing or leaking manure storage facilities are upgraded, replaced, or closed.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
%*	-	-	-	-	-	-	-	-	-	-

(Data Source: None)

* CPZ does not currently have an inventory of this performance standard, therefore no data is available, but any identified failing or leaking facilities are brought into compliance with ordinance requirements within two years of awareness of violation.

6. Clean Water Diversions for feedlots, barnyards, and storage manure in WQMA

TABLE 2-8 Goal: 100% of feedlots, barnyards, and stored manure located in Water Quality Management Areas (WQMA) have clean water diversions.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
#*	18	22	24	27	25	25	25	30	30	55

(Data Source: CPZ Livestock Facility Licensing/TRM/NOD/CAFO tracking, and CPZ FPP GIS database)

*CPZ does not have a % in compliance, nor does it have a full county inventory.

7. Process Wastewater Management

TABLE 2-9 Goal: 100% of livestock producers shall have no significant discharge of process wastewater to waters of the state.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
#	20	25	27	31	29	31	33	40	43	50

(Data Source: CPZ Livestock Facility Licensing/TRM/NOD/CAFO tracking, and CPZ FPP GIS database)

8. Manure Management Prohibitions

a. No overflow of manure storage facilities

TABLE 2-10 Goal: 100% compliance by all livestock producers.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
%	99.4	99.2	99.7	100	99.7	99.7	100	99.5	99.8	99
Actual Overflows	2	3	1	0	1	1	0	2	1	4
Active Storages	339	351	358	361	377	393	404	409	411	417

(Data Source: CPZ Animal Waste Storage GIS database, Complaints GIS database, and CPZ FPP GIS database)

Source: CPZ, Runoff from overflowing manure storage facility

b. No unconfined manure piles in a Water Quality Management Area

TABLE 2-11 Goal: 100% compliance by all livestock producers.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
#	15	19	23	26	25	25	25	27	27	28

(Data Source: CPZ Livestock Facility Licensing/TRM/NOD/CAFO tracking) *CPZ does not have a % in compliance, nor does it have a full county inventory.)

Source: CPZ, Unconfined manure pile flowing into wetland/stream

c. No direct runoff from a feedlot (barnyard) or stored manure into waters of the state

TABLE 2-12 Goal: 100% compliance by all livestock producers.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
#	23	27	29	33	32	34	33	36	36	167

(Data Source: CPZ Livestock Facility Licensing/TRM/NOD/CAFO tracking) *CPZ does not have a % in compliance, nor does it have a full county inventory.)

d. No unlimited livestock access to waters of the state without self-sustaining vegetation cover (streambank protection)

TABLE 2-13 Goal: 100% compliance by all livestock producers.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
#	16	20	23	27	25	26	26	28	28	29

(Data Source: CPZ Livestock Facility Licensing/TRM/NOD/CAFO tracking) *CPZ does not have a % in compliance, nor does it have a full county inventory.)

Source: CPZ, Uncontrolled cattle access to stream

CHAPTER 3 | GOALS, OBJECTIVES, STRATEGIES & OUTCOMES

Approach Perspective

The foundation of the Land and Water Resource Management Plan for Marathon County is soil health. The role of soil health is critical for the capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. The role of healthy of soil to improve infiltration, reduce flooding, temper droughts and improve base flow for streams and rivers is vastly underestimated. If we are to improve our environment from uncheck runoff it starts with healthy soils.

The importance of managing soils so they are resilient and sustaining for this and future generations cannot be overlooked. To do this, we need to consider soil as living organism that when provided the basic necessities for life performs functions required to produce food and fiber but also clean our environment. Only "living" things can have health, so we must consider soil as a living ecosystem. It is teaming with billions of bacteria, fungi, and other microbes that are the foundation of a symbiotic ecosystem. A healthy soil ecosystem provides nutrients for plant growth, absorbs and holds rainwater for use during dryer periods, filters and buffers potential pollutants from leaving our fields, which is the foundation for all agricultural and forest activities. If we were to measure only one criterion for healthy soils it would be the organic matter level. If organic matter levels are decreasing our soils are losing health, if they are increasing soil health increases. What is truly essential for soil health is covering our soils year round to improve infiltration, reduce erosion and nutrient loss. The agricultural practices most common for this are managed grazing, cover crops, conservation tillage, crop rotation, and perennial forages. This applies to not only agriculture but construction sites, shoreland riparian areas, buffer strips and other best management practices. We can no longer leave our soils exposed to the elements for long periods of time, especially from early October through mid-June if we want to have healthy soils along with clean surface and ground water.

Plan Goals, Objectives, Strategies, Outcomes and Contributors

The overarching goal of the LWRM Plan is to support the county's following goal statement: **"Marathon County is the healthiest, safest, and most prosperous county in Wisconsin"**. Achieving this overarching goal will require many different small steps taken in concert in a coordinated effort across Marathon County as outlined in this chapter. The LWRM Plan is designed to align with Marathon County's Comprehensive and Strategic Plans to improve and protect land and water resources within the county.

The LAC reviewed and updated the goals, objectives, and strategies of the 2021-2030 LWRM Plan. For clarity, the goals, objectives, strategies, and measurable outcomes are defined to explain the differences among the three elements.

Goals are statements about Marathon County's aspirations in the topic area.

Objectives are vision statements which provide direction to the subtopics within the areas of each goal.

Strategies are key steps, which should be taken to meeting the objective and reaching the goal.

Outcomes are measures or targets to further define success with respect to goals and objectives.

HEALTHIEST, SAFEST, MOST PROSPEROUS - WHY IS THIS IMPORTANT?

The future health and social well-being of Marathon County will be determined to a large extent by how the natural environment contributes to an individual's lifelong health and well-being. The social, economic, and physical environment in which a person lives shapes his or her individual characteristics and behaviors. And to that end, Marathon County is committed to being a strong supporter of the agriculture community while striving to achieve watershed restoration, and reducing nonpoint source pollution such as phosphorus. The reduction of phosphorus from watershed projects and practices will allow the county to assess progress toward improving water quality standards, and will align planning and decisions necessary to ensure continued progress.

Land Water Resource Management Plan GOALS:

1. Land resources are protected and improved and protected county-wide.
2. Surface water quality is protected and improved.
3. Groundwater is protected and improved.
4. Actively educate and engage all community stakeholders to develop an understanding of land, surface water, and . groundwater quality concerns.

Plan Goals

GOAL 1: LAND AND RESOURCES ARE PROTECTED AND IMPROVED COUNTY-WIDE.

Objectives:

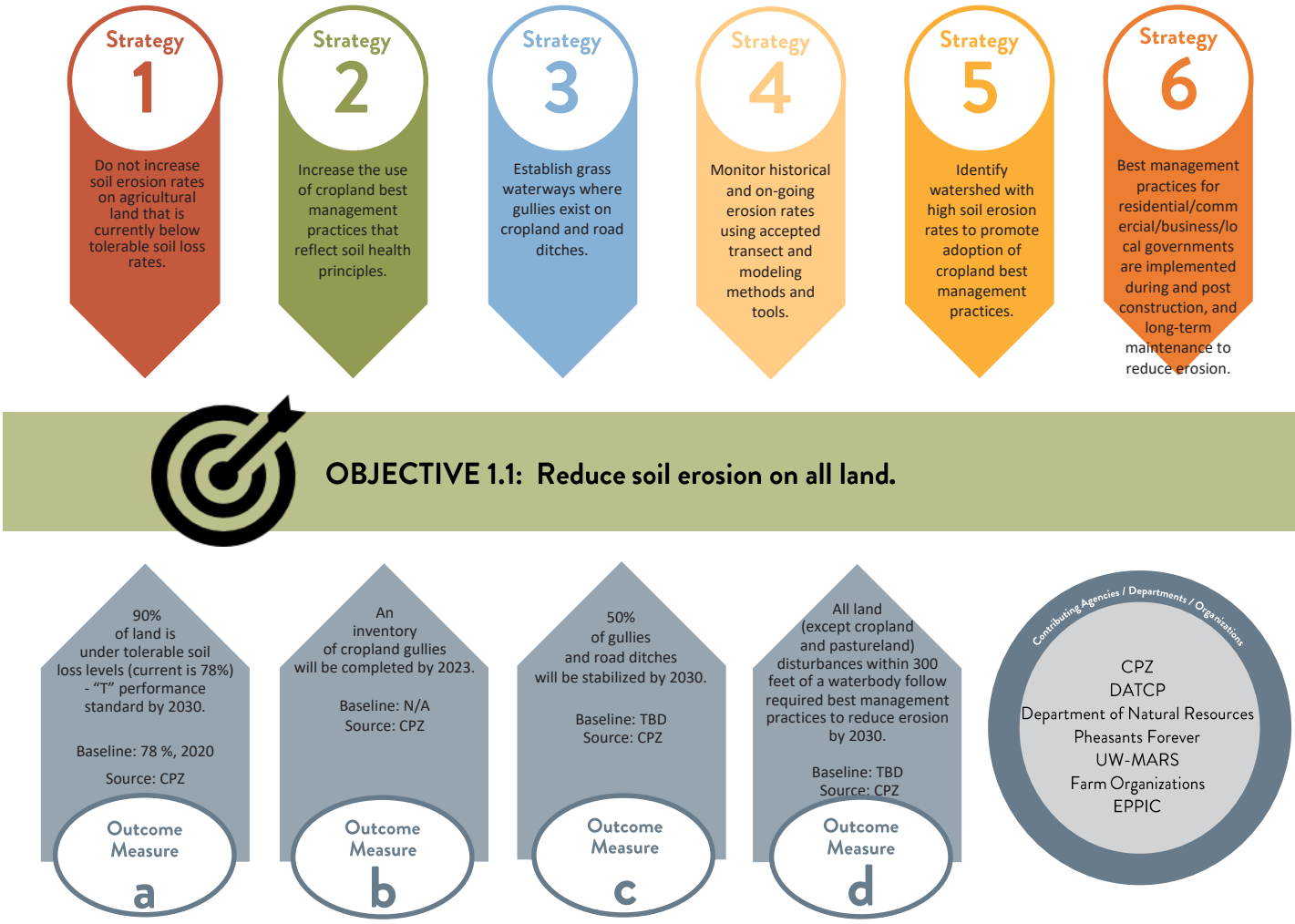
1.1 Reduce soil erosion on all land.

Strategies:

1. Do not increase soil erosion rates on agricultural land that is currently below tolerable soil loss rates.
2. Increase the use of cropland best management practices that reflect soil health principles.
3. Establish grass waterways where gullies exist on cropland and road ditches.
4. Monitor historical and on-going erosion rates using accepted transect and modeling methods and tools.
5. Identify watershed with high soil erosion rates to promote adoption of cropland best management practices.
6. Best management practices for residential/commercial/business/local governments are implemented during and post construction, and long-term maintenance to reduce erosion.

Outcome Measures:

a. 90% of land is under tolerable soil loss levels (current is 75%) - "T" performance standard by 2030.
b. An inventory of cropland gullies will be completed by 2023.
c. 50% of gullies and road ditches will be stabilized by 2030.
d. All land (except cropland and pastureland) disturbances within 300 feet of a waterbody follow required best management practices to reduce erosion by 2030.



Infographic 3-1

1.2 Improve soil health.

Strategies:

1. Monitor organic matter levels on agricultural land and utilize data to track trends in organic matter levels.
2. Increase organic matter on agricultural land.
3. Fully manage manure in a fashion where it benefits the health of the soil and productivity of the crops being grown.
4. Explore new soil testing methods to identify and improve soil health.
5. Increase soil health and productivity through newly adopted practices such as cover crops, small grains, reduced till and no-till farming, perennial forages, managed grazing and soil amendments.
6. Increase the number of farmers/owners utilizing new proven soil health testing methods.

Outcome Measures:

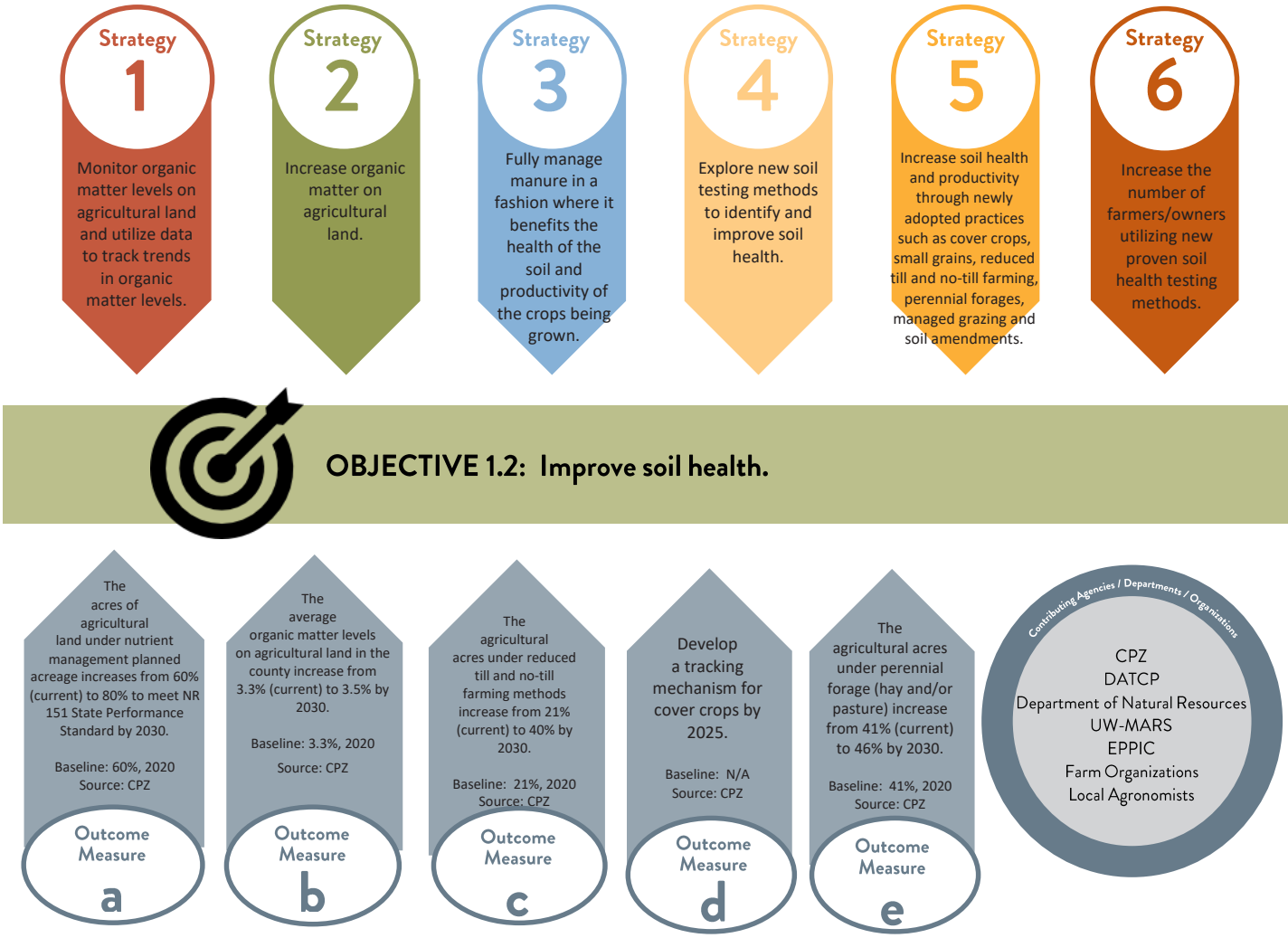
a. The acres of agricultural land under nutrient management planned acreage increases from 57% (current) to 80% to meet NR 151 State Performance Standard by 2030.

b. The average organic matter levels on agricultural land in the county increase from 3.3% (current) to 3.5% by 2030.

c. The agricultural acres under reduced till and no-till farming methods increase from 27% (current) to 40% by 2030.

d. Develop a tracking mechanism for cover crops by 2025.

e. The agricultural acres under perennial forage (hay and/or pasture) increase from 41% (current) to 46% by 2030.



