



Florence County
Land & Water Resource
Management Plan 2022-2031



Florence County
Land and Water
Resource Management Plan

February 2022

Prepared for:

Florence County
Land Conservation Committee

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Table of Contents

<i>Table of Contents</i>	1
<i>List of Maps</i>	3
<i>List of Exhibits</i>	3
Chapter 1. Introduction	4
State Enabling Legislation.....	4
Chapter 92.10 Requirements.....	4
Plan Development Process	5
Chapter 2. Resource Inventory and Assessment	8
General Physical Setting	8
Land Resources	8
Water Resources.....	11
Rivers and Streams	19
Demographics	28
Land Use.....	32
Soil Erosion and Sedimentation Information	35
Soil and Water Issues.....	36
Chapter 3. Natural Resources Standards	39
Introduction.....	39
Performance Standards and Regulations.....	39
Inventory of Existing Standards and Prohibitions.....	40
Chapter 4. 2016 -2021 Work Plan Accomplishments	42
Chapter 5. Identification and Prioritization of Issues and Problems	44
Public and Professional Input.....	44
Chapter 6. Goals and Objectives	45

<i>Chapter 7. Plan Implementation Process.....</i>	<i>48</i>
Regulations for Plan Implementation.....	48
Information and Education Strategy	50
Plan Implementation Budget.....	58
<i>Appendix A. Citizen Advisory Committee Meeting Minutes.....</i>	<i>61</i>
<i>Appendix B. Technical Workgroup Meeting Minutes.....</i>	<i>63</i>
<i>Appendix C. Public Hearing Announcement.....</i>	<i>66</i>
<i>Appendix D: Conservation Practices List.....</i>	<i>69</i>
<i>Appendix E. Partner Agencies</i>	<i>70</i>
<i>Appendix F. List of Acronyms.....</i>	<i>71</i>

List of Maps

Map 1. Location Map.....	7
Map 2. Soil Types.....	10
Map 3. Watersheds and Sub-Watersheds.....	13
Map 4. Water Resources.....	18
Map 5. Outstanding and Exceptional Waterways.....	22
Map 6. Wetlands.....	25
Map 7. Housing Occupancy – Seasonal, Recreational, or Occasional Use.....	31
Map 8. Land Ownership.....	33
Map 9. Existing Land Use.....	34
Map 10. ATV Trails.....	38

List of Exhibits

Exhibit 1. Groundwater Contamination.....	12
Exhibit 2. Watersheds and Sub-Watersheds.....	15
Exhibit 3. WDNR Impaired Waters List.....	16
Exhibit 4. Impaired Waters.....	17
Exhibit 5. Population.....	28
Exhibit 6. Housing Occupancy.....	29
Exhibit 7. Land Use.....	32
Exhibit 8. Florence County Monitoring Efforts.....	59

Chapter 1. Introduction

State Enabling Legislation

A county Land and Water Resource Management (LWRM) planning program was created through amendments to Chapter 92.10 of the Wisconsin Statutes in Wisconsin Act 27 (the 1997- 1999 Biennial Budget Bill). The goal of the amendment was to create a planning process that would:

- Rely on a locally led process for plan development and implementation.
- Allow for maximum flexibility with various program grants and funding sources.
- Encourage comprehensive watershed-based efforts without excessive planning.
- Reward innovation and cost effectiveness.
- Require the seamless integration of programs and funding sources.
- Make use of a wide variety of implementation tools.
- Ensure meaningful program evaluation and accountability.

Chapter 92.10 Requirements

Wisconsin Act 27, Chapter 92 Wisconsin Statutes was amended in 1997 to require counties to develop individual Land and Water Resource Management Plans whose purpose is:

- To conserve long-term soil productivity.
- Protect the quality of related natural resources; enhance water quality.
- Focus on severe soil erosion problems.

County Land and Water Resource Management Plan Concept

This *Florence County Land and Water Resource Management Plan* was developed to assist agencies that manage land, to protect and improve soil and water resources in Florence County. Goals established in the plan will help guide resource agency initiatives from 2022 through 2031 with a review at 5-years. This plan also provides the basis for funding those initiatives from various private, local, state, and federal sources. Used as a tool to guide and coordinate a variety of agencies and programs, the *Florence County Land and Water Resource Management Plan* will help to streamline decision-making and program administration.

Description of Planning Area

Florence County is in northeastern Wisconsin. Neighboring counties include Iron County, MI to the north, Dickinson County, MI to the east, Forest County, WI to the west and southwest, and Marinette County, WI to the south. Florence County is about 497 square miles in size and consists of eight towns including Aurora, Commonwealth, Fence, Fern, Florence, Homestead, Long Lake, and Tipler. Though none are incorporated communities, the Town of Florence has the highest population of all the townships and serves as the major government activity center and county seat.

Plan Development Process

North Central Regional Planning Commission

During the planning process, North Central Wisconsin Regional Planning Commission (NCWRPC) was an important partner (among many others) in developing the *Florence County Land and Water Resource Management (LWRM) Plan* including sharing relevant content from LWRM plans they have created. NCWRPC also identified various pertinent goals and objectives that were used as examples to update and revise the *Florence County LWRM Plan* strategies.

Public Participation

Under the coordination of Florence County Staff, two groups assisted with this plan development. A Citizen's Advisory Committee (CAC), made up of individuals representing riparian landowners, educators, local government officials, lake association members, and concerned citizens, met to identify, prioritize local soil and water quality issues, and start to develop goals and objectives (Appendix A). The Technical Advisory Committee (TAC) was formed of partner agencies to address the local concerns, and interests identified (Appendix B).

Working from the existing mission as defined by the Florence County Land Conservation Committee, the county's conservation goals are focused on:

“Assisting people in protecting, managing, conserving, and restoring the natural resources of Florence County by providing informational and educational resources, available technical assistance and cost-share, and supporting related programs.”

This plan is not intended to contain an exhaustive inventory of soil and water resources in Florence County. Instead, it draws upon new and existing inventory information from federal and state sources of data, data provided by federal and state agencies, and previously prepared documents. Recent development trends, land use, soil health, and water quality data were compiled to supplement these previous inventories.

Plan development identifies and prioritizes soil and water resource issues of concern and guides the Land Conservation Department's work plan and partner agency support to address them. The CAC was instrumental in identifying issues and formulating plan goals and objectives. The TAC considered these recommendations, analyzed resource information, and provided additional data that enhanced the quality and accuracy of the plan. The plan is meant to be versatile and allow for streamlined decision-making and adaptation as changing laws are adopted, Best Management Practices (BMPs) are developed and refined, and new natural resource threats are identified.

Public Hearing

A public hearing was held on December 6th to consider final public input before plan adoption. (Appendix C)

County Board Approval

The Florence County Board of Supervisors voted _____ to _____ to adopt the 2022-2031 *Florence County Land and Water Resource Management Plan* as presented.

Plan Contents

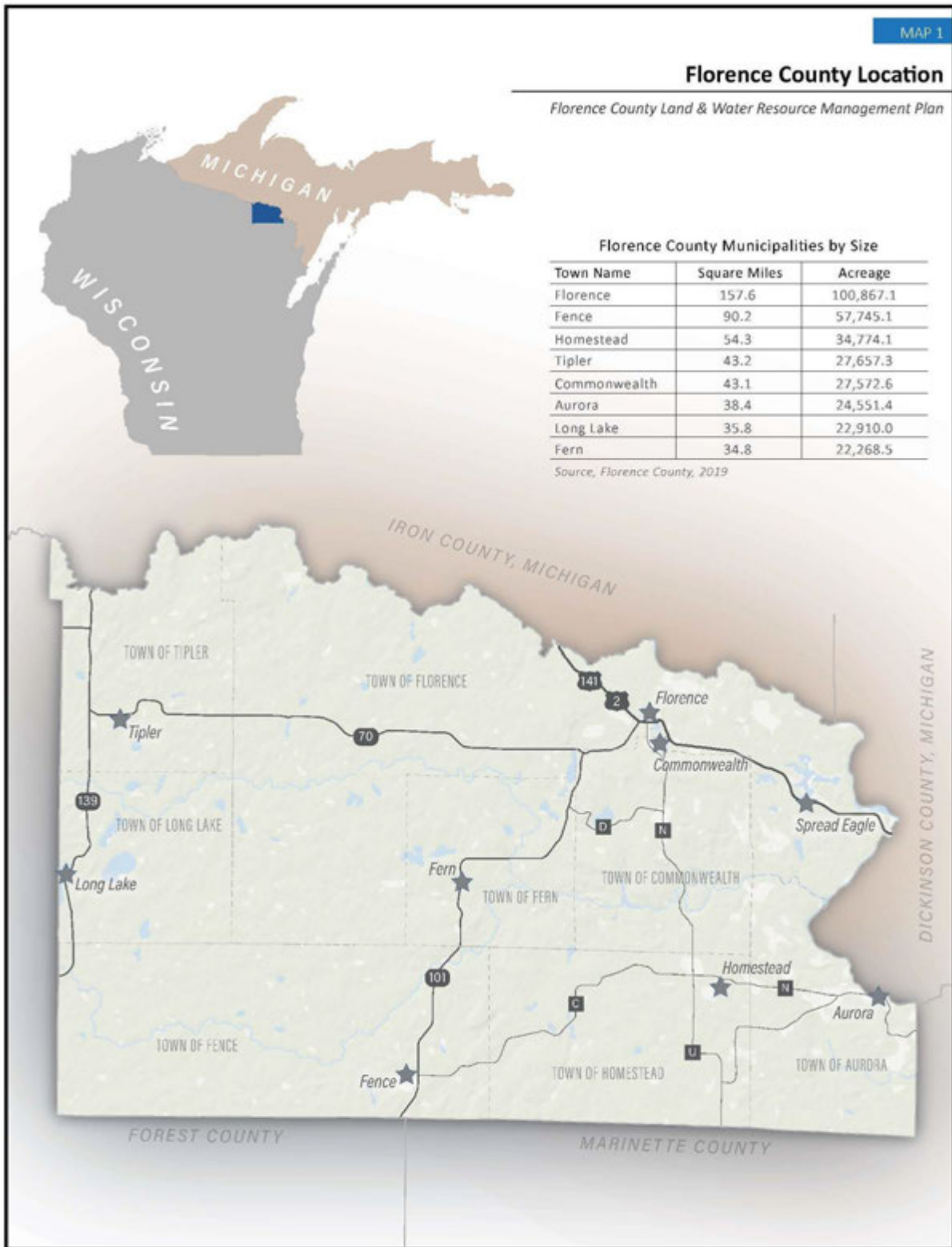
This plan is composed of six chapters:

