



LAND AND WATER RESOURCE MANAGEMENT PLAN



2025 to 2035

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 Wood County has healthy people, a healthy economy and a healthy environment today and tomorrow.

Shane A. Wucherpfennig

Shane Wucherpfennig

Land and Water Conservation Director



Wood County Land and Water Resource Management Plan

January 1, 2025 to December 31, 2034

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Wood County Conservation, Education and Economic Development Committee

Bill Leichtnam - Chairman
Tom Buttke – Vice Chairman
Timothy Hovendick – Member
Russell Perlock – Member
Wayne Schulz – Member
Joe Behlen – Producer Member

Wood County Land & Water Conservation Staff

Shane Wucherpfnig, County Conservationist
Kyle Andreae, Engineering Technician
Kendra Wilhelm, Conservation Specialist
Emily Salvinski, Conservation Specialist
Rodney Mayer, Conservation Program Coordinator
Barbara Peeters, Conservation Administrative Specialist

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EXECUTIVE SUMMARY

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The Wood 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.

Land & Water Conservation Mission Statement

Protect, improve, and manage land and water resources in the County through technical and financial assistance, educational opportunities, enforcement of County Ordinances, and administration of State programs to permanently benefit land and water resources for the citizens of Wood County.

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 Land & Water Conservation Department's Land and Water Program over the next 10 years from 2025 to the year 2035. The focus and main body of the LWRM Plan is organized into five areas listed below.

Introduction

Chapter 1. Introduction - The 2025 LWRM Plan update is the county's third decennial major revision and represents a major revision to the county's LWRM Plan strategies since 2015. The introduction explains the plan development methodology, other related resource management plans and ordinances and what the department's goals/objectives and action items will be to guide implementation, management, and delivery of the soil and water conservation programs in Wood County.

Resource Assessment

Chapter 2. Resource Assessment - provides information, figures, and data specific to Wood 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 Citizens Advisory Committee (CAC) through a facilitated meeting process to assure alignment with the County's Strategic Plan and the main focus 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 enhancing 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 is 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.

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Public Participation

The LWRM Plan is the product of the collaborative efforts of many individuals representing the county, conservation agencies, local watershed groups, the county health department, farmers, township representatives, 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 Citizens Advisory Committee (CAC) met June 19th, 2024, to determine overarching goals, objectives, strategies, outcomes, and the implementation strategy for the plan. The CAC was comprised of members from the Wisconsin DNR, Wisconsin DATCP, USDA – Natural Resources Conservation Service, and the UW-Madison Extension, Township Board Members, Health Department, Wood County Board Members, Park & Forestry Department and Land & Water Conservation Department staff. The CAC provided input and clarification of goals, strategies, objectives, and measurable outcomes and provided comments to the draft plan in order to establish a final draft plan for public review and consideration. The CEED approved the draft LWRM Plan for public review at their November 6, 2024, meeting.

Public Hearing

The Public Hearing was held on November 6, 2024, and a quorum of the CEED committee was present to receive the comments. The CEED committee approved the LWRM Plan on November 6, 2024, for submission to the Wisconsin Land and Water Board (LWCB) and forwarded to the Wood County Board for its favorable consideration by resolution.

The Wood County Board of Supervisors adopted the LWRM Plan on December 17, 2024.

The LWRM Plan was presented to the LWCB on December 3, 2024, and DATCP submitted a letter formally adopting the LWRM Plan on December 3, 2024.

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

Surface Water Resources



Wood County is located directly in the center of the State of Wisconsin with an approximate 809 total square mile area or 517,551 acres. Of that total, land consists of 507,597 acres and open water is 16,113 acres. There are approximately 130,725 acres of wetlands and 116,339 acres of flood plain. Sensitive areas, which are open water, wetlands and flood plains, makes up 263,177 acres or about 47% of the total area of the County. Marshfield, the largest city, in the northern part of the county, had a population of 18,668. The second largest city is Wisconsin Rapids and is the county seat. Located in the southern part of the county, the population is 18,601. Twenty-two townships make up the county. Wood County is bordered on the north by Marathon County, on the east by Portage County, on the south by Adams and Juneau Counties, and on the west by Clark and Jackson Counties. Wood County is located within two different river basins including the Central Wisconsin River Basin and the Black River Basin. Within these basins, thirteen distinct watersheds can be found.

Wood County has a total water surface of 16,113 acres, which includes 28 named lakes, 102 unnamed lakes/flowages and 329 named and unnamed streams. Except for cranberry flowages, Wood County has very few lakes. Major lakes include Lake Wazeecha, Nepco Lake and Dexter Lake. All of these are impoundments.

The total stream length is 837 miles. Of this total, 39 miles are classified as trout streams with 15 miles of Class I trout streams. Major rivers in the county include, the Yellow River, Hemlock Creek, Mill Creek, East Fork Black River and the Wisconsin River. The county contains all or part of 13 Hydrologic Unit Code (HUC) -10 watersheds.

With 263,177 acres or 47% of the county being open water, wetlands and flood plains, these sensitive areas are important for nesting

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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 adjust the existing controls if there is evidence that protections are not adequate.

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 Wood 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 of polluted runoff to critical water resources.

Development Impacts

In 2020, the population estimate for Wood County was 74,207. Over the last decennial period, population changes or shifts occurred in Wood County. Per the Wisconsin Department of Administration (WDOA) Demographic Services Center, Final 2023 Population Estimates, the population declined to 73,706. This is a -0.68 percent decrease. Since 1990, the population of Wood County increased by 0.13 percent, from 73,605 to 73,706 in 2023. According to the Wisconsin Blue Book - 2023-2024, in 2022, Wood County ranked 22nd in terms of population with a population density of 93.6 people per square mile.

The WDOA projects the county population to decrease from 74,749 to 71,150 between 2010 and 2040. The City of Marshfield and Wisconsin Rapids and its surrounding communities are the center of population and economic growth. These communities are located on the two opposite ends of the county and contribute to the development pattern of the greater metropolitan area.

The City of Marshfield has generally expanded to the west and north into the McMillian in Marathon County, respectively. Rural and suburban areas on the fringe of the City of Marshfield have experienced the effects of growth and development during the last decade with commercial, industrial, and residential growth. (2024 Draft Wood County Comprehensive Plan).

The City of Wisconsin Rapids is located in southern Wood County. Wisconsin Rapids is the county seat and has an estimated population of 18,809 which is about 25 percent of the total county population. Manufacturing has decreased overall but still comprises one-fifth of all jobs in the city, with education and healthcare being another one-quarter of all jobs. There are several smaller incorporated communities in the area, including Biron, Nekoosa, and Port Edwards.

Population increase, growth of residential, commercial, and industrial development including land use activities all contribute to decreased water quality and increased stormwater runoff. The Cities of Marshfield, Wisconsin Rapids; are 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 9 municipal-owned and operated water treatment facilities for public water supply for domestic, and industrial use in Wood 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 11,172 private water wells were constructed in Wood County. The availability of groundwater varies across the county depending on the local geology. Most of the county produces 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 vary 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.

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Agricultural Trends

Agriculture in Wood 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.

Land Use (2015)

As populations continue to grow, more emphasis will be needed on protecting the natural resources. Land use in Wood County is predominately agriculture and woodland. Agricultural land occupies 46 percent of the total area of the county or 240,000 acres. Approximately 77 percent of the farmland is in cropland with corn, oats, hay, and soybeans being the main crops. Cranberries are the next major agricultural crop with 72 marshes in operation; these cranberry marshes total 5,412 acres in some stage of production according to the 2012 census of agriculture.

Woodlands also occupy a major portion of the land area in Wood County with aspen, maple, oak, white birch, white pine, and red pine being the dominant species. Much of the forests are used by the paper mills for huge amounts of pulpwood, which is vital for paper production. There are also a significant number of tree farms specializing in Christmas trees located in the southern part of the county. Of the 516,544 acres in the county, 215,400 or 42 percent are classified as woodland. The County Forest contains 37,536 acres of woodland.

The Wisconsin Department of Natural Resources provides forest management assistance to woodland owners in Wood County. The WDNR forester, located in Wisconsin Rapids provides help in tree planting, timber sale establishment, non-commercial thinning and pruning, and general land management planning. The WDNR also administers the forest Stewardship Program, the Wisconsin Forest Landowner Grant Program and provides technical assistance to the Farm Service Agency and the Natural Resources Conservation Service on other forestry cost-sharing program.

Land Use (2025)

Wood County consists of 517,551 total acres. Land consists of 507,597 acres and open water is 16,113 acres. There are approximately 130,725 acres of wetlands and 116,339 acres of flood plain. Sensitive areas, which are open water, wetlands and flood plains, makes up 263,177 acres or about 47% of the total area of the County.

Of the lands listed above, about 206,500 acres are covered in forest, both private and public. The County owns about 37,600 acres of the forested land. Private forested lands mainly in southeastern portion of the County. The decline in paper production in the county has resulted in a decline in the demand for pulp wood. Conversion of forested lands, especially red pine stands is starting to take place.

As of 2022 there were 216,635 acres of farmed land according to the National Agricultural Statistics of USDA. The average size farm operation was 238 acres with 909 operators. The number of operators dropped 14% from 2017 to 2022.

Of the 216,635 acres farmed, approximately 69,500 acres are in row crops; corn, corn silage, and soybeans. There are about 45,800 acres of hay ground and pasture and 9,200 acres in cranberry beds. The number of acres in a given type of row crop can change significantly from year to year based on the market forces and weather conditions.

Lands not forested or farmed are in residential use and residential use support, such as roads and infrastructure. Currently there is rapidly expanding infrastructure of electrical generation by solar farms and electrical transmission.

There are currently 2,600 acres of former farmland and pine forest in solar farms. The University of Wisconsin Extension expects 1% of the farmland in the state will need to be converted to solar farms to meet the carbon goals of the utilities. Solar is now the most cost-effective method of generating electricity because once installed there are no ongoing fuel costs.

Because Wood County is relatively flat, it is very suitable for solar farms. It also has one of the largest substations in the state in the Town of Arpin, which plans to double in size and makes it a desirable location for utilities to build solar farms. Of the 1% of the total farmland in the state needed for solar farms, Wood County may end up being the county with the largest amount of acreage in solar farms because it is flat, close to other grid infrastructure, and the leases provide greater income than agricultural practices with little to no risks for the landowner.

In addition to the solar farms, transmissions lines in the County currently use approximately 1,620 acres according to the Wisconsin Public Service Commission. The use restriction language placed in the easements on these lands, typically impose land use limitations on the property and ultimately landowner rights. A few types of agricultural practices are allowed, but organic crop production and forestry, for example, cannot be practiced because of herbicide sprays used by the utilities and their restrictions on trees. The number and size of the transmission lines in the County is expected to substantially increase in the next ten years as solar farms are installed and other sectors of the economy in urban

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areas move from fossil fuels to electricity and solar power is wheeled to urban areas.

Sediment Delivery (2015)

The Wood County Land & Water Conservation Department conducts an annual countywide transect survey of cropland to gather information on conservation tillage and soil loss rates. The survey provides a database of reliable information that can be used to monitor trends. These trends can be used to direct program activities. The data from this survey estimates that 92 percent of cropland fields in Wood County have soil loss rates below tolerable soil loss levels. Although soil erosion is not a prominent water quality problem in Wood County, it does provide a means of transporting nutrient rich soil particles and animal waste to lakes and streams. It is important to prevent the migration of nutrients to surface waters by installing best management practices that reduce erosion rates.

Sediment Delivery (2025)

The largest U.S. export in terms of quantity and dollar value is soil. We lose more soil, in tons, than all the corn, soybeans, and other exported agricultural products combined.

Soil erosion from farmland is estimated in tons per acre per year. The RUSLE2 modeling program is used to estimate the soil loss based on land cover, soil type, and run off intensity. Soils are classified at T1, T2, and so on. T1 meaning one ton of soil per acre per year, is tolerable to remain productive. T1 is considered a low level of erosion.

Wood County's 69,500 acres of row crops with average soil losses from row crops at 2 to 3 tons per acres means each year county loses about 140,000 to 200,000 tons of soil. Pollutants attached to soil particles, such as phosphorus, are major reason for the surface waters being listed as impaired waters.

Efforts to move from row cropping to grass based agriculture will reduce the amount of soil loss and pollutants to surface waters. Grass base agriculture also builds soil health and helps to sequester carbon in the soil in the form of organic matter.



Polluted spring runoff carrying soil and manure into local streams

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 principles 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 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.

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Each year the LWCD's annual work plan provides estimates for the cost of implementing conservation practices, allocates staff time spent on technical assistance, education and outreach to support the implement the LWRM plan. The LWRM Plan goals, objectives, strategies, and measurable outcomes reflect a 10-year time period. They were developed by the LWCD, considering input, review and clarification by the CAC, through a facilitated planning process the LWRM plan including the following:

Plan Goals

The goals and supplemental details are found in CHAPTER 3 of this plan. The following 4 goals are overarching goals for the work plan.

- **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 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 waterbody 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. This LWRM Plan will support the Wisconsin River Basin TMDL report.

Agricultural Performance Standards and Prohibitions

Since the passing of legislation in 2002, Wood 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 Wood County achieving compliance with these requirements.

Under the leadership of the Land & Water Conservation Department (LWCD) and the Conservation, Education & Economic Development Committee (CEED), 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, and the Farmland Preservation Program. Achieving compliance with the APSP will also be a primary strategy used by conservation staff for implementing TMDL pollutant reduction goals.

Wood County LWRM Plan Accomplishments – 2015 - 2025

Timeline of significant accomplishments that supported implementation of the 2015 LWRM Plan goals:

- **2015(a)** – Successfully completed the Land and Water Resource plan and had it approved by the Land and Water Board in December of 2015.
- **2015(b)** – Engaged community to update 1982 Farmland Preservation Plan-adopted by County Board.
- **2016** – Received a Notice of Discharge Grant from the Wisconsin Department of Natural Resources for remediation of a site to

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meet the state performance standards.

- **2018**– Developed Nonmetallic mining regulations to protect the environment, especially the water resources, of the county through a local County Ordinance adopted by the Wood County Board. Wood Co adopted the NMM ordinance on July 17, 2001.
- **2019(a)** – Drafted, published and received approval of a 9-Key element plan for the Mill Creek Watershed from the WI DNR and EPA. The plan aligned with the Wisconsin River TMDL, and the plan approval made the watershed eligible for state and federal funds to implement the strategies outlined in the plan.
- **2019(b)** – In December of 2019, Wood County applied for a Targeted Runoff Management Grant (TRM) and was successful in securing a \$650,000 grant to start the implementation of the Mill Creek 9-Key element plan.
- **2019(c)** – Educated and qualified/requalified over 105 different Wood 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.
- **2020-2023** – Wood County Land & Water Conservation Department successfully implemented Phase 1 of the Mill Creek Watershed Plan aligning with the implementation matrix outlined in the plan and met the goals established during that phase of the project. Phase 2 of the plan started in January of 2024.
- **2015-2023** – Wood County Land & Water Conservation Department, through the installation and recommendations of measures to improve agricultural practices, minimize nonpoint pollution, habitat destruction and soil loss have tracked a total reduction of 40,196 lbs. of phosphorous and 35,516 tons of sediment from entering surface waters of Wood County. It is estimated that 1lb. of phosphorous can produce 500 lbs. of algae and over the course of the last ten years that would calculate out to around 20,098,000 pounds of algae in our lakes and rivers. These efforts help to align conservation efforts to reduce phosphorus levels to target levels identified in the Wisconsin River Basin TMDL.
- **2020** – Completed the Wood County Strategic Plan adopted by the Wood County Board of Supervisors in May of 2020. The Wood County strategic plan has been developed to provide strategic guidance to Wood County operations to enhance efficiency while carrying out the County’s mission and providing pathways to the achievement of its vision. Six overarching categories were used in the strategic plan which cross-cut departmental boundaries. Within each category, overarching strategies were identified. To fully attain some of the strategies, the actions will be achieved by multiple departments, along with partnering organizations. It is recommended each department review the strategies, and, if relevant, identify actionable items that contribute to the achievement of the strategy. The success of this plan is dependent on departments, stakeholders, and elected officials to identify and implement their respective actionable items needed to achieve these strategies. To remain relevant, this five-year plan will be reviewed annually and updated as needed, with a comprehensive review by the Operations Committee in 2024.

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 Basin TMDL.

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. Wood County Land & Water Conservation Staff continue to monitor parameters in the Mill 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 reduction goals in specific watersheds in Wood County.

SUMMARY OF WORK PLAN

Plan Evaluation

Progress Tracking

The 2025-2035 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 2024 Wood County Comprehensive Plan, and the approved Wisconsin River Basin and Mill Creek Watershed TMDL Reports.

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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 Wood 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.

Wood 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 Wood 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 the Land & Water Conservation Department's Land and Water Program initiatives through the year 2035. 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 Wood County Conservation, Education and Economic Development Committee (CEED), the LWRM Plan is a product of the collaborative efforts of Conservation staff and the CAC comprised of key individuals representing the stakeholders in soil health, lake and reservoir management, soil erosion prevention, wildlife, diverse farming operations, groundwater protection & protection of our natural resources.

Wood County Conservation staff provided pertinent input and assisted with the development of specific target areas, overall review, and authored elements of this plan. A meeting was held by the CAC 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 CAC provided comments of the draft plan in order to establish a final draft plan for public review and consideration.

Citizen Advisory Committee meeting date: June 19, 2024

A Citizen's Advisory Committee (CAC) comprised of members from the Wisconsin Department of Natural Resources (DNR), Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP), United States Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS) and County Conservation Staff met both in person and virtually to review goals, strategies, objectives, and measurable outcomes on June 7, 2024. In addition, the Land & Water Conservation staff updated the CEED committee on the LWRM plan updates and projected timelines. The 2025-2035 LWRM Plan Revision incorporates the most recent available data and maps from LWCD, 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.

Plan Requirements

The Wood 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, WI. Stats. § 92 .10 & Adm. Code § ATCP 50 .12 (August 2017).

The CAC's recommendations were presented to the Wood County Conservation, Education and Economic Development Committee on September 4, 2024, and October 2, 2024, for the Committee's favorable consideration. The Conservation, Education and Economic Development Committee noticed and conducted a public hearing to solicit broad public input and recommendations on November 6, 2024. The LWRM Plan was approved by County Board on December 17, 2024.

Performance Standards & Prohibitions

In NR151, the DNR established agricultural and non-agricultural performance standards and prohibitions (APSP) 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

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performance standards and prohibitions.

As a condition of the Wood County's land and water program and state law, the LWCD 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 LWCD staff make NR151 compliance determinations.

Wood County is devoted to developing 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 CEED and the Land & Water Conservation 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 on the land meet uniform design requirements to accomplish stated objectives and are outlined by ATCP 50.



Emerging seeding from no-till cropland planting

Managed Grazing



The implementation of the APSP is a primary focus of the administration, compliance monitoring and enforcement of the Animal Waste Management Ordinance and the Farmland Preservation Program. These programs provide direct compliance and local enforcement of specific performance standards. Other programs that provide landowners the opportunity to learn and apply best management practices to meet performance standards include a county managed grazing program, hosting soil health field days, which demonstrate effective, economical alternatives and provide extensive outreach.

Related Plans

Mill Creek – 9-Key Element Watershed Plan – 2019

This watershed-based plan was developed to be compliant with EPA's 9-key element components of an impaired watershed. The plan was approved in 2019 providing grant eligibility and outlines a strategy to restore waters that are impaired by nonpoint source pollution using state targeted runoff management (TRM) grants & federal section 319 funds. The County, State - DNR and the EPA all weighed in on the plan to ensure the plan met all requirements. The Mill Creek watershed, which includes land in Portage and Wood Counties, is consistent with the Wisconsin River TMDL and was modeled for pollutant loading data for the entire watershed. The plan and grant is administered through Wood County Land and Water Conservation, who partners with Portage County Land and Water Conservation. The project implementation also partners with the Farmers of Mill Creek Watershed Council, a local Producer Led Watershed group. The Mill Creek plan can be viewed here: <https://dnr.wisconsin.gov/topic/Nonpoint/9keyElement/planMap.html>

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Wisconsin River TMDL Report - 2019

The State DNR, together with many partners throughout the basin, are working to improve water quality of the Wisconsin River, its reservoirs and tributaries. The Total Maximum Daily Load (TMDL) study provides a strategic framework and prioritizes resources for water quality improvement in the Wisconsin River Basin. The Wisconsin River TMDL study area spans Wisconsin's central corridor from the headwaters in Vilas County to Lake Wisconsin in Columbia County, covering 9,156 square miles (approximately 15 percent of the state). The U.S. EPA approved the Wisconsin River TMDL on April 26, 2019. On July 9, 2020, the U.S. EPA approved site-specific phosphorus criteria for Petenwell Lake, Castle Rock Lake and Lake Wisconsin. The science behind the site-specific criteria is presented in Appendix C of the TMDL. When the EPA approved the Wisconsin River Basin TMDL in 2019, they approved allocations based both on the statewide phosphorus criteria applicable at the time and these newly approved site-specific criteria. With the approval of the site-specific criteria, the allocations presented in Appendix K of the TMDL will now be used for future wastewater permitting decisions and as the basis for locally led nonpoint reduction plans. The full Wisconsin River TMDL report can be referenced here: <https://dnr.wisconsin.gov/topic/TMDLs/WisconsinRiver/index.html>.

Throughout this LWRM plan there are references to the Wisconsin River TMDL report. Specifically, Appendix N will outline agricultural phosphorous targets for the Wisconsin River TMDL. The full Appendix N can be viewed here: <https://apps.dnr.wi.gov/water/wsSWIMSDocument.ashx?documentSeqNo=241735738>. For criteria specific to Wood County HUC 12 Watersheds reference Figures 2-19, 2-20 and Table 2-3 on pages 55-57 of this plan.

Wood County Farmland Preservation Plan – 2015

The Wood 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 Wood County Board adopted the Wood County Farmland Preservation Plan on April 29, 2015. A plan update is scheduled in 2025.

Upper Yellow River Watershed Nonpoint Source Control Plan – 1994

The Upper Yellow River Priority Watershed Project Plan was developed to assess land uses and accumulative nonpoint sources of pollution within the 224 square mile watershed with tributary land in Wood, Clark and Marathon counties. Although the plan is old, many of the resource assessments still have value giving a historic assessment and inventory of the entire three county watershed by sub shed. Similar to today's TMDL studies and 9-key Watershed plans, this plan was on a watershed scale and targeted a watershed on the DNR 303D list as an impaired waterway. The watershed was inventoried, an implementation strategy was developed, and implementation took place from around 1993 – 2005. Many conservation practices were implemented, and the reduction results were tracked to show progress toward goals. At the end of the project, a final report was submitted to DNR. For a more detailed look at the plan, it can be viewed at: <https://dnr.wisconsin.gov/sites/default/files/topic/Nonpoint/9kep/expired/UpperYellowRiver.pdf>

WOOD COUNTY ORDINANCES

Animal Waste Management Ordinance – Ch. 801

Wood County adopted its first Manure Storage Ordinance in 2000. The Wood County Board of Supervisors adopted an Amended the ordinance which is now referred to as the “Animal Waste Storage, Nutrient Management and Groundwater Protection Ordinance” in August of 2015. 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 Wood County; and protect the groundwater and surface water resources of Wood County. It is also intended to provide for the administration and enforcement of the ordinance and provide penalties for its violations.

Because agriculture is so prevalent in Wood County, one of the most significant potential groundwater contamination sources is animal waste. Both storage and spreading of animal waste can contaminate groundwater if not done properly.

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Animal waste storage facilities currently in use range from manure pits dug 80 years ago to newly engineered and installed storage structures. Currently there are 221 animal waste storage facilities in Wood County (see Figure 1-1). According to Land Conservation Department records, 84 of these structures were designed and installed to meet technical standards and specifications that were in effect at the time they were built. It is estimated that there are 137 manure storage facilities that do not meet any type of technical standards for design and installation. Wood County regulates the location, design, and installation of animal waste through its Animal Waste and Manure Management Ordinance. This ordinance ensures that all new, substantially altered, and abandoned manure storage facilities are completed in compliance with approved standards and specifications. The ordinance also requires that permitted storage facilities submit and follow an annual nutrient management plan.