Infographic 3-2

1.3 Forest management - Private and public forest lands in Marathon County are well managed to support wildlife, recreation and timber harvest goals.

Strategies:

1. Engage private landowners in land stewardship to participate in state and federal programs, including but not limited to the Managed Forest Law (MFL) program, the Deer Management Assistance Program (DMAP), and the Environmental Quality Incentives Program (EQIP).
2. Encourage private landowners to work together to align their own forest and wildlife habitat management objectives with landscape scale plans established by the state.
3. Provide education and best management practice options to reduce erosion during harvest.
4. Encourage forested pastures to be properly managed.
5. Encourage the establishment and/or maintenance of windbreaks for erosion control and energy conservation through working in partnership with the Central Wisconsin Windshield Partnership (CWWP).
6. Private forest lands are established and maintained as a viable land use.
7. Public forest lands in Marathon County are well managed to support wildlife, recreation and timber harvest goals as specified in the Marathon County Forest Comprehensive Land Use Plan.

Outcome Measures:

a. Establishment of a Demonstration Forest on a private landowner's property through Golden Sands RC&D's projects by 2023. This landowner will serve as a resource to other landowners looking to get involved in new land management programs.

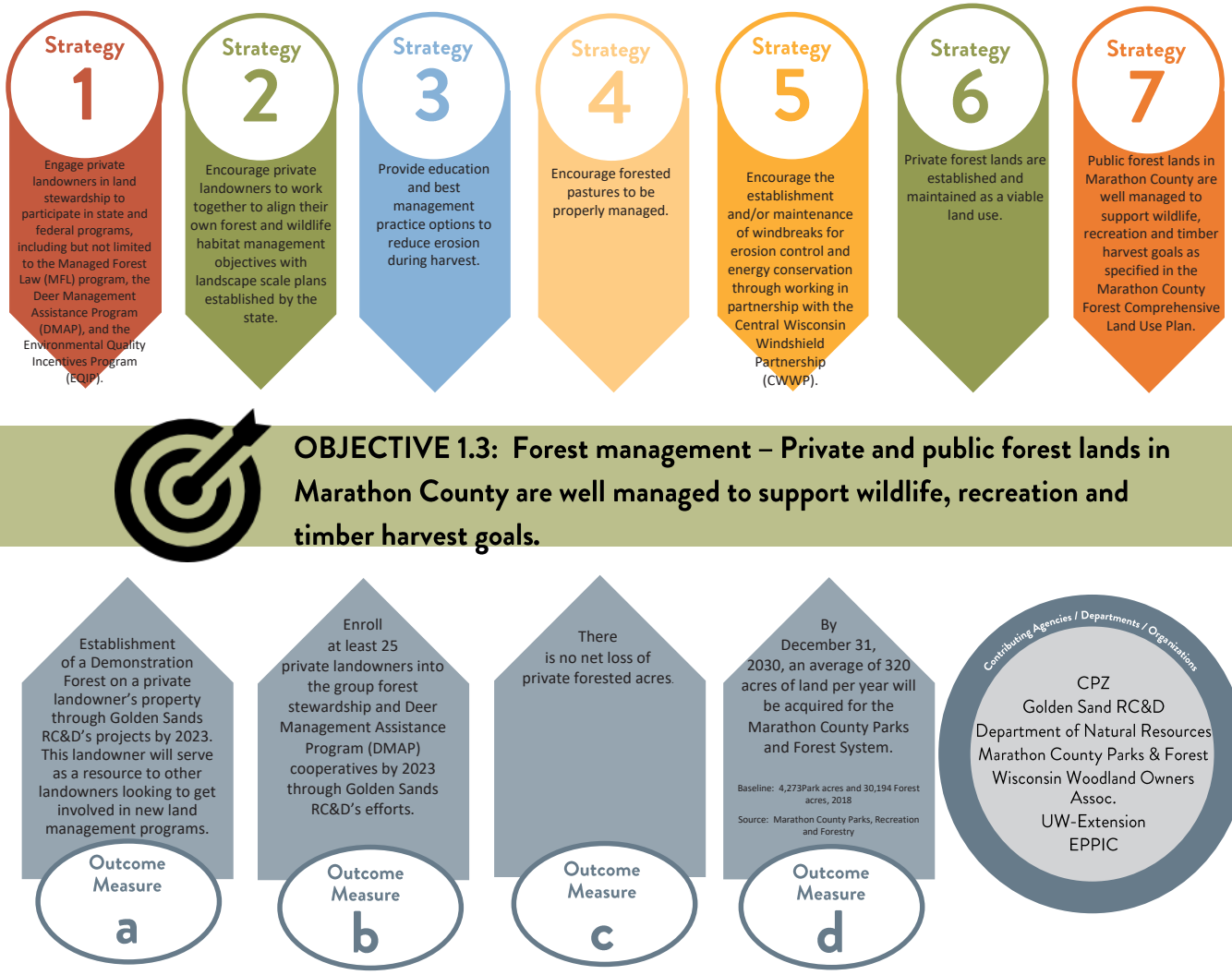
b. Enroll at least 25 private landowners into the group forest stewardship and Deer Management Assistance Program (DMAP) cooperatives by 2023 through Golden Sands RC&D's efforts.

c. There is no net loss of private forested acres.

d. By December 31, 2030, an average of 320 acres of land per year will be acquired for the Marathon County Parks and Forest System.

Baseline: 4,273 Park acres and 30,194 Forest acres, 2018

Source: Marathon County Parks, Recreation and Forestry Department.



Infographic 3-3

1.4 Protect and preserve prime agricultural lands.

Strategies:

1. Preserve prime farm soils that are most vulnerable to conversion for non-farm land uses.
2. Expand the Farmland Preservation-Agricultural Enterprise Areas within the County.
3. Expand Farmland Preservation zoning to reduce fragmentation and protect prime farm soils.
4. Encourage the protection of a viable agricultural industry by continuing to advocate that towns participate in county zoning to protect land under general agricultural and farmland preservation zoning.
5. Improve funding mechanisms to provide technical assistance to farmers and landowners to develop nutrient management plans and meet basic agricultural performance standards and prohibitions.
6. Identify and financially support viable and environmentally superior farming systems.

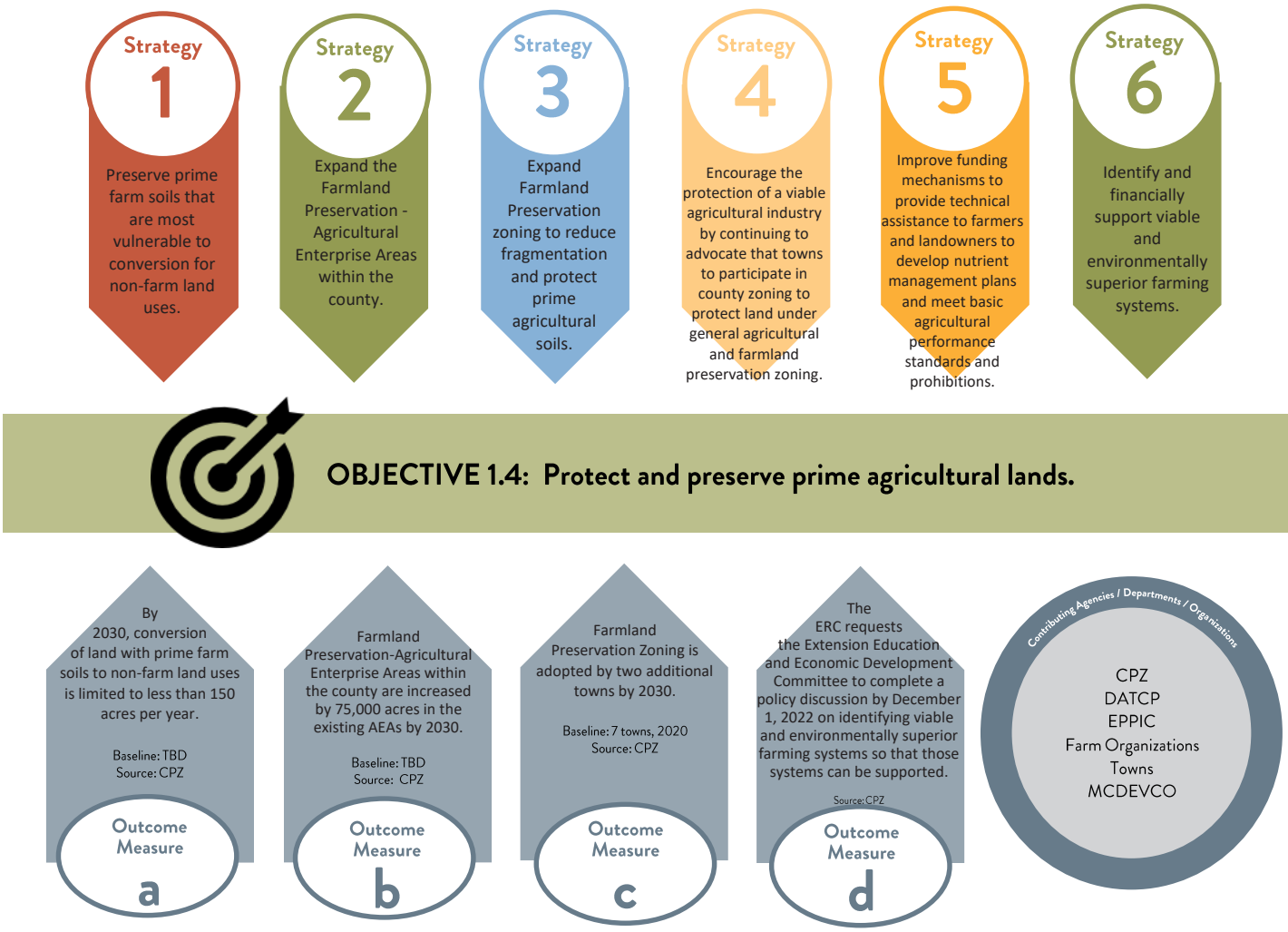
Outcome Measures:

a. Conversion of land with prime farm soils to non-farm land uses is limited to less than 150 acres per year.

b. Farmland Preservation-Agricultural Enterprise Areas within the county are increased by 75,000 acres in the existing AEAs by 2030.

c. Farmland Preservation Zoning is adopted by two additional towns by 2030.

d. The ERC requests the Extension Education and Economic Development Committee to complete a policy discussion by December 1, 2022 on identifying viable and environmentally superior farming systems so that those systems can be supported.



Infographic 3-4

GOAL 2: SURFACE WATER QUALITY IS PROTECTED AND IMPROVED.

Objectives:

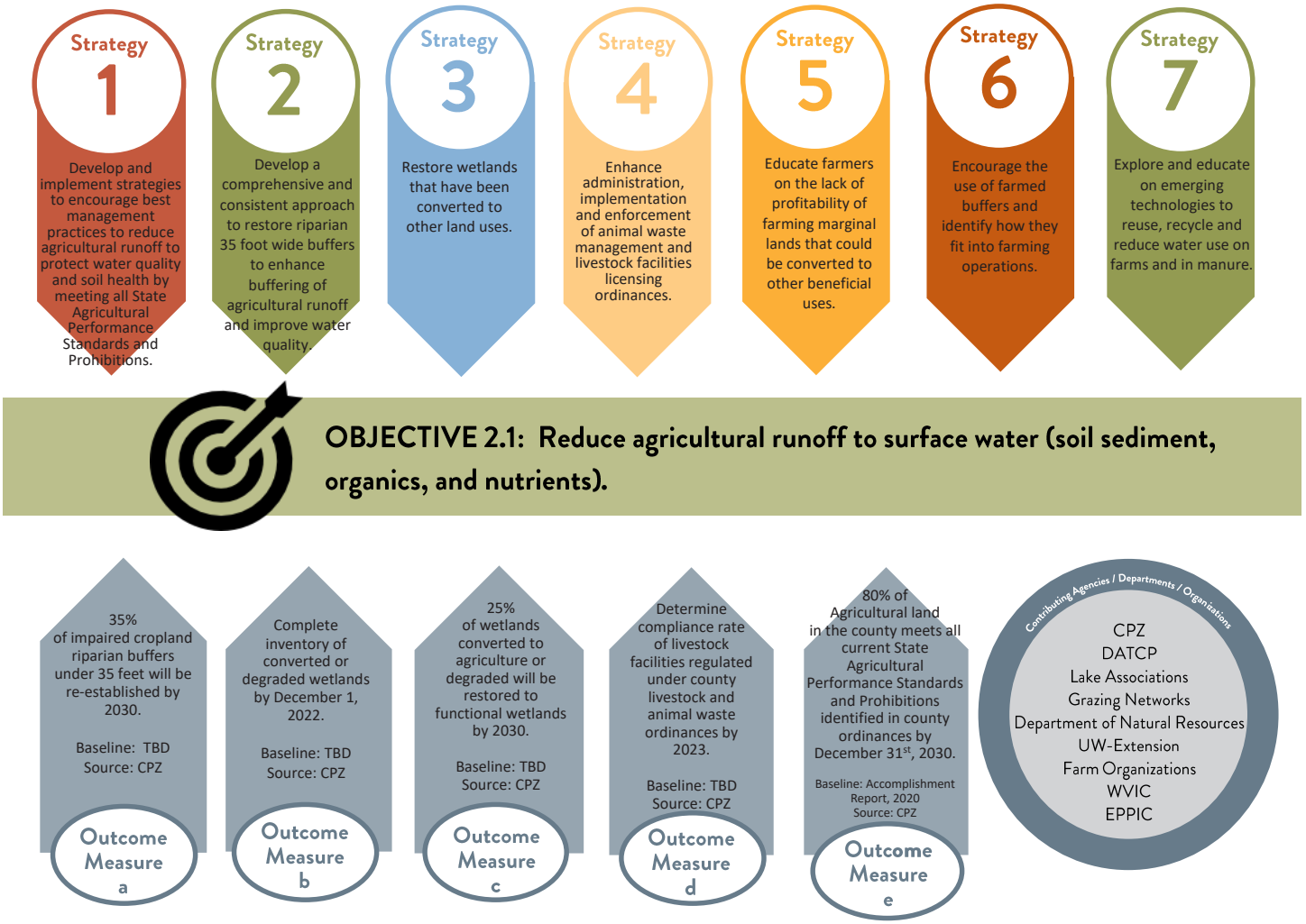
2.1 Reduce agricultural runoff to surface water (soil sediment, organics, and nutrients).