- **Chapter One:** *Introduction*, describes the plan requirements and development process.
- **Chapter Two:** *Resource Inventory and Assessment*, provides a detailed inventory of the natural resources within Florence County and assesses the quality of these resources on a watershed basis.
- **Chapter Three:** *Natural Resource Base Standards*, includes the existing and proposed standards and specifications for natural resource management standards within the county.
- **Chapter Four:** *2016-2021 Work Plan Accomplishments*, describes how the goals and objectives were accomplished during the previous five years.
- **Chapter Five:** *Identification and Prioritization of Issues and Problems*, describes the public involvement process used to identify resource management issues and provides a prioritization of these problems.
- **Chapter Six:** *Goals and Objectives*, provides a list of goals and objectives for managing the county natural resources.
- **Chapter Seven:** *Plan Implementation Process*, details the actions the county will undertake to apply performance standards to its resource management efforts.



Florence Natural Resource Center & Wild Rivers Interpretive Center

Map 1. Location Map



Chapter 2. Resource Inventory and Assessment

General Physical Setting

Florence County is in northeastern Wisconsin along the Michigan-Wisconsin border with the Menominee and Brule Rivers forming the northern and eastern boundaries of the county. The county can be found within two Ecological Landscapes established by the Wisconsin DNR, the North Central Forest and the Northeast Sands. Most of the county is rural and can be defined by its unique land features and vast natural resources. Most of the county is forest or wetlands, which the area residents and visitors directly benefit from. Much of the agriculture in the county is located in the eastern and southern portions of the county. Water resources can be found throughout the county, from rivers to lakes. Using the *Find A Lake* tool, found on the WDNR website, Florence County has 252 lakes covering about 7,063 surface acres. In addition, the county has many named and unnamed rivers and creeks, including the Pine and Popple rivers, which are enrolled in the State of Wisconsin's Wild Rivers program.

Land Resources

Soil Associations

The general character of the county's soils is largely the result of various glacial depositional processes. An irregular north-south line runs approximately through the center of the county dividing it between predominantly outwash soils in the west and sandy soils in the east.

The outwash soils in the western portion of the county were formed from glacial deposits which were derived from local bedrock formations. The topography of this area is largely rolling with low to moderate relief. Soils found under a forest cover, which consists mainly of conifers and hardwoods, exist in a cool and relatively moist climate. The sandy soils of the eastern portion of the county were formed from parent materials derived from sandstone bedrock pulverized by glacial ice. These soils originally supported a vegetation cover consisting of various species of pine, scrub oak, and savanna grasses. This area has low relief with occasional short, steep slopes.

There are eight soil associations within the county as determined by the Natural Resources Conservation Service within the soil survey of Florence County.

- **Annalake-Gastrow Association.** Very deep, nearly level to sloping, moderately well drained and somewhat poorly drained, loamy, and silty soils on glacial lake plains. These soils are found in slightly more than one percent of the county covering primarily side slopes, depressions, and linear drainageways.
- **Goodwit-Sarona Association.** Very deep, nearly level to steep, moderately well drained and well drained, silty and loamy soils on moraines covering about 7.5 percent of the county.
- **Padus-Pence-Vanzile Association.** This is the major soil association within Florence County covering approximately 47 percent of the total area. These soils are very deep, nearly level to steep, moderately well drained to somewhat excessively drained, loamy and silty soils on outwash plains, stream terraces, eskers and kames.
- **Sarona-Padus-Vilas Association.** Very deep, nearly level to steep, well drained and excessively drained, loamy and sandy soils on outwash plains, stream terraces, eskers, kames and moraines. Approximately one-fifth or 18 percent of the county is composed of these soils.
- **Vilas-Pence Association.** About 16 percent of the soils of Florence County are within the Vilas-

Pence Association. These soils are very deep, nearly level to steep, excessively drained and somewhat excessively drained, sandy and loamy soils on outwash plains, stream terraces, eskers and kames.

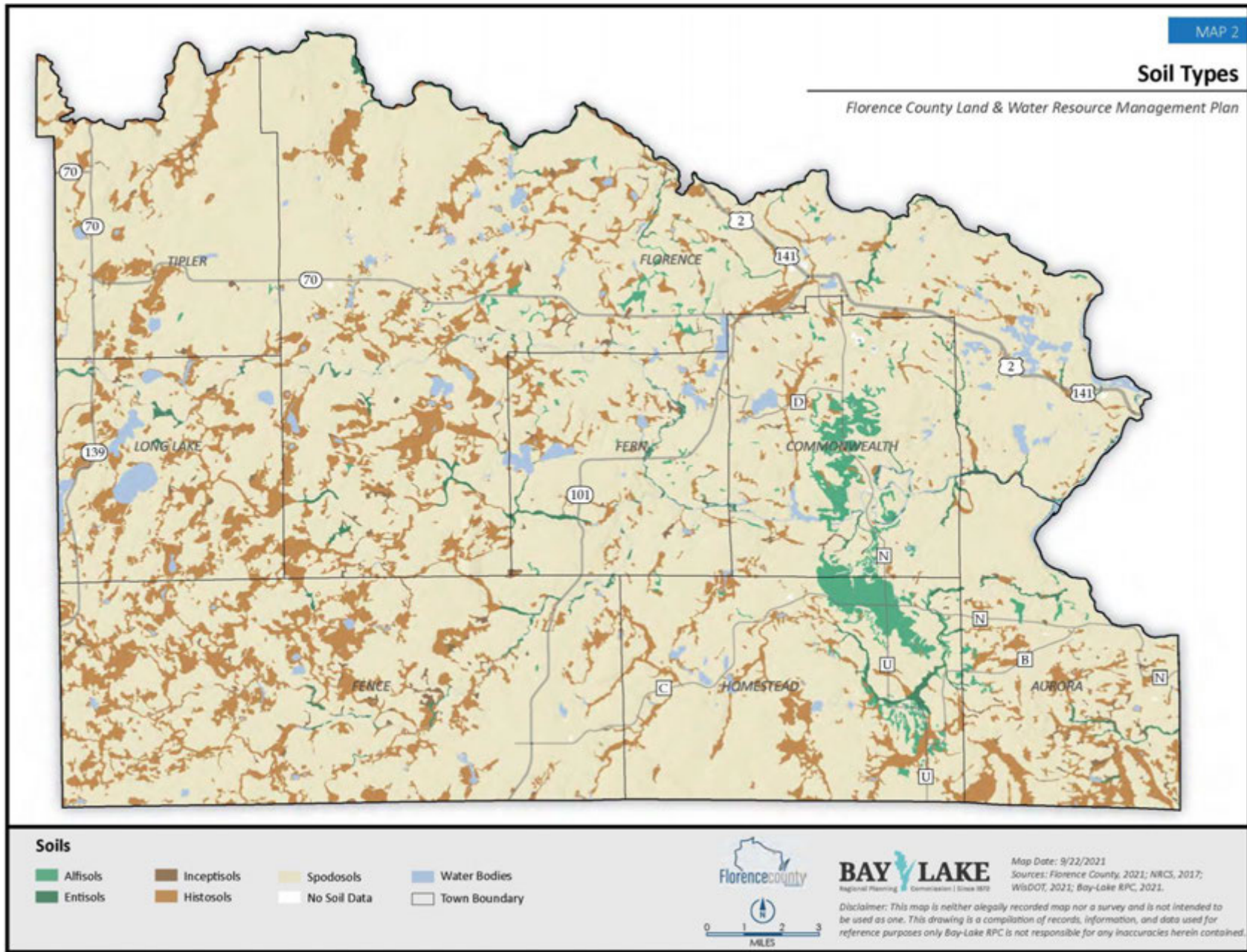
- **Ellwood-Iosco Association.** Very deep, nearly level to sloping, moderately well drained and somewhat poorly drained, silty and sandy soils on moraines covering approximately three percent of the county.
- **Rock Outcrop-Metonga-Ishpeming Association.** Rock outcrop and moderately deep, nearly level to steep, well drained, and somewhat excessively drained, loamy, and sandy soils on outwash plains and moraines covering about three percent of the county.
- **Wabeno-Goodwit Association.** Just about four percent of the soils of Florence County are in this association containing moderately deep and very deep, nearly level to sloping, moderately well drained, silty soils on drumlins and moraines.