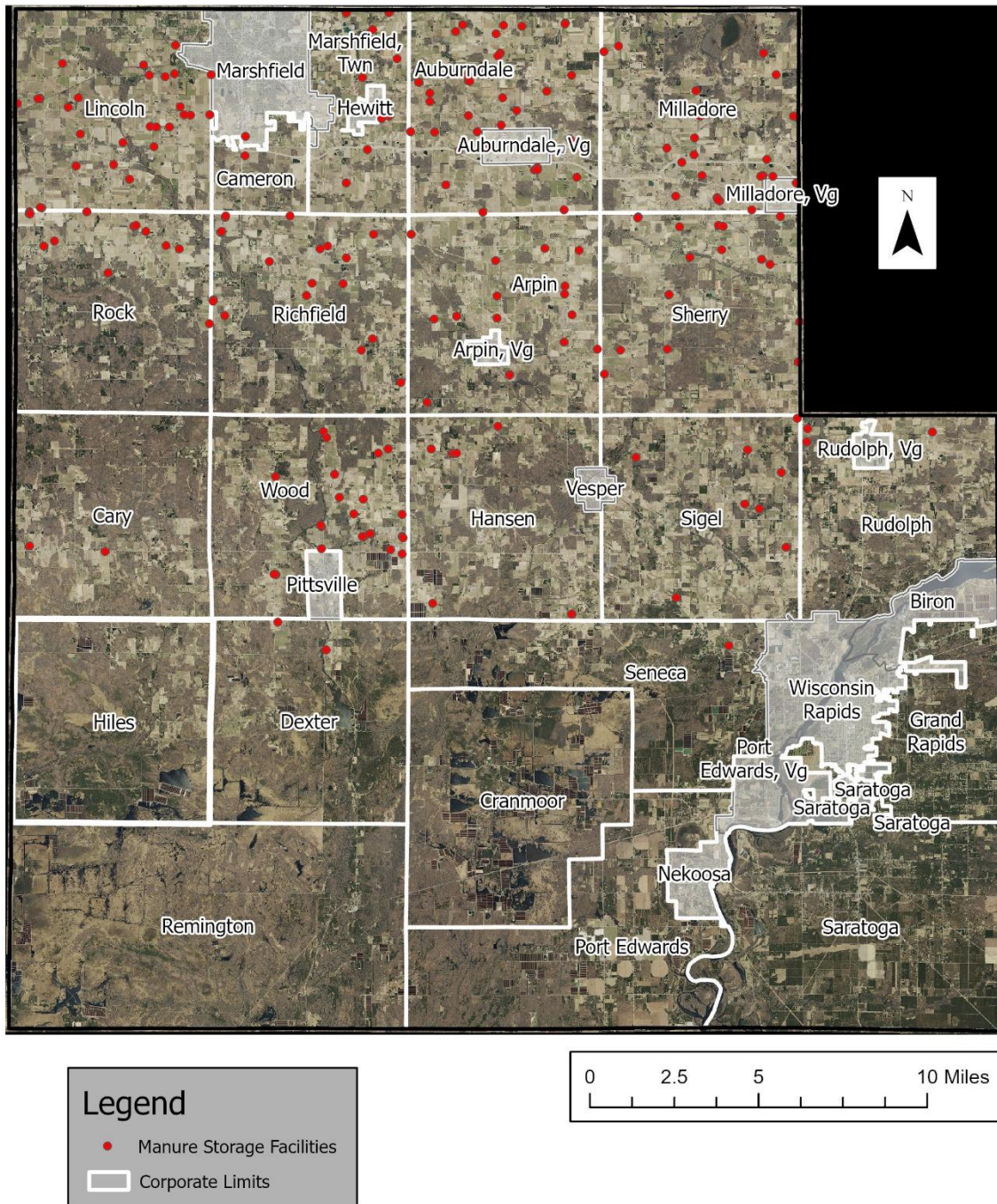


Clay lined waste storage facility

The most recent ordinance revision (August 2015) incorporated most of the APSP of the State. This gives the LWCD more tools to address the most critical sources of runoff pollution to surface and ground waters, thereby safeguarding land and water resources.

FIGURE 1-1

Manure Storage Facilities Wood County, Wisconsin



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

Nonmetallic Mining Reclamation Ordinance – Ch. 802

Wood County adopted the Nonmetallic Mining Reclamation Ordinance in 2001. Several revisions have occurred with the most recent being December of 2017.

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 802 to establish regulations for nonmetallic mining site reclamation under NR 135 that will restore the site to a purposeful and acceptable landscape appearance and use.

According to LWCD's records, historically, 94 nonmetallic excavation sites have been permitted and operated within the County of Wood since the adoption of the ordinance in 2001, with approximately 45 sites being successfully reclaimed between 2001-2024.

The Wood County Land and Water Conservation Department monitors all active mine sites throughout the life of the mines, ensuring successful reclamation and minimal environmental impacts with the land returned to a reasonable land use.



Active mine site



Reclaimed mine site

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Shoreland, Shoreland-Wetlands & Floodplain Code - Chapter 704e

The Wood County Board of Supervisors adopted the Shoreland, Shoreland-Wetland, and Floodplain Code in December 2012. 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 Wood County, the WDNR maintains oversight responsibilities to ensure compliance with State Statutes.

Related State and Federal Regulations

Department of Agriculture, Trade and Consumer Protection (DATCP) 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 April 2024, revisions to ATCP 50: Wisconsin's Soil and Water Resource Management Rule were adopted and can be viewed here: https://datcp.wi.gov/Pages/Programs_Services/ATCP50.aspx

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."

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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 LWCD 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

NR216: 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.

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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 National Pollutant Discharge Elimination System (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

The United States Environmental Protection Agency (USEPA):

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 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

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Wood County Land & Water Conservation Department

The Land & Water Conservation Department is a public service agency that provides a host of regulatory, professional, educational and technical services to the general public and local governments of Wood County. These program and service areas include the following:

Land and Water Services

The Land and Water Conservation 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 & Water Conservation Program Responsibilities

Land & Water Conservation Program Services are driven by Wood County's LWRM Plan. The LWRM Plan outlines a comprehensive strategy for the implementation of soil and water conservation in Wood County from 2025 through 2035. 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 Land & Water Conservation 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 is 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, 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.

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Educational Activities

The Farmers of Mill Creek Watershed Council (FMCWC) and Mill Creek Watershed 9-Key Element Plan

The FMCWC is a watershed group dedicated to finding solutions to water resource concerns in northern Wood County & northwestern Portage County. Land & Water Conservation, along with several other partners, initiated the formation of this group in 2016, which is also part of a bigger statewide producer led effort. Wood County Land & Water Conservation Department partners with the group on hosting many events annually to align the educational efforts with the Mill Creek Watershed 9-Key Element plan.

Wood County 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. FMCWC & Land Conservation leads the educational efforts in the Mill Creek Watershed and neighboring watersheds 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

Wood County Land & Water Conservation 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, publications & brochures about establishing rain gardens, shoreland owner protection practices, newsletters, social media and by providing staff technical assistance. LWCD also partners with lake groups and organizations to address goals and objectives listed within Lake Management Plans.

An Aquatic Plant Management Plan for Nepco Lake was developed in 2024 providing the framework for cultivating partnerships with other lake, Golden Sands Resource Conservation and Development Council, and other local groups and organizations. By building partnerships with citizens and organizational leaders, LWCD strives to create communities that value and protect surface water resources.

Healthy Lakes and River Educational Workshops

Wood County Land & Water Conservation Department Staff provide educational workshops regarding shoreline protection opportunities, including the Healthy Lakes & Rivers program funded through the Wisconsin DNR Surface Water Grant program, shoreline stabilization practices, and supplementary educational sessions as necessary. The Healthy Lakes & Rivers grant program funds five best practices that are options for private landowners to help prevent nutrient and sediment loading in our surface waters via runoff as well as stabilizes the shoreline through natural, diversified root systems. The combination of shoreline stabilization practices, such as natural fiber rolls or rock rip rap, with the Healthy Lakes & Rivers programs are key in reducing individual landowner impact on Wood County's surface waters, as well as reaching goals of the Wisconsin River TMDL.

Additional Land & Water Conservation Department Related County Programs

Conservation Reserve Enhancement Program (CREP)

The Conservation Reserve Enhancement Program (CREP) is a resource to help agricultural landowners meet their conservation goals, particularly those who till or graze land along rivers and streams. CREP pays landowners to install filter strips along waterways or to return continually flooded fields to wetlands while leaving the remainder of the adjacent land in agricultural production. CREP financial incentives include cost sharing of conservation practice installation, upfront incentive payments and annual soil rental payments. Many land cover and management practices are available under CREP, depending on the preference of the landowner and site factors, with some of the more common practices being filter strips, riparian buffers and wetland restorations. CREP is a joint effort between the federal, state and county governments.

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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. This program is administered by the Wisconsin DNR.

Invasive Species Program

The Land and Water Conservation Department has built an invasives species program that focuses both on terrestrial and aquatic invasive species. The program focuses on land & water resource health by trying to identify, map, monitor and educate youth, farmers, the public, lake property owners and other local partners of the negative effects of these invasive species. The department has been fostering local partnerships to help minimize the spread of invasives.

Wisconsin's invasive species rule, Wis. Admin. Code NR 40 classifies regulated invasive species as restricted or prohibited species. Restricted species: species that are widely established in the state. It is illegal to transfer, transport, and introduce restricted species without a permit. Prohibited species: species that are not yet in the state or in a few places. It is illegal to transfer, transport, introduce, and possess a prohibited species without a permit.

Aquatic Invasive Species

There are twelve known and verified aquatic invasive species (AIS) located within Wood County. One of the AIS is a prohibited species (non-native phragmites). Active management occurs on each known population. Nepco Lake and Petenwell Lake are listed as two of the "Top 300 AIS Prevention Priority Waterbodies," which is focused on shielding or containing the waterbodies from AIS. The Wood County Land & Water Conservation Department supports the goals within the Wisconsin Aquatic Invasive Species Management Plan to prevent the introduction of new AIS into Wisconsin, contain the spread of AIS in Wisconsin, and control existing populations of AIS to minimize harmful impacts by participating in the Lake Monitoring & Protection Network as well as pursuing other Surface Water Grants.

Terrestrial Invasive Species

There are fourteen known and verified terrestrial invasive species (TIS) located within Wood County. One of the TIS is a prohibited species (giant hogweed). Active management and monitoring occurs in areas with known populations and surrounding areas.

In March of 2017, the Wood County Land & Water Conservation Department presented to the County board on the environmental and health risks associated with Wild Parsnip. This invasive plant is not currently listed as a noxious weed in WI state Statute 66.0407(b). Wild parsnip creates health and ecological threats and is increasingly prevalent within the County. Wild parsnip is listed by the WI DNR as an invasive species with control encouraged by WI Administrative Rule NR 40. Wood County is authorized by WI State Statute 66.0407(1)(b) to designate any weed as noxious within County Boundaries. On March 17, 2017, the Board of Supervisors for the County of Wood, by resolution designated wild parsnip (*Pastinaca sativa*) as a "noxious weed" within the County. This action gives the county the authority to identify, map, monitor, and eradicate the species throughout the county. Wild parsnip is a restricted species that poses a hazard to human health (causes phytophotodermatitis when sap contacts skin in the presence of sunlight). Annual mapping and control measures are put in place in mid-summer and fall. Coordination with the Wood County Highway Department, Portage County Land & Water Conservation Department, and the Wood County Weed Commissioner is key in response and management efforts.

This protocol also aligns with this Land & Water Plan and would make the county eligible for future state funds if a statewide funding program becomes available.

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Tree, Shrub and Seed Sale, Generic Gel and Tree Shelters

The Wood County Land & Water Conservation department offers landowners the opportunity to purchase trees at minimal cost with an annual tree, shrub and seed sale. Varieties of conifers, hardwoods and shrubs are selected for the sale in late summer and order forms are sent to landowners in Wood County and surrounding counties as requested in early November. The wildflower and grass seeds are available to purchase year-round. Wood County LWCD is a preferred partner with Pheasants Forever for wildflower and grass seeds. Trees and shrubs are purchased in bulk from quality nurseries in Wisconsin and Michigan.

The department stocks tree shelters for sale year-round to landowners to protect tree seedlings from wildlife and ensure a warm environment for faster growth. Generic gel is also stocked for sale year-round as a starch absorbent that increases plant survivability by retaining water and giving it back to the plant during dry periods. Tree spades are also available for rent to landowners.

Supplies and Equipment

No-Till Drill and Roller Crimper

Wood County LWCD offers rental of a no-till drill and roller crimper to Wood County landowners. The roller crimper encourages mechanical termination of cover crops and planting green to improve soil health. The Great Plains no-till drill is available to rent to encourage no-tilling of soybeans, small grains, forages, interseeding, establishment of pastures and wildlife and pollinator openings.

No-till drills can improve soil health by increasing organic matter, water-holding capacity, and biological activity. They can also help protect crops by:

- reducing the impact of drought and flooding
- reducing erosion by leaving crop residue on the surface which helps improve water and air quality
- increasing crop yields due to improved soil health
- reducing the need for fertilizer due to the increased organic matter in the soil
- reducing the need for herbicides by using cover crops/green manures
- saving farmers time and money

Vision and Goals

Wood 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

- 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 Wood 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

CHAPTER I | INTRODUCTION

Rural Landscape of Wood County



Agricultural Preservation

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

Policies Related to Farmland Preservation Plan Requirements

The farmland preservation plan is a significant policy for the Wood 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 Wood 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 includes 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 1-2 illustrates the current farmland preservation areas in the county.

Farmland Preservation Program

Wood 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 2015, Wood County completed an update of its Farmland Preservation Plan to incorporate the new program opportunities of the Working Land Initiative into local programming. Wood County will update the plan in 2025.

The protection of agricultural cropland and woodland land uses are important to maintaining the rural and cultural integrity and diversity of Wood 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 Wood County.

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The Farmland Preservation Program in Wood County has a 42-year history of incentivizing adoption and implementation through 15-year Farmland Preservation agreements.

The state income tax credit incentives that Farmland Preservation Program participants are eligible for range from \$10.00 to \$12.50 per acre per year, depending on the landowners type of participation in the farmland preservation program. Beginning in tax year 2023, the tax credit was updated to the following:

- \$10.00/acre for landowners with a farmland preservation agreement signed after July 1, 2009 and located in an agricultural enterprise area, or for landowners who have modified an agreement initially signed before July 1, 2009
- \$10.00/acre for landowners in an area zoned for farmland preservation
- \$12.50/acre for landowners in an area zoned for farmland preservation and in an agricultural enterprise area with a farmland preservation agreement signed after July 1, 2009, or in an area zoned for farmland preservation and with a farmland preservation agreement modified after July 1, 2009

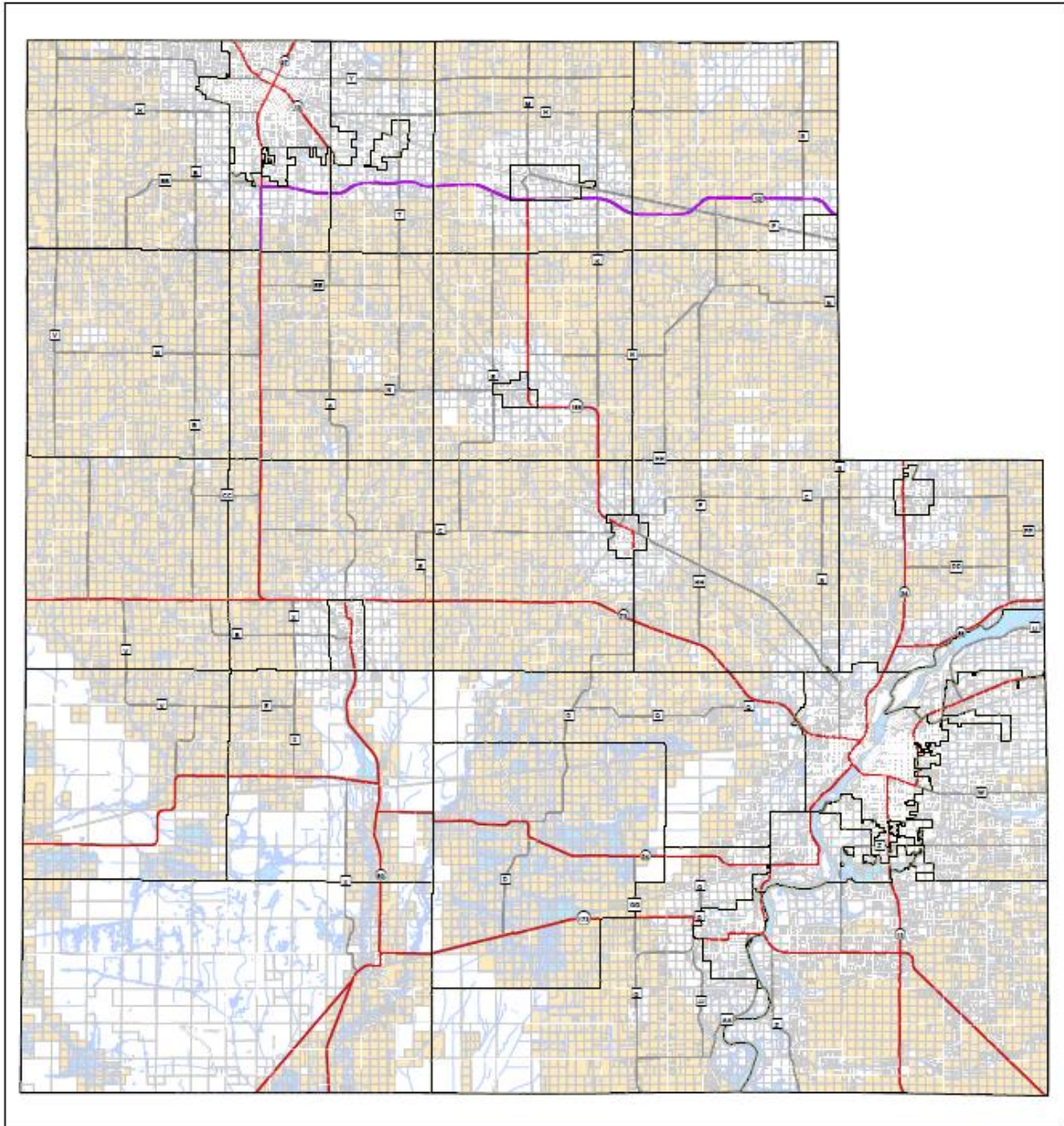
Claims made for year prior to tax year 2023 are subject to the old credit rates that are as follows:

- \$5.00/acre for landowners with a farmland preservation agreement signed after July 1, 2009 and located in an agricultural enterprise area, or for landowners who have modified an agreement initially signed before July 1, 2009
- \$7.50/acre for landowners in an area zoned for farmland preservation
- \$10.00/acre for landowners in an area zoned for farmland preservation and in an agricultural enterprise area with a farmland preservation agreement signed after July 1, 2009, or in an area zoned for farmland preservation and with a farmland preservation agreement modified after July 1, 2009

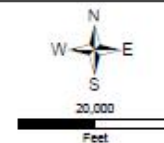
FIGURE 1-2

Farmland Preservation Plan

Wood County, Wisconsin



- Farmland Preservation Area
- Parcels
- Corporate Limits
- Water Body
- US Highway
- State Highway
- County Highway
- Local Roads



CHAPTER I | INTRODUCTION

FIGURE 1-3

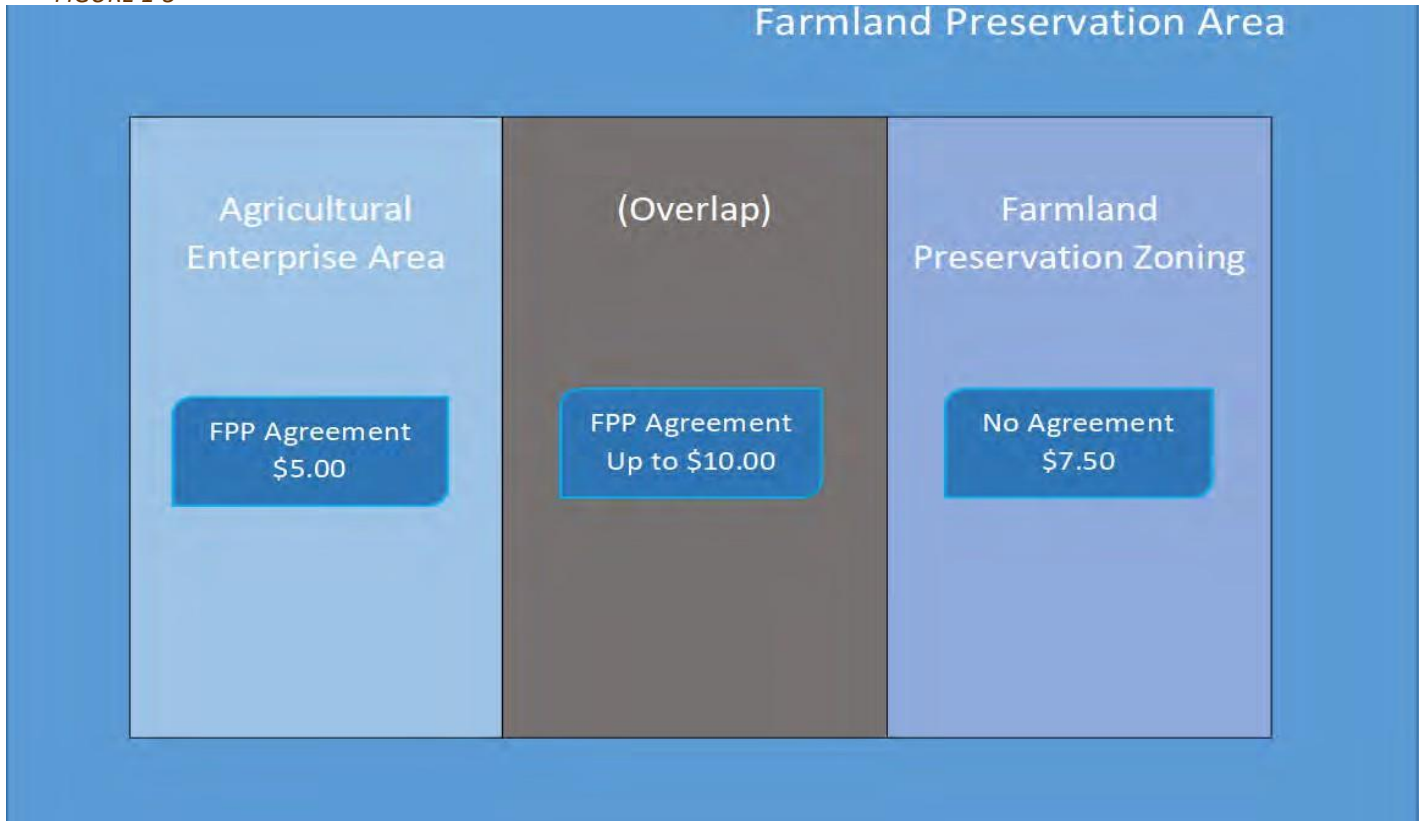


Figure 1-3 shows Farmland Preservation Tax Credit rates/acre for AEA's versus Farmland Zoning and illustrates a rate when combined.

Figure 1-4 shows Farmland Preservation claims and the average annual credit per claim, from the beginning of the program in 1978

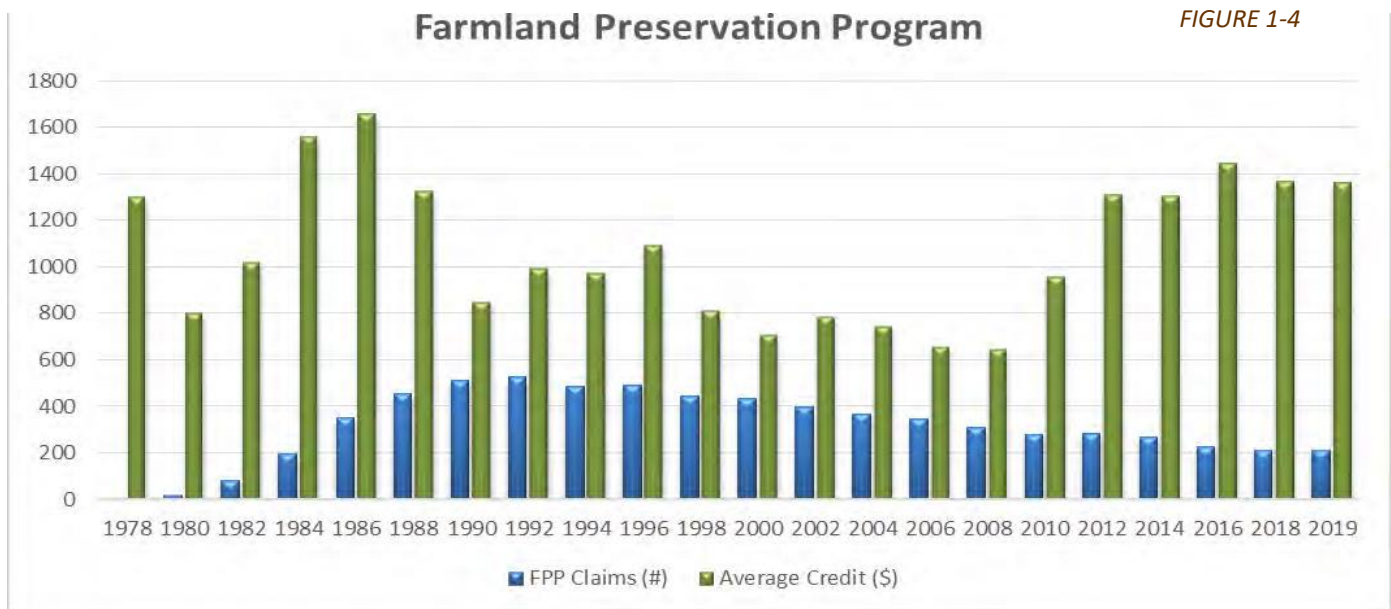


FIGURE 1-4

Source: WI DATCP and DOR Farmland Preservation Tax Credit Statistics

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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 Management Technical 590 standard for Wisconsin, nutrient management plans must also minimize soil erosion and phosphorus loss from cropland to surface waters.

Wood 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 2024, 94 Wood County landowners have nutrient management plans on 59,044 acres (40%) of cropland (refer to nutrient management plan Figure 1-5). Since 2007, Wood County has worked with the UW-Extension, North Central Technical College, and Wisconsin Nutrient and Pest Management Program to train and prepare Wood County landowners to develop their own nutrient management plans. This effort has been very successful and will be continued.