Strategies:

1. Develop and implement strategies to encourage best management practices to reduce agricultural runoff to protect water quality and soil health by meeting all State Agricultural Performance Standards and Prohibitions.
2. Develop a comprehensive and consistent approach to restore riparian 35 foot wide buffers to enhance buffering of agricultural runoff and improve water quality.
3. Restore wetlands that have been converted to other land uses.
4. Enhance administration, implementation and enforcement of animal waste management and livestock facilities licensing ordinances.
5. Educate farmers on the lack of profitability of farming marginal lands that could be converted to other beneficial uses.
6. Encourage the use of farmed buffers and identify how they fit into farming operations.
7. Explore and educate on emerging technologies to reuse, recycle and reduce water use on farms and in manure.

Outcome Measures:

a. 35% of impaired cropland riparian buffers under 35 feet will be re-established by 2030.
b. Complete inventory of converted or degraded wetlands by December 1, 2022.
c. 25% of wetlands converted to agriculture or degraded will be restored to functional wetlands by 2030.
d. Determine compliance rate of livestock facilities regulated under county livestock and animal waste ordinances by 2023.
e. 80% of Agricultural land in the county meets all current State Agricultural Performance Standards and Prohibitions identified in county ordinances by December 31st, 2030.



Infographic 3-5

2.2 Work to implement the Wisconsin River Watershed and Upper Fox Wolf River Total Maximum Daily Load (TMDL) identified goals.

Strategies:

1. Environmental Resource Committee (ERC) and County Board establishes the proper balance between voluntary/ regulatory approaches to:
    a. Establish targeted performance standards to meet water quality standards for phosphorus impaired watersheds.
    b. Reduce mechanically applied animal waste applications during snow covered, frozen or saturated conditions.
2. All surface waters, including intermittent streams, and existing wetlands will have a 35 foot tillage setback buffer.
3. All agricultural land will have Phosphorus Index (PI) levels at 2.5 pounds per acre or less.
4. Develop and support a coalition(s) of stakeholders to develop and implement action plan(s) to reduce phosphorus loading.
5. Complete implementation of the Fenwood Creek Watershed Plan and apply what was learned to future TMDL planning and implementation efforts, along with the Wisconsin River and Upper Fox Wolf River report to develop two more nine element watershed based plans in the county.
6. Seek new funding options and incentives outside of conventional government sources to implement soil health and conservation practices.

Outcome Measures:

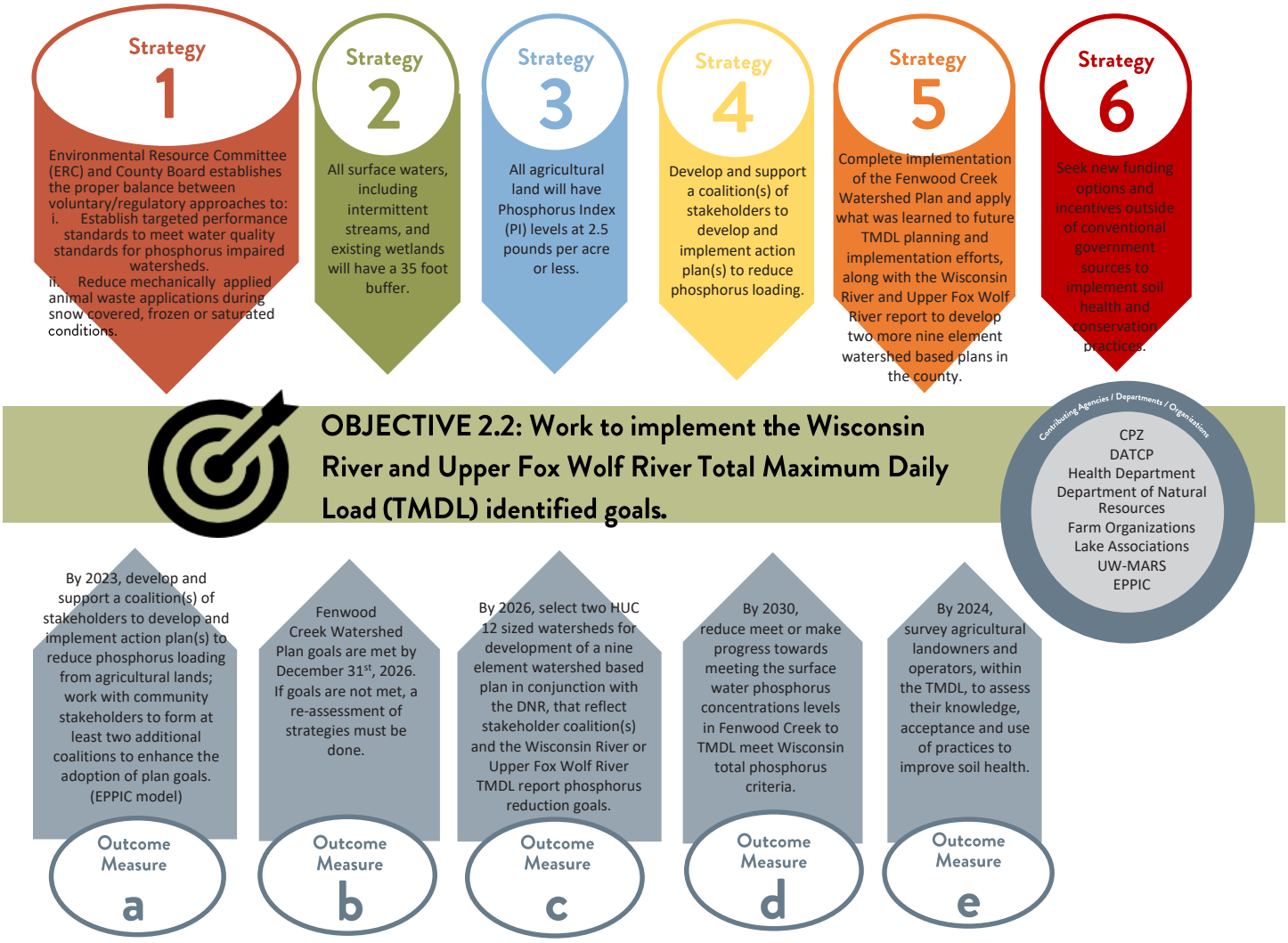
a. By 2023, develop and support a coalition(s) of stakeholders to develop and implement action plan(s) to reduce phosphorus loading from agricultural lands; work with community stakeholders to form at least two additional coalitions to enhance the adoption of plan goals. (EPPIC model)

b. Fenwood Creek Watershed Plan goals are met by December 31st, 2026. If goals are not met, a re-assessment of strategies must be done.

c. By 2026, select two HUC 12 sized watersheds for development of a nine element watershed based plan in conjunction with the DNR, that reflect stakeholder coalition(s) and the Wisconsin River or Upper Fox Wolf River TMDL report phosphorus reduction goals.

d. By 2030, reduce, meet, or make progress towards meeting the surface water phosphorus concentrations levels in Fenwood Creek to meet Wisconsin River TMDL total phosphorus criteria.

e. By 2024, survey agricultural landowners and operators within the TMDL watersheds to assess their knowledge, acceptance and use of practices to improve soil health.



Infographic 3-6

2.3 Protect and enhance natural habitat areas along riparian corridors and wetlands.

Strategies:

1. Promote conservation easements/programs along riparian corridors.
2. Conduct a riparian zone qualitative land cover analysis for watersheds in the county.
3. Develop and recommend a 35 foot buffer zone strategy for wetlands, outside of 303(d) impaired watersheds, by the end of 2024.
4. Support the development of lake and river management plans with key stakeholders.

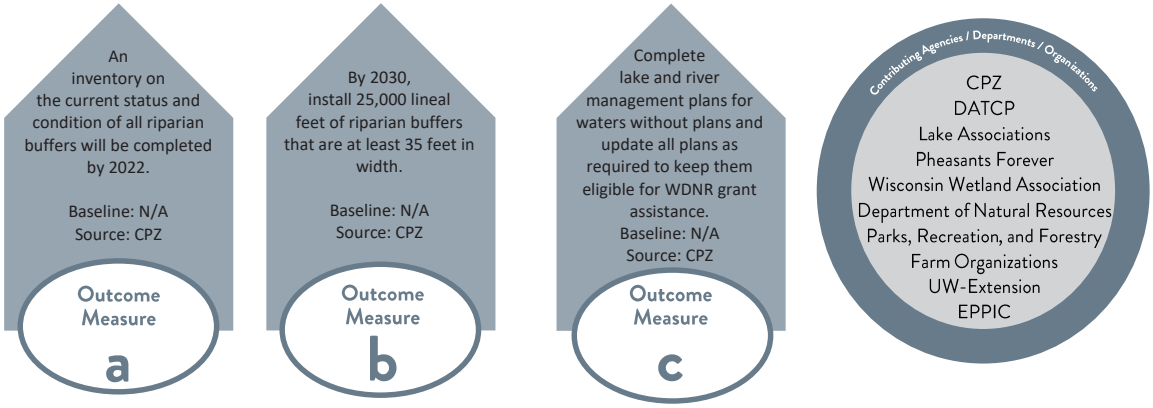
Outcome Measures:

a. An inventory on the current status and condition of all riparian buffers will be completed by 2022.

b. By 2030, install 25,000 lineal feet of riparian buffers that are at least 35 feet in width.

c. Complete lake and river management plans for waters without plans by 2030. Keep all plans updated, as required, to keep them eligible for WDNR grant assistance.

OBJECTIVE 2.3: Protect and enhance natural habitat areas along riparian corridors and wetlands.



Infographic 3-7

2.4 Reduce runoff from non-agricultural sources to improve water quality.

Strategies:

1. Implement the Private Onsite Wastewater Treatment System (POWTS) maintenance program to eliminate all surface discharge of septage.
2. Support implementation and enforcement of point source pollution regulations.
3. Shoreland owners will maintain existing buffers along waterbodies.
4. Shoreland owners will re-establish 35 foot buffers along waterbodies, where the buffer has been degraded.
5. Encourage the use of soil testing on non-agricultural land before fertilizer is applied near waterbodies.
6. Explore alternative methods for snow and ice removal from hard surfaces to reduce the impacts of salt on surface and groundwater.

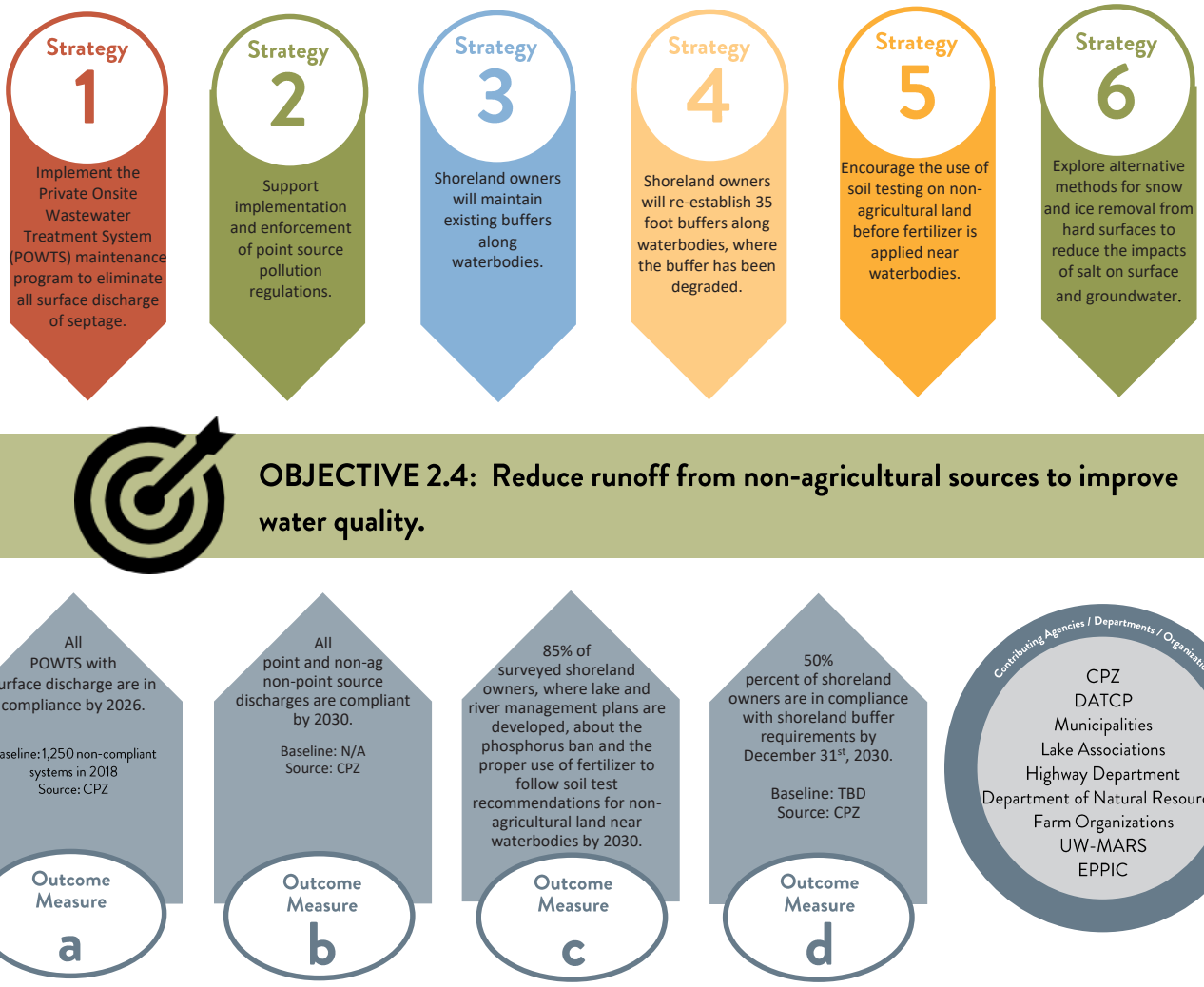
Outcome Measures:

a. All POWTS with surface discharge are in compliance by 2026.

b. All point and non-ag non-point source discharges are compliant by 2030.

c. 85% of surveyed shoreland owners, where lake and river management plans are developed, about the phosphorus ban and the proper use of fertilizer to follow soil test recommendations for non-agricultural land near waterbodies by 2030.

d. 50% percent of shoreland owners are in compliance with shoreland buffer requirements by December 31st, 2030.