Soil Types

According to GIS analysis done by the Bay-Lake Regional Planning Commission, there are five different types of soil in Florence County. The soils include alfisols, entisols, inceptisols, histosols, and spodosols. Soil types were mapped to give an easier overview of general soil characteristics which can make planning projects easier. Refer to Map 2 for the locations of different soil types in Florence County.

- **Alfisols.** Moderately weathered soils often found in forests.
- **Entisols.** Soils with little to no horizon development, new soils.
- **Inceptisols.** Slightly developed soils, still young.
- **Histosols.** Organic and wet soils, often found in wetlands.
- **Spodosols.** Acidic sandy soils, often found in conifer forests.

Map 2. Soil Types



Water Resources

Groundwater

Florence County serves primarily as a regional discharge area with movement of groundwater from west to east and southwest to northeast. Most lakes in the county are groundwater discharge supplied. The primary supply of groundwater is found in the surface aquifer in the material which lies directly over the bedrock formation. This material was laid down by the last glacier over 10,000 years ago. Soft water is generally encountered in the western towns of Florence County, while medium hard water is found within the eastern towns.

The Soil Survey of Florence County was generated through the Natural Resource Conservation Service's (NCRS) Web Soil Survey on September 14th 2021. It indicates that the supply of groundwater in Florence County is of good quality and sufficient with present and anticipated future demands from domestic, agricultural, municipal, and industrial needs. This is the case because only a small portion of the groundwater potential is being used. There are also very few large-scale pumpage areas. For example, there were only six acres irrigated in Florence County according to the 2017 Census of Agriculture.

Florence County, in general, has sand and gravel aquifers. Wells in the western and northeastern parts of the county generally yield 100 to 500 gallons of water per minute (Oakes and Hamilton, 1973). In the central and southeastern parts of the county, wells generally yield 10 to 100 gallons per minute (Florence County Soil Survey).

Groundwater quality can be impaired by a variety of pollutants including leaking underground storage tanks (LUSTs), landfills, septic tanks, over-application of pesticides, fertilizers and manure, leaking animal waste storage facilities, and spills of hazardous chemicals. Florence County has a single water utility which supplies a limited amount of county residents with water. Much of the county is served by private wells. According to a 2008 report created by USGS and UW-Extension called "*Protecting Wisconsin's Groundwater Through Comprehensive Planning*" there are two sources of groundwater contamination present in Florence County, nitrates, nitrogen, and arsenic. Nitrates and nitrogen have not been detected above 10 parts per million (ppm). 27% of wells in Florence County exceed health standards for arsenic of 10 parts per billion (ppb). Refer to the Groundwater Contamination Susceptibility Map (Exhibit 1) below for more information on potential at risk areas for groundwater contamination.