LWCD 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.

Farmland with a Nutrient Management Plan 2016-2023

Wood County, Wisconsin

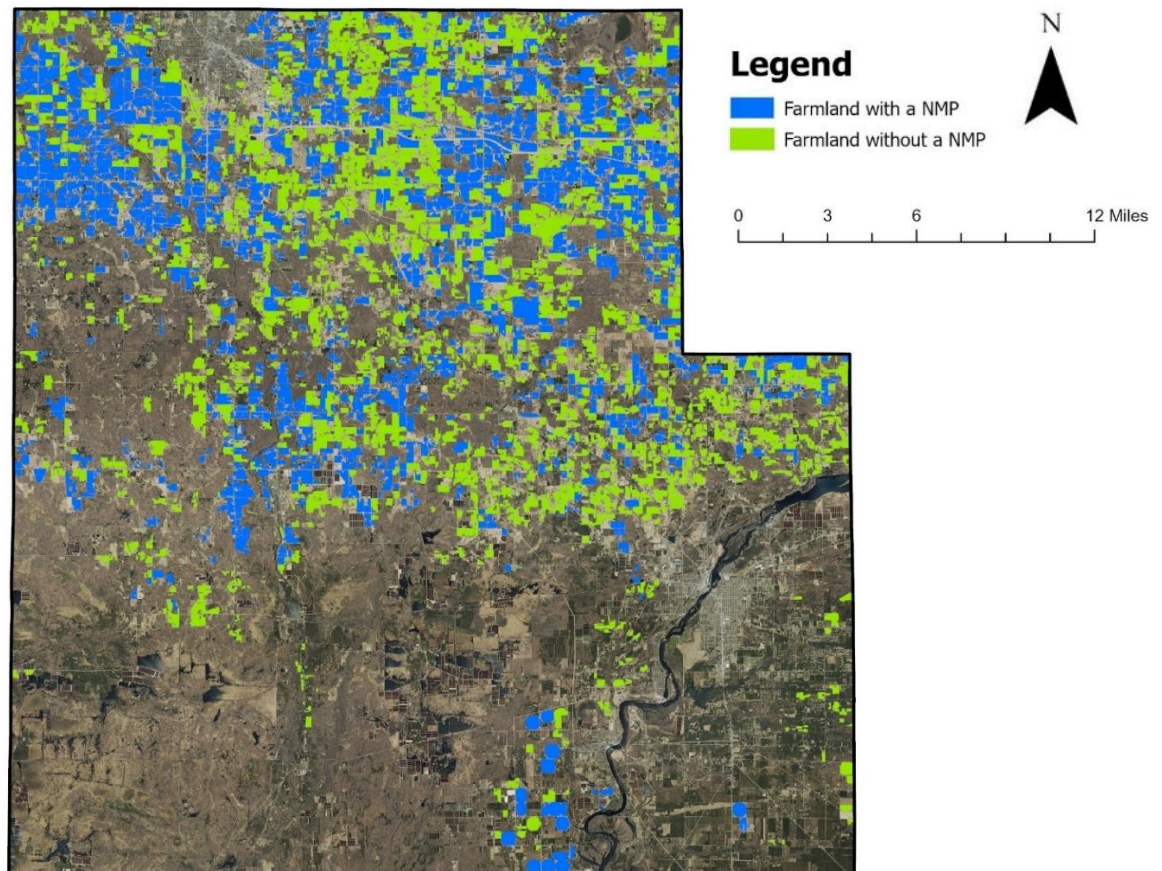


FIGURE 1-5

CHAPTER 2 | RESOURCE ASSESSMENT

RESOURCE ASSESSMENT

Wood County, in the Central part of Wisconsin, has a total area of 517,551 acres. Of this total, 507,597 acres are land and 16,113 are water. In 2024, the population of Wood County was 74,100. Wisconsin Rapids, the county seat in the southeast part of the county, had a population of 18,809. Marshfield, in the northern part of the county, had a population of 18,668. Twenty-two townships make up the county. Wood County is bordered on the north by Marathon County, on the east by Portage County, on the south by Adams and Juneau Counties, and on the west by Clark and Jackson Counties.

The earliest settlement of Wood County began soon after what is now Wisconsin came under the authority of the United States in 1815. Daniel Whitney, with others, erected a sawmill at what is now Nekoosa in 1831.

The vast stands of quality timber, especially white pine, attracted lumbermen, and the lumber industry grew rapidly. The sandy parts of the county were logged first because the trees there were almost entirely pine, which was the only timber cut by the early lumbermen. Settlers followed the lumbermen, but because the sandy areas were poorly suited to farming, the settlers soon moved to the northern part of the county, where soils are finer textured. They frequently burned the hardwood timber to clear the land for farming.

Wood County was created in 1856 from a part of Portage County. Several boundary changes followed until 1872, when the present boundaries were established.

Wheat and rye were the principal crops at first, but about the turn of the century dairying began to increase in importance. Butter was the main dairy product, but cheese soon became more important. In 1925, more than 12 million pounds of cheese was produced in Wood County.

The culture of cranberries began in the early 1870's, and today Wood County is the leading cranberry producing county in Wisconsin.

Paper mills replaced sawmills as the era of lumbering drew to a close. Numerous sites on the Wisconsin River between Nekoosa and Biron provide waterpower to operate the paper mills. The river supplies the vast quantities of water needed in making paper. Paper is now the principal industrial product in Wood County. (The Wisconsin Rapids paper mill closed in June 2020.)

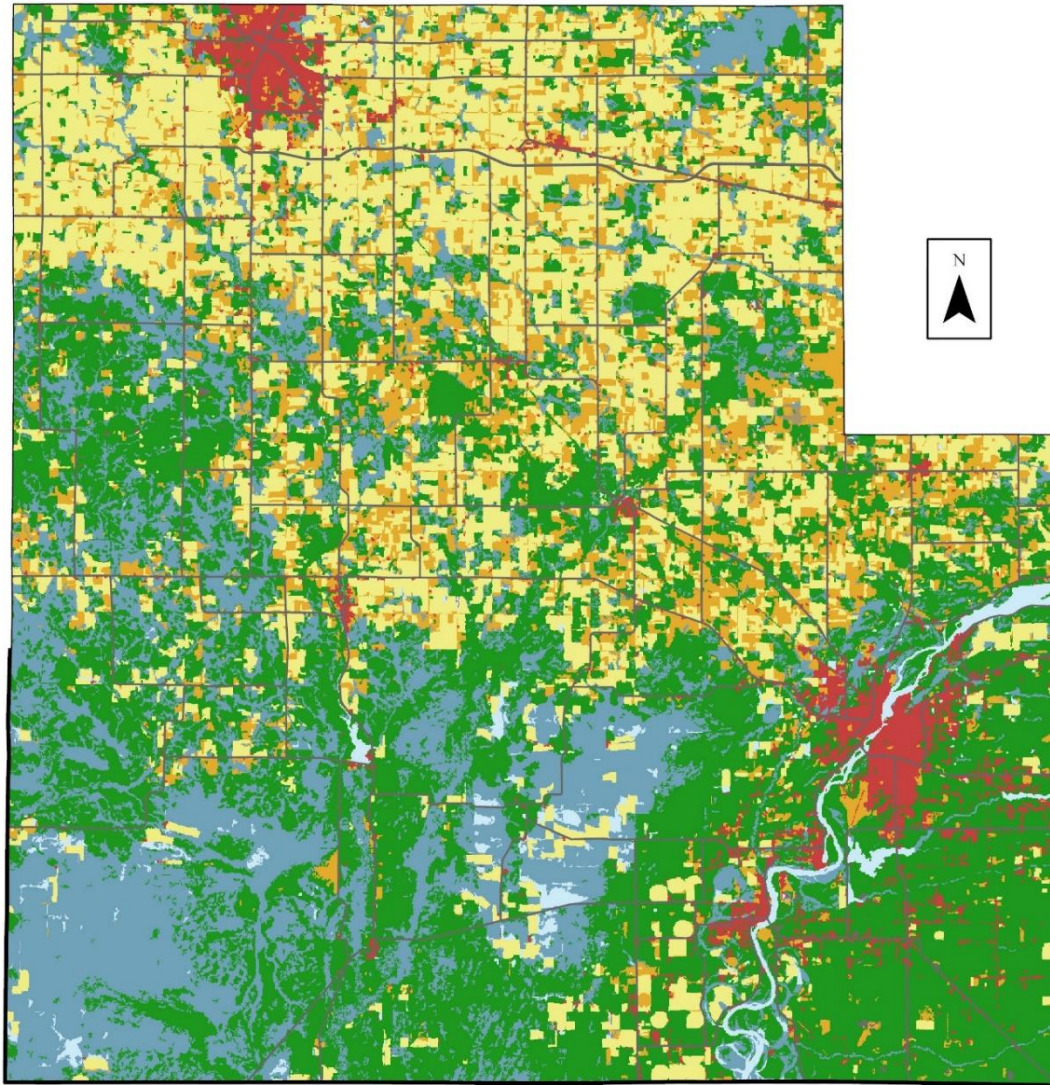
The census of 1860, the first to include Wood County, showed a population of 2,425 people. By 1900 the population was 25,865, of which about one-third was in urban areas. In 1950, 50,000 people lived in the county, and slightly more than half were classified as urban residents.

In an attempt to illustrate the latest available land cover data for Wood 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 Wood County, WI

Land Cover and Land Use Wood County, Wisconsin



Legend

Land Uses

 Urban/Developed	 Wetland
 Agriculture	 Barren
 Grassland	 Shrubland
 Forest	 Major Roads
 Open Water	

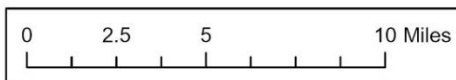


Figure 2-2 Land Use & Land Cover Wood County, WI

CHAPTER 2 | RESOURCE ASSESSMENT

Soil Associations

Most of the soils found in the county are best used for cropland and woodlands. The soils of Wood 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 in 1977, 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.

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 of a site for development. Most soils in Wood 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 farmlands”. Not all lands classified as prime farm soils are used for farming; some have been developed with residential or other uses. The Wood County Farmland Preservation Plan includes more detailed information on prime farm soils.

The Survey identified 11 primary soil associations (Figure 2–4: Generalized Soils Map) in Wood County. These soil associations include the following:

Withee – Marshfield – Santiago Association

The soils of this association are on the glacial ground moraine in the northern and northwestern parts of the county.

- **Current land cover:** Most of this association is cultivated, but woodlots are common.
- **Other important features:** In recent years extensive residential development has taken place in parts of this association.

Milladore – Eau Claire – Sherry Association

The soils of this association are on broad upland plains in the northeastern part of the county and around Rudolph.

- **Current land cover:** Most of this association is cultivated, but some areas are in woodlots.
- **Other important features:** Most of the soils of this association have a seasonal high-water table. The potential for recreational use is moderate to good.

Dolph – Altdorf Association

The soils of this association are on broad upland plains around Rudolph and Powers Bluff.

- **Current land cover:** About half of this association is cultivated, and the rest, mostly on wetter sites, is in woodland or native pasture.
- **Other important features:** Most of the soils of this association have a seasonal high-water table and are wet in spring.

Fenwood – Rietbrock Association

This association consists of soils on prominent hills in the north-central and west-central parts of the county.

- **Current land cover:** Most of this association is in woodland and native pasture.
- **Other important features:** Potential for recreational use is good.

Vesper – Kert Association

The soils of this association are on the upland plain in a broad belt across the middle of the county.

- **Current land cover:** About 60 percent of the association is cultivated. The rest is in woodland, native pasture, or wildlife habitat.
- **Other important features:** Much of this association has good potential for wildlife habitat.

Elm Lake – Merrillan Association

The soils of this association are on the northern edge of Glacial Lake Wisconsin in the area west of Dexterville and in a small area west of Wisconsin Rapids.

- **Current land cover:** Most of this association is in woodland, but some small areas are cultivated.
- **Other important features:** This association has moderate potential for woodland and good potential for wildlife habitat.

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Plainfield – Friendship Association

The soils of this association are on outwash plains on either side of the Wisconsin River and extend from the vicinity of Wisconsin Rapids southward.

- Current land cover: Most of this association is in woodland.
- Other important features: This association has good potential for irrigated crops.

Newson – Meehan Association

Most of the soils of this association are on nearly level outwash plains and glacial lakebeds east of Wisconsin Rapids and in the southwestern and south-central parts of the county.

- Current land cover: Most of this association is in woodland. Some areas were once cultivated but have been planted to trees or have reverted to woodland.
- Other important features: This association has good potential for wildlife habitat.

Markey – Rifle Association

The soils of this association are on the glacial lake plain in the south-central part of the county and in a small area in the northeastern part of the county.

- Current land cover: Most of this association is in woodland or wildlife habitat. A few small areas are used for native pasture and large areas are in cranberries.
- Other important features: These soils have good potential for use as wildlife habitat.

Dawson – Greenwood Association

The soils of this association are on the glacial lake plain in the extreme southwest part of the county.

- Current land cover: Most of this association is in woodland or wildlife habitat. Some areas are used for growing cranberries.
- Other important features: These soils have good potential for wildlife habitat.

Alluvial land, wet Association

This association consists of bottomlands, islands, and sloughs along the Wisconsin and Yellow Rivers.

- Current land cover: Most of this association is in woodland and wildlife habitat, but some areas are in native pasture.
- Other important features: Floods are frequent, and the water table is high.

The soils in the northern two-thirds of Wood County formed in “two-storied” parent material. That is, the upper 20 to 26 inches of the soils formed in silty wind-laid material, and the lower part of the soils formed either in glacial till or in residuum weathered from underlying bedrock.

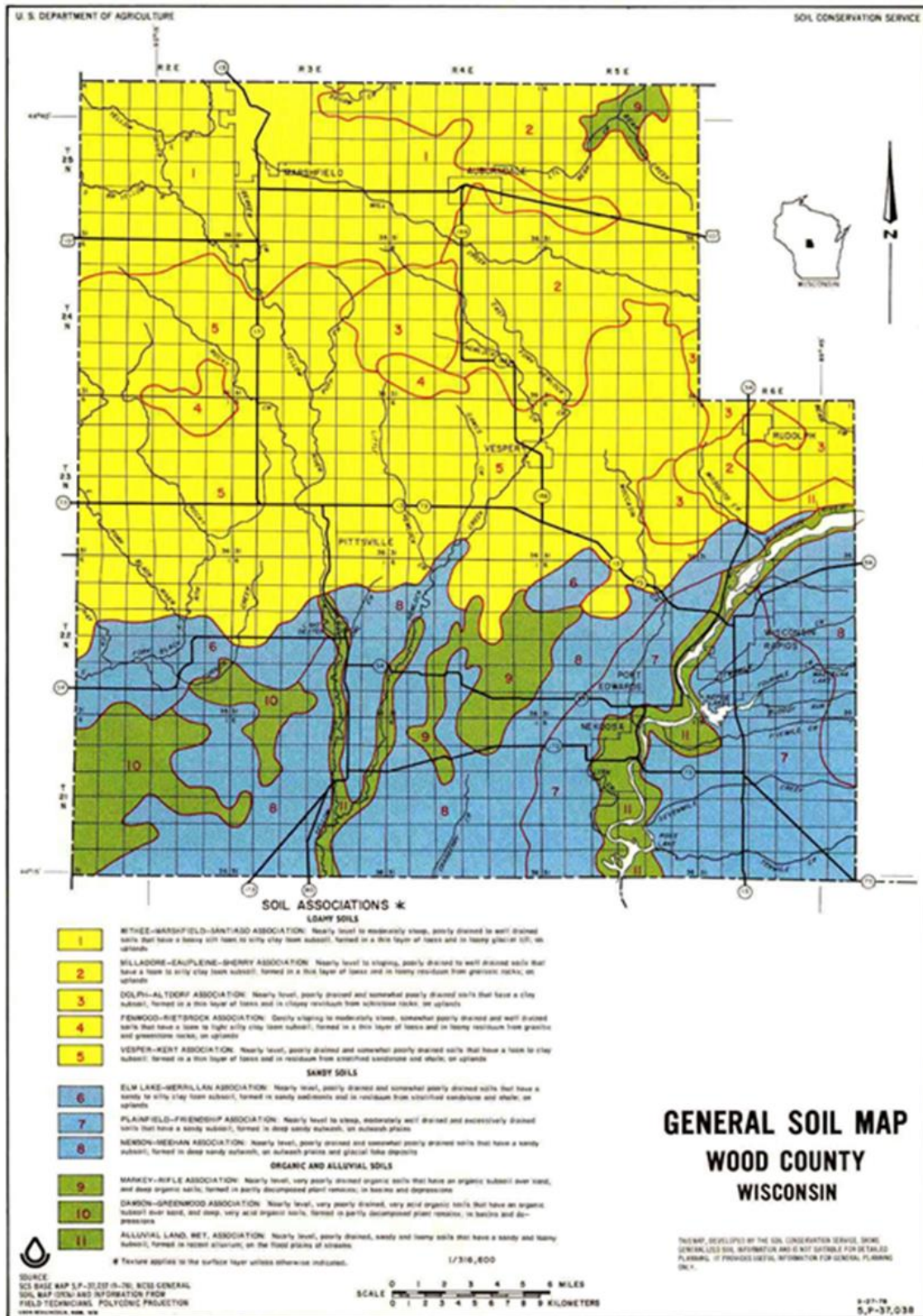
If a line were drawn east and west approximately through Wisconsin Rapids, it would roughly separate the loamy soils north of the line from the sandy soils south of the line. The loamy soils have a cap of wind laid silty material that averages about 24 inches in thickness.

In the northwestern part of the county, the soils formed partly in the underlying loamy glacial till. These are soils of the Withee, Marshfield, Santiago and Mann series.

In the northeastern part of the county, the material below the silty cap is loam residuum weathered from the underlying gneissic rock. Milladore, EauPleine, and Sherry soils formed in this silt and residuum.

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Figure 2-4 General Soil Map Wood County, WI



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An area north of Powers Bluff in Richfield and Arpin Townships and areas in Sigel, Sherry, and Rudolph Townships have soils that formed partly in underlying clayey residuum weathered from schistose bedrock. These are soils of the Dolph and Altdorf series.

A broad belt across the middle of the county is soils that formed in the silty cap and underlying layers of residuum from weakly cemented sandstone and acid clay shale. These are soils of the Kert, Vesper, Hiles, and Veedum series.

Most of the soils in the southern part of the county formed in sandy material deposited by glacial melt waters along the Wisconsin River or in Glacial Lake Wisconsin. Soils of the Nymore, Plainfield, Friendship, Meehan, and Newson Series formed in these.

Topography and Soil Associations

To analysis the complex relationship among various soils associations, terrain, elevation, and the hydrologic transport system of watersheds within county, it is crucial to consider the 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. This will 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 Wood County. From 2018-2023, the average soil loss rate for Wood County cropland was 1.8 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 Wood 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 used or encouraged to control and minimize soil erosion including conservation tillage, stormwater permitting requirements, managed 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 240,000 acres of cropland within the county, agricultural soil erosion has been a longtime concern for the Land & Water Conservation 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.

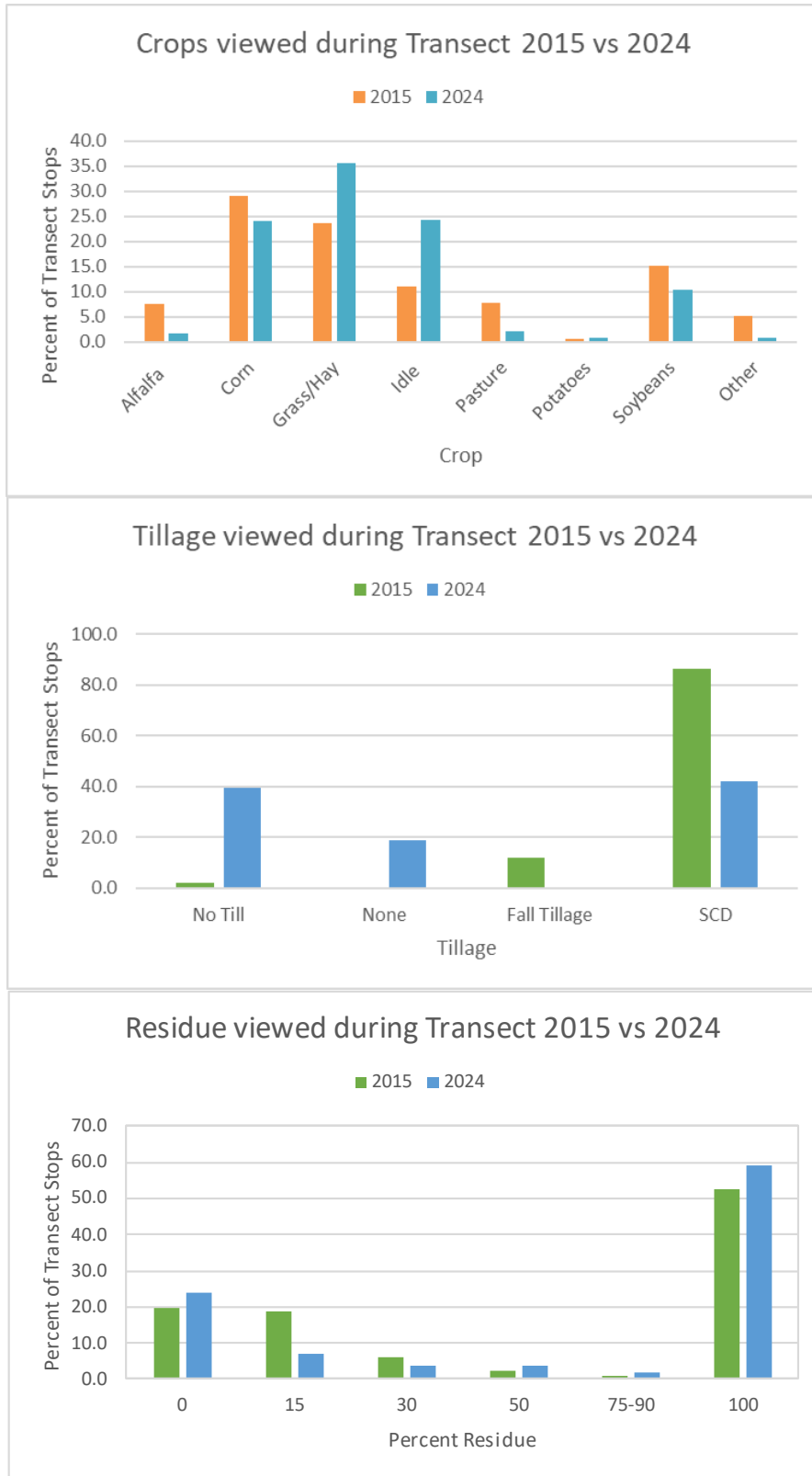
Soil Erosion Transect Survey

In June 1999, Wood County conducted its first transect survey. The survey has been repeated annually from 1999 to 2024. The cropland average annual “tolerable” soil loss rate (“T” level) for Wood County in 1999 was 2 .7 tons/acre/year. The current estimated average county-wide cropland soil erosion rate is 1 .6 tons/acre/year, with a downward trend. However, 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 (TMDL). Even though soil loss is lower, total phosphorous (P), total suspended solids (TSS) and total nitrogen (N) levels have trended up, which the Transect Surveys don’t reflect. The following trends can be identified from the Transect Survey, and are illustrated in Figure 2-5:

1. Cropland soil erosion rates have decreased in the last ten years some of which can be attributed to a higher residue left.
2. Cropping practices are trending toward more annual and erodible crop types being grown.
3. Tillage practices are trending toward less disturbance, but a higher percentage of cropland is being tilled annually.

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Figure 2-5 2015 vs. 2024 Annual Transect Comparison - Crop, Tillage & Residue Data



CHAPTER 2 | RESOURCE ASSESSMENT

Ground Water

Wood County Hydrogeology

The principal sources of groundwater in the county are saturated sand and gravel deposits, fractured Precambrian rock and Cambrian sandstone. Most of the county's private wells are in the Precambrian rock. The highest yielding wells are placed in the sand and gravel deposits. Figure 2-6 illustrates general water table elevations for the county.

Wood County has two distinct geologic areas that affect groundwater. The northern two-thirds of the County have Precambrian rocks near to the ground's surface. Unconsolidated materials in this area are generally less than 20 feet thick. In this area wells often cannot pump water from the unconsolidated material but are installed in the Precambrian rocks and utilize fractures in the rock to access water. Groundwater recharge in this area is approximately 1-4 inches annually.

In the Southeastern portion of the County there are sand and gravel deposits that range from 40-100 inches thick that allow for easy access to large amounts of groundwater. This portion of Wood County is in the "Central Sands" region of Wisconsin. Groundwater recharge in this portion of the County is estimated at 7-12 inches per year.

These geologic differences not only affect groundwater availability (quantity) but also potential quality. You will see on the generalized groundwater susceptibility map for Wood County that the northern two-thirds of the County is considered less susceptible to groundwater contamination. Groundwater susceptibility is defined as the ease with which a contaminant can be transported from the land's surface to the groundwater water table. Areas with high susceptibility are areas where it is easier for the transport of potential contaminants and areas with low susceptibility are those where it is more difficult for the transport of potential contaminants. The reason for the low susceptibility ranking in the northern portion of Wood County is due to a variety of characteristics that include the shallow depth to bedrock (there is not an aquifer contained in the shallow unconfined materials, therefore it isn't as easy for potential contaminants to reach groundwater), the type of bedrock present (the sandstone and igneous/metamorphic rock present do not contain many fractures and provide some level of protection from contaminants moving downward from the land's surface), and the soils in the area that have a low to medium permeability that don't allow for easy transport of water or contaminants through them.