Infographic 3-8

2.5 Manage lake and stream resources to protect and improve the water quality and habitat.

Strategies:

1. Continue to support the efforts of the WDNR, Lake Organizations, and Lake District associations to protect and improve the water quality and habitat of lakes.
2. Continue to mitigate aquatic invasive species by supporting WDNR projects and goals and provide services as outlined in the county AIS Network Partnership agreement. (AIS Network Partnership starts 2022 with planning in 2021)
3. Work with UW-Extension to provide information and education regarding Best Management Practices and other measures local municipalities and property owners can implement to improve water quality.
4. Coordinate water quality testing with Wisconsin Valley Improvement Corporation (WVIC) and other agencies.
5. Support healthy fisheries, wildlife and aquatic communities.
6. Provide technical assistance to protect and enhance waterfront properties to be in compliance with current Shoreland zoning requirements.

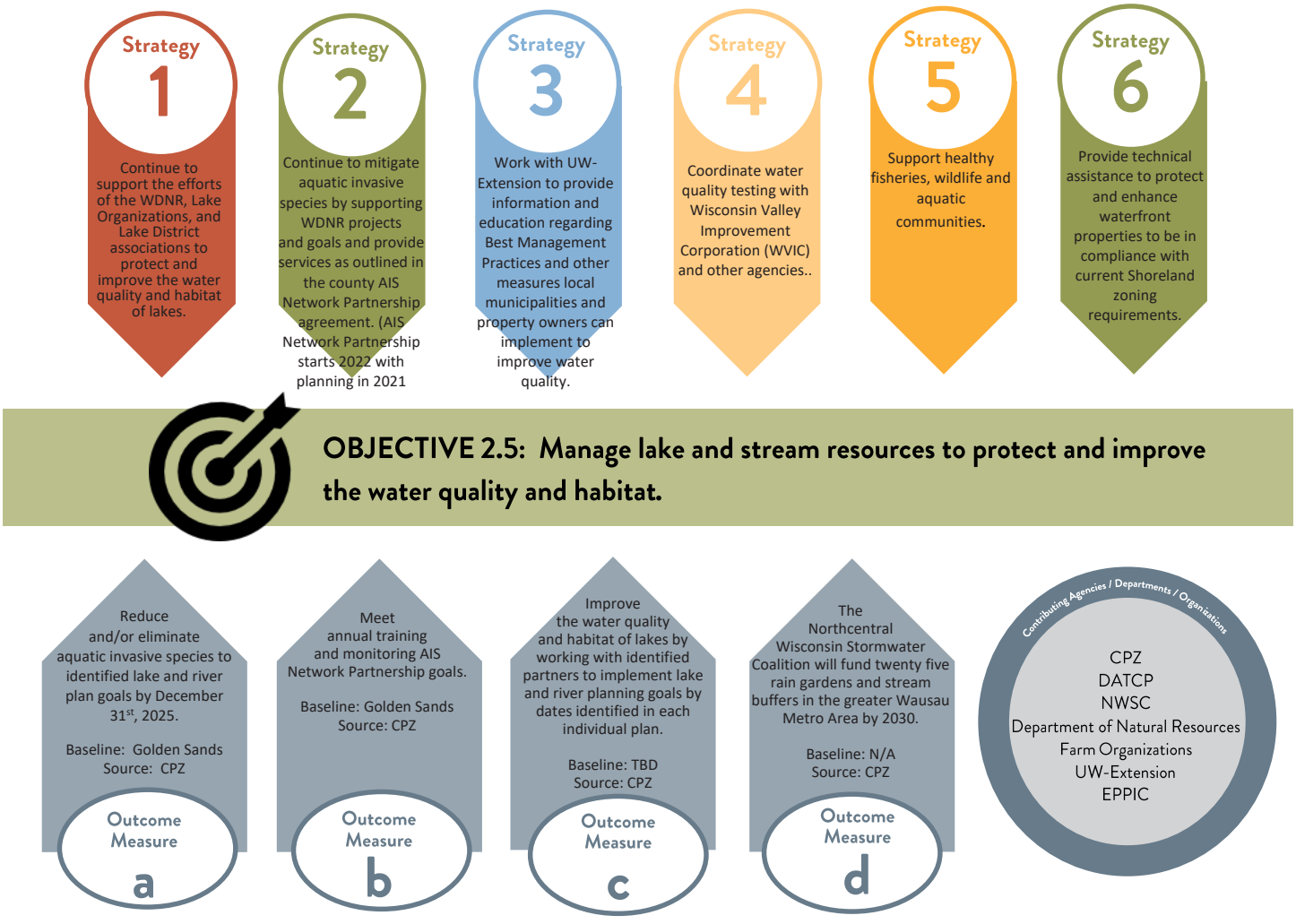
Outcome Measures:

a. Reduce and/or eliminate aquatic invasive species to identified lake and river plan goals by December 31st, 2025

b. Meet annual training and monitoring AIS Network Partnership goals.

c. Improve the water quality and habitat of lakes by working with identified partners to implement lake and river planning goals by dates identified in each individual plan.

d. The Northcentral Wisconsin Stormwater Coalition will fund twenty five rain gardens and stream buffers in the greater Wausau Metro Area by 2030.



Infographic 3-9

GOAL 3: GROUNDWATER IS PROTECTED AND IMPROVED.

Objectives:

3.1 Protect and enhance the quantity and quality of groundwater resources.

Strategies:

1. Update the 2001 County Groundwater Protection Plan, which will identify threats to groundwater quality and quantity.
2. Update county Geographic Information System (GIS) layer to properly identify municipal well recharge areas to be used for planning purposes and work to develop wellhead protection or source water protection plans for public drinking water systems within the county.
3. Continue to conduct tests and analysis of contaminants in public and private wells to develop a reliable data set which reflects the quality of water in the county.
4. Ensure all POWTS are working properly to protect groundwater.
5. Use the information from the updated groundwater plan to guide decisions on changes in land use approved by the county.
6. Amend wellhead or source water protection plans to meet EPA's nine key elements and submit to DNR and EPA for review and approval.

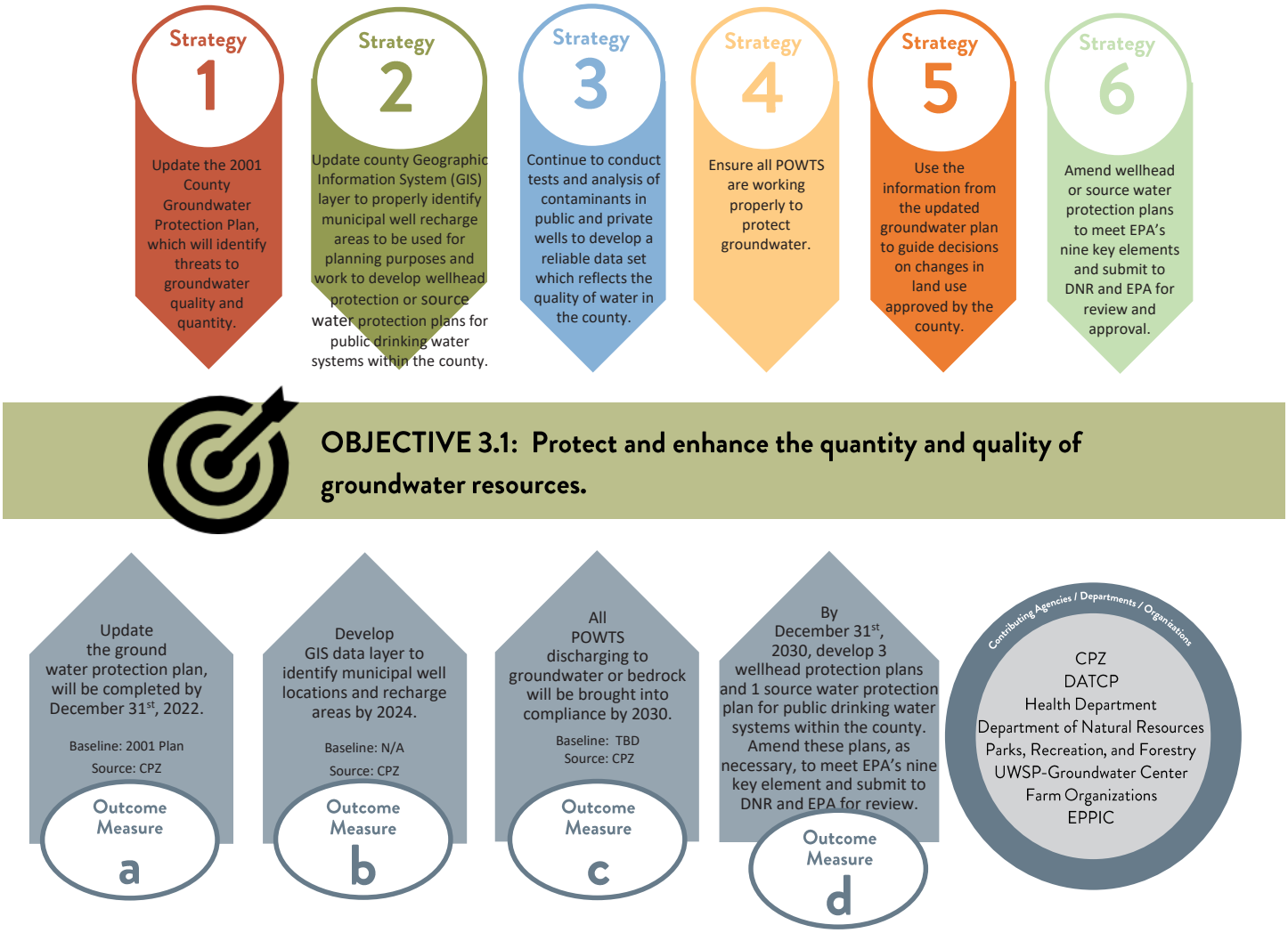
Outcome Measures:

a. Update of the ground water protection plan will be completed by December 31st, 2022.

b. Develop GIS data layer to identify municipal well locations and recharge areas by 2024.

c. All POWTS discharging to groundwater or bedrock will be brought into compliance by 2030.

d. By December 31st, 2030, develop 3 wellhead protection plans and 1 source water protection plan for public drinking water systems within the county. Amend these plans, as necessary, to meet EPA's nine key element and submit to DNR and EPA for review.



Infographic 3-10

GOAL 4: ACTIVELY EDUCATE AND ENGAGE COMMUNITY STAKEHOLDERS TO DEVELOP AN UNDERSTANDING OF LAND, SURFACE WATER, AND GROUNDWATER QUALITY CONCERNS.

Objectives:

4.1 Improve public awareness and provide educational opportunities to enhance agricultural practices that protect land and water quality.

Strategies:

1. Develop and implement strategies to educate farmers and landowners to implement best management practices.
2. Educate farmers and landowners about soil health.
3. Work with community coalitions to provide workshops, educational opportunities, and field tours to enhance agricultural practices while improving land and water quality.
4. Identify the benefits of conservation to farmers and landowners and engage them through educational activities to increase the adoption of conservation practices. This would include profitability, sustainability, natural resource protection, and soil health.
5. Provide coordinated access to information and educational materials through various sources including websites, newsletters, videos, local newspapers, public service announcements and social media.

Outcome Measures:

a. Organize and hold 15 on-farm educational demonstration days, per year, to show case how and why best management practices function properly and how they should be maintained. Conduct and hold five nutrient management farmer education courses per year.

b. Bi-annually conduct a survey of farmers to assess which forms they prefer to receive their information, program delivery, constraints and resistance to implementation of conservation practices.

OBJECTIVE 4.1: Improve public awareness and provide educational opportunities to enhance agricultural practices that protect land and water quality.

Infographic 3-11

4.2 Conduct information and education activities as it relates to plan goals.

Strategies:

1. Coordinate educational opportunities with the North Central Wisconsin Stormwater Coalition to inform key stakeholders.
2. Develop a clear understanding of land and water related concerns and relay the concerns in easily understood formats.
3. To develop a clear understanding of Wisconsin River and Upper Fox Wolf River TMDL reports and water quality related concerns that identify the concerns in easily understood formats.
4. Provide informational and educational opportunities to protect and enhance waterfront properties to improve water quality.
5. Coordinate educational activities based upon the importance of water quality to Schools County wide on an annual basis through environmental/agricultural teachers, 4-H, FFA, Water Action Volunteers (WAV) and environmental groups, including water quality sampling techniques.
6. Provide coordinated access to water, land and soil health information and educational materials through various sources including websites, newsletters, videos, local newspapers, public service announcements and social media.