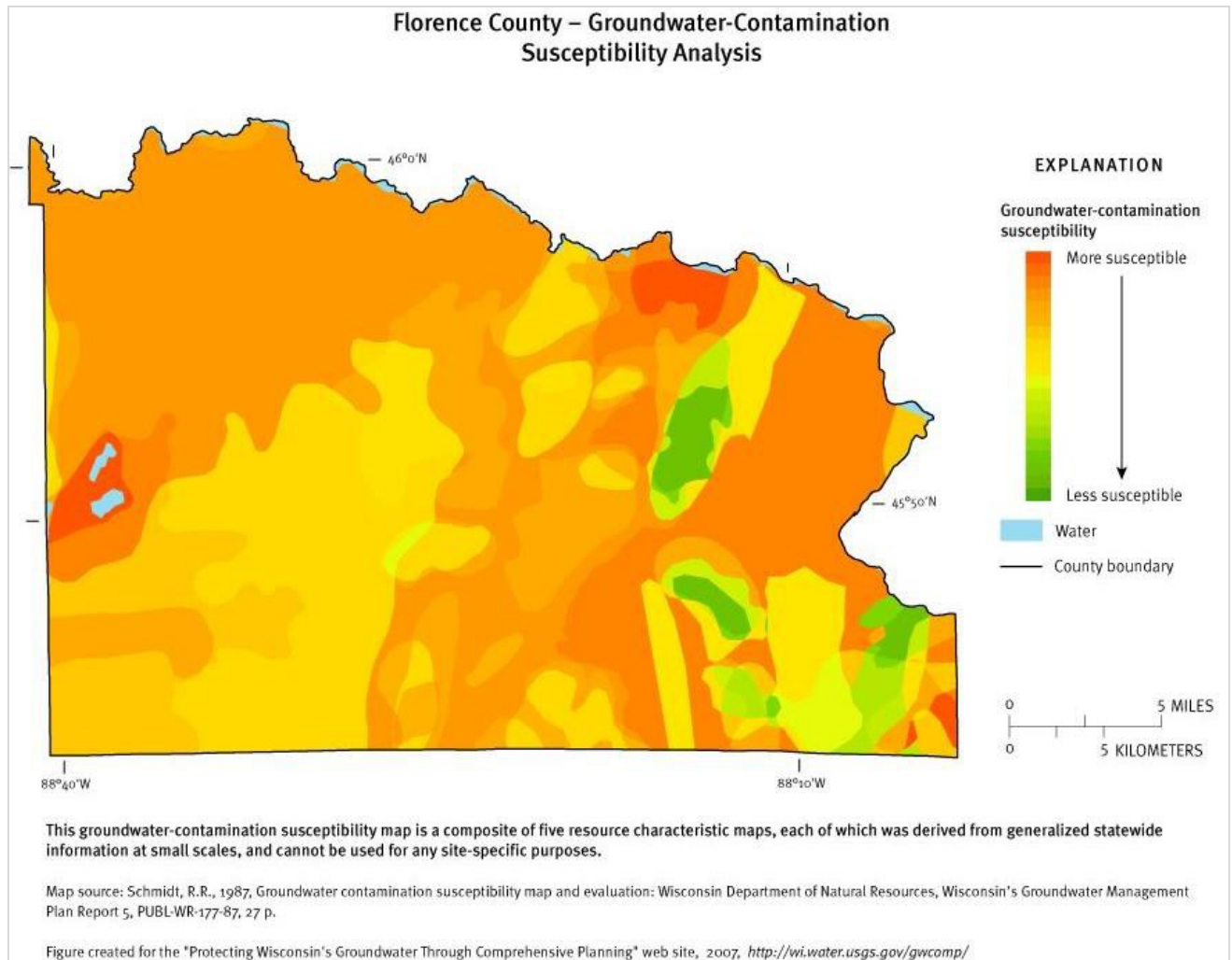


Pink Water Lily



White Water Lily

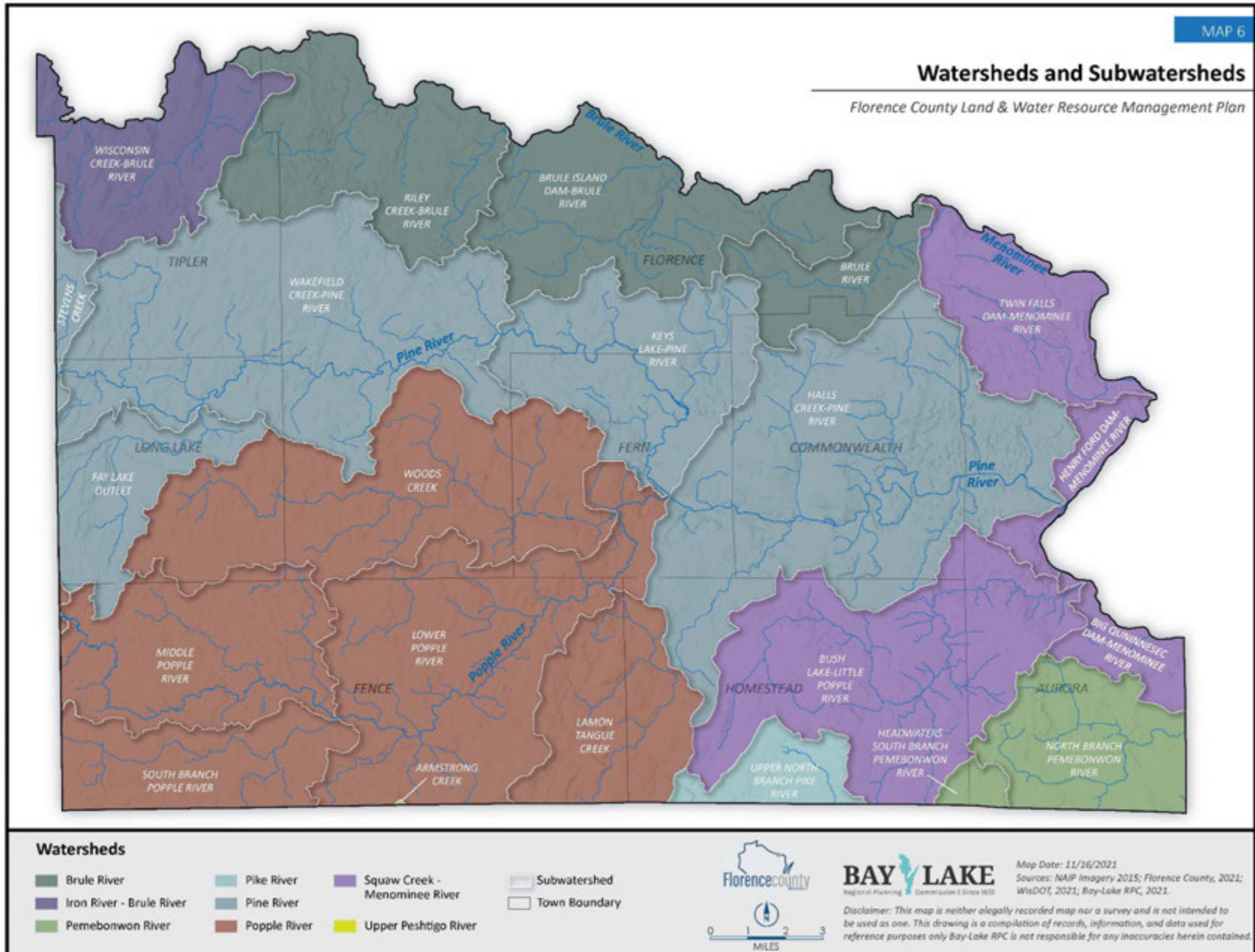
Exhibit 1. Groundwater Contamination



Potential Sources of Groundwater Contamination:

- There are no atrazine prohibition areas in Florence County.
- There are no concentrated animal feeding operations in Florence County.
- There are about 80 animal farms in Florence County.
- There are 6 open-status sites in Florence County that have contaminated groundwater and/or soil. These sites are composed of 5 Leaking Underground Storage Tank (LUST) sites, and 1 Environmental Repair (ERP) sites.
- Florence County has one demolition disposal landfill site near Aurora.
- There are no superfund sites located in Florence County.

Map 3. Watersheds and Sub-Watersheds



Watersheds and Sub-watersheds

Map 3 shows the eight major watersheds (HUC 10) and 25 sub-watersheds (HUC 12) covering Florence County; these include the Pine River, Popple River, and Menominee River/Brule River watersheds, and small portions of the Pike and Pemebonwon River watersheds. Much of these watersheds are dominated by forests and wetlands.

The Florence County Land Conservation Department continues to complete culvert replacements for the Pine - Popple River Watershed to increase resiliency during extreme flood events and reduce barriers for aquatic species.

- The Menominee and Brule watershed covers more than 65,000 acres in the northern one-fifth of Florence County. The Brule River sub-watersheds are included within this watershed as are the upper 15 miles of the Menominee River (Exhibit 2). Tributaries to this watershed could affect surface water quality as mercury has been detected in fish according to the WDNR Impaired Waters List.
- The Pine River watershed lies in central Florence County. The Pine River, Pine/Popple River, Stevens Creek, and Woods Creek sub-watersheds fall within this watershed basin.
- The Popple River watershed is in the southern part of Florence County. Included within this watershed are the North and South Branches of the Popple River, and the Little Popple River sub-watersheds.
- The Pike River and Pemebonwon River watersheds cover small portions of southeastern Florence County. These watersheds flow primarily south and east from Florence County into Marinette County and then into the Menominee River, located in the Lake Michigan watershed.



Morgan Lake

Exhibit 2. Watersheds and Sub-Watersheds

Watershed	Sub-watershed	Acres	Percent
Brule River		43,479	13.67%
	Brule Island Dam-Brule River	18,657	
	Brule River	7,248	
	Riley Creek-Brule River	17,568	
Iron – Brule River		12,463	3.92%
	Wisconsin Creek-Brule River	12,463	
Pemebonwon River		12,455	3.91%
	Headwaters South Branch Pemebonwon River	1,211	
	North Branch Pemebonwon River	11,247	
Pike River		4,329	1.36%
	Upper North Branch Pike River	4,329	
Pine River		104,413	32.82%
	Fay Lake Outlet	8,930	
	Halls Creek-Pine River	40,020	
	Keys Lake-Pine River	17,156	
	Kingstone Creek-Pine River	139	
	Steven Creek	1,673	
	Wakefield Creek-Pine River	36,494	
Popple River		96,063	30.20%
	Lamon Tague Creek	12,259	
	Lower Popple River	28,543	
	Middle Popple River	16,867	
	South Branch Popple River	10,805	
	Upper Popple River	76	
	Woods Creek	27,512	
Squaw Creek – Menominee River		44,916	14.12%
	Big Quinnesecs Dam-Menominee River	3,591	
	Bush Lake-Little Popple River	26,862	
	Henry Ford Dam-Menominee River	3,512	
	Twin Falls Dam-Menominee River	10,951	
Upper Peshtigo River		17	0.01%
	Armstrong Creek	17	
Total		318,135	100.0%

Source: WDNR. (BLRPC used data from WDNR’s Open Data Portal to approximate watersheds and sub-watershed acreage).

Dams

For all information regarding the location of dams in Florence County please refer to the WI DNR Dam Search webpage at: <https://dnr.wisconsin.gov/topic/dams/damSearch.html>.

Lakes

Lakes are defined as all waters navigable, meandered, or public that hold water nine out of ten years. From the county's largest surface water area found at Halsey Lake to the 101 waterbodies that are unnamed, Florence County residents and visitors enjoy a variety of year-round water recreation. With over 57 public boat landings located throughout the county, along with a great deal of transient boater activity, the county's waterbodies have significant exposure to aquatic invasive species.

Several non-native plants and animals have become a serious threat to local water ecosystems, which could also prove to be a potential loss in recreational uses, tourism, and property values. Known populations of invasive species have been documented in 29 area lakes, eight rivers and creeks, and four flowages. These aquatic invaders include Chinese and Banded Mystery Snails, Eurasian Water Milfoil, Purple Loosestrife, Rainbow Smelt, Rusty Crayfish, and Zebra Mussels. Efforts to educate the public and identify and manage these species has been integrated into the management plan of the Wild Rivers Invasive Species Coalition. Florence County is a member of this coalition. Refer to Map 4 for information on Water Resources found in Florence County.

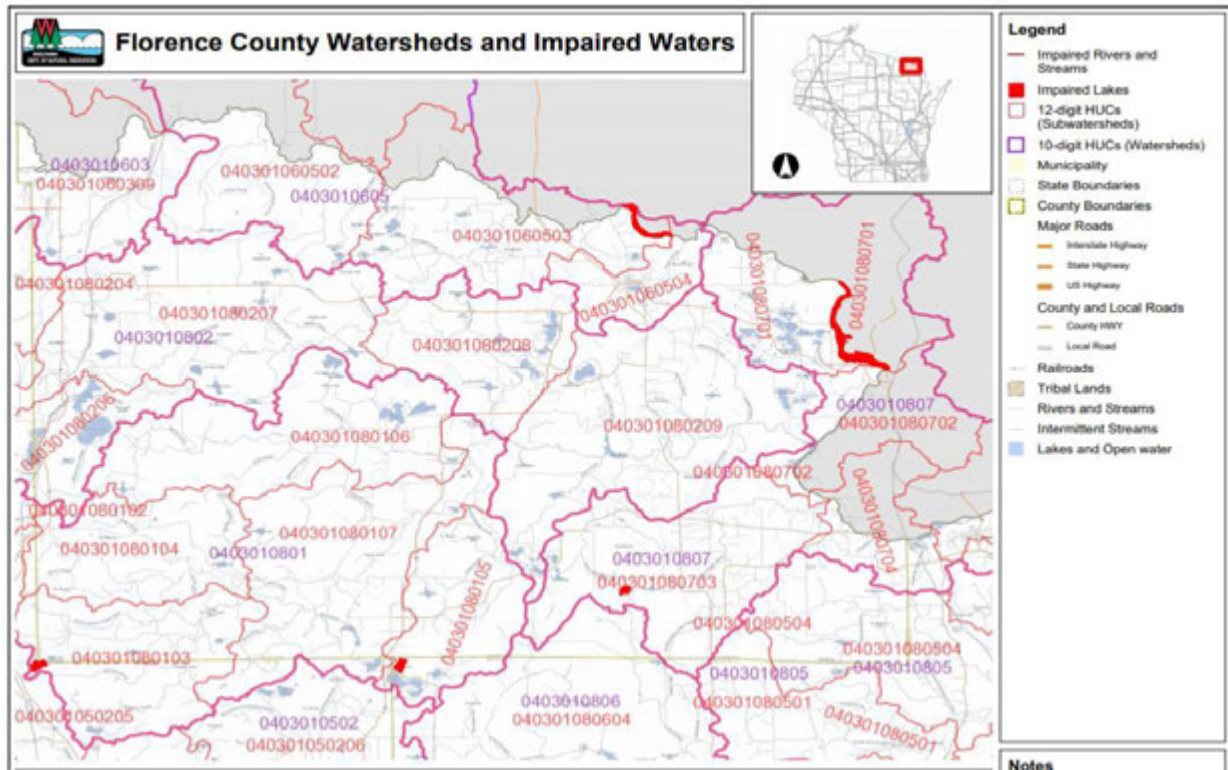
Exhibit 3. WDNR Impaired Waters List

Name	Water Type	Pollutant	Impairment	Status	Priority
Sand Lake	Lake	Mercury	Contaminated fish tissue	303d Listed	Low
Brule River Flowage	Impoundment	Mercury	Contaminated fish tissue	303d Listed	Low
VanZile Lake	Lake	Mercury	Contaminated fish tissue	303d Listed	Low
Twin Falls Flowage	Lake	Mercury	Contaminated fish tissue	303d Listed	Low