Groundwater susceptibility increases the farther south you go in Wood County with the southeast corner having the highest susceptibility. This is due to the thick deposits of unconfined materials that hold easily accessible aquifers. This area also contains highly permeable soils that allow for easy transport of water and potential contaminants as shown in Figure 2-7.

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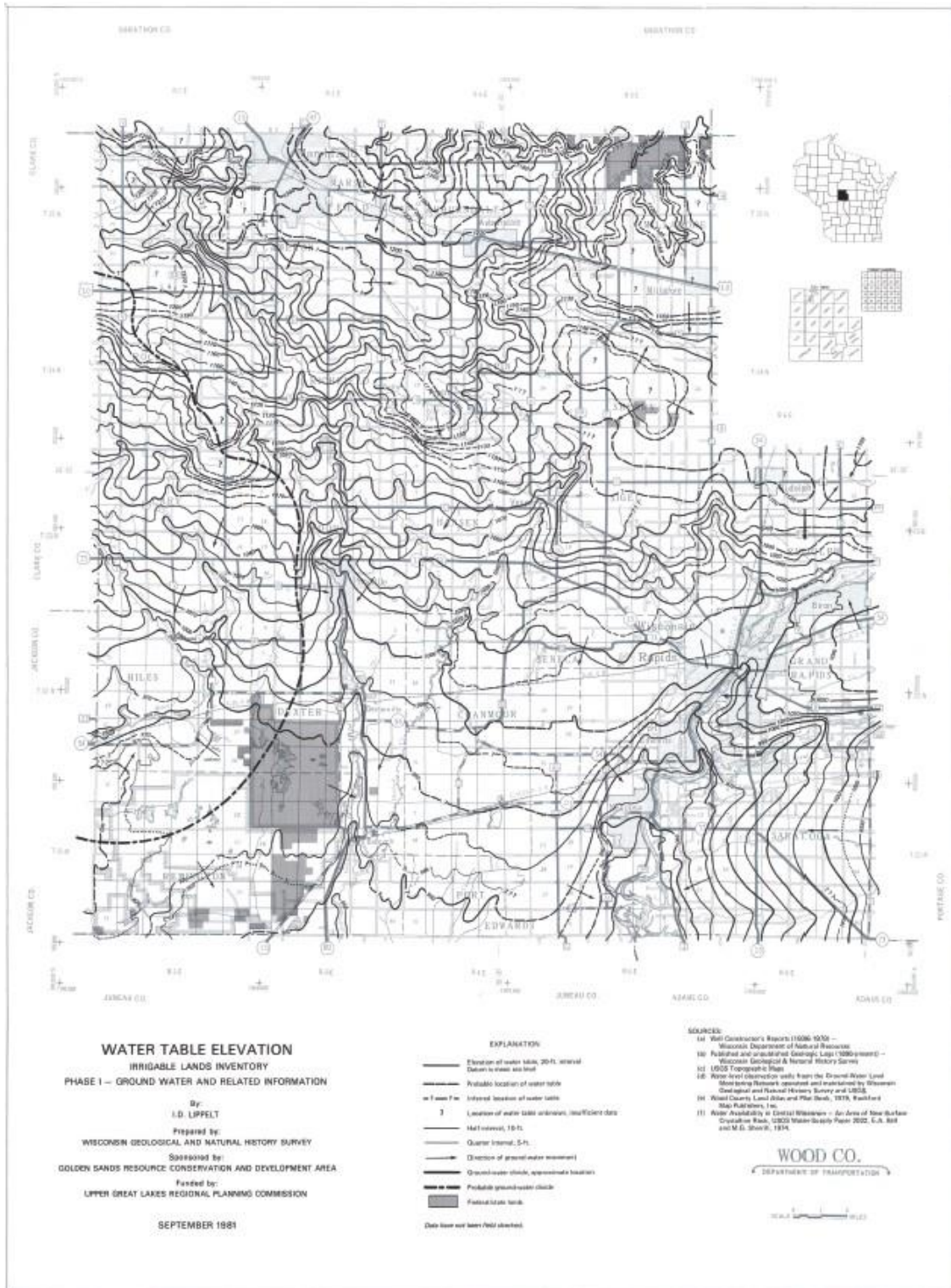
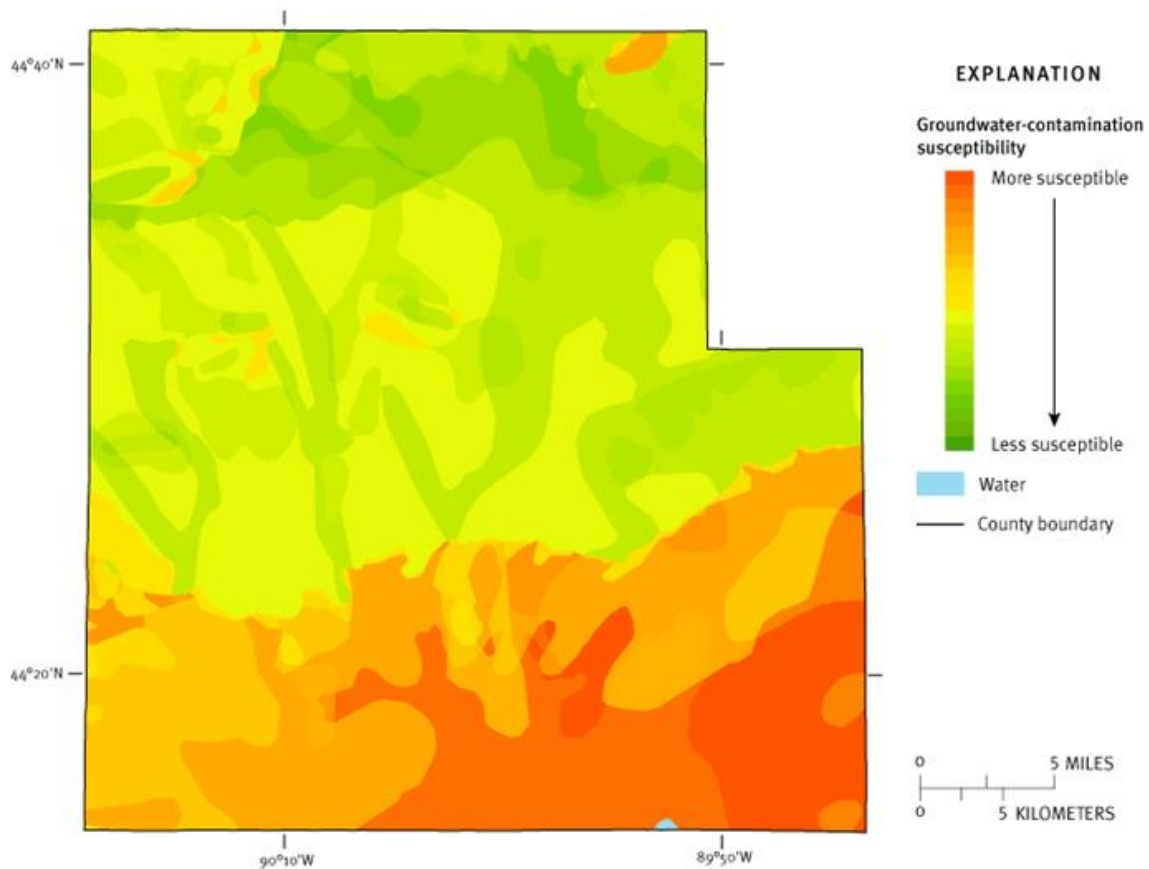


Figure 2-6 Water Table Elevation of Wood County, WI

Wood County – Groundwater-Contamination Susceptibility Analysis



This groundwater-contamination susceptibility map is a composite 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 Department of Natural Resources, Wisconsin's Groundwater Management Plan Report 5, PUBL-WR-177-87, 27 p.

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

Figure 2-7 Groundwater Susceptibility of Wood County, WI
<https://wi.water.usgs.gov/gwcomp/find/wood/susceptibility.html>

Groundwater Use

Everyone in Wood County relies on and utilizes groundwater. 100% of the drinking water, approximately 44% of irrigation water, and approximately 45% of industrial water is pumped from groundwater. Groundwater pumping can be divided into five general areas: agricultural, commercial, industrial, municipal, and rural residential. Agricultural, industrial, and municipal water supplies are pumped from approximately 152 high-capacity wells in the County. Rural residential and some commercial uses pump from approximately 13,000 low-capacity wells. The number of high-capacity and low-capacity wells in the County continues to grow.

The Wisconsin Water Use 2022 Withdrawal Summary, developed by DNR, ranks Wood County as 28th in the state for groundwater withdrawal. Wood County is withdrawing between 2.5-5 billion gallons as shown in Figure 2-8.

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

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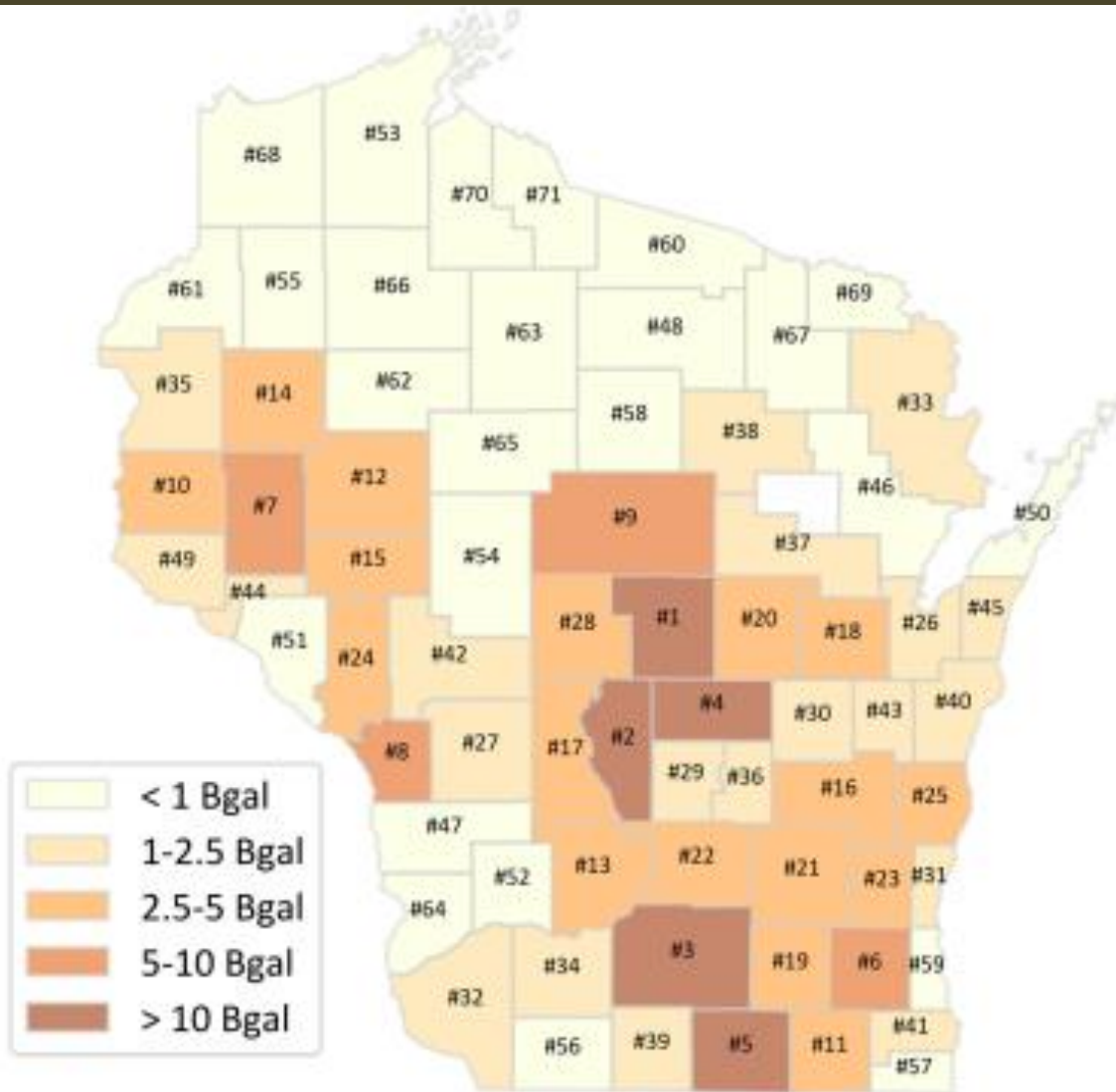


Figure 2-8 Average Groundwater Withdrawals by County 2022

<https://dnr.wisconsin.gov/sites/default/files/topic/WaterUse/WithdrawalReport/2022.pdf>

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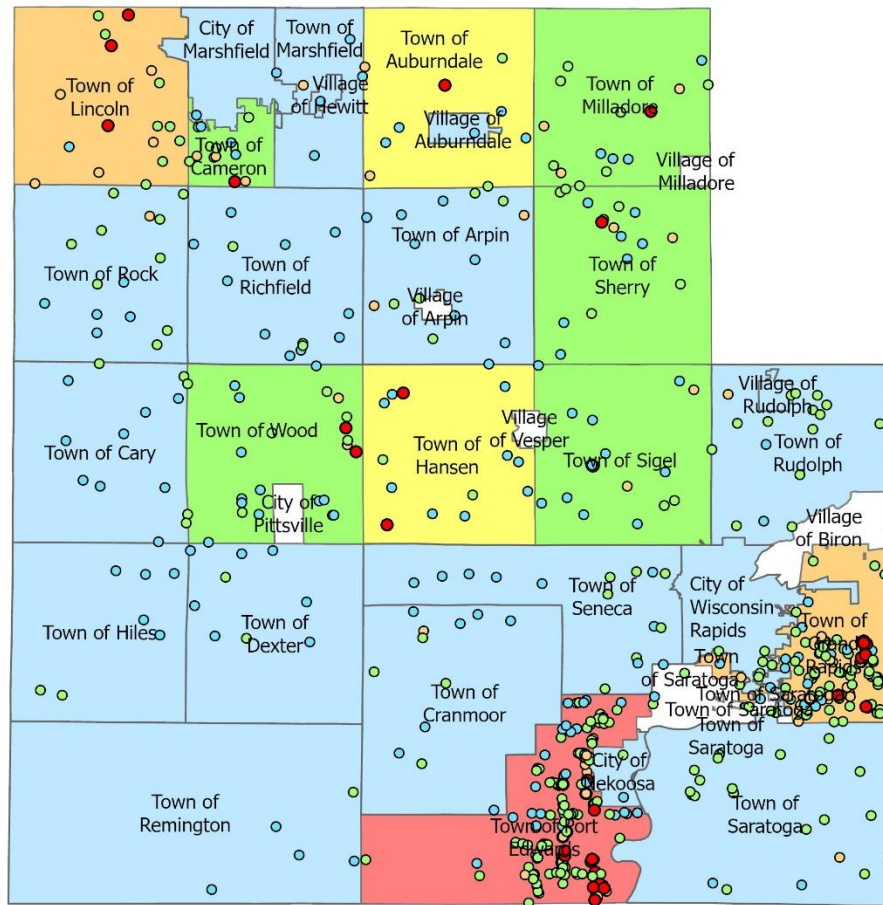
County Wide Nitrate Study 2019-2023

In 2019 the Land & Water Conservation Department presented to the County Board of Supervisors on nitrate contamination throughout Wood County. The Land & Water Conservation Department emphasized that it would be very difficult to analyze existing test results and pull any kind of trend data from it as it was so random. The LWCD recommended completion of a county wide study targeting all 22 townships with a goal of 1 private well sampling in every section across the County as representation of nitrate levels county wide as well as set a baseline for future testing and trend analysis. The County Board moved to fund the study and the study began in 2019. The sampling effort was done over the 5-year period from 2019-2023. See figure 2-9 for a generalized map showing county wide sampling points:

Nitrate Testing 2019-2023

Wood County, Wisconsin

Figure 2-9



Legend

% of Results over 10 ppm by municipality		Individual Nitrate Results	
	No Test		<LOD
	0%		<5 ppm
	5-10%		>5 ppm
	11-15%		>10 ppm
	16-20%		
	>21%		

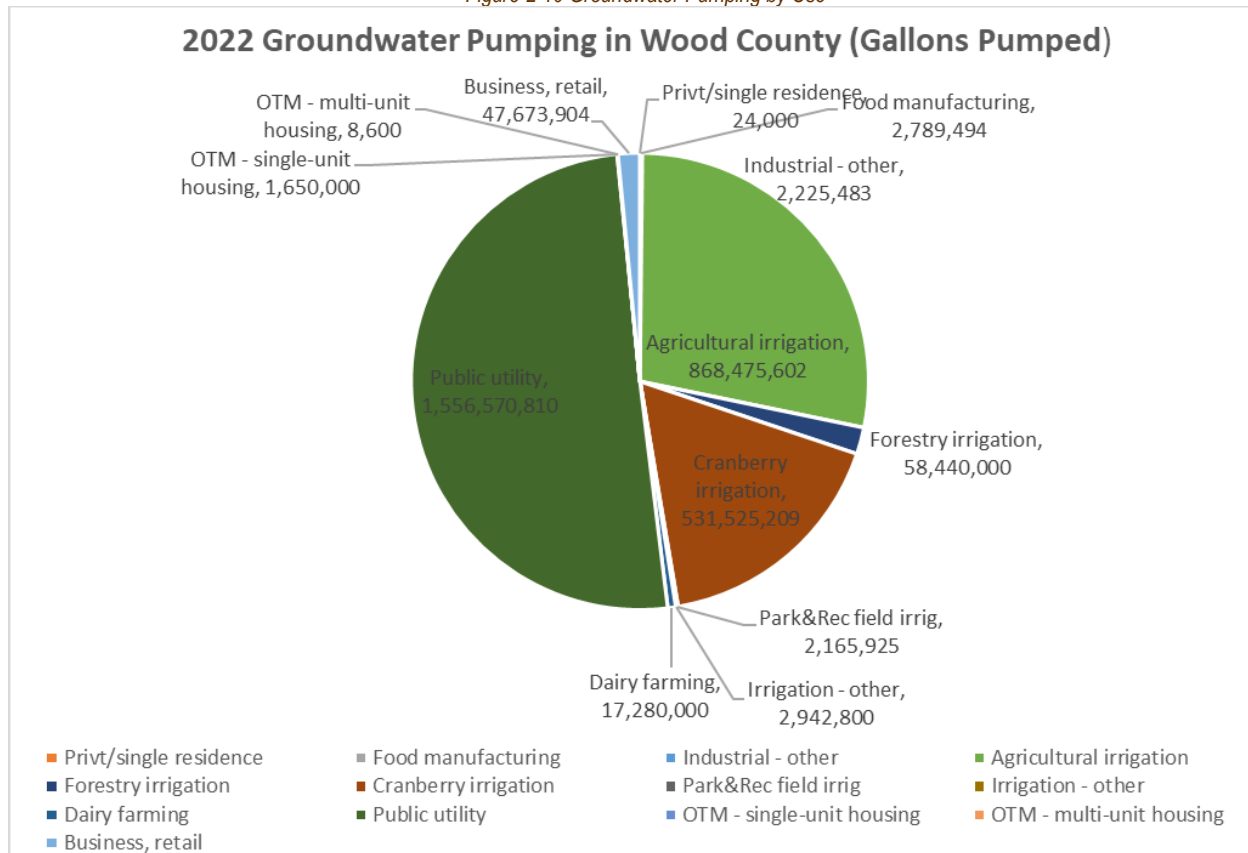


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High-Capacity Well Use of Groundwater

High-capacity wells or well systems are defined as one or more wells, drillholes, or mine shafts on a property (contiguous or adjacent land having the same owner) that have a combined approved pump capacity of 100,000 gallons per day (Section NR 812.07(52-53) Wisconsin Administrative Code). Any high capacity well in the state must be reviewed and permitted by the WIDNR. The process for reviewing and permitting a high capacity well can be found at <https://dnr.wisconsin.gov/topic/Wells/HighCap/Apply.html>. WIDNR requires the amount of water pumped from these wells to be reported annually. Figure 2-10 shows the most recent annual record from 2022. The largest user of groundwater in Wood County is municipal water or public utilities, followed by agricultural irrigation and cranberry production. The total amount of groundwater pumped in Wood County in 2022 was 3,137,209,278 gallons. The amount of groundwater pumped from these sources varies from year to year, dependent on how many wells may be pumping and conditions that may affect the amount of water needed.

Figure 2-10 Groundwater Pumping by Use



Groundwater pumped (in gallons) from high-capacity wells in Wood County in 2022. <https://apps.dnr.wi.gov/waterusepub/Source>

Central Sands Groundwater County Collaborative

In 2018, six counties, including Wood County, began meeting to discuss concerns over groundwater quality issues in the Central Sands. These Counties recognized the need to work together across municipal boundaries in order to address the groundwater issues and make efficient use of groundwater resources. In 2019, Adams, Juneau, Marquette, Portage, Waushara, and Wood County boards unanimously passed resolutions to officially create the Central Sands Groundwater County Collaborative or CSGCC. Each County has representatives from their County Land and Water Conservation Department, County Health Department, and elected officials that make up the Collaborative. **The mission of CSGCC is to work together to meet the present and future needs for safe, high-quality reliable, and sustainable drinking water.**

In 2019 CSGCC members also drafted a list of initiatives to guide their future efforts. These initiatives are a way to work towards assuring safe drinking water for residents of and visitors to the participating Counties. The complete list of initiatives is listed below. Some of the initiatives have already been completed while others can serve as future activities that Wood County will continue to work towards.

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- 1) Understand current groundwater conditions by evaluating existing data and reports. Develop a sampling strategy to collect water quality information across the counties in the Central Sands region. This information will be used to inform consumers, identify problem areas, interpret relationships to land use practices, and evaluate changes over time. In areas considered "hot spots", conduct further analysis to inform consumers and evaluate likely sources of nitrate contamination.
 - a) Conduct a GAP analysis by assessing and summarizing existing nitrate data and groundwater studies.
 - b) Develop a spatial data layer with septic locations.
 - c) Develop and launch a sampling strategy for nitrate trend monitoring that will inform consumers and the interpretation of analyzed data, answer questions about how groundwater is changing over time and whether practices are achieving safe drinking water goals.
 - d) In areas identified as "hot spots", conduct additional sampling that includes analysis of indicators for likely land management practices. Interpretation should include the use of existing data and identify the likely factors affecting nitrate contamination, when possible.
- 2) Understand where areas most vulnerable to groundwater contamination exist to guide development and use of ordinances, practices, and other preventative responses for nitrogen-contributing land uses.
 - a) Develop a map of susceptibility/risk of nitrate contamination based on physical characteristics and land use attributes.
- 3) Develop a uniform understanding of methods to prevent groundwater contamination from nitrogen based on information from previous studies in the Central Sands region and similar settings.
 - a) Conduct a systematic review to develop a menu of best management practices to address nitrate contamination concerns in the counties.
 - b) Develop a menu of good groundwater options for counties and possibly residential, agricultural, industrial, and municipal.
- 4) Develop a unified regional outreach strategy to provide partisan-free education about groundwater conservation and water quality safety to the general public.
 - a) Use a variety of outreach techniques to urge private well owners to routinely test their well water.

Work to Characterize Wood County Groundwater

Over the last five years there have been numerous efforts to characterize the groundwater quality of Wood County. Overall, the quality of groundwater in Wood County is considered to be good. The most naturally occurring contaminant is iron and the most common man-made contaminant is nitrate-nitrogen. The characterizations of Wood County's groundwater confirm these findings.

Wisconsin Well Water Viewer

The Wisconsin Well Water Viewer was created as an educational tool to help people better understand Wisconsin's groundwater resources. The Well Water Viewer relies mostly on voluntarily submitted well water samples from homeowners and other well water data collected by state agencies over the past 40 years. This includes private well water quality data from the Center for Watershed Science and Education, the WI Dept. of Ag, Trade and Consumer Protection, and the WI Department of Natural Resources Groundwater Retrieval Network, Eau Claire County Health Dept and La Crosse County Health Dept.

The well water viewer can summarize water quality data on a County level, municipal level, or section level for a variety of water quality analytes that include Alkalinity, Arsenic, Atrazine, Bacteria, Chloride, Conductivity, Copper, Iron, Lead, Manganese, Nitrate, pH, Saturation Index, Sulfate, and Total Hardness. The well water viewer can provide a good overview of water quality in areas of the County. The well water viewer also identifies areas where no water samples have been collected.

According to the Wisconsin Well Water Viewer 6% of private wells sampled in Wood County exceed the drinking water standard for nitrate-nitrogen, which is lower than the state average of 9%. Exceedances of the nitrate-nitrogen drinking water standard in private wells occur most often in private wells in the southeastern portion of Wood County, likely due to the sandy soils and high amount of agricultural land (Figures 2-11, 2-12, 2-13 and 2-14).