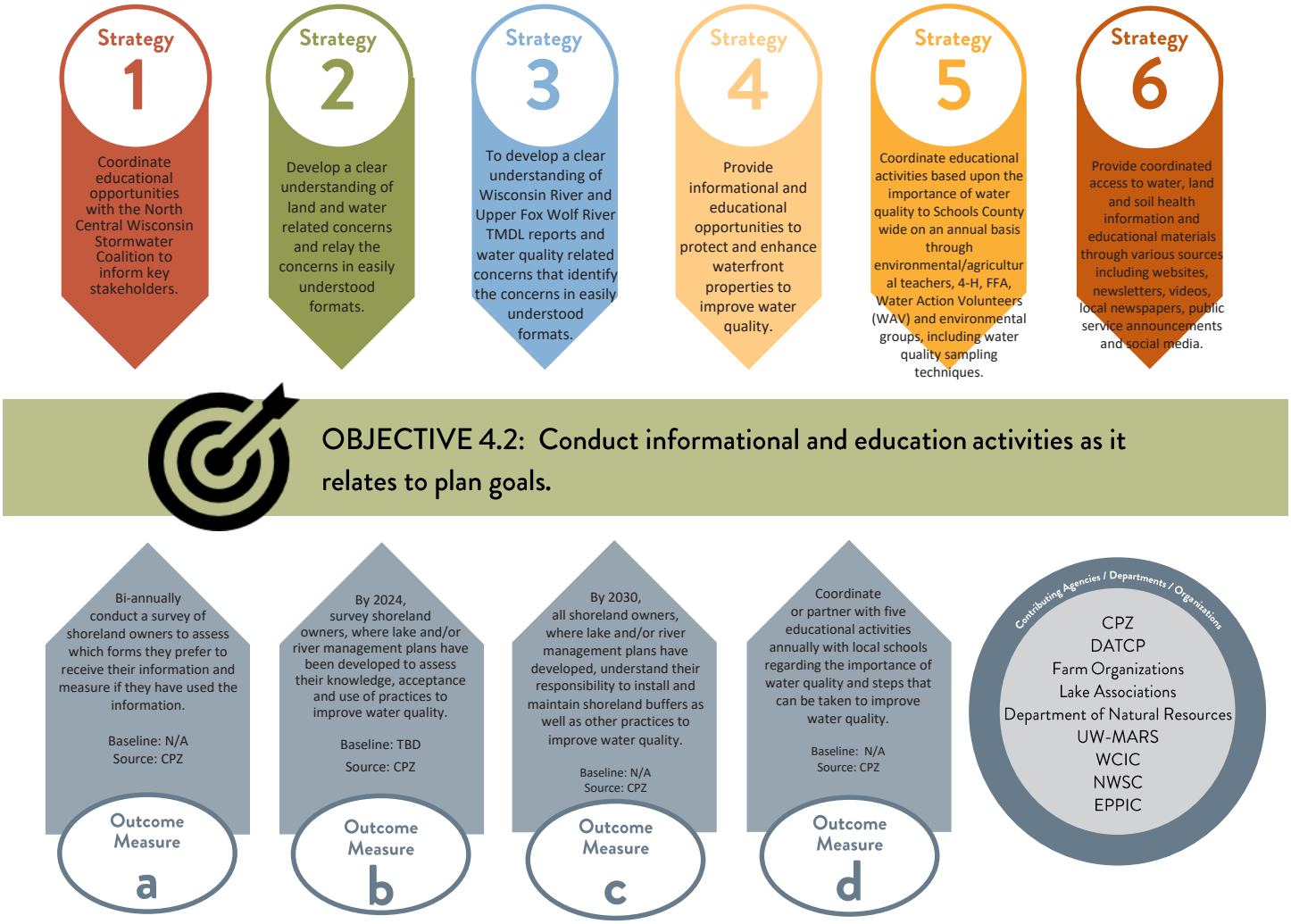
Outcome Measures:

a. Bi-annually conduct a survey of shoreland owners to assess which forms they prefer to receive their information and measure if they have used the information.

b. By 2024, survey shoreland owners, where lake and/or river management plans have been developed to assess their knowledge, acceptance and use of practices to improve water quality.

c. By 2030, all shoreland owners, where lake and/or river management plans have developed, understand their responsibility to install and maintain shoreland buffers as well as other practices to improve water quality.

d. Coordinate or partner with five educational activities annually with local schools regarding the importance of water quality and steps that can be taken to improve water quality.



Infographic 3-12

CHAPTER 4 | PLAN IMPLEMENTATION & COORDINATION

Implementation of this LWRM Plan will be to continue education efforts, provide technical assistance, seek additional revenue streams to fund this plan, and grow compliance levels of landowners that meet the state performance standards and prohibitions. In addition, this Plan over the next ten-years will begin to focus on achieving and meeting water quality standards and lowering the phosphorus levels in the impaired watershed as specified in the Wisconsin and Fox-Wolf River Basin TMDL. Because of the complexity of the problems and multiple jurisdictions involved, most likely no one protective mechanism will solve the problem. More likely, a wide range of mechanisms will be necessary and, in many cases, may be preferred to give locally-based and supported initiatives maximum flexibility in achieving their protection goals and needs.

Growing Community Engagement

It is imperative to recognize the need to develop and grow a committed groups of stakeholders at the watershed level, such as we have done with EPPIC. (see EPPIC videos on youtube https://www.youtube.com/channel/UCUgOVeQ-aqYyEdPLBtfuUsg) A valuable lesson has been learned in the past that not just one or two groups can accomplish this task. A broad group of stakeholders need to be involved to achieve the outcome we desire, where a large percentage of people that control the land, implement conservation on their land to improve the land and water. Marathon County CPZ staff has and will continue to seek valuable input and coordinate with a diverse group of agencies, associations, private sector business, citizens, landowners, farmers and organizations involved in resource management and protection.

These agencies and groups include: United State Environmental Protection Agency, United States Department of Agriculture-(Natural Resource Conservation Service, Animal and Plant Health Inspection Service – Wildlife Services, and United States Forest Service), Wisconsin Department of Agriculture, Trade, and Consumer Protection, Wisconsin Department of Natural Resource staff (such as Water Resources Management Specialists, Fisheries Biologists, Water Regulations and Zoning Specialists, Water Program Management staff, Watershed Management staff), Army Corps of Engineers, University of Wisconsin Madison–Division of Extension; University of Wisconsin Stevens Point and Marshfield Agriculture Research Station, County Parks and Forestry, Land Records & Regulations, and the County Highway and Health Department.

Public engagement

Other organizations involved include the following: County Lake Associations/Districts, GrassWorks Inc., Big Eau Pleine Citizens Organization, Golden Sands Resource Conservation & Development Council, North Central Wisconsin Stormwater Coalition, Eau Pleine Partnership for Integrated Conservation, Lake Wausau Association, and the Wisconsin Valley Improvement Corporation. In addition, CPZ staff works actively with many regional organizations promoting resource conservation at both large and small-scale levels. Each agency, organization, association, and individual has its individual resource issues, programs, and plans; but cooperatively we can work together for the greater good of Marathon County's land and water resources.

Nonpoint Source Pollution and Storm Water Managements

The threats to surface and groundwater resources are changing. Historically, point sources were viewed as the primary threat. Now, however, because of the successful implementation of point source controls, nonpoint runoff pollution is the primary threat to county water resources. Nonpoint problems are both water quality and quantity based. The increase of storm water runoff from poor soil conditions and increasing impervious surfaces are major threats to water resources. The solutions to these problems

are watershed-specific and therefore must be pursued using a watershed approach sometimes involving multiple government jurisdictions.

Healthy Soil for Healthy Plants, Animals and People

Soil health can be defined as the capacity of a soil to function as a vital living ecosystem that sustains plants, animals, and humans. The importance of managing soil health to sustain agricultural productivity for this and future generations cannot be overlooked. We need to recognize that, when provided with the basic necessities of life, the living component of soil performs functions crucial to the production of food and fiber. We must consider and care for soil as a living ecosystem. It is teeming with billions of living bacteria, fungi, and other microbes that are the foundation of a stable ecosystem. This microbial component of the soil ecosystem: improves soil structure and stability; cycles nutrients for plant growth; increases rainwater infiltration and storage for use during drier periods; and prevents potential pollutants from leaving our fields. If we needed to measure soil health by only one criterion it would be organic matter. In general, if organic matter levels are decreasing our soil health is declining and if they are increasing our soil health is improving. The best management practices most commonly used to increase organic matter levels and improve soil health are managed grazing, cover crops, conservation tillage, no-till and perennial crops. In Marathon County, farmers can no longer leave soils exposed to the elements from early October through mid-June if the county is to have healthy soils and clean water. To improve soil health the following five principles need to be understood and followed by farmers in the county:

1. Soil Cover

Keep plant residues on the soil surface -- a high percentage of soil must be protected by residue. Living or dead vegetation on the soil surface year round is the building block for soil health.

2. Limit Disturbance of Soil

Minimize or eliminate tillage, this provides an opportunity for soil biology to start re-building soil aggregates, pore spaces, and organic matter.

3. Increase Diversity

Mimic nature by incorporating a diversity of cool and warm season grasses and broad leaf plants into a management system, by utilizing three or more crops and cover crops in a rotation. Grassland and cropland plant diversity increases soil and animal health.

4. Living Roots

Keep plants growing throughout the year to feed the soil. Cover crops and perennial forages add carbon to the soil via biomass and root exudates that feed and sustain soil micro-organisms.

5. Integrate Livestock and animal manure

Managed grazing and properly applied animal manure from storage increases the soil biological activity on cropland, and improve nutrient cycling. Proper grazing techniques of managed pastures, cover crops and crop residue, increases livestock's level of nutrition.

NR 151 Agricultural Performance Standards and Prohibitions Implementation:
The specific roles and responsibilities of the county and state agencies in implementing these standards and prohibitions are well defined in NR 151 and ATCP 50. Under this program approach, CPZ staff will conduct status reviews of cropland and animal production areas for compliance with NR 151 Agricultural Performance Standards and Prohibitions as part of existing incentive, cost sharing, and permitting programs. In conducting the status review, staff may consult with DNR when determining which of the state standards and prohibitions apply to parcels being evaluated and determine the extent of compliance for each of the applicable standards and prohibitions. While conducting status reviews, staff use prescribed tools to determine compliance with applicable NR 151 performance standards and prohibitions. The information from the status review form is used to document the compliance status of parcels within the county. The status review results are tracked in the county's GIS, insuring current and future status of parcels and to create reports pertaining to overall NR 151 compliance throughout the county.

cover crop between corn rows

goats grazing

Upon completion of the status review, the landowner is provided a status report and provided an opportunity for review, comment, and appeal. In circumstances where full compliance has not yet been achieved, CPZ staff will work with the landowner to develop a timeline for compliance and secure technical assistance and cost-share funding when applicable and available. CPZ staff may also consult with DNR for select cases of NR 151 non-compliance.

Farms subject to program requirements and/or regulatory enforcement of the state standards include:

1. Property owners who require permits or enforcement under the County Animal Waste Management and/or Livestock Facilities Licensing Ordinances.
2. Lands enrolled in the Farmland Preservation Program in order to receive program tax credits.
3. Livestock operations which are new or expanding.
4. Operations which are subject to state jurisdiction under WI Stats. 281 and NR 243 or NR 151 that are found to be out of compliance with the NR 151 agricultural standards, as determined by a site evaluation conducted as part of routine permit monitoring or in response to a public complaint.
5. Farmers participating in the Multi-Discharger Variance Program.

6. Farmers entering into cost share agreements with the county.

Priority Farm Strategy:

There is a need to establish priorities because of limited time and financial resources. CPZ staff will follow the priority of services guidelines listed below to achieve LWRM Plan implementation. Currently there is high demand for administrative, technical, cost-sharing, and regulatory services administered through CPZ. The two highest priority objectives to meet plan goals are:

- Implementation of priority cropland Best Management Practices (BMPs) which support the five principles of soil health, listed above, include but are not limited to cover crops, no-till and conservation tillage, managed grazing, grassed waterways, clean water diversions, perennial forages, manure spreading during low risk times of the year, and implementing nutrient management plans.
- Implementation of NR 151 Agricultural Performance Standards and Prohibitions.

High Priority for Services- Hierarchy of priority based on goals identified in Chapter 3

To most efficiently and cost-effectively meet the demands for technical and financial assistance, while addressing the high resources concerns, CPZ staff will follow the priorities listed below based upon farm size, location, and programs:

- Fenwood Creek Watershed farms.
- Animal Waste Management Ordinance.
- Livestock operations with more than 500 animal units but not permitted by WI DNR as a Concentrated Animal Feeding Operation (CAFO).
- Manure application during high risk (frozen, snow coered or saturated) soil conditions.
- Farmland Preservation Program participants.
- Farms located within the impaired waters identified by the WI DNR, that want to advance their farms to superior levels of management by implementing the five principles of soil health.
- Status reviews for compliance with NR 151 Agricultural Performance Standards and Prohibitions on farms that receive cost sharing, permitting, or other programs that require compliance with one or more of the state standards:
- Livestock operations between 300 animal units and 500 animal units.
- Managed Grazing Program in Marathon and Lincoln County.
- Participants in other voluntary cost sharing programs outside of high priority locations, farm size, or program.
- Riparian and wetland buffer installation and maintenance.

bedded pack barn

In responding to public complaints or staff observations, highest priority is assigned to:

- Sites or farms identified above as high priority for services.
- Sites or farms where there is an immediate threat to fish, wildlife, and/or habitat.
- Sites or farms where resource impacts are evaluated to be severe, and compliance can be achieved.
- Technical and administrative support for local units of government undertaking initiatives to improve water quality.

Medium Priority for Services

- Farms located within watersheds of Outstanding and Exceptional Resource waters.
- Farms located within watersheds where TMDL reports or implementation plans are not yet prepared.

In responding to public complaints or staff observations, medium priority is assigned to:

- Sites or farms identified above as medium priority for services.
- Sites or farms where impacts are less severe.

Low Priority for Services

- All other operations

Technical and financial assistance

Providing quality technical and financial assistance through CPZ and/or private service providers is an important part of achieving plan outcomes. This assistance is utilized in the following ways:

1. Implement best management practices by providing quality technical assistance and promoting and administering federal, state, and county cost share conservation programs to achieve LWRM plan priorities
2. Monitor and track conservation plans and practices and assess resource needs.
3. Provide training for farmer-developed nutrient management plans.
4. Plan review and permit issuance, ordinance implementation.