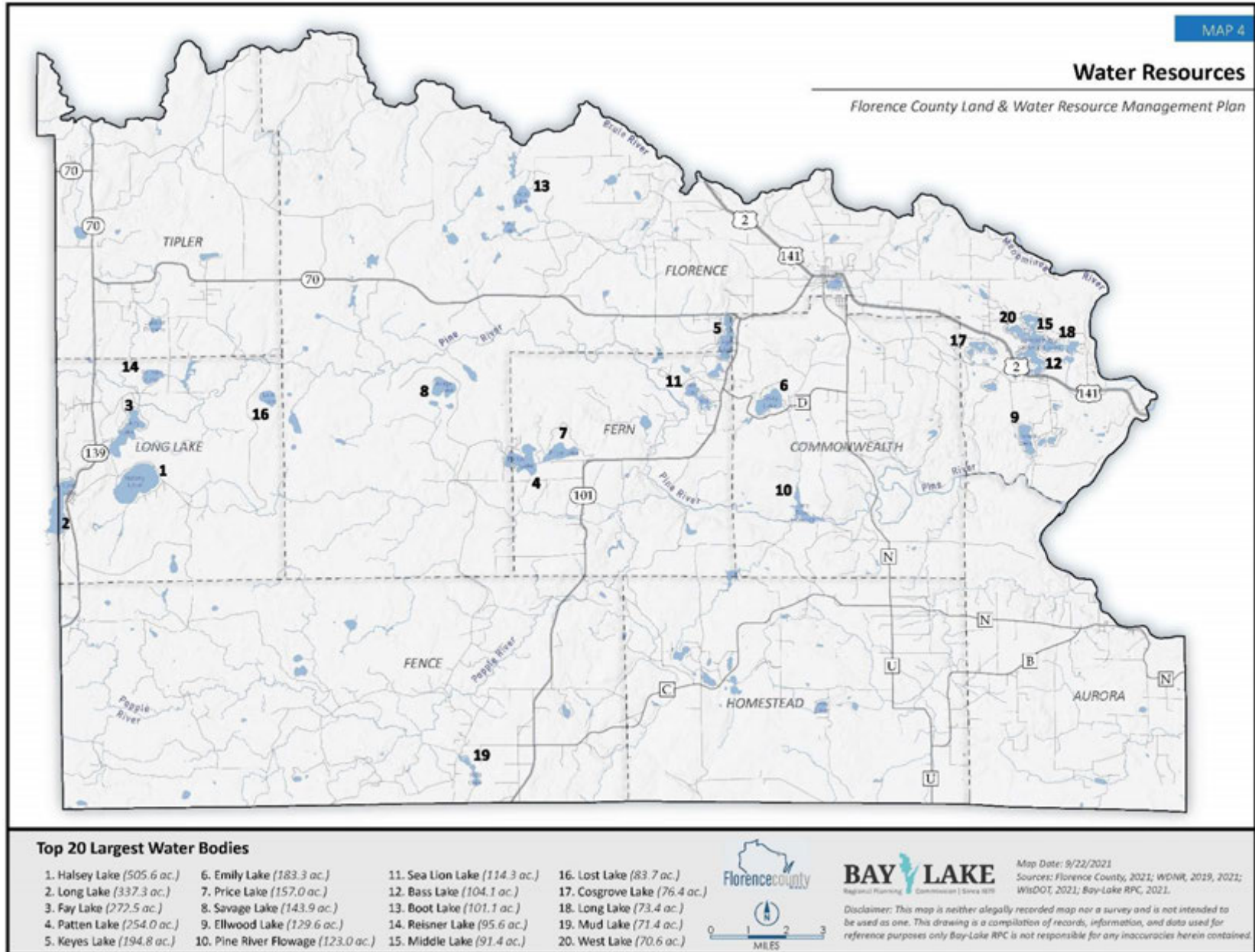
Source: WDNR.

Exhibit 4 above represents county lakes that have been identified in Wisconsin's Department of Natural Resources Impaired Waters Program. Standards rely on criteria for a wide range of pollutants such as: phosphorus, sediment, bacteria, PCBs, and mercury. Water is polluted or "impaired" if it does not support full use by humans, wildlife, fish, and other aquatic life, and it is shown that one or more of the pollutant criteria are not met. All impairments are from mercury pollution (likely from atmospheric deposition).

Exhibit 4. Impaired Waters



Map 4. Water Resources



Rivers and Streams

There are 165 miles of river that cover 1,637 acres in Florence County. Florence County's rivers coalesce in Wisconsin's central highlands, journey east on their way to the Menominee River, and eventually to Green Bay. Initially averaging six feet of drop per mile of river, they flow through deep glacial deposits until bedrock outcrops surface.

In many places along Florence County rivers and streams, massive, 2-billion-year-old, deep-seated bedrock stands out, forcing the water to race down and plummet over falls. The largest waterfall, Breakwater Falls, drops nearly 60 feet making it the 6th largest waterfall in Wisconsin and the state's only top-10 waterfalls in its eastern half.

Native, French, and other European trappers and traders were early users of the rivers of Florence County. These rivers were used to travel to and from the watersheds of Lake Superior, Lake Michigan, and the Mississippi River. Some currently existing portages around falls and between rivers, originate from early river use by travelers, trappers, traders, and loggers. LaSalle Falls is named after Charles LaSalle who ran a trading post at the confluence of the Pine and Popple rivers.

Land use is a product of the county's extensive forests and sustainable management. Logging is this county's primary form of agriculture. While rivers are no longer used for logging, the historical remnants of that era can be found along all of them.

Unique among Wisconsin counties, two of Florence County's major rivers, the Pine and Popple, were legislatively designated in 1965 as Wild Rivers and are being managed to allow visitors the opportunity to experience the wildness of a river. Today, Florence County rivers act as corridors for hunting, fishing, ATV use, snowmobiling, boating, swimming, hiking, kayaking, canoeing, driving tours, sightseeing, camping, foraging, bicycling, and birdwatching.



Little Quinnesec Falls 1870: Where the Michigamme River meets the Brule River to form the Menominee River, before the dam was built.

Picture courtesy of: John Roberts

Wild Rivers, The Pine and Popple

The corridors of the Pine and Popple rivers are central Florence County features that are state-designated Wild Rivers.

The Pine River is the largest of the two rivers. It travels 46 miles through the county (total length: 89 miles) with an average width of 102 feet, a 5-year average flow of 571 cubic-feet-per-second (cfs), and an historic peak flow of 4,850 cfs.

By comparison, the Popple River travels 30 miles across Florence County (total length: 62 miles) with an average width of 64 feet, the recent 5-year average flow of 177 cfs, and an historic peak flow of 1,640 cfs.

The rivers differ significantly in that the Popple River has no impoundments and is a class 2 or 3 trout stream for its entire length. The Pine River has one impoundment (at Pine Dam) with the maximum depth to its flowage of 38 feet and a second backup of water from the Ford Dam on the Menominee River. Above LaSalle Falls (above the Pine Dam) the river is a class 3 trout stream. Water below the Pine Dam is considered a warm-water fish habitat.

For the purposes of maintaining the rivers as wild, access to both rivers is limited. In Florence County, the Popple River has 10 designated access points, and the Pine River has 17. Camping is similarly restricted with five designated sites on the Pine River and one on the Popple River. Where both rivers travel through the National Forest land camping is less restricted and offers one 6-unit campground.

Both rivers have hard, slightly acid, light brown water. Waterfowl, furbearing animals, and other wildlife frequent both rivers. Challenging whitewater and pleasant quiet water paddling are available on both rivers.

Unique to the river corridor of these state-designated Wild Rivers, at least 150 feet on either side of the river have been managed as old-growth forest since 1965, thus providing about 1800 acres of old growth forest that adds to the potential for visitors to experience wildness as a river.

The lower Pine and Popple rivers both have several waterfalls. Of the named falls reachable by canoe/kayak or trail are four on the Popple River (Washburn Falls, Little Bull Falls, Big Bull Falls, and Jennings Falls) and four on the Pine River (Meyers Falls, Bull Falls, LaSalle Falls, and Breakwater Falls). The bedrock of LaSalle Falls and Breakwater Falls is some of the oldest rock in North America at 2-billion-years-old. The Niagara Fault runs through the bedrock between LaSalle and Breakwater Falls and provides evidence of an early-earth continental collision between the Superior continental plate (or Canadian Shield) and the younger Marshfield continental plate. In total, Florence County has close to 30 waterfalls.