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Figure 2-11 Nitrate-Nitrogen Concentration by Township in Wood County, WI 2024
Private Wells Water Quality

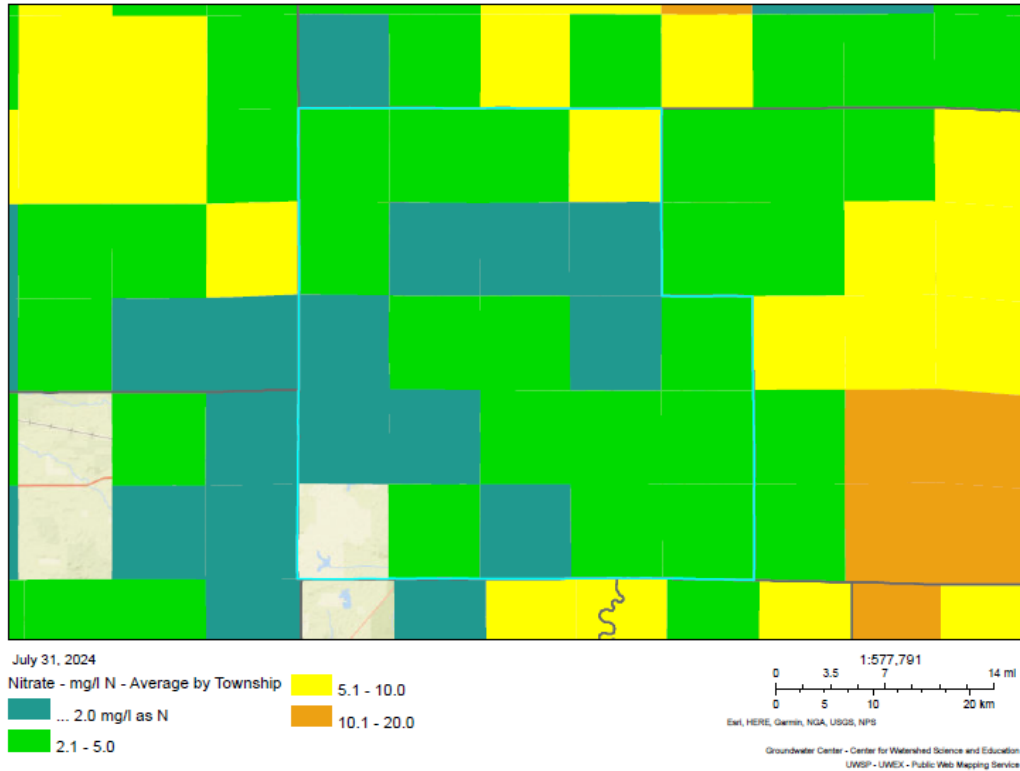
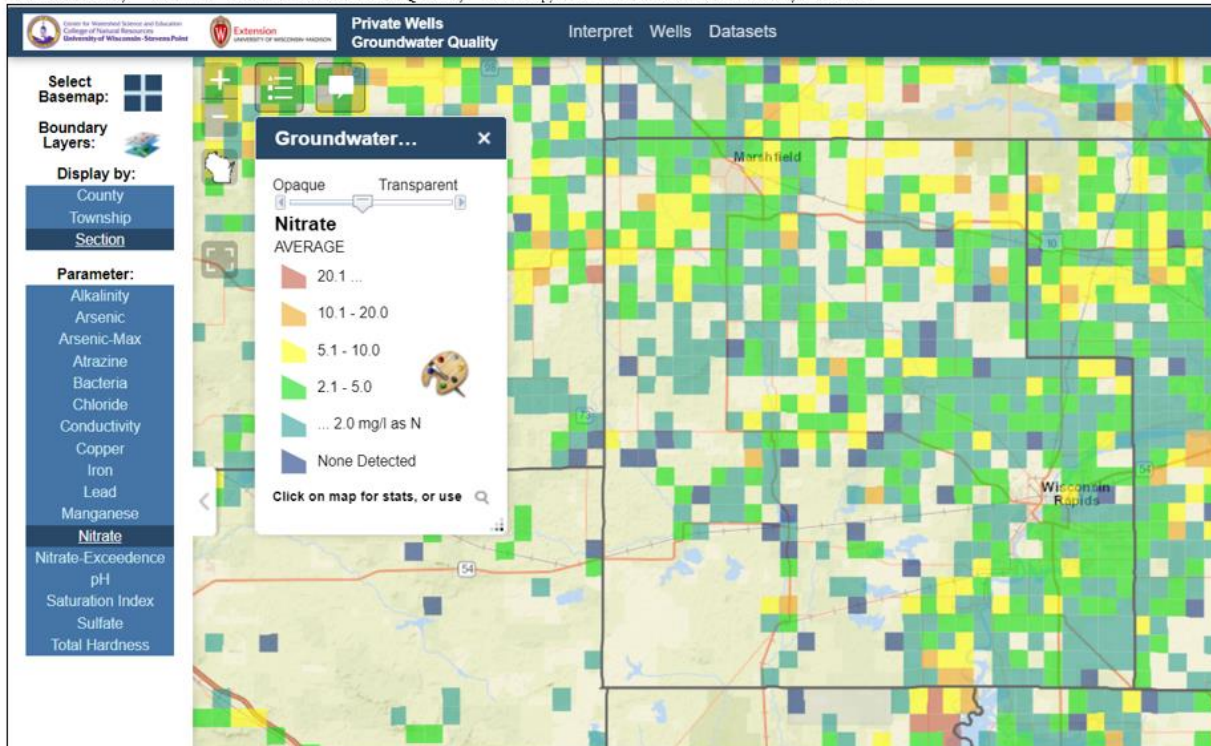


Figure 2-12 Average Nitrate Concentration by Township in Wood County, WI 2024

Wood County – Private Wells Groundwater Quality – Average Nitrate Concentrations by Section

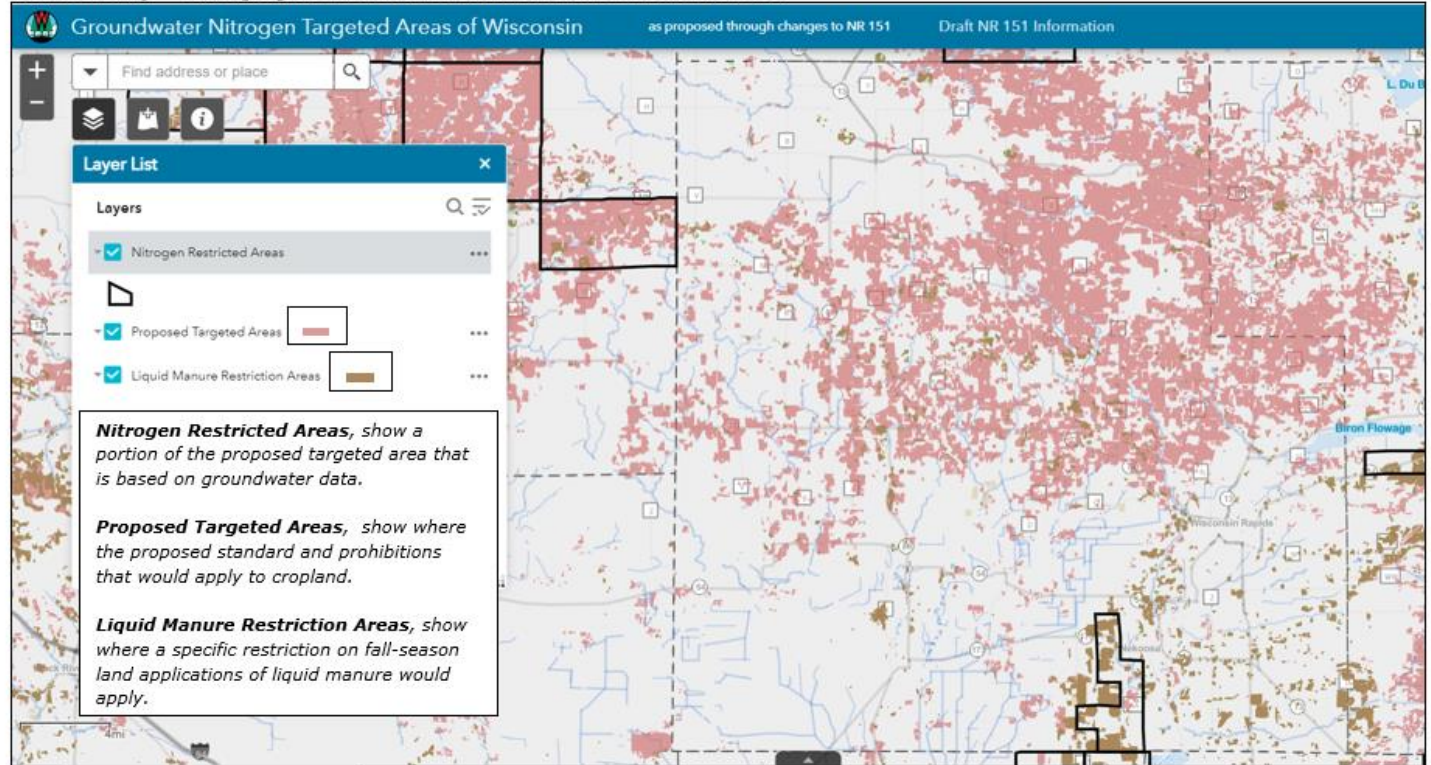


Source: UW Stevens Point Center for Watershed Science and Education - <https://www3.uwsp.edu/cnr-ap/watershed/Pages/WellWaterViewer.aspx>

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Figure 2-13 DNR Proposed Sensitive Areas for Nitrate Contamination in Wood County, WI

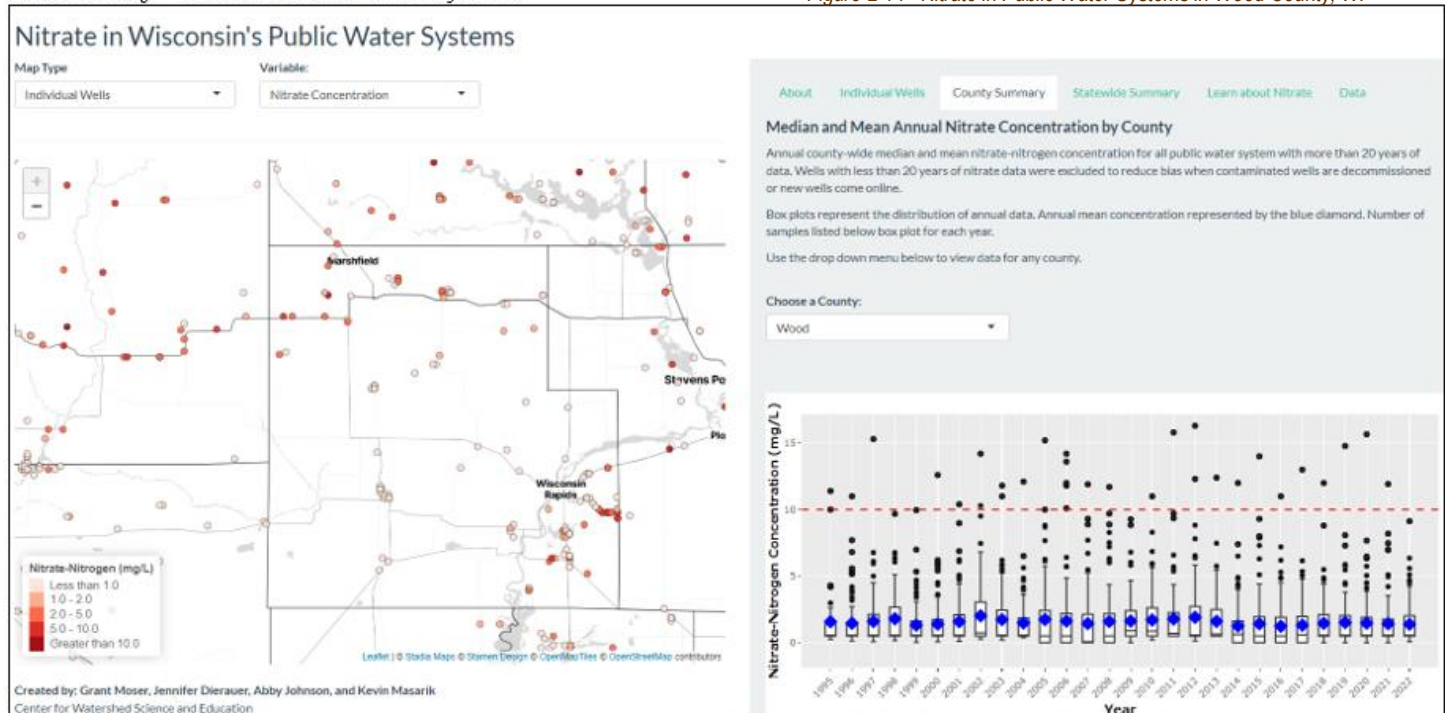
Wood County – DNR proposed Sensitive Areas for Nitrate Contamination



Source: Wisconsin DNR - <https://dnr.wisconsin.gov/topic/nonpoint/nr151nitrate.html>

Wood County – Nitrate in Public Water Systems

Figure 2-14 Nitrate in Public Water Systems in Wood County, WI



Source: UW Stevens Point Center for Watershed Science and Education - https://www3.uwsp.edu/cnr-ap/watershed/Pages/nitrate_trends.aspx

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Central Sands Nitrate and Neonicotinoid Study

In 2021-2022, the Central Sands Nitrate and Neonicotinoid Study performed a data-gap analysis and compiled an exhaustive database of over 100,000 historical groundwater nitrate and neonicotinoid concentrations for wells across Adams, Juneau, Marquette, Portage, Waushara, and Wood counties. Using data collected from 1953-2021, the study evaluated trends in nitrate and neonicotinoid in groundwater and explored correlations between groundwater quality and land-use type.

The Gap analysis highlighted that the amount of nitrate samples increased since 1953 but remained stable overall since the early 2000's. Neonicotinoid data points only began to be collected after 2008, and sampling continued to increase since then. Through GIS, a map was produced showing which sections with at least one well or septic system have never been sampled for nitrate (or no record of sampling could be found) or have not been sampled for nitrate in the last five years. A similar spatial gap analysis could not be conducted on the neonicotinoids data as very few and sparse data points have been collected.

Overall, neonicotinoids and nitrate data compilation is an ongoing and continuous processes that requires collaboration between various stakeholders. The database produced by this study has been extremely valuable to the researchers, policymakers, and members of the public for understanding and mitigating the impacts of groundwater contamination, and for protecting the quality and availability of groundwater resources. The database was used in the development of the nitrate susceptibility map of Wood County.

Nitrate-Nitrogen Trends in Public Drinking Water Systems in Wood County

The Wisconsin Department of Natural Resources (DNR) and the U.S. Environmental Protection Agency (USEPA) define a "public water system" as a system for the provision to the public of piped water for human consumption, if such a system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. "Serving" water means that water is available for drinking regardless of whether the water is actually being consumed.

There are four different types of public drinking water systems, but all types are required to routinely sample their water quality. Because these systems are routinely sampled, they provide one of the most robust sources of water quality data to assess trends in water quality over time.

The University of Wisconsin-Stevens Point Center for Watershed Science and Education developed an online tool that compiles water quality data from public drinking water systems across the state to assess nitrate-nitrogen concentrations in public drinking water systems as well as trends nitrate-nitrogen concentrations in the systems.

In 2022, (the most recent annual data) Wood County's 120 public drinking water systems had an average nitrate concentration of 1.4 mg/L and none of the public drinking water systems exceeded the nitrate-nitrogen drinking water standard of 10 mg/L.

When looking at nitrate-nitrogen trends in the 120 Wood County public drinking systems, there are seven systems that have decreasing trends in nitrate-nitrogen concentrations and two systems that have increasing trends in nitrate-nitrogen concentrations. The remaining 177 public drinking water systems have no nitrate-nitrogen trend.

Figure 2-15 Map of Nitrate-Contamination Potential for Wood County, WI

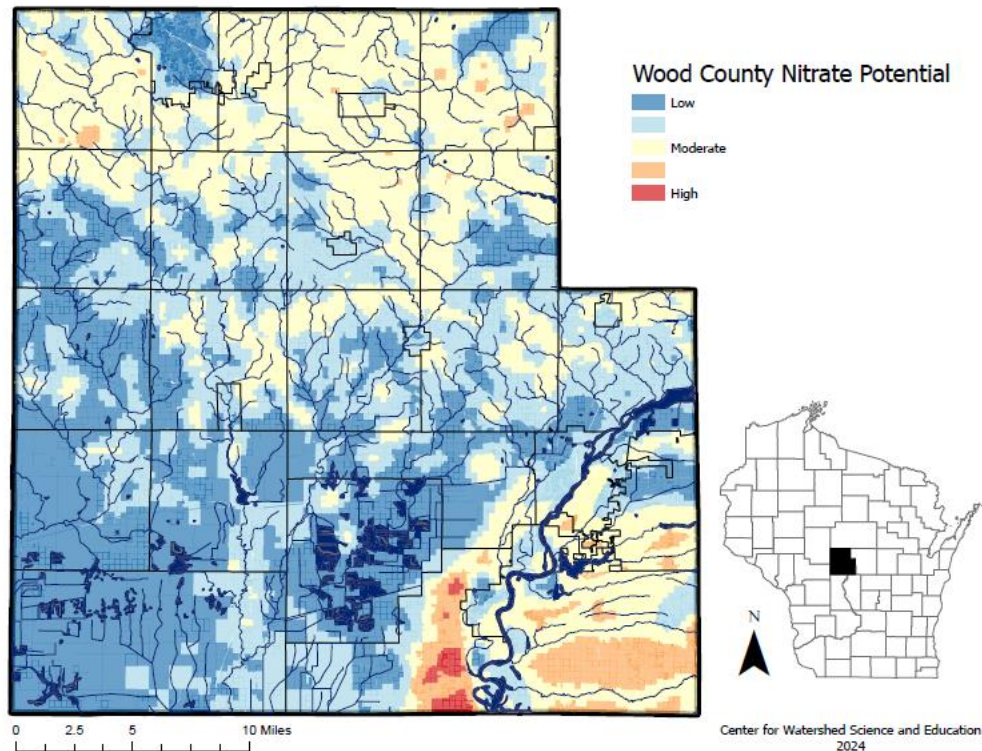


Figure 2-15 shows the potential for nitrate contamination throughout Wood County using land covers and soil drainage information from within a 500 - meter buffer of each parcel centroid. Multiple linear regression was used to investigate the relationship of nitrate to weighted drainage rank and the percentages of land cover classified as: potato/vegetable, continuous corn, cash grain, and dairy rotation. The factors analyzed are known to influence well water quality including geologic influences (i.e. soil drainage classification) and human activities (i.e. agricultural land cover types).

The Wiscland 2.0 coverage was used to determine the area of various agricultural land covers on each parcel. SSURGO database was used to characterize soil drainage class for each parcel. Rankings were assigned to each drainage classification with 1 representing very poorly drained soils and 7 representing excessively drained soils. A weighted average of soil drainage class was determined for the area within a 500-meter buffer of the parcel centroid.

The output from the multiple linear regression was used to assign a risk value to each parcel in the County to determine areas with a high risk of nitrate contamination to areas with a low risk.

Nitrate is dependent on a variety of factors which include land-use, soils, geology, well depth, casing depth, etc. Even under similar land cover categories, the land cover data used for this analysis cannot determine the degree to which management may differ between owners. For example, sources and rates of nitrogen may differ, cover crops may be used on some fields and not others, or types of crops planted may have changed since 2017 when the Wiscland data layer was published. As a result, predicting high nitrate risk does not mean wells in those areas are guaranteed to have elevated nitrate, but does suggest a greater likelihood of detecting nitrate at elevated levels. Similarly, prediction of low risk does not rule out the possibility that a well has unsafe levels of nitrate. The map is not a replacement for routine well testing of important parameters such as nitrate. Predictive models like these can be used to inform county outreach strategies or prioritize areas for additional conservation management.

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

The following four items could be steps taken to help meet the strategies listed above:

Potential Actions

- 1) Develop a monitoring program for private wells throughout the County and re-test and monitor private wells with known elevated contaminant levels to establish water quality trends in Wood County.
- 2) Continue to update the Wood County database of well information and drinking water quality results from the Wood County Lab.
- 3) Utilize the Wood County nitrate risk map to identify areas of protection and areas where best management practices should be employed.
- 4) Continue to participate in multi-County collaborative efforts to address groundwater quality and quantity issues in Central Wisconsin.

Groundwater is the major source of public water supply for private, domestic, agricultural, and industrial use in Wood County. Areas along the Wisconsin River 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.

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 Wood County; however, drinking water quality data for Wood 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.

County Surface Water Resources

Physiology, Geology, and Drainage

Wood County lies in two geographic provinces of Wisconsin. The northern two-thirds is part of the Northern Highland, and the rest of the county is part of the Central Plain according to the Soil Survey of Wood County, Wisconsin.

In general, the Northern Highland region has underlying bedrock that consists of Precambrian crystalline rocks. The western half of this region has a mantle of heavy loam glacial till over bedrock. The rest of this region has, over the bedrock, a layer, which varies in thickness; this layer is loamy residuum weathered from Precambrian rock. The entire region was covered by a layer, about two feet thick of wind-deposited silt.

The central plain region has underlying bedrock that consists of Cambrian sandstone interbedded with varying amounts of shale. The shale layers are generally thin or absent in parts of Sigel and Hansen Townships but are thick and very prominent in the western part of the county. Glacial till covers the sandstone and shale in the northwestern part of the county and on a few broad, low ridges south of Powers Bluff, but the rest of the Central Plain in Wood County is residual. One to two feet of loess cover the entire region except the lake plain and outwash parts.

Watersheds and Drainage

A watershed can be defined as an interconnected area of land draining from surrounding ridge tops to a common point such as a

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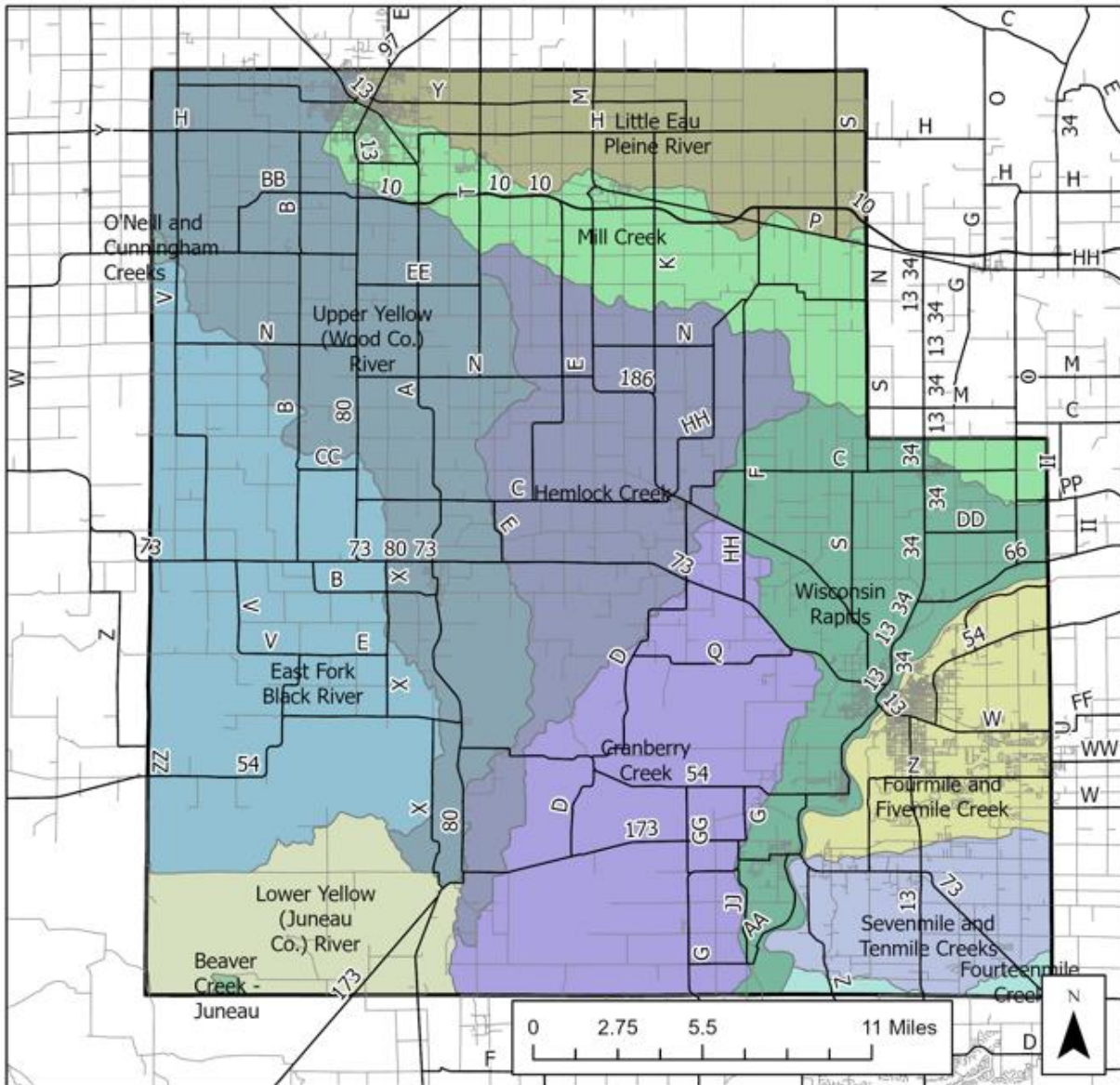
lake or stream confluence with a neighboring watershed. All lands and waterways can be found within one watershed or another. Wood County watersheds are shown in (figure 2-14). In Wisconsin, watersheds vary in scale from major river systems to small creek drainage areas and typically range in size from 100 to 300 square miles. River basins encompass several watersheds. There are 32 river basins in Wisconsin, which range in size from 500 to over 5,000 square miles. Wisconsin's 32 river basins are then divided in 23 geographic management units. These units or "GMUs" are the basis for the reorganized DNR and form the nucleus around which programs are implemented in the regions.