Enforcement and compliance

Safeguards are a necessity at times to achieve plan goals and to protect the land and water of the county. Therefore, Marathon County has put into place fair and consistent ordinances and a defined enforcement policy for county ordinances administered by CPZ. These tools will be used and followed when enforcement and compliance with these ordinances is necessary. The relevant ordinances and enforcement process will be used when it comes the following situations:

1. Evaluating land parcels, notifying landowners of compliance status, offering cost sharing, providing technical assistance, and follow enforcement process to implement the cropland NR 151 Agricultural Performance Standards and Prohibitions.
2. Livestock Facilities Licensing Ordinance, and Animal Waste Management Ordinance in accordance with the priority farm strategy listed above.
3. Updating and implementing county ordinances related to land and water programs as needed or required by state statute or regulation.
4. Consider county stormwater and construction site erosion control incorporation into county land division, shoreland, and floodplain ordinances.

Information and Education Strategy

Successful information and education strategies are essential to properly focus on the myriad of land and water goals of this LWRM Plan, along with Marathon County's conservation and planning programs, to achieve phosphorus reduction. Educational opportunities for local officials, land owners, farmers, and all citizens whether urban or rural, young or seniors, are paramount to share and generate a cohesive awareness about protecting and enhancing the land and water resources. In order to improve and protect these resources, collectively a change of culture by all those with a stake in these vital resources is required to be successful.

Information and education activities will be critical to reaching each plan goal. An information and education strategy is also a separate goal of this plan. Initial implementation of the information and education strategy is outlined in each one-year work plan. The strategy will be evaluated and modified along with other components of the work plan each year.

Citizen engagement through community stakeholder groups are critical components of the implementation of this LWRM Plan.

- A water resources technician along with dedicated conservation staff and partners provide focus to, and coordination of, natural resource educational efforts related to their program priorities.
- CPZ staff that deal directly with the public by answering the telephone or greeting clients are trained to distribute appropriate educational materials and refer clients to the appropriate staff person, department, or agency.
- The development and assessment of information and education strategies is imperative to ensure targeted audiences are reached and engaged, especially given the wide variety of communication platforms available today.

stream in eastern Marathon County

Riparian and Wetland Tillage Setback Buffer

Policy development and adoption of a Riparian and Wetland Protection buffer including a "Tillage Setback Policy' is required as part of this LWRM Plan, to protect existing vegetation in riparian corridors and work to restore the integrity of the natural resource areas. A riparian and wetland "Tillage Setback Policy" minimizes or prevents the alteration of the riparian zone along stream segments to ensure that functions provided by the riparian and wetland areas are protected. The riparian zone is an ecological term that refers to

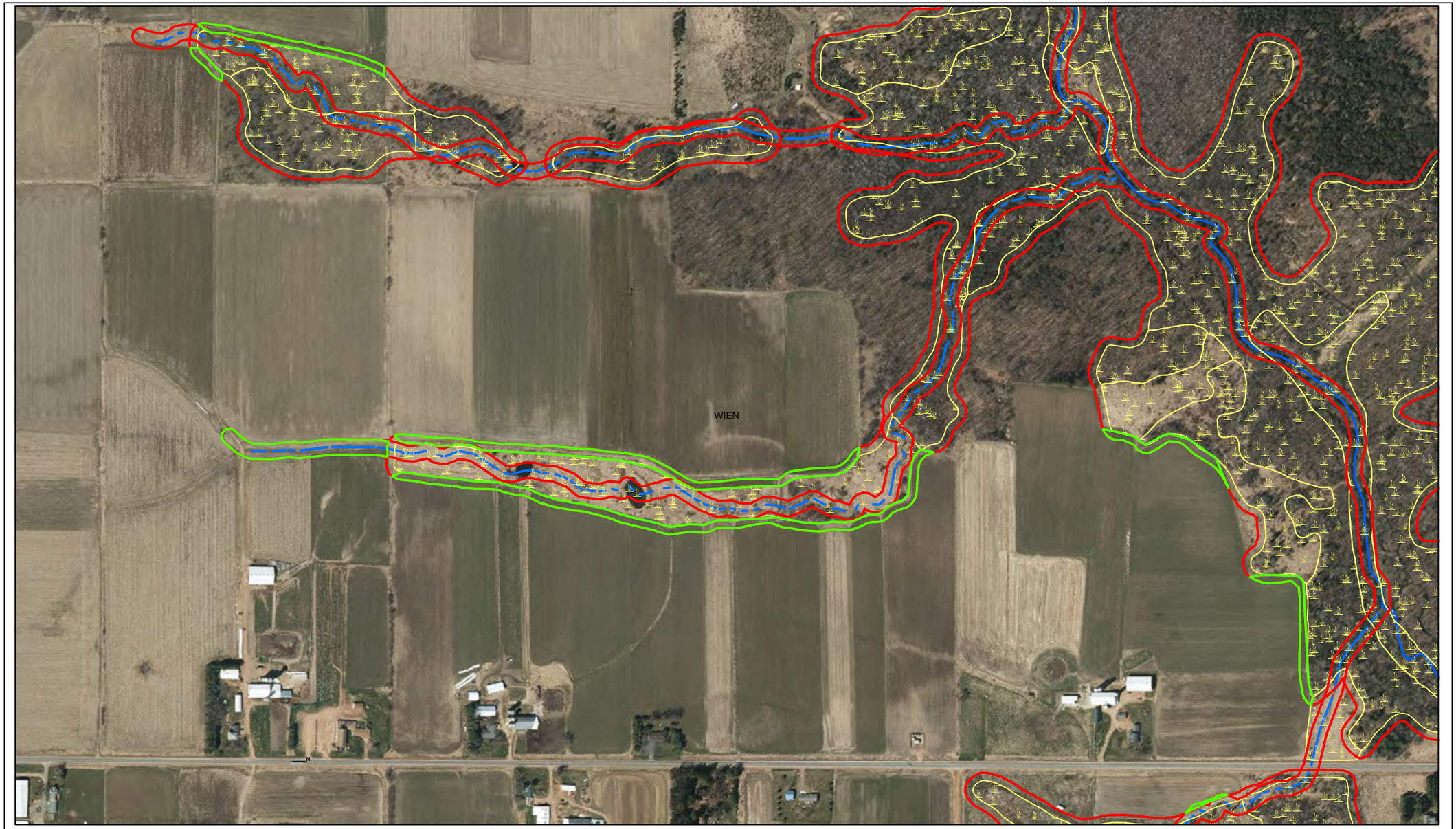


FIGURE 4-1

EXAMPLE TILLAGE SETBACK MAP
MARATHON COUNTY WI

the habitat adjacent to a river or stream that functions to support and enhance aquatic and terrestrial communities who are dependent on the river or stream. The riparian or wetland buffer refers to a "green corridor" along the banks of a river, stream or wetland that separates water bodies from tillage or developed land uses and is intended to provide protection from the harmful impacts of such uses on water quality. Research has indicated that these types of setbacks can range from 25 to 300 feet depending on the size and drainage area of the stream and quality of wetland; however at this time, such broad protection zones can only be encouraged on a voluntary basis. This plan does call for the county to consider the development and implementation a 35-foot buffer for surface water and wetland areas, which would be consistent with other state protections for property owners along shoreland areas. See Figure 4-1.

Protection of Regionally Important Water Resources

The need for careful judgment may be required to facilitate the management and protection of regionally important water resources, which are sensitive to local environmental impacts and yet provide important benefits to the residents of the region. These water resources can benefit from the strategies described in this LWRM Plan, which includes both legislative and administrative management recommendations. They also require cooperative efforts among the adjoining units of government that effect these waters. The development of management and protection strategies for regionally important water resources is based on existing information from the Wisconsin River Basin TMDL.

The identification of groundwater areas in need of protection is less defined than surface waters. One can pinpoint the locations of groundwater withdrawals for municipal and agricultural drinking water systems. Areas served by individual systems/wells are distributed over a broader area. It is important in groundwater protection to manage aquifer recharge areas. The delineation of aquifer recharge areas requires extensive subsurface geological information, which is often not readily available. Therefore, those areas, which are dependent on groundwater for a sizeable portion of water supply, are identified here in general terms only.

Partners

Federal

Section 303(d) of the Clean Water Act and Chapter 40 of the Code of Federal Regulations, Part 130 require states to develop total maximum daily loads (TMDLs) for waters not meeting designated uses under technology-based controls for pollution. The TMDL process quantitatively assesses the impairment factors so that states can establish water quality based controls to reduce pollution from both point and nonpoint sources, and to restore and protect the quality of their water resources.

State Legislation

This LWRM Plan recognizes legislation enacted in Wisconsin that established standards for the management of water quality standards and nonpoint source pollution, and provides a mechanism for local accountability to meet state minimum standards. However, it is clear from the deliberations of the LAC, charged with addressing the issues of land and water resource management recommendations for this plan, that the absence of adequate state statutory standards severely impedes adequate regulation to effectively achieve water quality standards and targets identified in the Wisconsin River TMDL and this Plan. These deficiencies need to be addressed by county board and proper recommendations sent to State leaders.

State Agencies

Improved linkages among different levels of government and existing protective mechanisms are needed. Actions taken by one level of government should be coordinated to maximize local, state, and federal investment and avoid long-term irreversible negative impacts on land and water resources.

Marathon County
CPZ staff will continue to work closely with a diverse group of agencies, associations, and organizations involved in resource management and protection and include the following: The Eau Pleine Partnership for Integrated Conservation (EPPIC), Big Eau Pleine Citizens Organization (BEPCO), Lake Wausau Association, various lake districts, Pheasants Forever, River Alliance of Wisconsin, Golden Sands, and Central Wisconsin River Graziers Network.

Work Plan and Timeline

An annual work plan and timeline will be determined by the goals, objectives, strategies, and outcomes as identified in Chapter 3. The infographics clearly identify conservation staff activities to achieve the overall identified goals to be accomplished through specific objectives, activities and partnerships, with specific outcomes to accomplish within a specified timeframe. This model reflects the county's Comprehensive Plan and Strategic Plan format for continuity. Each year the conservation staff work plan and status will be evaluated to better inform and guide decisions towards education efforts, funding levels, staff directives, and efforts designed to preserve and protect land and water resources.

Current and Future Potential Funding Sources

Annual Fiscal Resource Projection
The annual CPZ budget typically supports 7.7 full time equivalent staff positions whose primary focus is on LWRM Plan implementation. In 2010 there were 5 full time equivalent staff positions. Funding for these positions varies from year to year, but there is consistently on average over the last four years approximately $730,000 of county tax levy and $580,000 DATCP/DNR staffing and cost share grants which are relied upon to provide base funding for staff along with matching grant obligations for various staffing grants.

Annually there is an identified staffing budget shortfall of $190,000 and $730,000 cost share shortfall to meet the high priority objectives in the current and proposed Land Water Resource Management plan. This does not reflect any specific watershed plans or projects, which would need their own budget to be developed.

Despite a decrease in state funding over the last decade for staff and stable county tax levy, CPZ has been able to slowly increase staffing levels because of successful efforts to secure grants, provide stable revenue streams, and partnership agreements to boost the amounts of cost sharing and staff positions. In recent years CPZ has secured grants from the following sources to increase its current staff funding levels:

- *National Association of Conservation Districts-Technical Assistance Grant*
  $40,000 per year to support the managed grazing efforts.
- *National Association of Conservation Districts-Technical Assistance Grant*
  $35,000 per year to support the Farmland Preservation efforts.
- *Natural Resources Conservation Service-multiyear Cooperative Agreement*
  Provides $80,000 per year to support Conservation Specialist position working primarily in the Big Eau Pleine Watershed, which includes the Fenwood Creek.
- *DNR Lake Protection Grant*
  Multiyear grant supports Water Resources Technician position and Aquatic Invasive Species program partnership with Golden Sands RC&D.
- *Service fees* on cost share grants provide reliable funding to support staff expenses.

These grants and allocations have allowed CPZ to increase staff levels but they are not stable long term funding sources. A more sustainable approach is needed to secure additional County tax levy along with State base funding to fund staff positions and to pursue grants to provide cost sharing to farmers and landowners, which support State objectives. This approach is recommended to stabilize program efforts. To meet additional LWRM Plan goals and objectives along with desired outcomes, additional funding sources will need to be secured to achieve full plan objectives. Annual budgets will reflect county direction on plan implementation goals. Specific budgets will be developed to implement various goals within the plan. This plan is based upon current funding and staffing levels, with opportunities for new directions and initiatives if funding is provided.

Grant Funding for Projects, Farmers and Landowners

Marathon County conservation programs have typically ranked well over the years in grant funding allocations supporting the work efforts aligned with conservation program implementation and practices to protect the soil and water resources within the county. For example, funding allocations for 2020 include the following:

- *Marathon County Total Funding allocation for 2020*
  Staffing funds and cost share funds totals $314,865. Marathon County has steadily risen and now ranks #1 in the state in highest total DATCP grant funding.
- *Marathon County Funding Allocation for Bond Cost Sharing*
  Annually, funds to be used for structural type conservation practices totals $75,850, and segregated fund revenues (SEG) cost sharing and funds to be used for "soft" practices such as nutrient management, no till, cover crops, etc. totals $95,000. Marathon County now ranks #1 in the state for total DATCP cost sharing for farmers compared to #26 in 2010.
- *Nutrient Management Farmer Education Training Grant*
  The annual multi county nutrient management farmer education program that Marathon County initiated 13 years ago received $53,350 of grant funds for 2020, with most of the funds going directly to participating farmers. This allocation is the highest in the state.

classroom training fro farmers on Nutrient Management

growing money

- *DNR Targeted Resource Management (TRM) grants*
  CPZ has been highly successful in securing grants to fund projects on farms. Both small and large scale grants have been secured over the last 10 years that have funded individual projects on farms along with watershed-scale projects such as the Fenwood Creek Watershed. These grants have varied annually from $50,000 to $800,000 with a ten year total of just over $4,000,000 that went directly to farmers. These types of grants will continue to be secured to fund conservation projects within the county.

- *Lake Grants*
  Marathon County has partnered with Lake Groups and associations to secure grants for Lake Plans, and now Lake Grants to aide in implementation of the plans that have been developed. CPZ will continue to grow this effort to secure grants to both develop new lake and river planning grants along with implementation grants to meet plan objectives.

- *Multi-Discharger Variance Program*
  These funds from the DNR are used in the Fenwood Creek Watershed as incentive payments to farmers. To be eligible, farmers must meet all State Agricultural Performance Standards and Prohibitions. Once eligible, farmers can earn incentive payments based on the amount of additional phosphorus reductions they make on their cropland. Funding ranges from $30,000-$40,000 per year.