An unnamed fall on the Popple at high water.

Photo courtesy of: John Roberts

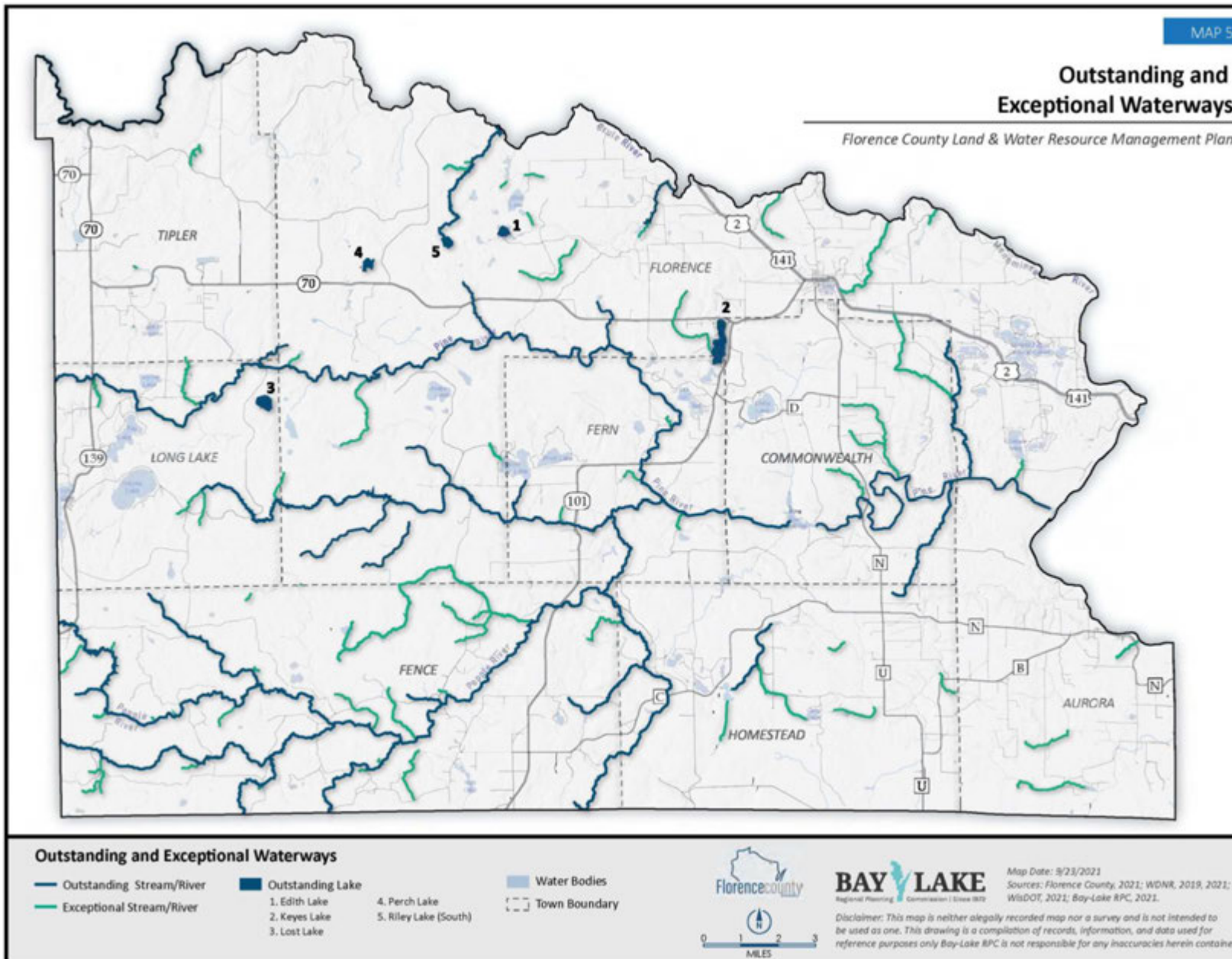
Brule River

The Brule River can be found in the Chequamegon-Nicolet National Forest and is the border between Wisconsin and Michigan's upper peninsula. It extends 53 miles, of which 20 miles are found in Northern Florence County. The Brule River joins with the Michigamme River to form the Menominee River. It has been classified as a Class I and Class II trout stream by the WDNR. According to Trout Unlimited the Brule River represents a "Conserve Stronghold" for trout species which indicates that this river has several desired attributes such as low habitat impairment, high climate resilience, and large habitat patches.

Outstanding and Exceptional Waterways

Other than the two Wild Rivers, Florence County also has a plethora of outstanding and exceptional waterways. These have been designated as such because they represent waterways which provide outstanding recreational opportunities, support valuable fisheries and wildlife habitat, have good water quality, and are not significantly impacted by human activity. Water bodies that are designated Outstanding and Exceptional Waterways are identified on Map 5.

Map 5. Outstanding and Exceptional Waterways



Floodplains

Floodplains are often viewed as valuable recreational and environmental resources in an urbanized area. These areas provide for stormwater retention, ground water recharge, and habitat for various kinds of wildlife unique to the water.

Development that is permitted to take place in these areas is susceptible to storm damages and can have an adverse effect on water quality and wildlife habitat. In addition, it can also result in increased development and maintenance costs such as: providing flood proofing, repairing damage associated with flooding and high water, increased flood insurance premiums, extensive site preparation, and repairing water related damage to roads, sewers, and water mains.

As a result, the state of Wisconsin requires that counties, cities and villages adopt shoreland/ floodplain zoning ordinances to address the problems associated with development in floodplain areas. Development in floodplain areas is strictly regulated and, in some instances, not permitted. For planning and regulatory purposes, the floodplain is normally defined as those areas, excluding the stream channel, that are subject to inundation by the 100-year recurrence interval flood event. This event has a one percent chance of occurring in any given year. Because of this chance of flooding, development on the floodplain should be discouraged and the development of park and open space in these areas is encouraged.

The authority to enact and enforce these types of zoning provisions in counties is set forth in Chapter 59.69 of the Wisconsin Statutes and Wisconsin Administrative Code NR 116. This same authority is also vested to cities and villages in Chapter 62.23 of the Wisconsin Statutes.

The floodplains have been identified within Florence County according to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps. There are approximately 6,264 acres in the 100-year floodplain and 64 acres in the 500-year floodplain. Most are located along four major waterways including the Brule River, Menominee River, Pine River, and Popple River. Floodplains are also located along several of the creeks in the eastern portion of the county. The lakes in eastern Florence County that have floodplains include Spread Eagle Chain of Lakes, Lake Emily, Patten Lake, Keyes Lake, Boot Lake, Fisher Lake, Lake Ellwood, and several smaller lakes and ponds. Most of the floodplains appear to be in the eastern portion of Florence County since the Federal Emergency Management Agency (FEMA) does not delineate floodplains within national forests (Chequamegon-Nicolet National Forest) which cover the western portion of the county. There are a total of 7,497 acres of floodplains in the county.

Wetlands

The State of Wisconsin defines wetlands as areas where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which have soils indicative of wet conditions. Wetlands are important for groundwater recharge and provide habitat for a variety of plants and animals. They also provide natural open space, help maintain both surface and groundwater quality, and provide water storage areas for periods of flooding and high water. Whenever possible, wetlands should be left unaltered. Filling or draining of wetlands is also quite costly, destroys the productive capacity of the ecosystem and can adversely affect surface water quality and drainage.

In 1972, Congress passed the Federal Water Pollution Control Act Amendments, also known as the Clean Water Act, “to restore and maintain the chemical, physical, and biological integrity” of the nation’s waters. The Act defined “navigable waters” as “waters of the United States.” Section 404 of the Clean Water Act established a permit program regarding discharges of dredged and filled material. The basic premise of the program is that no discharge or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation’s waters would be significantly

degraded. Activities that are regulated under this program include fills for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry.

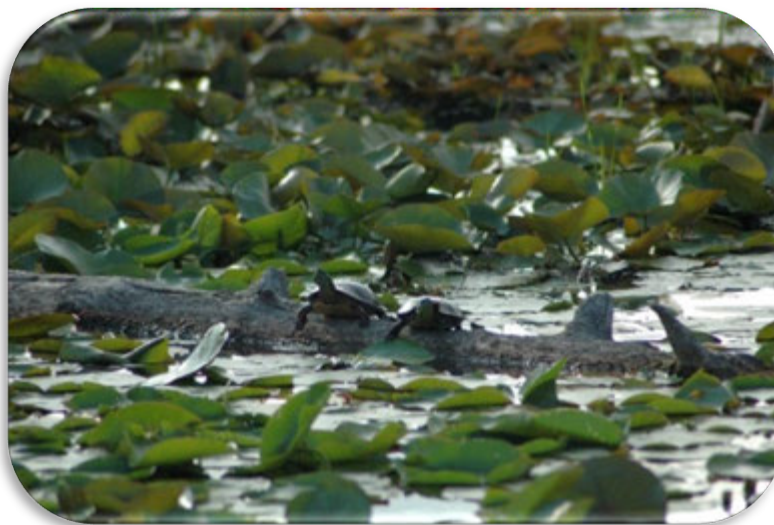
When a permit is applied for in conjunction with any of the above activities, the applicant must show that they have:

1. Taken steps to avoid wetland impacts where practicable,
2. Minimized potential impacts to wetlands, and
3. Provided compensation for any remaining unavoidable impacts through activities to restore or create wetlands. The permit process is often accompanied by a field review of the site.