Wood County is located within two geographic management units (GMUs) including the Central Wisconsin River Basin and the Black River Basin. Within these basins, thirteen distinct watersheds can be found. See Figure 2-17 below for the major watersheds in the county.

Wood County is drained by four primary drainage systems. The Wisconsin River flows through the southeastern quarter of the county and intercepts a number of small creeks that drain the eastern part of the county. Mill Creek flows eastward from Marshfield, draining part of northern Wood County. The Yellow River and Hemlock Creek system, which flows southward, drains the central and largest part of the county. The extreme western part of the county is drained by the westward-flowing East Fork of the Black River. A few small creeks in the extreme northern part of the county flow northward into the Little Eau Pleine River in adjoining Marathon County. The watershed divides are generally low and ill-defined, as is characteristic of an area of low relief and somewhat poorly drained or poorly drained soils.

Major Watersheds Wood County, Wisconsin

Figure 2-17



Legend

- | | | |
|---|---|---|
| Beaver Creek - Juneau | Hemlock Creek | Sevenmile and Tenmile Creeks |
| Cranberry Creek | Little Eau Pleine River | Upper Yellow (Wood Co.) River |
| East Fork Black River | Lower Yellow (Juneau Co.) River | Wisconsin Rapids |
| Fourmile and Fivemile Creek | Mill Creek | |
| Fourteenmile Creek | O'Neill and Cunningham Creeks | |

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Wood County Impaired Waters & Water Quality Condition of Watersheds

The watersheds shown in Figure 2-18 have been assessed to determine their state of condition in terms of water quality condition and degree of impairment due to non-point source impacts. Many of these watersheds in the county have water quality impairments. Seven of them are listed or at least have certain sections of stream listed on the DNR impaired waters (303(d) list for not meeting water quality standards. The main impairments include high phosphorous (TP), nitrogen (N) and total suspended solids (TSS). Other impairments and contaminants include Perfluorooctane sulfonate (PFOS), pathogens, excess algal growth, degraded biological communities, low dissolved oxygen, polychlorinated biphenyl (PCBs) and mercury. Table 2-1 illustrates the streams in the county on the 303(d) list.

A Local Stream that is not on the DNR's 303(d) list

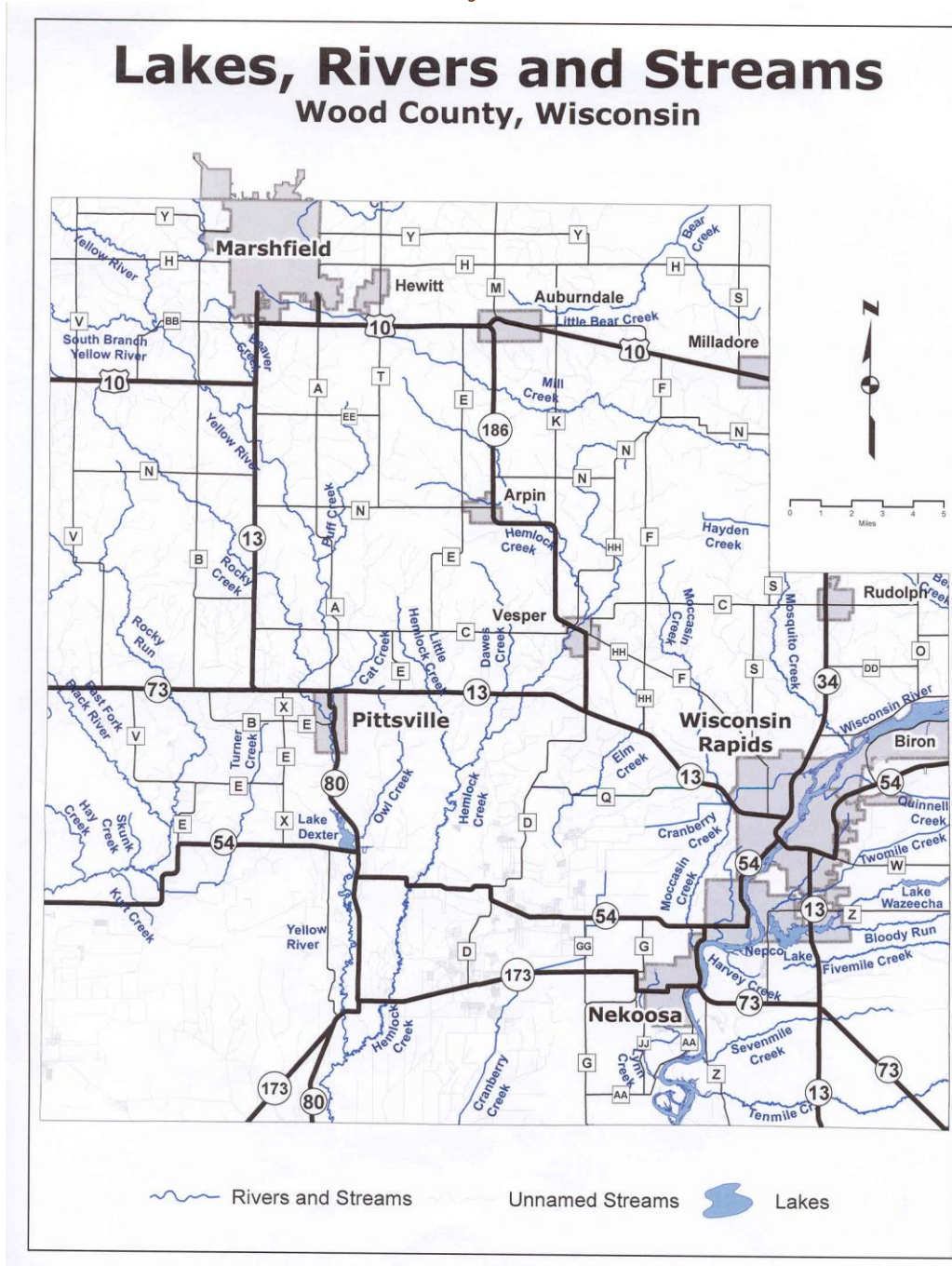


Surface Water Resources

Wood County has a total water surface of 16,113 acres, which includes 28 named lakes, 102 unnamed lakes/flowages and 329 streams. Except for cranberry flowages, Wood County has very few lakes. Major lakes include Lake Wazeecha, Nepco Lake and Dexter Lake. All of these are impoundments.

The total stream length is 837 miles. Of this total, 39.0 miles are classified as trout streams with 15.0 miles of Class I trout streams. Major rivers in the county include, the Yellow River, Hemlock Creek, Mill Creek, East Fork Black River and the Wisconsin River (figure 2-18).

Figure 2-18



Impaired Waters

The listing of waters under the Clean Water Act (s.303(d)) must, under current U.S. Environmental Protection Agency (EPA) requirements, occur every two years. This list identifies waters which are not meeting water quality standards, including both water quality criteria for specific substances or the designated uses, and is used as the basis for development of Total Maximum Daily Loads (TMDLs) under the provisions of section 303(d)(1)(c) of the Act. The 303(d) list has been characterized as an impaired waters list.

There are twenty-five listed impaired water bodies in Wood County according to the WDNR. These waters are listed within Wisconsin's 303(d) Water-body Program and are managed by the WDNR's Bureau of Watershed Management. See Table 2-1.

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Table 2-1

Waterbody Name	Water Type	Start Mile	End Mile	Size (Miles or Acres)	Pollutants (Causes)	Impairments (Observed Effects)	Watershed Name
Bear Creek	River	0	11.7	11.7	Total Phosphorus	High Phosphorus Levels	Mill Creek
Beaver Creek	River	0	4	4	Total Phosphorus	High Phosphorus Levels, Impairment Unknown	Upper Yellow (Wood Co.) River
Beaver Creek	River	4	6.2	2.2	Total Phosphorus	High Phosphorus Levels	Upper Yellow (Wood Co.) River
Biron Flowage	Impoundment			2,187	Perfluorooctane sulfonate (PFOS)	PFOS Contaminated Fish Tissue	Wisconsin Rapids
Cat Creek	River	0	2.3	2.3	Total Phosphorus	High Phosphorus Levels	Upper Yellow (Wood Co.) River
Dawes Creek	River	0	7.8	7.8	Total Phosphorus	Impairment Unknown	Hemlock Creek
Dexter Lake	Impoundment			286.7	Escherichia Coli (E. Coli)	Recreational Restrictions - Pathogens	Upper Yellow (Wood Co.) River
Dexter Lake	Impoundment			286.7	Total Phosphorus	Eutrophication, Excess Algal Growth	Upper Yellow (Wood Co.) River
East Branch Yellow River	River	0	8.8	8.8	Total Phosphorus	Impairment Unknown	Upper Yellow (Wood Co.) River
East Fork Hemlock Creek	River	0	11	11	Total Phosphorus	Impairment Unknown	Hemlock Creek
Flick Creek	River	0	1.4	1.4	Total Phosphorus	High Phosphorus Levels	Wisconsin Rapids
Hemlock Creek	River	0	27	27	Total Phosphorus	Degraded Biological Community	Hemlock Creek
Hemlock Creek	River	27	32.9	5.9	Total Phosphorus	High Phosphorus Levels	Hemlock Creek
Little Bear Creek	River	0	1.5	1.5	Total Phosphorus	Degraded Biological Community	Little Eau Pleine River
Little Bear Creek	River	1.5	8	6.5	Total Phosphorus	Impairment Unknown	Little Eau Pleine River
Little Hemlock Creek	River	0	10.4	10.4	Total Phosphorus	High Phosphorus Levels	Hemlock Creek
McMillan Creek	River	0	8.7	8.7	Total Phosphorus	Impairment Unknown	Little Eau Pleine River
Mill Creek	River	16	32.8	16.8	Total Phosphorus	Low Dissolved Oxygen	Mill Creek
Moccasin Creek	River	5	19.1	14.1	Total Phosphorus	Impairment Unknown	Wisconsin Rapids
Puff Creek	River	0	7.7	7.7	Total Phosphorus	Degraded Biological Community	Upper Yellow (Wood Co.) River
Rocky Creek	River	0	12.2	12.2	Total Phosphorus	Impairment Unknown	Upper Yellow (Wood Co.) River
South Branch O'Neill Creek	River	0	18.1	18.1	Total Phosphorus	High Phosphorus Levels	O'Neill and Cunningham Creeks
South Branch Yellow River	River	0	17.5	17.5	Total Phosphorus	Degraded Biological Community	Upper Yellow (Wood Co.) River
South McMillan Creek	River	0	8	8	Total Phosphorus	High Phosphorus Levels	Little Eau Pleine River
Unnamed	River	5	7.9	2.9	Total Phosphorus	High Phosphorus Levels	Upper Yellow (Wood Co.) River
Unnamed	River	0	5	5	Total Phosphorus	Impairment Unknown	Upper Yellow (Wood Co.) River
Unnamed	River	0	1.9	1.9	Total Phosphorus	Degraded Biological Community	Upper Yellow (Wood Co.) River
Unnamed	River	0	1.3	1.3	Total Phosphorus	Impairment Unknown	Upper Yellow (Wood Co.) River
Yellow River	River	8.4	39.1	30.7	Total Phosphorus	Impairment Unknown	Lower Yellow (Juneau Co.) River
Yellow River	River	39.1	50	10.9	Total Phosphorus	High Phosphorus Levels	Upper Yellow (Wood Co.) River
Yellow River	River	53	83.1	33.1	Total Phosphorus	High Phosphorus Levels	Upper Yellow (Wood Co.) River
Wisconsin River	River	188	204.4	16.4	Cause Unknown	Degraded Biological Community	Fourteen-mile Creek
Wisconsin River	River	188	204.4	16.4	Polychlorinated Biphenyls (PCBs)	PCBs Contaminated Fish Tissue	Fourteen-mile Creek
Wisconsin River	River	204.4	223.7	19.3	Mercury	Mercury Contaminated Fish Tissue	Wisconsin Rapids
Wisconsin River	River	204.4	223.7	19.3	Polychlorinated Biphenyls (PCBs)	PCBs Contaminated Fish Tissue	Wisconsin Rapids

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Outstanding and Exceptional Waters

Wisconsin has classified many of the State’s highest quality waters as Outstanding Resource Waters (ORWs) or Exceptional Resource Waters (ERWs). Chapter NR 102 lists the ORWs and ERWs. The WDNR conducted a statewide evaluation effort in the early 1990’s to determine which waters qualified for ORW and ERW classification. By 2006, a significant number of waters were added to Chapter NR 102 as ORWs and ERWs. Wood County has 15.0 miles of Class I trout water classified as exceptional resource waters. This includes 5.0 miles of Bloody Run Creek, 2.3 miles of Fivemile Creek, 1.5 mile of Lynn Creek, 3.0 miles of Rocky Creek, and 3.2 miles of Sevenmile Creek.

Healthy Watersheds, High Quality Waters

In 2022, the Wisconsin Department of Natural Resources published the Healthy Watersheds, High-Quality Waters Action Plan which identifies, and shifts focus to protecting the healthy water resources of Wisconsin. In 2021, DNR staff identified high quality lakes, rivers, and streams, healthy wetlands, and rare and unique wetlands for each county in Wisconsin. Table 2-2 shows Wood County’s healthy watersheds and high-quality waters.

Table 2-2

2021 High-Quality Waters: Lakes, Rivers, Streams											
Wood County - 7 High-Quality Waters identified in 2021											
Data sorted by alphabetical county and alphabetical waterbody name											
OFFICIAL NAME	LOCAL NAME	WBIC	PRIORITY WATERSHEDS		COUNTY NAME (STREAM MOUTH & LAKE LOCATION)	HUC6	HUC12 CODE (STREAM MOUTH & LAKE LOCATION)	UNIQUE & RARE RESOURCES (COUNT)	Attaining WQS (COUNT)	IBIs (COUNT)	HQW CRITERIA (COUNT)
			HUC6: *	State: ** Both: ***							
Bloody Run		1390600			Wood	Wisconsin	070700030403	2	1	1	3
Hemlock Creek		1366300			Wood	Wisconsin	070700031005	1		1	2
Owl Creek		1370300			Wood	Wisconsin	070700031106		1	1	2
Rocky Creek	Run	1370800			Wood	Wisconsin	070700031104	2	1	4	3
Sevenmile Creek		1387000			Wood	Wisconsin	070700030704	2	2	3	3
Tenmile Creek	Ditch # 10	1382700			Wood	Wisconsin	070700030704	3	4	3	3
Unnamed		1372400			Wood	Wisconsin	070700031105		1	1	2

2021 High-Quality Waters: Healthy Wetlands											
Wood County - 9 Healthy Wetlands identified in 2021											
Data sorted by alphabetical county and increasing Healthy Wetland ID											
WETLAND ID	SITE NAME	SITE ID	PRIORITY WATERSHEDS		COUNTY NAME	HUC6	HUC12 CODE	DISTURBANCE RANK	PLANT COMMUNITY CONDITION	LAT	LONG
			HUC6: *	State: ** Both: ***							
Healthy_231	Hiles Wetlands SNA	NC147	***		Wood	Miss-Black-Root	070400070605	1	1	44.381103	-90.268278
Healthy_233	Hiles Wetlands	NC148	***		Wood	Miss-Black-Root	070400070605	1	1	44.386212	-90.257311
Healthy_234	Hiles Wetlands SNA	NC146	***		Wood	Miss-Black-Root	070400070605	1	1	44.40183	-90.285532
Healthy_264	Mead Conifer Bog SNA	NC157			Wood	Wisconsin	070700021705	1	1	44.667057	-89.890776
Healthy_272	Mead Conifer Bog SNA	NC156			Wood	Wisconsin	070700021705	1	1	44.6771	-89.8836
Healthy_274	Mead WA	NC026			Wood	Wisconsin	070700021705	2	2	44.6827	-89.87761
Healthy_275	Mead WA	NC020			Wood	Wisconsin	070700021707	1	1	44.682701	-89.850394
Healthy_276	Mead WA	NC024			Wood	Wisconsin	070700021707	1	1	44.68405	-89.85229
Healthy_277	Mead Conifer Bog SNA	NC155			Wood	Wisconsin	070700021705	2	1	44.684451	-89.879997

2021 High-Quality Waters: Rare & Unique Wetlands											
Wood County - 5 Rare & Unique Wetlands identified in 2021											
Data sorted by alphabetical county and increasing Rare & Unique Wetland ID											
WETLAND ID	WETLAND TYPE	SITE ID	PRIORITY WATERSHEDS		COUNTY NAME	HUC6	HUC12 CODE	SRANK	GRANK	LAT	LONG
			HUC6: *	State: ** Both: ***							
Rare_222	Central Poor Fen	CPHER061WI	*		Wood	Wisconsin	070700031301	S3	G3G4	44.316188	-90.159898
Rare_224	Central Poor Fen	CPHER061WI	*		Wood	Miss-Black-Root	070400070605	S3	G3G4	44.326648	-90.274007
Rare_234	Central Poor Fen	CPHER061WI	*		Wood	Miss-Black-Root	070400070605	S3	G3G4	44.380064	-90.273074
Rare_235	Central Poor Fen	CPHER061WI	*		Wood	Wisconsin	070700031106	S3	G3G4	44.389454	-90.087796
Rare_236	Central Poor Fen	CPHER061WI	*		Wood	Miss-Black-Root	070400070604	S3	G3G4	44.396696	-90.287262

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Wisconsin River TMDL Phosphorus Reduction Criteria by HUC 12 Watershed in Wood County

Outlined below in Figures 2-19 & 2-20 as well as Table 2-3 are TMDL Baseline Phosphorous Reductions and Site-Specific Criteria targeted by HUC 12 watersheds for Wood County. These reductions are part of the Wisconsin River TMDL agricultural phosphorus target goals outlined in Appendix N of the Wisconsin River TMDL Report. The entire Appendix N can be viewed here: <https://apps.dnr.wi.gov/water/wsSWIMSDocument.ashx?documentSeqNo=241735738>.

Figure 2-19

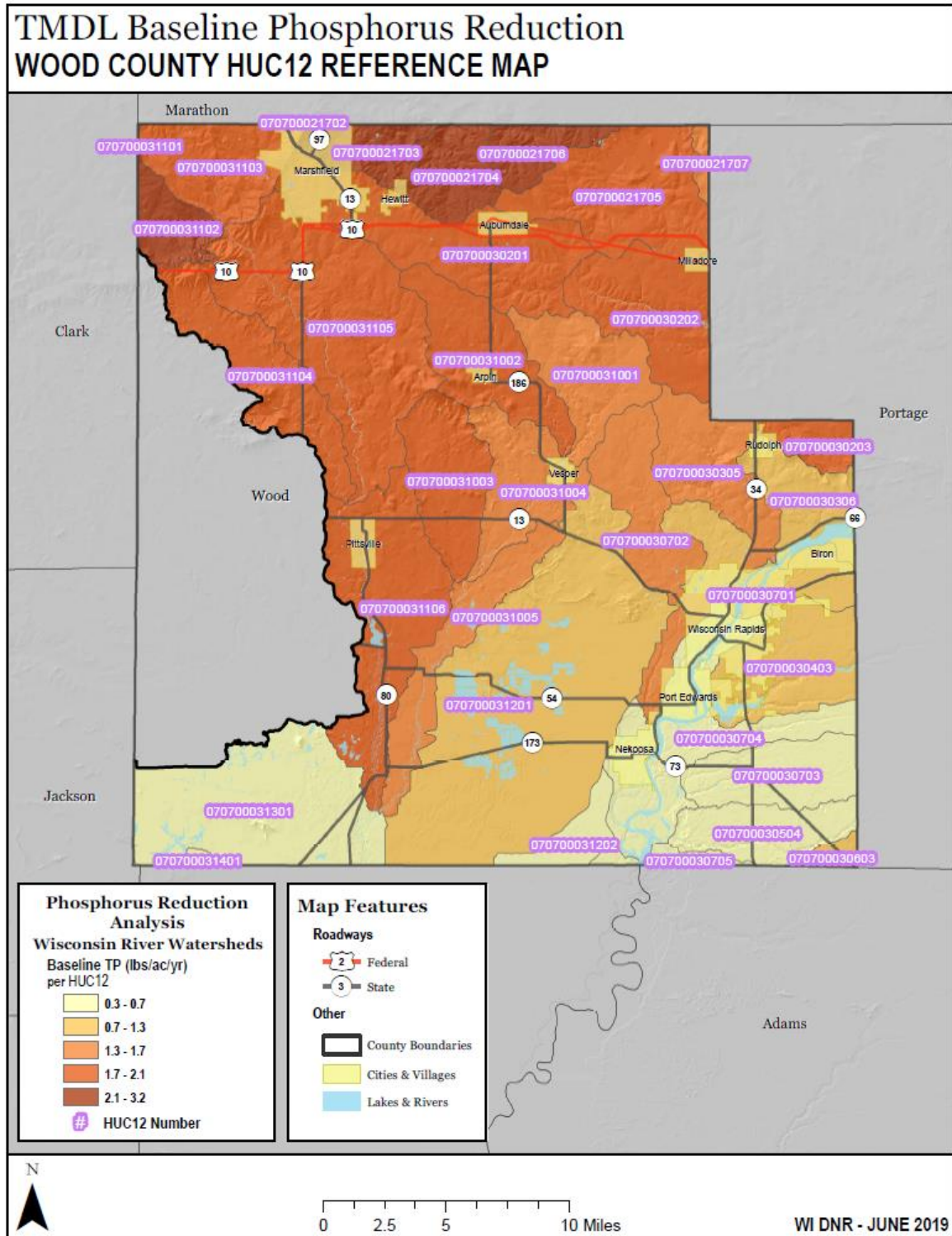
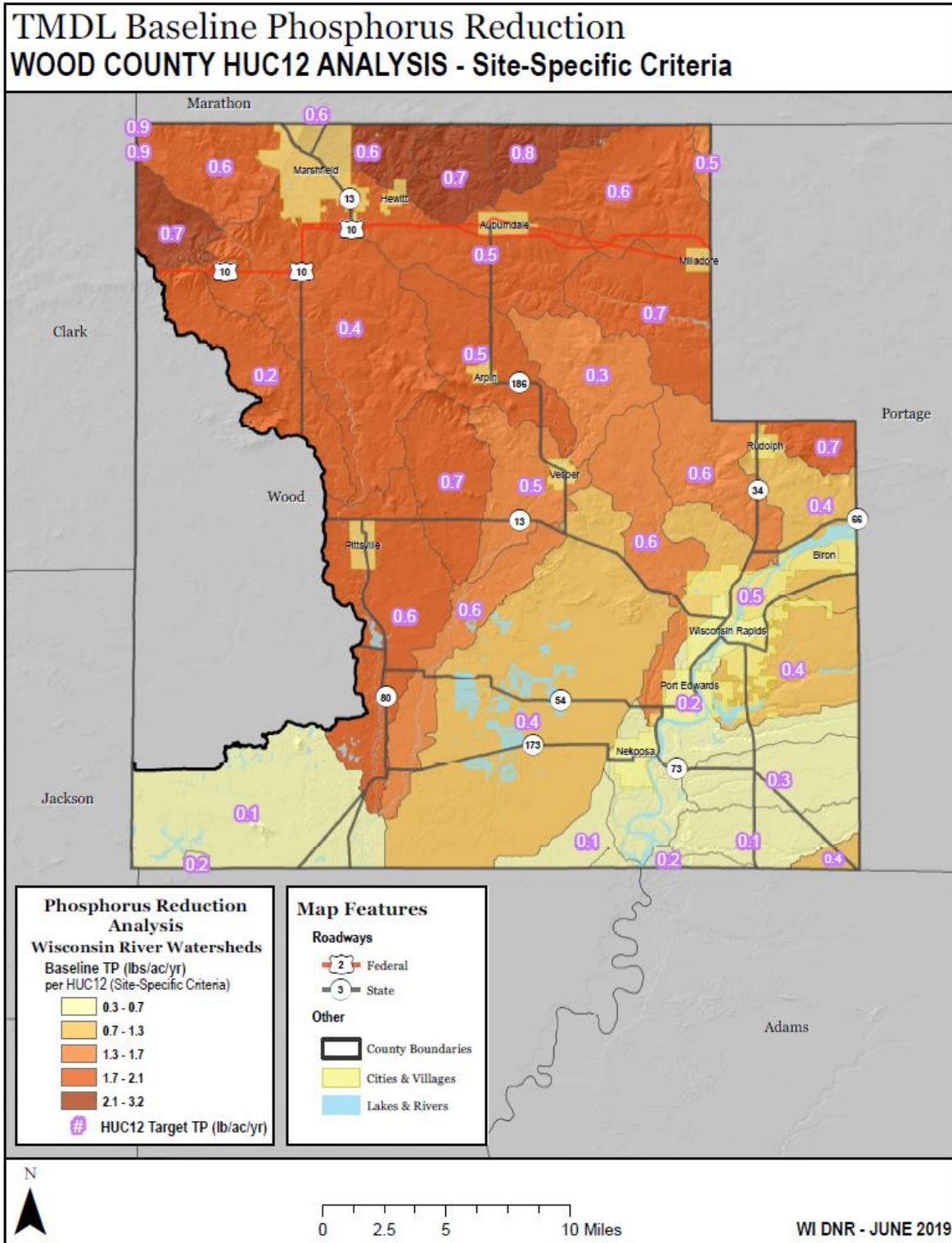