According to the Wisconsin River Basin TMDL, the primary source of nonpoint pollution is from rural areas whose major land use is agriculture. As a result, agricultural stormwater runoff from fields carries animal waste, pesticides, nutrients, sediment, and phosphorus. The TMDL has identified phosphorus as the primary nonpoint source pollutant, and will be the focus of conservation staff and efforts.

The evaluation and monitoring of water quality and habitat along riparian and wetland areas will be critical to improving overall water quality in designated impaired watersheds within Marathon County, as well as coordinating with adjacent units of government where areas of impaired watersheds are located outside of the county. Land cover using the Wiscland 2.0 digital database will enable staff to examine GIS land cover data to further examine physical land cover attributes that may exacerbate nonpoint source pollution on a sub-basin scale and on a more refined analysis along riparian corridors.

The Marathon County LWRM Plan is intended to be a flexible document that will review progress toward goals, objectives, and measurable outcomes on an annual basis. CPZ staff will align annual work program efforts to ensure effective favorable progress.

Agricultural Nonpoint Source and Farmland Preservation Program Monitoring and Tracking

1. *Agricultural Performance Standards and Prohibitions Monitoring and Evaluation*
   GIS technology, SnapPlus nutrient management planning software, remote sensing, and on-site evaluations are currently being used as tools to evaluate, track and monitor landowner compliance with the agricultural performance standards and prohibitions. Animal lot manure discharges are monitored using the BARNY runoff model.
2. *Soil Transect Survey*
   A biennial Soil Erosion Transect Survey conducted by conservation staff, farm-level soil conservation assessments via SnapPlus nutrient management planning software and use of satelite imagery are some main tools used to monitor the erosion of croplands within the county, along with changes in land use.
3. *Monitoring Soil Organic Matter Levels*
   Soil health is monitored by analyzing annual aggregate county-wide soil test data for organic matter levels based upon data from thousands of soil test results from various DATCP-approved labs and reported by the UW soil testing lab.
4. *Wetland monitoring through partners*
   The Wisconsin DNR provides, updates and maintains the official wetlands mapping of the State. CPZ depends on these maps along with site specific delineation when needed to identify wetlands.
5. *35 Feet Tillage Setback*
   This LWRM Plan calls for an inventory of 35 foot Shoreland buffers. This will begin an effort to track, evaluate and increase buffers along surface waters and wetlands of the county.
6. *Agricultural Runoff*
   The reduction of agricultural runoff to surface water is outlined in Objective 2.1 and success will be determined by monitoring the outcome measurements in chapter 3. Monitoring will be done with a variety of tools including site specific evaluation tools, watershed modeling , use ofstaelite imagery to estimate crop residue levels and monitoring by the WI DNR.
7. *Phosphorus*
   Phosphorus loading from agricultural croplands and pastures is currently modeled using the Wisconsin Phosphorus Index (PI) planning and assessment tool that is part of the SnapPlus nutrient management planning software program.

As part of tracking the outcomes over the life of this LWRM Plan, conservation staff will conduct a biennial survey of farmers to assess which forms they prefer to receive their information and measure if they have successfully used or implemented the information. Public awareness and educational opportunities to enhance agricultural practices will be promoted events through educational demonstrations such as on-farm field days, and through courses such as nutrient management farmer education classes.

Surface Water Quality Monitoring

Phosphorus loading

The need for water quality monitoring and assessment for phosphorus loading is characterized by the data results found in the Wisconsin River Basin TMDL report. Clearly, the most significant element of this LWRM Plan is to achieve and reduce surface water phosphorus levels to recommended TMDL phosphorus criterion for 303(d) impaired waters in Marathon County. The county will rely upon the WI DNR for their prescribed role in water quality monitoring within the county. In addition, the Wisconsin Valley Improvement Company will continue to monitor various waterways within its control, and has agreed to share the data with CPZ. This includes monitoring the Fenwood Creek.

Additional water quality monitoring will include lakes and streams testing through volunteer efforts and the Wisconsin Valley Improvement Company (WVIC). Responsible agencies, local government, volunteer groups and WVIC will collaborate to monitor water resources.

Lake Districts

Marathon County in cooperation and partnership with citizens, communities and the University of Wisconsin Stevens Point developed 10 Management Plans and 11 Lake Studies to protect, enhance, and improve long-term water quality. Marathon County will continue to assist, promote and monitor the implementation of the plans.

Aquatic Invasive Species

Marathon County has entered into a working relationship with the Golden Sands Resource Conservation & Development Council to conduct ongoing inventories, monitoring and management of lakes and reservoirs.

Citizen Monitoring

Raise public awareness, especially among the watersheds' residents, of the pollution sources and solutions in and out of Marathon County. Take a more proactive approach of Water Action Volunteers, citizens and citizen groups to monitor natural resources.

Project Tracking

Conservation staff and partners will continue to meet annually over the next 10 years following plan adoption. Conservation staff will be responsible for demonstrating and assessing progress toward the stated goals, to allow both staff and partners to target projects and revise/amend the strategies if a realignment is required to better achieve the overall protection of natural resources.

Overall Plan Evaluation

Important aspects of the LWRM Plan include tracking progress, maintaining contact with partner communities/organizations, and amending/updating the plan to reflect newly identified opportunities, needs, and gaps. It is planned that the partners will revisit goals, objectives, action steps, and outcomes annually to determine necessary program adjustments.

The partners will continue to meet following plan adoption over the life of this plan to assess progress toward the stated goals, to allow partners to better target projects and revise/amend the plan at its 5-year interval. The list of actions allows key stakeholders to assess progress in the following manner:

- Limited sampling is proposed along the Big Eau Pleine Reservoir and tributaries.
- Use of some BMPs assumes typical pollutant reduction and often does not involve monitoring. Conservation staff will document the amount, location, and type of BMPs installed relative to the plan items, which will allow pollutant load reductions to be modeled.

- Select projects will be monitored for effectiveness (e.g., pollutant reduction), as part of the project or as a separate monitoring effort.

These data will be compiled yearly. Partners will meet approximately quarterly to coordinate on projects and share results. Each year, partners will review progress and assess whether revised goals are needed.

Plan Update/Annual Work Plan Revision

To assess progress and update partners, conservation staff will:

- Track progress using summary tables;
- Hold meetings with partners and discuss plan progress, pending projects, and newly identified project needs at least four times a year or as appropriate to manage projects;
- Maintain contact with partners by telephone, e-mail, newsletter, or other methods; and
- Present updates at meetings, e.g. ERC, EPPIC, other pertinent groups.
- Consult annually with DNR nonpoint, TMDL and WQ monitoring staff to discuss/evaluate progress and opportunities for collaboration to implement TMDLs within selected watersheds.

CPZ will retain the LWRM Plan document and use its web page to post updates, information, discussion materials, upcoming events/coordination, and contact information.

APPENDIX A

APPENDIX A

MARATHON COUNTY ADMINISTRATOR THROUGH THE AUTHORITY PROVIDED IN CHAPTER 2- THE GOVERNING BODY HEREBY CREATES A LOCAL ADVISORY COMMITTEE FOR THE ENVIRONMENT AL RESOURCES COMMITTEE FOR THE PURPOSE DEVELOPING A LAND AND WATER RESOURCE MANAGEMENT PLAN

WHEREAS, Wisconsin State Statute 92.10 and ATCP 50.12(3) require the Environmental Resources Committee (ERC) to prepare a land and water resource management plan that, at a minimum, does the following:

- Develops an assessment of water quality and soil erosion throughout the County
- Specifies water quality objectives for each priority watershed and priority lake
- Identifies best management practices to achieve water quality objectives and to achieve tolerable erosion levels
- Identifies applicable performance standards and prohibitions related to the control of pollution from nonpoint sources
- Describes multi-year plan of activities and priorities for any activities related to land and water resource protection
- Describes a monitoring program with performance measurements
- Provides for education and information of soil and water resource management
- Strategy to coordinate activities with programs of other local, state and federal agencies. and

WHEREAS, the Environmental Resource Committee is required to actively solicit public participation in the planning and evaluation of soil and water conservation programs through a local advisory committee as specified in ATCP 50.12(3), and

WHEREAS, the Environmental Resources Committee values citizen involvement land and water resource management, and

WHEREAS, the Environmental Resources Committee supports the efforts of the Citizens and Technical Advisory members in the development of the land and water resource management, and

WHEREAS, the development of the land and water resource management plan will serve to guide local, state and federal programming in protecting and conserving resources, and

WHEREAS, DNR consultation and involvement in land and water resource management planning will provide for a more complete plan, and

NOW, THEREFORE BE IT RESOLVED that the County Administrator of the County of Marathon does hereby resolve to authorize the local Advisory Committee (membership as attached) to provide advice and assist in development of recommendations for inclusion in the Land and Water Resources Plan.

AND FURTHER IT BE RESOLVED, that the Environmental Resources Committee approves of the appointment of advisory members.

Jacob Langenhahn, Chair

Dated this 6 day of June, 2019

Marathon County Environmental Resource Committee

Local Advisory Members:

Randy Fifrick
Marathon County Board Supervisor District 15
Environmental Resources Committee member
1555 Greenwood Drive, Kronenwetter, WI 54455

Mary Kate Riordan
Maple Ridge Farms, Owner, Marketing
Lake Wausau Association Board
212 Rainbow Lane, Wausau, WI 54401

Peter Arnold
Dairy Farmer-Grazing Based midsized farm
2009 WI Conservation Farmer of the Year
226512 County Road E, Edgar, WI 54426

Meldon Maguire
Dairy Farmer-family sized dairy
Woodland Owner-Wisconsin Woodland Owners Board of Directors
Town Chair-Town of Emmet
211651 Eau Pleine Park Road, Mosinee, WI 54455

Tom Mueller
Dairy farmer-Large Scale farm Owner and Operator
Miltrim Farms
115315 Township Road, Athens, WI 54411

LeeAnn Podruch
President Pike Lakes Sportsman Club/Wi Lake Leaders
Graduate Eastern Lakes Representative
214900 County Road Z, Wausau, Wi, 54403

Wayne Breitenfeldt
Dairy farmer, No-till cash crops
160400 County Road Z, Wausau, Wi 54403

Technical advisors shall include representatives from the following agencies:

Wisconsin DNR

Wisconsin Valley Improvement Company

USDA- Natural Resources Conservation Service

UW-Extension/Marshfield Agricultural Research Station

APPENDIX B

APPENDIX B

APPENDIX C

APPENDIX C

APPENDIX D

APPENDIX D

OUTSTANDING AND EXCEPTIONAL WATERS REPORT: MARATHON COUNTY

WADRS ID	LOCAL WATERBODY NAME	WBIC	ERW/ ORW	ERW/ ORW ID	START MILE	END MILE	MILEAGE
12512	Big Cain Creek	1471300	ERW	253	0	6.45	6.45
10375	Camp F Creek	290900	ERW	990	0	4.28	4.28
1492908	Comet Creek	285600	ERW	868	12.24	26.63	14.39
9751	Un Creek (T27n-R10e-S02)	308900	ORW	1067	0	0.36	0.36
316189	Flume Creek	286600	ERW	899	13.44	24.17	10.73
12379	Fourmile Creek	1436200	ERW	228	7.8	11.11	3.31
12491	Grass Creek	1461300	ERW	250	0	6.38	6.38
10372	Holt Creek	289200	ORW	957	0.63	8.56	7.93
1458906	Creek 35-8 T27n R10e	986406717	ERW	49	0	0.23	0.23
12513	Little Cain Creek	1471400	ERW	254	0	5.31	5.31
18371	Little Trappe River	1470800	ERW	252	0	8.46	8.46
201391	Little Wolf River	272400	ERW	817	64.73	66.99	2.26
12425	Mole Brook	1439400	ERW	229	0	6.53	6.53
12400	Noisy Creek	1429700	ERW	227	0	6	6
314375	S Br Embarrass River	309700	ORW	1070	0.47	9.49	9.02
9755	Norrie Creek	309700	ORW	1070	0	0.47	0.47
1459093	Plover River	1402800	ORW	213	49.86	60.86	11
18372	Prospect Creek (Cain Creek)	1472000	ERW	255	0	4.72	4.72
314425	Embarrass River-S. Branch	305600	ORW	1051	14.79	34.79	20
1485521	Spranger Creek	308500	ORW	1065	2.03	10.6	8.57
9748	Spranger Creek	308500	ERW	null	0	2.03	2.03
12431	Spring Brook Creek	1440800	ERW	230	0	10.27	10.27
1459514	Creek 32-12 (T26n, R9e)	1404750	ERW	216	0	0.06	0.06
1459521	Creek 30-15 T26n R9e	5014474	ERW	218	0	0.6	0.6
1459527	Creek 25-15c T28n R9e	1407550	ERW	225	0	0.21	0.21
1459550	Creek 2-14 (T29n, R4e)	1458400	ERW	247	0	5.41	5.41
1459556	Creek 25-11 T30n R3e	5009527	ERW	248	0	0.8	0.8
1486233	Norrie Brook Tributary	309900	ERW	1071	0	2.38	2.38
9750	Un Creek 118 (T27n-R10eS11)	308800	ERW	1066	0	1.65	1.65
1493687	Creek 27-13 T27n R10e	286500	ERW	892	0	1.13	1.13
1458622	Creek 25-15d T28n R9e	1407250	ERW	26	0	0.08	0.08
1493681	Creek 15-3?	290800	ERW	988	0	0.81	0.81
1458640	Creek 27-13 T27n R10e	3000158	ERW	29	0	0.53	0.53
1458030	Creek 21-14 T30n R3e	3000157	ERW	16	0	1.03	1.03
12480	Unnamed Creek 2114(T30n, R4e, S2, Nwse, 37)	1459900	ERW	249	0	3.15	3.15
316308	Un Creek 8-2 (T26n-R10eS08	291000	ERW	992	0	2.98	2.98
316294	Un Creek (T26n-R10eS15	290700	ERW	988	0	1.35	1.35
316281	Un Creek 22-13 (T26nR10e-S22	290300	ERW	979	0	0.95	0.95
18360	Unnamed Creek 25-11 (T30n, R3e, S25, Swsw, 37)	1459200	ERW	248	0	1.49	1.49
18359	Unnamed Creek 2-13 (T29n, R4e, S2, Nwse, 37)	1458300	ERW	246	0	3.22	3.22
12345	Unnamed Creek 53t28n, R10e, S5, Swne)	1407800	ERW	226	0	0.37	0.37
12344	Unnamed Creek 18-9 (T28n, R10e, S18, Nesw)	1407500	ERW	224	0	0.41	0.41
12343	Unnamed Creek 19-3 R10e,S19,Sw ne)	1407400	ERW	223	0	2.96	2.96
12342	Unnamed Creek 25-12 (T28n, R9e, S25, Sesw)	1407300	ERW	222	0	0.92	0.92
12341	Unnamed Creek (T28n, R9e, S36, Swne)(Creek 36-3)	1407100	ERW	221	0	0.46	0.46
12340	Unnamed Creek 11-12 (T27n, R9e, S11, Sesw)	1406800	ERW	220	0	0.87	0.87
12337	Unnamed Creek 26-6 (T27n, R9e, S26, Nwnw)	1406000	ERW	219	0	1.76	1.76
10374	Un Creek 209 (T26n-R10eS20)	290100	ERW	974	0	0.98	0.98
12334	Unnamed Creek (T26n,R9e,S3 1,Sese)(Cree k 31-15)	1404700	ERW	215	0	1.99	1.99
12335	Unnamed Creek 32-6 (T26n, R9e, S32, Nwnw)	1404900	ERW	217	0	1.91	1.91