Wisconsin Administrative Code NR 115 and NR 117 fall under the jurisdiction of the Wisconsin Department of Natural Resources and mandates that shoreland wetlands be protected in both the rural and urban areas of the state. In unincorporated areas, NR 115 provides the legislation to protect shoreland-wetlands. Shoreland and wetlands zoning ordinances shall include all shorelands within the jurisdiction of the county ordinance which are designated as wetlands on the most recent version of the Wisconsin Wetland Inventory as depicted on the Department of Natural Resources Surface Water Data Viewer. The ordinance also allows for those wetlands that are unidentified on the viewer to also be regulated based on a department determination. The shoreland-wetland district regulates the uses allowed, which is different than a department permit which is based on the discharge of fill material.

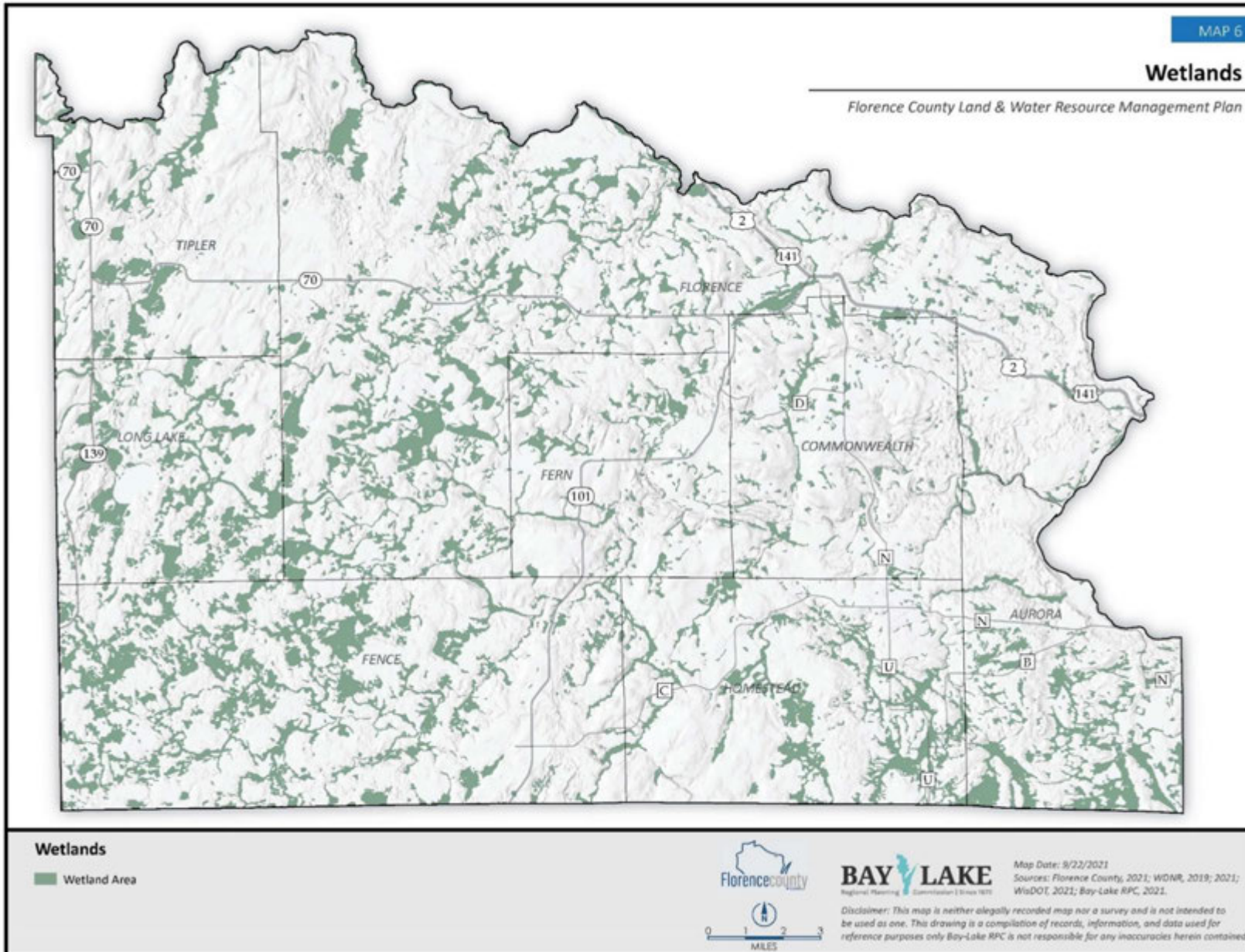
To protect wetlands in the incorporated areas, NR 117 was enacted in 1983 and requires that all shoreland wetlands of five acres or more be protected. As a result of NR 115 and NR 117, many of the wetlands that remain today are protected from future development.

Within Florence County, there are approximately 53,616 acres of wetlands as identified by the Wisconsin Department of Natural Resources. The wetlands are primarily found adjacent to the major surface water features within the county. Most of the wetlands in the county are classified as forested wetlands by the WDNR. The remaining wetlands in Florence County have some forest cover or forest cover mixed with shrubs or emergents. See Map 6 for locations of wetlands found in Florence County.



Painted Turtles (*Chrysemys picta*)

Map 6. Wetlands



Other Significant Resources

Keyes Peak Ski Hill, located three miles south of the community of Florence, offers various winter recreation activities such as downhill and cross-country skiing. The site also provides a spectacular panoramic view from the area's highest peak, particularly during the autumn months.

There are 132 miles of state funded ATV trails in the county; 61 miles of summer trails and 71 miles of winter trails (see Map 10). Additionally, there are 138 miles of DNR-approved, public, marked trails known as the Blue Ox Trails.

National, State & County Scientific and Natural Areas

State Scientific and Natural Areas are designated by the WDNR Bureau of Endangered Resources and the Scientific Areas Preservation Council as tracts of land in a natural or near natural state, which are managed to serve several purposes including scientific research, teaching of resource management, and preservation of rare native plants and ecological communities. Currently the WDNR has designated 13 State Natural Areas in Florence County. There are also three significant natural areas in Florence County which are managed at a national and local level. For greater details on these significant resources visit, the WI DNR website for State Natural Areas, the Chequamegon-Nicolet Forest website, or the Florence County Forestry and Parks Department.

National, State, and County Natural Areas

- **Brule River Cliffs.** Within Chequamegon-Nicolet National Forest, Blue Jay Lane, Long Lake, 318 acres.
- **Fox Maple Woods.** Within Chequamegon-Nicolet National Forest, WI-70, Florence, 41 acres.
- **Grandma Lake Wetlands.** Within Chequamegon-Nicolet National Forest, Long Lake, 475 acres.
- **Haley Creek Swamp.** Florence County, Creek Rd, Florence, 460 acres.
- **Hedmark Pines.** Within Chequamegon-Nicolet National Forest, Morgan Lake Rd, Armstrong Creek, 805 acres.
- **Lauterman Lake.** Within Chequamegon-Nicolet National Forest, Forest Rd 2154, Long Lake, 1,109 acres.
- **Kieper Creek.** Within Chequamegon-Nicolet National Forest, Forest Rd 2154, Florence, 871 acres
- **Popple River Corridor.** Within Chequamegon-Nicolet National Forest, Morgan Lake Rd, Armstrong Creek, 235 acres.
- **Savage Lake.** Within the Pine Popple Wild Rivers, Florence, 1,882 acres.
- **Spread Eagle Barrens.** Florence County, Niagara, 7,155 acres
- **Wheeler Lake.** Within Chequamegon-Nicolet National Forest, Florence, 769 acres.
- **Wisconsin Slough.** Within Chequamegon-Nicolet National Forest, Long Lake, 113 acres.
- **Woods Creek Cedars.** Within Chequamegon-Nicolet National Forest, Long Lake, 420 acres.
- **Chequamegon-Nicolet National Forest.** Managed by the Federal government, the Chequamegon-Nicolet National Forest covers 661,000 acres in northeast Wisconsin with

approximately 84,000 acres located in Florence County.

- **Florence County Forest.** The Florence County Forest covers an area of more than 36,000 acres with the largest portion located in the Town of Homestead.
- **Whisker Lake Wilderness Area.** Located in the northwestern portion of Florence County in the Town of Florence, the Whisker Lake Wilderness is the second largest national forest wilderness area in Wisconsin covering approximately 7,765 acres (National Forest Rd 2150).



Menominee River

Demographics

Population and housing information can be an important component in predicating the demands on the natural resources of a county.