Figure 2-20



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Table 2-3

Wood County - Edge of Field Total Phosphorus Target by HUC12							
HUC12 CODE	HUC12 NAME	TMDL	CROPLAND ACRES IN COUNTY	BASELINE TP (lb/ac/yr)	TARGET TP CC (lb/ac/yr)	TARGET TP SSC (lb/ac/yr)	
070700021702	McMillan Marsh-Little Eau Pleine River	WRB		0.00	2.5	0.5	0.6
070700021703	Squaw Creek/Scheuer Creek	WRB		2,632.05	2.6	0.5	0.6
070700021704	Wild Creek-Little Eau Pleine River	WRB		4,706.58	2.6	0.5	0.7
070700021705	Bear Creek	WRB		7,597.61	1.9	0.4	0.6
070700021706	Honey Island Flowage-Little Eau Pleine River	WRB		2,686.67	2.6	0.5	0.8
070700021707	Townline Reservoir-Little Eau Pleine River	WRB		395.78	1.5	0.3	0.5
070700030201	Upper Mill Creek	WRB		11,675.77	1.9	0.4	0.5
070700030202	Middle Mill Creek	WRB		6,785.48	1.8	0.4	0.7
070700030203	Bear Creek	WRB		1,796.17	1.8	0.4	0.7
070700030305	Mosquito Creek	WRB		3,548.02	1.7	0.3	0.6
070700030306	Biron Flowage-Wisconsin River	WRB		1,344.95	1.1	0.2	0.4
070700030403	Nepco Lake	WRB		256.55	1	0.2	0.4
070700030504	Tenmile Creek	WRB		192.01	0.3	0.1	0.1
070700030603	Fourteenmile Creek	WRB		0.00	1.1	0.2	0.4
070700030701	City of Wisconsin Rapids-Wisconsin River	WRB		965.49	1.3	0.3	0.5
070700030702	Mocassin Creek	WRB		3,796.18	1.5	0.3	0.6
070700030703	Sevenmile Creek	WRB		326.47	0.7	0.1	0.3
070700030704	Fivemile Creek-Wisconsin River	WRB		660.56	0.5	0.1	0.2
070700030705	Peenwell Lake	WRB		348.71	0.5	0.1	0.2
070700031001	East Fork of Hemlock Creek	WRB		4,801.61	1.7	0.3	0.3
070700031002	Upper Hemlock Creek	WRB		5,265.98	1.8	0.5	0.5
070700031003	Little Hemlock Creek	WRB		4,374.11	1.9	1.9	0.7
070700031004	Middle Hemlock Creek	WRB		2,827.97	1.7	1.4	0.5
070700031005	Lower Hemlock Creek	WRB		1,020.40	1.5	1.5	0.6
070700031101	Headwaters of the Yellow River	WRB		50.49	3.2	0.9	0.9
070700031102	South Branch of the Yellow River	WRB		4,023.07	3.1	0.7	0.7
070700031103	East Branch of the Yellow River-Yellow River	WRB		6,060.06	2.1	0.6	0.6
070700031104	Rocky Creek	WRB		3,447.51	1.9	0.2	0.2
070700031105	Puff Creek-Yellow River	WRB		14,736.12	2	0.4	0.4
070700031106	Owl Creek-Yellow River	WRB		3,486.99	1.9	1	0.6
070700031201	Upper Cranberry Creek	WRB		4,104.04	1	1	0.4
070700031202	Lower Cranberry Creek	WRB		1,078.36	0.3	0.3	0.1
070700031301	Mead Marsh-Yellow River	WRB		198.91	0.3	0.3	0.1
070700031401	Meadow Valley-Beaver Creek	WRB		17.35	0.6	0.6	0.2

Wetlands

According to Wisconsin State Statutes, Chapter NR 103, wetlands are areas which water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions.

Wetlands may be seasonal or permanent and are commonly referred to as swamps, marshes, fens or bogs. Wetland plants and soils have the capacity to store and filter pollutants ranging from pesticides to animal wastes. Wetlands provide storage of floodwaters preventing damage to developed areas and make lakes, rivers, and streams cleaner and drinking water safer. Wetlands also provide valuable habitat for fish, plants, and animals.

As is the case statewide and nationally, Wood County has experienced a decline in the number of quality wetlands. According to the WDNR, there are 130,725 acres of wetland in Wood County or 25.8% of total acres in the county. WDNR mapped wetlands for Wood County are shown in (FIGURE 2-21).

Construction of new and expanded cranberry beds has traditionally been done in wetlands. Now, however, new construction is usually done in upland soil types, avoiding wetlands.

The Wisconsin DNR and the US Army Corp of Engineers require mitigation when natural wetland sites are destroyed. Several mitigations have taken place in Wood County during the past ten years. In many cases, the mitigated wetlands are of lesser quality than the destroyed wetlands.

Identification of Concerns and Priorities

Goals and Priorities Over the Next Ten Years

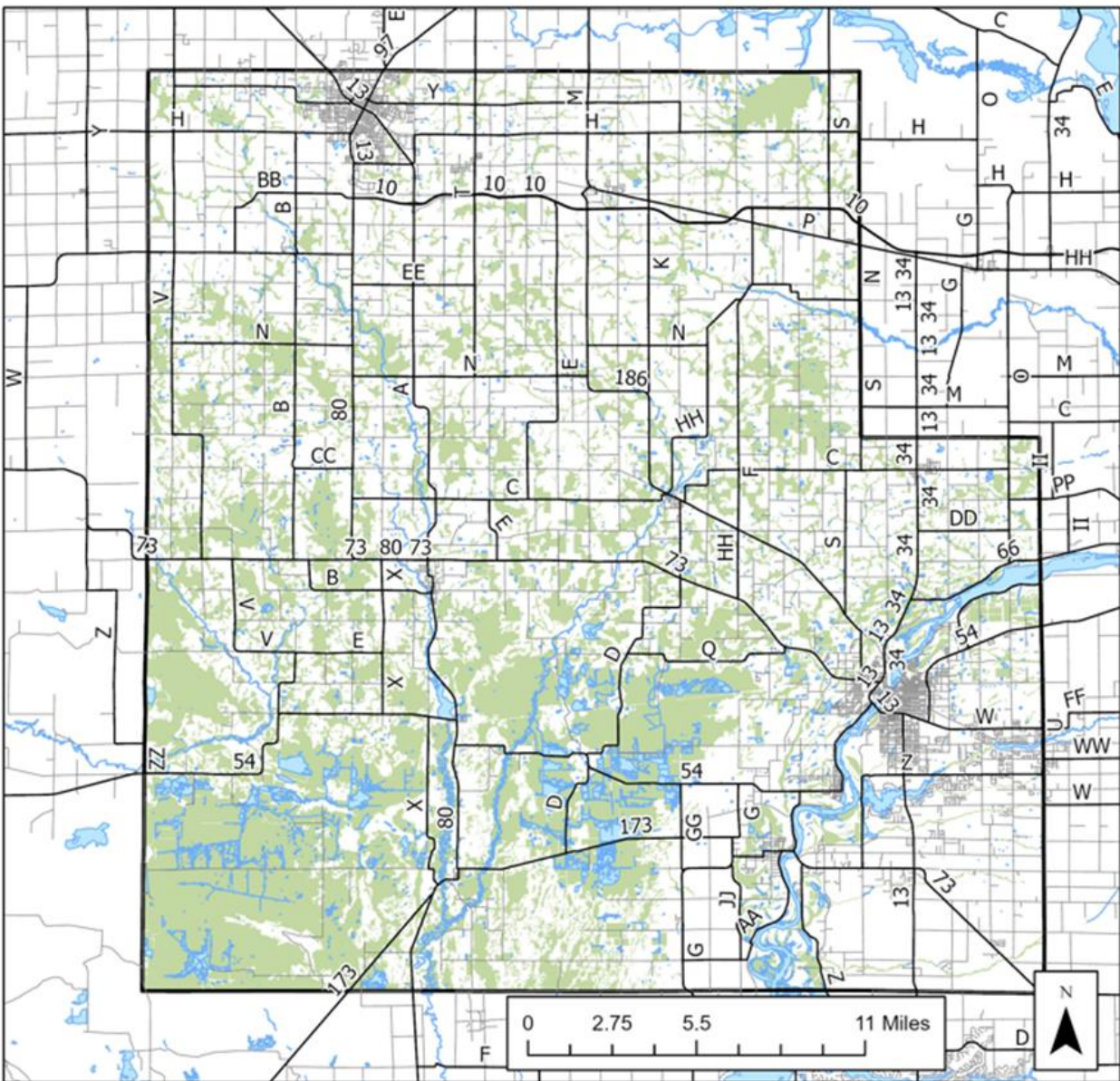
The Land & Water Conservation Department’s priority over the next 10 years will continue promoting and encouraging more soil health conservation practices through educational field days, soil health events and building partnerships with producers, landowners, lake groups, partnering agencies, legislators, media and others to show that these regenerative practices not only protect and improve water quality, but improve profitability and resilience with land operators and their communities. A watershed approach will be used to follow TMDL reductions in order to make water quality improvements. A major focus will be

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on the Wisconsin River TMDL and corresponding watersheds. The department has an existing TMDL 9-key element plan for the Mill Creek Watershed that includes four HUC 12 watersheds and is in its third year of implementation & three DNR Multi-Discharger Variance (MDV) projects including the Castle Rock, Lake Dubay and Black River Watersheds. Conservation practices implemented within the county follow the Wisconsin River TMDL reduction criteria. The Castle Rock HUC 8 watershed covers two thirds of Wood County and is included in the Wisconsin River TMDL.

WI DNR Wetland Inventory Wood County, Wisconsin

Figure 2-21



Legend

-  DNR Wetland Inventory
-  Rivers, Streams and Lakes

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Woodlands

Woodlands are one of the most prominent land cover features found in Wood County. Woodlands are important to the county's resource base, culture, and serve many functions, adding value to both the local economy and quality of life. They provide wildlife habitat, recreational opportunities, timber, and pulpwood.

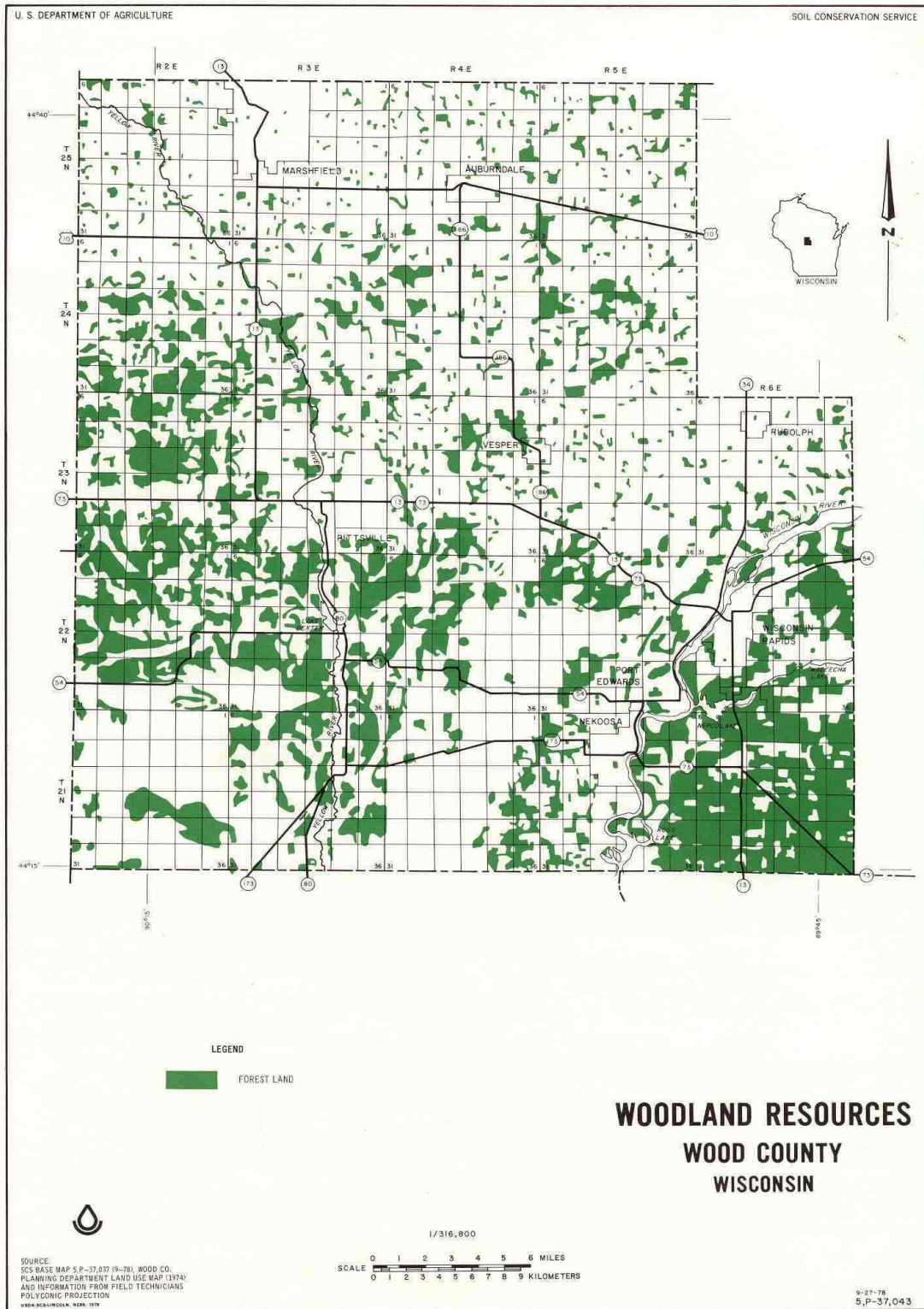
Woodlands occupy a major portion of the land area in Wood County with aspen, oak, maples, white birch, white pine, and red pine being the dominant species. Much of the forests are used by the paper mills for huge amounts of pulpwood, which is vital for paper production. There are also a significant number of tree farms specializing in Christmas trees located in the southern part of the county. Of the 517, 551 acres in the county, 215,400 acres or 42 percent are classified as woodland (figure 2-22). The county forest contains 37,536 acres of woodland. In the 1850's county forests were covered primarily with stands of white pine and tamarack. Between 1850 and the early 1930's when the county first acquired forestland, portions of the county were cutover, drained, burned, and farmed. Because of soil condition many farms failed, leaving tax delinquent lands with acquisitions beginning in the 1930's. The Wood County Forest generates significant revenues for the county, primarily through pulpwood harvests.

An increasing share of the property tax burden continues to shift to forestland owners, primarily due to use-value assessment and the rising assessed value of forestland. Use-value assessment is lowering the property tax burden for owners of agricultural land, thus placing more demand on non-agricultural properties. Rising property taxes for forestland owners have led to a sharp increase in Managed Forest Law (MFL) program enrollment. This WDNR program provides a property tax break for forest owners who agree to adopt a forest management plan.

As one of only 29 counties with county forestland, the Wood County Forest is a unique community resource. The landscape of the county forest supports thriving forest communities and abundant recreational opportunities. Hunting, fishing, hiking, biking, camping, canoeing, kayaking, ATVs, snowmobiles, snowshoeing, boating, cross-country skiing, bird watching, and sightseeing are all important elements of Wood County's culture and economy that are supported by the County Forest.

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Figure 2-22



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Solar & Wind Projects

Planning, Permitting and Development Impacts

Wood County being relatively flat, along with 216,635 acres or 42% of the county in open farmland, makes the county very desirable for development of wind & solar projects.

Wind & solar installations are becoming more frequent as individuals, communities, companies and utilities look for renewable energy solutions. The focus is on ground-mounted projects as they have a broader impact on the environment than building mounted or home installations. The following report referenced in this plan is being provided to help explore early planning opportunities, permitting requirements, long-term land use, life cycle analysis and equity-based evaluations for developing wind & solar infrastructure projects. The following link will take you to a UW Extension publication titled “Community Centered Solar Development Engagement Project”: https://portage.extension.wisc.edu/files/2024/09/CCSD-Final-Report-Portage-County_UWEx-FINAL_DOE_091824.pdf. The report is very comprehensive and provides a lot of information particularly pages 22-30 about options for county and local government.

While wind & solar projects can benefit the environment as well as the community in which they are installed, they can have undesirable outcomes when not carefully planned. The planning phase is the time to establish which installation and management practices can have the most beneficial outcomes, often at the lowest costs. It is particularly important for these environmental factors to be taken into consideration during the permitting of these large-scale projects prior to their construction. Retrofitting those practices later may increase costs and may have detrimental impacts to the environment.

Wind & solar-related permits are typically reviewed in DNR's Office of Energy for environmental impacts, rather than in the individual programs or regional offices.

Climate Resiliency

Climate resiliency means a comprehensive effort to anticipate, prepare for, quickly respond to, and recover from the adverse impacts of climate change. It involves proactively identifying potential climate risks and vulnerabilities, integrating adaptive strategies into community planning, and fostering the resilience of critical infrastructure. A resilient community engages in systematic risk assessment, ensuring the involvement of diverse stakeholders in decision-making processes to address social equity and inclusivity.

Resilient communities prioritize the development of robust emergency preparedness plans, incorporating continuous monitoring of climate conditions and adaptation measures. This involves the construction of resilient infrastructure (including health systems capable of responding to extreme weather events) designed to withstand extreme weather events and the promotion of economic activities less susceptible to climate impacts. Natural resource management focuses on the conservation and restoration of ecosystems, enhancing their capacity to provide essential services.

Moreover, climate resiliency emphasizes ongoing learning and flexibility, adjusting strategies based on evolving climate conditions and community needs. Policies supporting climate resilience at local, regional, and national levels are crucial, integrating climate considerations into land-use planning, zoning, and building codes. Through community engagement and education, residents are empowered with the knowledge and skills necessary to adapt to changing conditions. Ultimately, climate resiliency is a holistic and integrated approach that addresses the interconnected social, economic, and environmental aspects of a community, fostering adaptability and sustainability in the face of a volatile and variable climate.

Groundwater is currently in abundant supply in Wood County, but careful consideration should be given to planned development and climate resiliency planning efforts to ensure the supply is maintained.

CHAPTER 3 – GOALS, OBJECTIVES, STRATEGIES & OUTCOMES

Approach Perspective

The foundation of the Land and Water Resource Management Plan for Wood 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 soil is 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 unchecked 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, soil should be considered a living organism that when provided the basic necessities for life, performs functions required to produce food and fiber but also clean the environment. Only “living” things can have health, so soil must be considered as a living ecosystem. It is teeming 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 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 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. Soils can no longer be exposed to the elements for long periods of time, especially from early October through mid-June in order to have healthy soils along with clean surface and ground water.

Plan Goals & Objectives

The overarching goal of the LWRM Plan is to provide direction to natural resources managers of all levels of government for the protection and improvement of our natural resources. Achieving this overarching goal will require many different small steps taken in unity with a coordinated effort across Wood County as outlined in this chapter. The LWRM Plan is designed to align with Wood County’s Comprehensive and Strategic Plans to improve and protect land and water resources within the county.

The CAC reviewed and updated the goals, objectives, and strategies of the 2025-2035 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 Wood 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.

The future health and social well-being of Wood 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, Wood 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.

CHAPTER 3 | GOALS, OBJECTIVES, STRATEGIES & OUTCOMES

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

Objective: 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. Maintain land tolerable soil loss levels at the current (2024) rate of 92% or greater with no net increase by 2035.
- b. Address known cropland gullies from previous inventories in impaired watersheds by 2030.
- c. Work with and promote stabilization of road ditch and construction erosion with local towns and municipalities by hosting a local workshop by 2030.
- d. Publish and distribute a brochure highlighting the implementation of best management practices to reduce erosion when land disturbances are within 300 feet of a waterbody by 2030.

Objective: 1.2 Improve Soil Health

Strategies:

1. Monitor organic matter levels on agricultural land and utilize data to track trends.
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. Increase the acres of agricultural land under nutrient management planned acreage by 5% to meet NR 151 State Performance Standard by 2030.
- b. Improve the average organic matter levels on agricultural land in the county by promoting soil health principles.
- c. Increase and promote the conversion of agricultural acres under reduced till and no-till farming methods through field days and workshops.
- d. Develop a tracking mechanism for cover crops by 2025.
- e. Promote managed grazing through education and pasture walks as a way to increase land under perennial forage.

Objective: 1.3 Protect and Preserve Agricultural Lands

Strategies:

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

CHAPTER 3 | GOALS, OBJECTIVES, STRATEGIES & OUTCOMES

Outcome Measures:

- a. Conversion of land with prime farm soils to non-farmland uses is limited to less than 150 acres per year.
- b. Work with interested landowners to develop a Farmland Preservation-Agricultural Enterprise Area within the county or join existing AEA's that join our count borders with the neighboring counties of Clark and Marathon by 2030.
- c. Update and publish the county Farmland Preservation Plan in 2025 with goals, objectives, strategies and measurable outcomes for the next ten years.

Objective: 1.4 Forest management - Private and public forest lands in Wood 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 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 timber harvest.
4. Encourage the establishment and/or maintenance of windbreaks for erosion control and energy conservation through working in partnership with the Central Wisconsin Windshed Partnership (CWWP).
5. Private forest lands are established and maintained as a viable land use.
6. Identify and financially support viable and environmentally superior farming systems.
7. Public forest lands in Wood County are well managed to support wildlife, recreation and timber harvest goals as specified in the Wood 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 2026.
- b. Enroll private landowners into the group forest stewardship through Golden Sands RC&D's efforts.
- c. Work to assure there is no net loss of private forested acres.

GOAL 2: SURFACE WATER QUALITY IS PROTECTED AND IMPROVED.

Objective: 2.1 Work to Implement the Wisconsin River Watershed Total Maximum Daily Load (TMDL) Identified Goals

Strategies:

1. Conservation, Education and Economic Development Committee (CEED) 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 agricultural land will have Phosphorus Index (PI) levels at 6 pounds per acre or less.
3. Develop and support partnerships with agencies to develop and implement action plan(s) to reduce phosphorus loading.
4. Complete implementation of the Mill Creek Watershed Plan and apply what was learned to future TMDL planning and implementation efforts, along with the Wisconsin River report to develop future nine element watershed-based plans in the county.
5. Seek new funding options and incentives outside of conventional government sources to implement soil health and conservation practices.

Outcome Measures:

- a. By 2025, develop and support a partnership between county, state and federal agencies to develop and implement action plan(s) to reduce phosphorus loading from agricultural lands.
- b. Mill Creek Watershed Plan phase 2 goals are met by December 31st, 2027. If goals are not met, a re-assessment of strategies must be done.

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- c. By 2030, select one HUC 12 sized watershed for development of a nine key element watershed-based plan in conjunction with the DNR, that reflect the Wisconsin River TMDL report phosphorus reduction goals.
- d. By 2030, reduce, meet, or make progress towards meeting the surface water phosphorus concentrations levels in Mill Creek to meet Wisconsin River TMDL total phosphorus criteria.
- e. By 2030, survey agricultural landowners and operators within the TMDL watersheds to assess their knowledge, acceptance and use of practices to improve soil health.

Objective: 2.2 Reduce agricultural runoff to surface water (soil sediment, organics, and nutrients).

Strategies:

1. Increase the number of cropland acres that have a nutrient management plan.
2. Reduce runoff of winter-spread manure.
3. Administer County Animal Waste Storage Ordinance.
4. Reduce runoff from barnyards and feedlots.
5. Promote proper well abandonment.
6. Implement Chapter 102, Wisconsin Statutes Phosphorus Rule.
7. Reduce high nitrate levels in drinking water.
8. Establish a harvestable buffer cost-share program using various funding sources, including but not limited to, DATCP funds and Wisconsin DNR Surface Water Grant Program (i.e. Management Plan Implementation).

Outcome Measures:

- a. Promote the annual Farmer Nutrient Management classes by offering tuition, a soil testing stipend to farmers applying and taking the course to become certified to write their own nutrient management plans.
- b. Continue to serve landowners to properly abandon idle or noncompliant private wells on an annual basis through cost sharing and technical assistance.
- c. Follow up with all complaints related to animal waste leaving a facility or field to ensure compliance with NR 151 and NRCS 590 Standard.
- d. Pursue any and all grant opportunities to secure a more stable funding source for the establishment of harvestable buffers.

GOAL 3: REDUCE CROP DAMAGE CAUSED BY DEER

Objective: 3.1 Administer Wildlife Damage Abatement and Claims Program

Strategies:

1. Inform and educate landowners and producers that the wildlife abatement and claim program is an available program.
2. Evaluate the program annually for continuity with the DNR program rules.
3. Track damage and effectiveness of the program.

Outcome Measures:

- a. Provide assistance to landowners and producers when requested and damage is occurring on cropland.
- b. Conduct appraisals and make recommendations to DNR on shooting permits.
- c. Provide assistance for all huntable species that are eligible for the program.
- d. Provide abatement measures & options to abate damage when requested.

GOAL 4: PROTECT AND DEVELOP WETLANDS AND UPLANDS FOR WILDLIFE HABITAT

Objective: 4.1 Increase and Protect Wetlands and Wildlife Habitat.