APPENDIX E

APPENDIX E

SECTION 303(D) LISTED IMPAIRED WATER RESOURCES

Local Waterbody Name	Water Type	Date Listed	Pollutant	Impairment Indicator
Beaver Creek	RIVER	4/1/2016	Unknown Pollutant	Elevated Water Temperature
Big Bass Lake	LAKE	4/1/2002	Mercury	Contaminated Fish Tissue
Big Rib River	RIVER	4/1/1998	Mercury	Contaminated Fish Tissue
Creek 2-14 (T29n, R4e)	RIVER	4/1/2014	Unknown Pollutant	Degraded Biological Community
Mayflower Lake	LAKE	4/1/1998	Mercury	Contaminated Fish Tissue
Unnamed Creek 2-13 (T29n, R4e, S2,Nwse, 37)	RIVER	4/1/2016	Unknown Pollutant	Elevated Water Temperature
Lost Lake	LAKE	4/1/2018	Total Phosphorus	Water Quality Use Restrictions
Big Eau Pleine Flowage	IMPOUNDMENT	4/1/1998	Total Phosphorus	Low DO, Eutrophication, Excess Algal Growth
Big Eau Pleine River	RIVER	4/1/1998	Total Phosphorus	Low DO
Big Eau Pleine River	RIVER	4/1/1998	Total Phosphorus	Low DO
Big Eau Pleine River	RIVER	4/1/1998	Total Phosphorus	Low DO
Black Creek	RIVER	4/1/2014	Total Phosphorus	Impairment Unknown
Black Creek	RIVER	4/1/2014	Total Phosphorus	Impairment Unknown
Dill Creek	RIVER	4/1/2014	Total Phosphorus	Water Quality Use Restrictions
E Br Big Eau Pleine River	RIVER	4/1/2014	Total Phosphorus	Water Quality Use Restrictions
Fenwood Creek	RIVER	4/1/2014	Total Phosphorus	Impairment Unknown
Fenwood Creek	RIVER	4/1/2012	Total Phosphorus	Impairment Unknown
Hamann Creek	RIVER	4/1/2014	Total Phosphorus	Impairment Unknown
Raeder Creek	RIVER	4/1/2012	Total Phosphorus	Impairment Unknown
Randall Creek	RIVER	4/1/2014	Total Phosphorus	Water Quality Use Restrictions
Randall Creek	RIVER	4/1/2014	Total Phosphorus	Water Quality Use Restrictions
Scotch Creek	RIVER	4/1/2014	Total Phosphorus	Impairment Unknown
Scotch Creek	RIVER	4/1/2014	Total Phosphorus	Impairment Unknown
Scotch Creek	RIVER	4/1/2014	Total Phosphorus	Impairment Unknown
Wild Creek	RIVER	4/1/2014	Total Phosphorus	Water Quality Use Restrictions

Source: Wisconsin Department of Natural Resources

APPENDIX F

APPENDIX F

WISCONSIN RIVER BASIN TMDL

MARATHON COUNTY - ROW CROP TOTAL PHOSPHORUS TARGETS

Wisconsin River Basin (WRB) = 279,882 Total row crop acres | Source: Wisconsin Department of Natural Resources

HUC12 Name	Row Crop Acres	Translated TMDL Allocations				
		TP Baseline (lb/ac/yr)	Current Criteria		Recommended SSC	
			Reduction Needed	TP Target (lb/ac/yr)	Reduction Needed	TP Target (lb/ac/yr)
Middle and South Forks of the Copper River	0	-	-	-	-	-
Devil Creek	892	3	79%	0.6	63%	1.1
Prospect Creek-Trappe River	2,104	2.8	79%	0.6	63%	1.0
Little Trappe River-Trappe River	4,516	3.1	79%	0.6	63%	1.1
Beaver Creek-Black Creek	8,186	3	79%	0.6	63%	1.1
Drewek Creek-Black Creek	11,004	3.3	79%	0.7	67%	1.1
McGinnis Creek	2,817	3.3	79%	0.7	63%	1.2
Baldwin Creek-Big Rib River	3,483	3.8	79%	0.8	63%	1.4
West Fork of the Little Rib River-Rib River	11,276	3.6	79%	0.7	63%	1.3
Little Brook-Little Rib River	6,560	3.7	79%	0.8	63%	1.3
Scotch Creek	15,982	3.2	79%	0.7	65%	1.1
Pine Creek-Big Rib River	10,464	3.6	79%	0.7	63%	1.3
Kennedy Creek-Big Rib River	8,335	3.5	79%	0.7	63%	1.3
Elmwood Cemetery-Spring Brook	727	2.3	79%	0.5	63%	0.9
Oldens Creek-Eau Claire River	1,361	2.4	79%	0.5	63%	0.9
Mole Brook-Eau Claire River	4,876	2.9	79%	0.6	63%	1.1
Prahl Creek-Big Sandy Creek	8,433	3	79%	0.6	63%	1.1
Little Sandy Creek-Big Sandy Creek	3,760	2.3	79%	0.5	63%	0.8
Silver Creek-Eau Claire River	858	2.7	79%	0.6	63%	1.0
County Line Creek-Wisconsin River	3,146	2.9	79%	0.6	63%	1.1
Jim Moore Creek-Wisconsin River	5,149	2.8	79%	0.6	63%	1.0
Eau Claire Flowage	504	3.6	79%	0.7	63%	1.3
East Branch of the Big Eau Pleine River	7,005	2.7	84%	0.4	84%	0.4
West Branch of the Big Eau Pleine River	4,886	2.3	84%	0.4	84%	0.4
Randall Creek	11,722	3	84%	0.5	84%	0.5
Dill Creek	12,474	2.9	85%	0.4	85%	0.4
Porky Creek-Big Eau Pleine River	8,496	3.2	84%	0.5	84%	0.5
Hamann Creek	9,407	3.3	84%	0.5	84%	0.5
Noisy Creek-Big Eau Pleine River	9,118	3	84%	0.5	84%	0.5
Rock Creek-Big Eau Pleine River	7,184	3.2	84%	0.5	84%	0.5
Fenwood Creek	12,809	3.2	84%	0.5	84%	0.5
Freeman Creek	6,961	3.7	84%	0.6	84%	0.6
Lake Dubay	7,083	3.6	84%	0.6	84%	0.6
Carlson Creek-Little Eau Pleine River	7,695	2.7	84%	0.4	84%	0.4
McMillan Marsh-Little Eau Pleine River	4,937	2.5	80%	0.5	78%	0.6
Squaw Creek/Scheuer Creek	3,770	2.6	79%	0.5	77%	0.6
Wild Creek-Little Eau Pleine River	12,671	2.6	81%	0.5	74%	0.7
Bear Creek	125	1.9	79%	0.4	67%	0.6
Honey Island Flowage-Little Eau Pleine River	5,895	2.6	79%	0.5	68%	0.8
Townline Reservoir-Little Eau Pleine River	225	1.5	79%	0.3	63%	0.5
Fourmile Creek	3,206	3.9	79%	0.8	63%	1.4
Bull Junior Creek	840	1	79%	0.2	63%	0.4
Mosinee Flowage-Wisconsin River	1,021	2.8	79%	0.6	63%	1.0
Hog Creek	1,937	2.8	79%	0.6	63%	1.0
Little Eau Claire River	3,818	1.2	79%	0.2	63%	0.4
Johnson Creek	1,287	1.4	79%	0.3	63%	0.5
Lake Dubay-Wisconsin River	3,237	1.4	79%	0.3	63%	0.5
Headwaters of the Plover River	3,602	2.1	79%	0.4	63%	0.8
Pike Lake-Plover River	7,499	1.5	79%	0.3	63%	0.5
Jordan Pond-Plover River	1,580	0.8	79%	0.2	63%	0.3
Hay Meadow Creek	82	0.8	79%	0.2	63%	0.3
Headwaters of the Yellow River	2,663	3.2	73%	0.9	73%	0.9
East Branch of the Yellow River-Yellow River	2,214	2.1	73%	0.6	73%	0.6

Upper Fox-Wolf River Basin TMDL

Marathon County - Row Crop Total Phosphorus Targets

Upper Fox-Wolf River Basin (UFWRB) = 17,254 Total row crop acres

HUC12 Name	Row Crop Acres	Translated TMDL Allocations					
		TP			TSS		
		TP Baseline (lb/ac/yr)	Reduction Needed	TP Target (lb/ac/yr)	TP Baseline (tons/ac/yr)	Reduction Needed	TP Target (tons/ac/yr)
Spranger Creek-South Branch Embarrass River	6,639	3.25	83%	0.55	2.10	35%	1.36
Packard Creek-Middle Branch Embarrass River	624	2.52	83%	0.43	1.71	35%	1.11
Holt Creek-Little Wolf River	5,706	1.87	83%	0.32	1.45	45%	0.79
Flume Creek	424	2.53	83%	0.43	1.85	47%	0.99
Comet Creek	2,805	2.38	83%	0.41	1.65	46%	0.89
Bradley Creek-Little Wolf River	1,056	2.09	83%	0.36	1.57	47%	0.84

Source: Wisconsin Department of Natural Resources

APPENDIX G

PRACTICE or ACTIVITY	ATCP 50 Reference	Fund Source	Units of Measurement
Pesticide Management Plans	50.79		
1. Management Plans	50.79(1)	No Funds Available	Number
2. Structures (as described in the plan for structure's design)	50.79(2)	Bond	Number
Prescribed Grazing	50.80		
1. Management Plan	50.80(1)	No Funds Available	Number
2. Fencing (not permanent)	50.80(2)	No Funds Available	Linear Ft.
3. Fencing (permanent)	50.80(3)	Bond	Linear Ft.
4. Establish Permanent Pasture (seeding)	50.80(4)	Bond	Acres
Relocating or abandoning animal feeding operations	50.81	Bond	Number
Residue Management	50.82	SEG [1]	Acres
Riparian Buffers	50.83		
1. Installation (including land out of production and first 10 years of maintenance)	50.83(1)	Bond	Acres
2. Mowing and maintenance beyond initial 10 year period	50.83(2)	No Funds Available	Acres
Roofs	50.84	Bond	Number
Roof Runoff Systems	50.85	Bond	Number
Sediment Basins	50.86	Bond	Number
Sinkhole Treatment	50.87	Bond	Number
Stream Bank and Shoreline Protection	50.88	Bond	Linear Ft.
Stream Crossing	50.885	Bond	Linear Ft.
Strip-Cropping	50.89	SEG [1]	Acres
Subsurface Drains	50.90	Bond	Number
Terrace Systems	50.91	Bond	Linear Ft.
Underground Outlet	50.92	Bond	Number
Waste Transfer Systems	50.93	Bond	Number
Wastewater Treatment Strips	50.94	Bond	Linear Ft.
Water and Sediment Control Basins	50.95	Bond	Number
Waterway Systems	50.96	Bond	Acres
Well Decommissioning	50.97	Bond	Number
Wetland Restoration	50.98	Bond	Acres
Engineering services provided in connection with a completed cost-share practice for which bond revenue may be used (also refer to 50.40(7)).	50.34(4)	Bond	
Other practices with DATCP's written approval	50.40(3)(a)		

A completed form must indicate whether the reimbursement request involves practices installed to achieve compliance with NR 151 performance standards and prohibitions. Not all practices are installed for the purpose of achieving compliance with NR 151 (see below for examples). If no compliance is achieved, the "00" code should be used on the form. Where compliance is achieved, staff completing the form should use their professional judgment to identify the specific NR 151 standard or prohibition that was met, and then insert the code number that corresponds to that NR 151 standard or prohibition (The code numbers in the form match the sections in NR 151 where the standard or prohibition are referenced). The following chart can help you complete this part of the form.

NR 151 Code	Compliance Achieved through Practice Installation
02	Control soil erosion (sheet, rill and wind) to meet tolerable soil loss (T) calculated by RUSLE 2 (now includes pastures)
03	Tillage setback of 5 to 20 feet
04	Phosphorous Index
05	Construct, maintain and close manure storage facilities to prevent manure overflows and leaks.
055	Process Wastewater discharge to waters of the State
06	Divert clean water from feedlots, manure storage areas and barnyard areas within a water quality management area.
07	Apply manure and fertilizer in conformance with a nutrient management plan to control nutrient runoff into water of the state.
08	No overflow from manure storage facilities.
08	No unconfined manure stacks within the Water Quality Management Area.
08	No direct runoff from feedlots and manure storage facilities.
08	No unlimited access of livestock to waters of the state that prevents maintenance of adequate sod or self- sustaining cover.

Guidance on Compliance Determinations involving Specific Practices

To receive 70% cost-sharing, the practices listed below must be associated with a NR 151 performance standard. If a NR 151 performance standard code is not assigned to the practice, then the project will only receive funding at a 50% cost-share rate. This table lists possible codes that might be associated with a particular practice to receive the higher cost-share rate.

Practice	NR 151 Code Options
Access Roads (50.65)	05, 08
Roof Runoff Systems (50.85)	05, 055, 06, 08
Stream Bank and Shoreline Protection (50.88)	03, 08
Stream Crossing (50.885)	02, 03, 08
Wetland Restoration (50.98)	02, 07

MARATHON COUNTY

Marathon County's goal is to be the healthiest, safest and most prosperous county in Wisconsin.

Marathon County: Land & Water Resource Management Plan

www.co.marathon.wi.us

Back photo by Roger Zimmermann