Strategies:

1. Promote and encourage the restoration of wetlands that have been impaired or removed.
2. Promote wildlife habitat development.

CHAPTER 3 | GOALS, OBJECTIVES, STRATEGIES & OUTCOMES

Outcome Measures:

- a. Provide assistance to landowners and producers to restore wetlands on the landscape through technical assistance and cost-sharing opportunities.
- b. Offer wildlife tree and shrubs sales to provide landowners the opportunity to plant more food sources and provide habitat for wildlife.

GOAL 5: INCREASE EFFORTS TO ASSESS AND INVENTORY WATER RESOURCES OF WOOD COUNTY

Objective: 5.1 Increase Water Quality on Wood County Streams

Strategies:

1. Determine streams that could be monitored for water quality testing.
2. Develop a testing protocol.
3. Seek funding for monitoring.

Outcome Measures:

- a. Develop a list of priority streams with impairments to implement monitoring protocols.
- b. Track progress over time.
- c. Work with partnering agencies to network and share data.

Objective: 5.2 Increase Water Quality Monitoring for Groundwater

Strategies:

1. Use existing well data to target hotspots of contamination.
2. Test more wells for contamination annually.
3. Seek funding for monitoring.

Outcome Measures:

1. Develop a list of priority areas to focus efforts.
2. Provide additional testing on wells with known contamination to monitor changes.
3. Work with partnering agencies to network and share data.

GOAL 6: GROUNDWATER IS PROTECTED AND IMPROVED

Objective: 6.1 Protect and Enhance the Quality and Quantity of Groundwater Resources

Strategies:

1. Help the County develop a 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 help 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. Use the information from the Central Sands Nitrate and Neonicotinoid Study to guide decisions on changes in land use approved by the county.
5. Help develop 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. Help develop a ground water protection plan by December 31, 2030.
- b. Develop GIS data layer to identify municipal well locations and recharge areas by 2030.

CHAPTER 3 | GOALS, OBJECTIVES, STRATEGIES & OUTCOMES

- c. Use data from the Central Sands Nitrate and Neonicotinoid Study to develop a programming document to create a road map for groundwater testing and outline next steps for central Wisconsin counties to guide the implementation of changes in land use by the end of 2026.
- d. Help Planning & Zoning Department map & identify current POWTS systems using GIS by 2030.
- e. Align local wellhead protection plans and source water protection plans being developed in the county for public drinking water systems with DNR requirements and EPA's nine key element criteria. Submit plans that are developed to DNR and EPA for review.

GOAL 7: ACTIVELY EDUCATE AND ENGAGE COMMUNITY STAKEHOLDERS TO DEVELOP AN UNDERSTANDING OF LAND, SURFACE WATER, AND GROUNDWATER QUALITY CONCERNS

Objective: 7.1 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, department brochures, local newspapers, public service announcements and social media.

Outcome Measures:

- a. Organize and hold 1-2 on-farm educational demonstration days, per year, to showcase how and why best management practices function properly and how they should be maintained. Conduct and hold five nutrient management farmer education courses at different locations per year. This effort is part of a multi-county collaborative NMFE grant in central Wisconsin.
- b. Annually evaluate and assess program delivery, constraints and resistance to implementation of conservation practices.

Objective: 7.2 Conduct Information and Education Activities as it Relates to Plan Goals

Strategies:

1. Coordinate educational opportunities to inform key stakeholders of this plan's deliverables.
2. Develop a clear understanding of land and water related concerns along with an understanding of the Wisconsin River TMDL report and relay the concerns in an easily understandable format.
3. Provide informational and educational opportunities to protect and enhance waterfront properties to improve water quality.
4. 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.
5. Provide coordinated access to information and educational materials through various sources including websites, newsletters, videos, department brochures, local newspapers, public service announcements and social media to 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.

CHAPTER 3 | GOALS, OBJECTIVES, STRATEGIES & OUTCOMES

Outcome Measures:

- a. Provide a shoreland evaluation tool survey link from the Healthy Lakes & Rivers website to shoreland owners to assess their property. The Shoreland Evaluation Tool walks owners through questions about the physical aspects of lake or river property, as well as how to manage it.
- b. By 2026, provide the Nepco Lake District organization with the shoreland evaluation tool to distribute survey to shoreland owners, to self-score and assess knowledge, acceptance and use of practices to improve water quality.
- c. Educate shoreland owners, through the Nepco Lake District Organization, the importance of installing and maintaining shoreland buffers as well as other practices to improve water quality.
- d. Coordinate or partner on one (1) educational activity annually with local schools regarding the importance of water quality and steps that can be taken to improve water quality.

GOAL 8: PURSUE GRANT OPPORTUNITIES TO HELP SUPPORT THE IMPLEMENTATION OF THE LWRM PLAN GOALS

Objective: 8.1 Apply for State and Federal Grants When Available

Strategies:

1. Apply for education and planning grants, aquatic invasive species grants, surface water management grants, targeted runoff management plans and any other grant opportunities that would support implementation and goals of this plan. Apply annually with a completed grant application by the required deadline along with all required support documentation to the agency/organization providing the grant opportunity for consideration and eligibility.
2. Review requests annually for score and completeness and improve future requests to be successful in obtaining grant awards.

Outcome Measures:

- a. Apply annually by the required deadline, a completed grant application along with all the required support documentation to the agency/organization providing the grant opportunity for consideration and eligibility.
- b. Review requests annually for score and completeness and improve future requests to successful in obtaining grant awards.

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In order to implement this LWRM plan, we will 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 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 committed groups of stakeholders at the watershed level, such as we have done with Farmers of Mill Creek Watershed Counsel (FMCWC) & Petenwell Castle Rock Stewards (PACRS). 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 desired outcomes where a large percentage of people that control the land, implement conservation on their land to improve the land and water. Wood County LWCD staff have 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 & Planning and Zoning, the County Highway Department and the Health Department.

Public Engagement



Other organizations involved include the following: County Lake Associations/Districts, GrassWorks Inc., Golden Sands Resource Conservation and NRCS. LWCD 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 Wood County's land and water resources.

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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 Wood 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 which 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 improves nutrient cycling. Proper grazing techniques of managed pastures, cover crops and crop residue increase a livestock's level of nutrition.



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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, LWCD 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



Cattle 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, LWCD staff will work with the landowner to develop a timeline for compliance and secure technical assistance and cost-share funding when applicable and available. LWCD 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 Storage, Nutrient Management and Groundwater Protection Ordinance.
2. Lands enrolled in the Farmland Preservation Program in order to receive program tax credits.
3. 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.
4. Farmers participating in the Multi-Discharger Variance Program.
5. Farmers entering into cost share agreements with the county.

Priority Farm Strategy:

There is a need to establish priorities due to limited time and financial resources. LWCD 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 LWCD. 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 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.

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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 resource concerns, LWCD staff will follow the priorities listed below based upon farm size, location, NR 151 compliance and programing available:

- Mill Creek Watershed farms.
- Animal Waste Storage, Nutrient Management and Groundwater Protection Ordinance.
- Manure application during high risk (frozen, snow covered 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 Wood County.
- Participants in other voluntary cost sharing programs outside of high priority locations, farm size, or program.
- Riparian and wetland buffer installation and maintenance.



Robotic milking 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

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Technical and Financial Assistance

Providing quality technical and financial assistance through LWCD 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, Wood County has put into place fair and consistent ordinances and a defined enforcement policy for county ordinances administered by LWCD. 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 in the following situations:

1. Evaluating land parcels, notifying landowners of compliance status, offering cost sharing, providing technical assistance, and following enforcement process to implement the cropland NR 151 Agricultural Performance Standards and Prohibitions.
2. Updating and implementing county ordinances related to land and water programs as needed or required by state statute or regulation.
3. Incorporating County stormwater and construction site erosion control 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 Wood County's conservation programs, to achieve phosphorus reduction. Educational opportunities for local officials, landowners, 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.

- Dedicated conservation staff and partners provide focus to, and coordination of natural resource educational efforts related to their program priorities.
- LWCD 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.

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Harvestable Buffers, Cover Crops & Residue Management

The Wood County Land & Water Conservation Department is sponsoring a project to establish harvestable buffers, cover crops, and residue management within the Wisconsin River Basin in Wood County and the entirety of the Mill Creek Watershed. Activities and deliverables include reducing suspended solids, total phosphorus, and total nitrogen concentrations within the Wisconsin River Basin to reach Total Maximum Daily Load (TMDL) goals. Funding for this program was initiated through a 1-year innovations grant with DATCP and recently the Wood County Board of Supervisors appropriated funds from County American Rescue Act Funds (ARPA) in 2024 to the LWCD for the establishment of additional buffers, cover crops and reduced tillage practices and additional educational field days to promote soil health practices.

The project goal is to work towards reaching the goals of Wisconsin's Nutrient Reduction Strategy, the Wisconsin River TMDL, the Mill Creek 9-Key Element Plan, and Wood County's Land and Water Resource Management Plan by establishing harvestable or vegetative buffers along perennial and intermittent streams and some concentrated flow areas throughout Wood County and connected watersheds. A harvestable buffer may be harvested in a way to maintain growing vegetation.



Buffers will be a minimum of 30 ft wide. Landowners and farmers are responsible for maintaining the vegetative cover for the contract period. Farmers will be given five options: planting 1 species and maintaining it for 3 years, planting multi-species with a minimum of 3 species and maintaining it for 3 years, planting 1 species and maintaining it for 5 years, planting multi-species with a minimum of 3 species and maintaining it for 5 years, planting native pollinator mix of species and maintaining it for 5 years.

The 2025-2027 goal is to establish 70 acres in 3-year harvestable buffer contracts and 40 acres in 5-year harvestable buffer contracts. Attaining this goal will reduce 91 lbs. of phosphorus, 50 lbs. of nitrogen, and 44 tons of sediment from entering surface waters per year. One pound of phosphorus can produce 500 lbs. of algae, meaning a reduction of 91 lbs. of phosphorus will keep 45,500 lbs. of algae from being produced within the Wisconsin River Basin per year.

The project will also support the establishment of cover crops and the use of no-till practices. Cost-share amounts for both cover crops and residue management will be based on the ATCP 50.42 cost share rates. The LWCD will work to develop a more permanent funding for these effective practices.



Proposed Harvestable Buffers - Figure 4-1

Protection of Regionally Important Water Resources

The need for appropriate 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 CAC, 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

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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.

Wood County

LWCD 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 Petenwell & castle Rock Stewards (PACRS), The Farmers of the Mill Creek Watershed Council (FMCWC), Nepco Lake District, Pheasants Forever, River Alliance of Wisconsin, Golden Sands Resource Conservation & Development Council, Inc., and Central Wisconsin River Grazers 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. This plan clearly identifies 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 LWCD budget typically supports 5.74 full time equivalent staff positions whose primary focus is on LWRM Plan implementation. In 2016 there were 4 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 \$286,000 of county tax levy and \$298,000 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 \$40,000 and a \$252,000 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 require their own budget.

Despite a decrease in state funding over the last decade for staff and stable county tax levy, LWCD has been able to slowly increase staffing levels because of successful efforts to secure grants and provide stable revenue streams to boost the amounts of cost sharing and staff positions.

These grants and allocations have allowed LWCD 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

Wood 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 2024 include the following:

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- **Wood County Total Funding Allocation for 2024**

Staffing funds and cost share funds totals \$271,672. Wood County has steadily risen and now ranks somewhere in the middle of requests for state total DATCP grant funding.

- **Wood County Funding Allocation for Bond Cost Sharing**

Annually, funds to be used for structural type conservation practices totals \$50,300, 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 \$54,000. Wood County typically utilizes all DATCP cost sharing for farmers annually. Although funding priorities target compliance with NR 151 regulations, the LWCD still encourages adoption of farm conservation practices through a voluntary implementation approach. For a complete list of eligible practices, see “Best Management Practices” on page 84.

- **Nutrient Management Farmer Education Training Grant**

The annual multi county nutrient management farmer education program that Wood County is part of received \$32,410 of grant funds for 2024, with most of the funds going directly to participating farmers. This allocation funds farmers/producers in 6 collaborating counties.



Classroom Training for Farmers on Nutrient Management



Farmers of Mill Creek Fall Cover Crop Field Day

- **DNR Targeted Resource Management (TRM) grants**

LWCD 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 Mill Creek Watershed. These grants have varied annually from \$50,000 to \$650,000 with a ten-year total of just over \$1,200,000 that went directly to farmers. These types of grants will continue to be secured to fund conservation projects within the county.

- **Lake Grants**

Wood County LWCD has partnered with lake groups to support these organizations in their pursuit of securing grant funding for lake plans and implementation of the plans that have been developed. Additionally, a variety of funding sources may be pursued for education, assessments, planning, implementation, and invasive species, including but not limited to, Surface Water Grants funded by the Wisconsin DNR. Projects may directly influence our surface waters, such as ensuing a Surface Water Restoration grant or to help reduce runoff from nonpoint sources by utilizing the Management Plan Implementation Surface Water Grant. LWCD will continue to grow this effort to secure grants to fund activities related to surface water protection, restoration, and enhancement.

- **Multi-Discharger Variance (MDV) Program**

These funds from the DNR are used in the Castle Rock, Lake Dubay & the Black River Watersheds 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 phosphorus, nitrogen and sediment reductions they make on their cropland. Funding ranges from \$30,000-\$40,000 per year.

MONITORING AND EVALUATION

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 Wood 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 Wood County LWRM Plan is intended to be a flexible document that will review progress toward goals, objectives, and measurable outcomes on an annual basis. LWCD 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*

An annual Soil Erosion Transect Survey conducted by conservation staff, farm-level soil conservation assessments via SnapPlus nutrient management planning software and use of satellite 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. LWCD depends on these maps along with site specific delineation when needed to identify wetlands.

5. *Agricultural Runoff*

The reduction of agricultural runoff to surface water is outlined in Objective 2.2 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 of satellite imagery to estimate crop residue levels and monitoring by the WI DNR.

6. *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.

Tracking reduction outcomes will occur over the life of this LWRM Plan. Conservation staff will document and measure progress and increase public awareness and educational opportunities. Agricultural practices will be promoted through events and educational demonstrations such as on-farm field days, and through courses such as nutrient management farmer education classes.

CHAPTER 5 | MONITORING & EVALUATION

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 Wood County. The county will rely upon the WI DNR for their prescribed role in water quality monitoring within the county. In addition, the LWCD will continue to monitor various waterways within its control and has agreed to share the data with DNR. This includes monitoring the Mill Creek.

Additional water quality monitoring will include lakes and streams testing through volunteer efforts and stream base flow for groundwater fed streams. The LWCD, DNR and volunteer groups will collaborate to monitor water resources.

Lake Districts

In 2024, Wood County in cooperation and partnership with Nepco Lake District assisted in developing an Aquatic Plant Management Plan and Lake Study on Lake Nepco to protect, enhance, and improve long-term water quality. This will help in pursuing and securing future DNR surface water grants. Wood County will continue to assist, promote and monitor the implementation of the plans.

Aquatic Invasive Species

Wood County has a working relationship with the Golden Sands Resource Conservation & Development Council to conduct ongoing inventories, monitoring and management of lakes and reservoirs. Starting in 2024 Wood County LWCD annually applies for Lake Management & Protection (LMPN) grants in which Wood County will provide core Aquatic Invasive Species (“AIS”) Prevention and Citizen Lake Monitoring Network (“CLMN”) services in Wood County.

Citizen Monitoring

Raise public awareness, especially among the watersheds’ residents, of the pollution sources and solutions in and out of Wood 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:

- Annual Water Quality sampling will continue in the Mill Creek Watershed at sites in both Wood and Portage County HUC 12 watersheds 6 times a year to track if any progress to water quality improvement is occurring.
- 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.

LWCD will compile this data yearly. Partners will be updated periodically on projects and reduction results. Each year, LWCD will

CHAPTER 5 | MONITORING & EVALUATION

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 spreadsheets and GIS.
- Maintain contact with partners by telephone, e-mail, newsletter, or other methods.
- Present updates at meetings, PACRS, FMCWC and other pertinent group meetings.
- Consult annually with DNR nonpoint, TMDL and water quality monitoring staff to discuss/evaluate progress and opportunities for collaboration to implement TMDLs within selected watersheds.

The following programs specifically will have additional tracking/reporting to monitor progress and success toward this plan's goals:

- FPP participation and contracts will have an annual 25% spot check and progress will be tracked using GIS.
- CREP participation and contracts will have an annual 25% spot check and reduction goals will be modeled and tracked using GIS.
- The Castle Rock, Lake Dubay & Black River watershed Multi-Discharge Variance Plans (MDV) will have modeling performed on practices implemented each year. Reductions in Total Phosphorous (TP) and Total Suspended Solids (TSS) will be tracked using spreadsheets and GIS by the LWCD and data will also be reported and tracked in the DNR Best Management Practices Implementation Tracking System (BITS) to demonstrate progress towards reaching nutrient reduction goals related to TMDLs, Statewide Nutrient Reduction Strategy, and other DNR and EPA reporting requirements.
- The Mill Creek Watershed 9-Key Element (TMDL) plan, which is currently in the implementation phase, will have modeling performed on practices implemented each year. Reductions in Total Phosphorous (TP) and Total Suspended Solids (TSS) will be tracked using spreadsheets and GIS by the LWCD and data will also be reported and tracked in the DNR Best Management Practices Implementation Tracking System (BITS). The tracking of the reductions will be cumulative and will apply toward the overall TMDL reductions outlined in the Wisconsin River Watershed TMDL report for targeted reductions.
- All other watershed associated BMP implementation across the County of Wood will follow this same strategy and will be modeled and tracked using GIS by the LWCD. These reductions will help protect, enhance, preserve and move toward improved water quality.
- Agricultural Targeted Runoff Management Grants and Notice of Discharge sites that include BMP implementation will have modeling performed on the installation of these practices. Reductions in Total Phosphorous (TP) and Total Suspended Solids (TSS) will be tracked using spreadsheets and GIS by the LWCD and data will also be reported and tracked in the DNR Best Management Practices Implementation Tracking System (BITS).

LWCD 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

WOOD COUNTY LWRM PLAN ADVISORY GROUP

<u>NAME</u>	<u>AFFILIATION</u>
Andrew Craig.....	DNR
Scott Provost.....	DNR
Pat Oldenburg.....	DNR
Lisa Trumble.....	DATCP
Katy Smith.....	DATCP
Barbara Peeters.....	Wood County LWCD
Shane Wucherpennig.....	Wood County LWCD

WOOD COUNTY LWRM PLAN CITIZENS ADVISORY COMMITTEE

<u>NAME</u>	<u>AFFILIATION</u>
Pat Stanislawski.....	Town of Dexter
Bill Clendenning.....	County Board, District 15
Bill Leichtnam.....	County Board, District 19
Randy Moody.....	Town of Port Edwards
Jason Grueneberg.....	Wood County Planning & Zoning
Ben Jeffrey.....	Wood County Health Department
Chad Schooley.....	Wood County Parks & Forestry
Fawn Gottschalk.....	Town of Cranmoor
Jen McNelly.....	Wood County UW Extension
Russ Biebl.....	USDA, NRCS
Andy Richardson.....	USDA, NRCS
Andrew Craig.....	Wisconsin DNR
Scott Provost.....	Wisconsin DNR
Cindy Koperski.....	Wisconsin DNR
Barbara Peeters.....	Wood County Land & Water Conservation
Kendra Wilhelm.....	Wood County Land & Water Conservation
Emily Salvinski.....	Wood County Land & Water Conservation
Shane Wucherpennig.....	Wood County Land & Water Conservation

DEFINITIONS

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Aquifer	An underground layer of soil material or bedrock that contains groundwater.
ATCP 50	The chapter of Wisconsin's Administrative Code that implements the Land and Water Resource Management Program as prescribed in Chapter 92 of the Wisconsin Statutes.
Basin.....	An extremely large watershed area, used by DNR to identify major drainage patterns in the State. Wood County falls within two major drainage basins, the Black-Buffalo-Trempealeau River Basin and the Central Wisconsin River Basin.
Best Management Practices.....	(BMPs) The most effective practice or combination of practices for reducing nonpoint source pollution to acceptable levels.
Chapter 92	Portion of the Wisconsin Statutes outlining the soil and water conservation, agricultural shoreland management and animal waste management laws and policies of the State.
Conservation Education and Economic Development (CEED) Committee.....	The portion of the Wood County government that is empowered by Chapter 92 of the Wisconsin Statutes to conserve and protect the County's soil, water and related natural resources.
Conservation Reserve Program	(CRP) A provision of the Federal Farm Bill that takes eligible cropland out of production and puts that land into grass or tree cover for 10 to 15 years.
Crop Residue.....	The plant residue left on the soil surface after the harvest of a crop and preparation of the soil for the following crop.
Department of Agriculture, Trade and Consumer Protection (DATCP) –	The State agency responsible for establishing statewide soil and water conservation policies and administering the State's soil and water conservation programs. DATCP administers State cost-share funding for a variety of LWCD operations, including support for staff, materials and conservation practices.
Erosion.....	The process by which rainwater and runoff detach soil particles from the soil surface and carry them downhill.
Geographic Information Systems (GIS) –	A computerized system of maps and layers of data about land including soils, land cover, topography, field boundaries, roads and streams, zoning and land use, etc
Glacial Till	Rock fragments and soil materials transported and deposited by the ice of glaciers.
Impaired Waters 303(d) List	A DNR list of water bodies, required by the federal Clean Water Act, that do not meet or are not expected to meet quality water standards.
Natural Resources Conservation Service (NRCS) –	The NRCS is under the direction of the United States Dept. of Agriculture (USDA) and is responsible for soil survey inventory and information, farm conservation planning, and providing technical assistance to landowners regarding best management practices.
Nonpoint Source Pollution	The pollution that occurs when rainfall or snowmelt runs over land surface or through the soil, picks up natural and human applied pollutants, and deposits them into surface water or groundwater. Pollutants include soil particles, fertilizers, animal waste, pesticides, petroleum products, and other toxic materials.

DEFINITIONS

- Nutrient ManagementA conservation practice designed to minimize the contamination of surface and ground water by limiting the amount of nutrients applied to the soil to no more than what the crop rotation is expected to use. It involves frequent soil testing and annual planning of the techniques, placement, rate, and timing of fertilizer and animal waste applications. Also includes an analysis of soil erosion rates based on cropping and tillage practices.
- Parent MaterialThe original rock and organic materials that a soil formed from. Climate, landscape position, plants and animals act on these materials over time to form soils with unique properties.
- Sedimentation.....The transport and deposition of soil particles from soil erosion and by surface runoff. The particles may be deposited onto the land surface or into surface water or groundwater.
- Storm Water.....The portion of rainfall and snowmelt that runs over the land surface and does not soak into the ground. Paved surfaces and roofs increase storm water quantities. Storm water often delivers pollutants to surface waters.
- Sub-basin.....A large watershed area used by DNR as a management unit for strategic planning.
- Surface Water Quality Management Area – A land area draining to and within 1,000 feet of a lake or 300 feet of a stream.
- Technical StandardsThe specifications for the design, construction, implementation and maintenance of conservation practices.
- TillageFarming operations which mechanically disturb the soil in preparation for planting a crop. Clean tillage, or moldboard plowing, buries all or most of the crop residue from the previous crop. Minimum tillage, reduced tillage, and conservation tillage leaves a portion of the crop residue from the previous crop on the soil surface after planting to protect the soil from erosion. No-till leaves all of the crop residue on the soil surface.
- TMDL.....Total maximum daily load for total phosphorus, established by section 303(d) of the Clean Water Act.
- Tolerable Soil Loss (T).....The maximum rate of soil erosion, in tons per acre per year, that is allowable for a particular soil to sustain its productivity for growing plants and crops.
- University of Wisconsin-Extension (UW-Ext.) – The local outreach branch of the University of Wisconsin that is responsible for formal and informal educational programs throughout the state.
- WatershedA land area that drains to a common point such as to a stream or lake, or to a group of streams and/or lakes.
- Wisconsin Department of Natural Resources (WDNR) – the State agency responsible for managing State owned lands and protecting public waters of the State. The WDNR also administers programs to regulate, guide and assist land conservation programs within individual counties, as well as landowners in managing land, water, fish and wildlife.
- Wisconsin Land & Water AssociationMembership organization that represents the state’s 72 county Land & Water Conservation Committees, Departments and their employees.

BEST MANAGEMENT PRACTICES

Best Management Practices

The following is a list of Best Management Practices listed in ATCP-50 that are eligible to receive cost-share assistance under the Wood County Soil and Water Resource Management Program:

- manure storage systems
- manure storage system closure
- barnyard runoff control systems
- access road
- trails and walkways
- conservation cover
- conservation crop rotation
- contour farming
- cover crop
- critical area stabilization
- diversions
- feed storage runoff control systems
- field windbreaks
- filter strips
- grade stabilization structures
- habitat diversification
- harvestable buffers
- hydrologic restoration
- livestock fencing
- livestock watering facilities
- milking center waste control systems
- nutrient management
- nutrient treatment system
- pesticide management
- prescribed grazing
- relocating or abandoning animal feeding operations
- residue management
- riparian buffers
- roofs
- roof runoff systems
- sediment basins
- sinkhole treatment
- streambank and shoreline protection
- stream crossing
- stream restoration
- strip cropping
- subsurface drains
- terrace systems
- underground outlets
- verification of depth to bedrock
- waste transfer systems
- wastewater treatment strips
- water and sediment control basins
- waterway systems
- well decommissioning
- wetland development or restoration