Population Trends

For the past century, Florence County’s population has gone through fluctuations of slow growths and declines. Florence County’s population growth has slowed or declined over the past two decades. The projected growth for Florence County, per the Wisconsin Department of Administration (WDOA), identifies a slight growth from 2020 to 2035, with a sharp decline anticipated from 2035 to 2040.

Population Projections

Wisconsin DOA projections indicate that the county’s population in the next 15 years is expected to slightly increase to 4,455 people by 2035 and then start a slight decline to 4,030 people by 2040, see Exhibit 5. These population figures do not reflect the seasonal residents. These residents are an important factor to consider since they make up a significant portion of the recreational facility users. The permanent population resides primarily in the eastern half of the county within the towns of Aurora, Commonwealth, and Florence. Areas of population concentration include the unincorporated communities of Florence, Aurora, Commonwealth, Spread Eagle, Long Lake, Tipler, Fern, and Fence.

Exhibit 5. Population

Population:	Historic				Est. 2020	Projections			% Change 2020 - 2040
	1980	1990	2000	2010		2030	2035	2040	
Aurora	1,050	1,036	1,186	1,036	1,057	1,055	1,035	965	-8.70%
Commonwealth	369	407	419	399	409	435	440	415	1.47%
Fence	192	222	231	192	190	195	190	175	-7.89%
Fern	111	112	153	159	160	195	200	195	21.88%
Florence	1,809	2,097	2,319	2,002	2,003	1,950	1,895	1,735	-13.38%
Homestead	272	337	378	336	342	345	340	315	-7.89%
Long Lake	199	205	197	157	159	150	140	125	-21.38%
Tipler	170	174	205	146	147	130	120	105	-28.57%
Total	4,172	4,590	5,088	4,427	4,467	4,445	4,455	4,030	-9.78%
Aurora	1,050	1,036	1,186	1,036	1,057	1,055	1,035	965	-8.70%

Source: US Census, WDOA 2020 Estimates and 2030 - 2040 Projections, and Bay-Lake RPC 2021.

Housing Trends

From 2010 to 2019, Florence County gained 45 housing units for a total of 4,825 units. Some communities gained housing units while other declined. This trend could be correlated to the slowing growth of Florence County, and potentially from a decrease in seasonal homeowners. Many of the housing units are in the towns of Florence, Aurora, and Fence.

Housing Units

In 2019, many housing units in Florence County were owner occupied while 53% of total housing units were seasonal, recreational, or occasional use. These totals indicate that the county serves as a location for vacation and second homes for many of the area's residents. A concentration of recreational housing units can be found on local water bodies including the Spread-Eagle Chain of Lakes and Keyes Lake. Exhibit 6 shows the different types of housing units. Map 7 shows the distribution of Occupied and Seasonal housing units.

Exhibit 6. Housing Occupancy

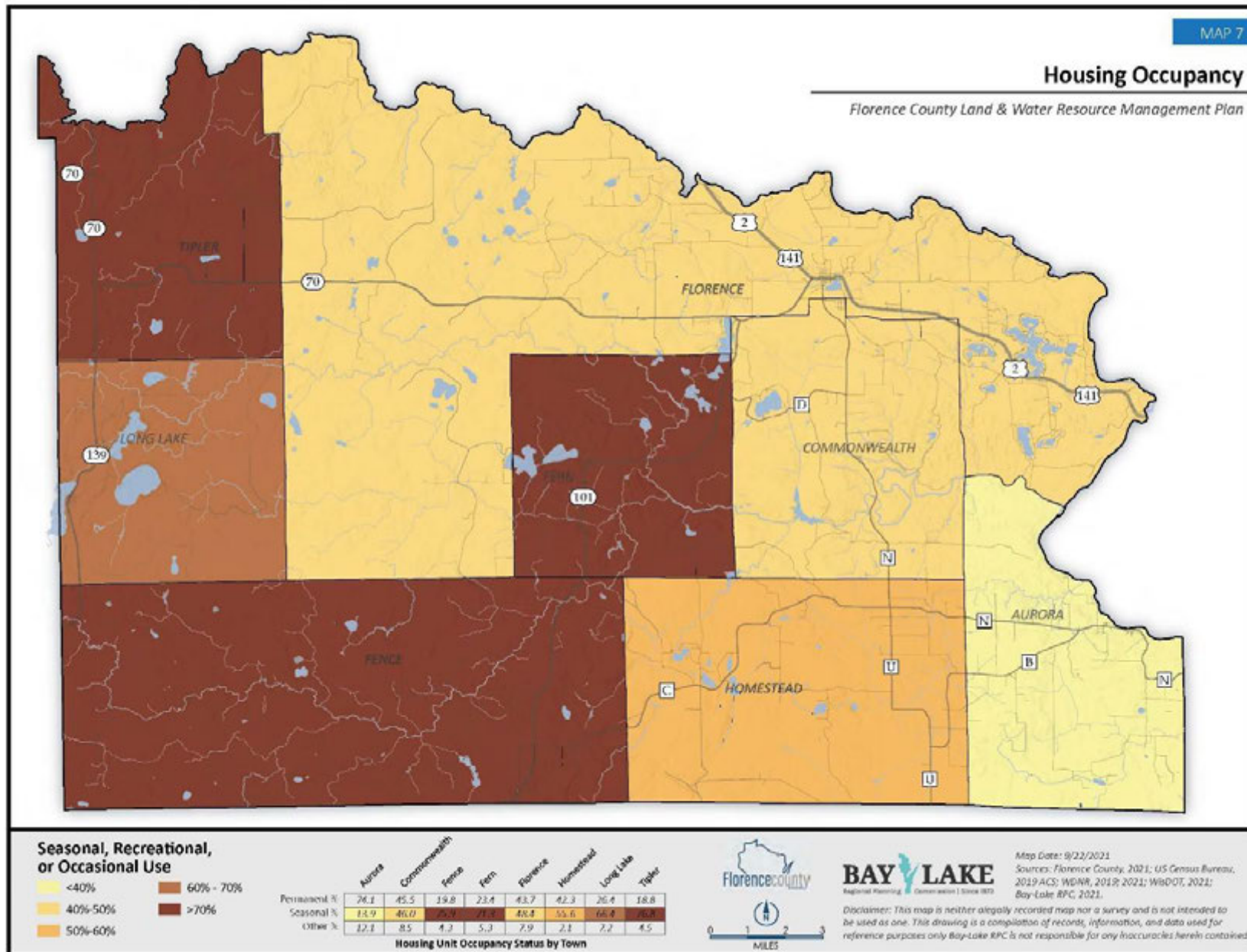
Occupancy Type	Total	Permanent Owner Occupied	Vacant Housing Units	Other Vacant	Seasonal, Recreational, Occasional	Seasonal, Recreational, Occasional (%)
Aurora	563	417	146	68	78	14%
Commonwealth	400	182	218	28	190	48%
Fence	490	97	393	21	372	76%
Fern	359	84	275	19	256	71%
Florence	1,923	840	1,083	152	931	48%
Homestead	426	180	246	9	237	56%
Long Lake	307	81	226	17	209	68%
Tipler	357	67	290	16	274	77%
Florence County	4,825	1,948	2,877	330	2,547	53%

Source: US ACS 2019 5-year estimate, and Bay-Lake RPC 2021.



Spread Eagle Barrens State Natural Area

Map 7. Housing Occupancy – Seasonal, Recreational, or Occasional Use



Land Use

Geographic Description

Elevation differential within the county varies from a maximum of 1,526 feet above sea level at Long Lake to 1,038 feet above sea level at the Kingsford Flowage on the Menominee River. Major drainage systems within the county are the Pine, Popple, and Brule rivers, all of which are in the Menominee River watershed. The surface waters flow principally to the north and east over Florence County. The general character of Florence County's soils is largely the result of various glacial depositional processes. An irregular north-south line runs approximately through the center of the county dividing it between predominantly loamy soils in the west and sandy soils in the east.

Land Ownership

A large percentage of property within Florence County is designated as "Public Land." The Chequamegon-Nicolet National Forest includes 84,952 acres located on the western edge of the county. Other "Public Land" include the Florence County Forest which is 35,660 acres in size. Private forestlands comprise a large percentage of forestland in the county. As of January 2015, there were approximately 77,106 acres enrolled in the Forest Crop Law (FCL) and Managed Forest Land (MFL) programs in Florence County. Out of the 77,106 acres, 49,618 acres are open to the public for hunting and recreation.

There are several significant natural features that are designated as State Natural Areas, Wildlife and Fishery Areas, Significant Coastal Wetlands, or Land Legacy Places.

Three sites in the county that have been determined to have national historical significance. They include the Fay Outlet Site in the Town of Long Lake, the Fern School in the Town of Fern, and the Florence County Courthouse and Jail in the Town of Florence. See Map 8 for land ownership in Florence County.

Land Use Inventory

The US Department of Agriculture and Agriculture Counts 2020 Cropland Data Layer was utilized to analyze different land uses in Florence County. As shown in Exhibit 7, of the 498 square miles in Florence County, approximately 3.4% is cropland (10,498 acres), 2.85% is developed and open space (9,057 acres), and forestlands are an estimated 90.37% of the land (287,719 acres). See Map 9 for extent of the county's land uses.

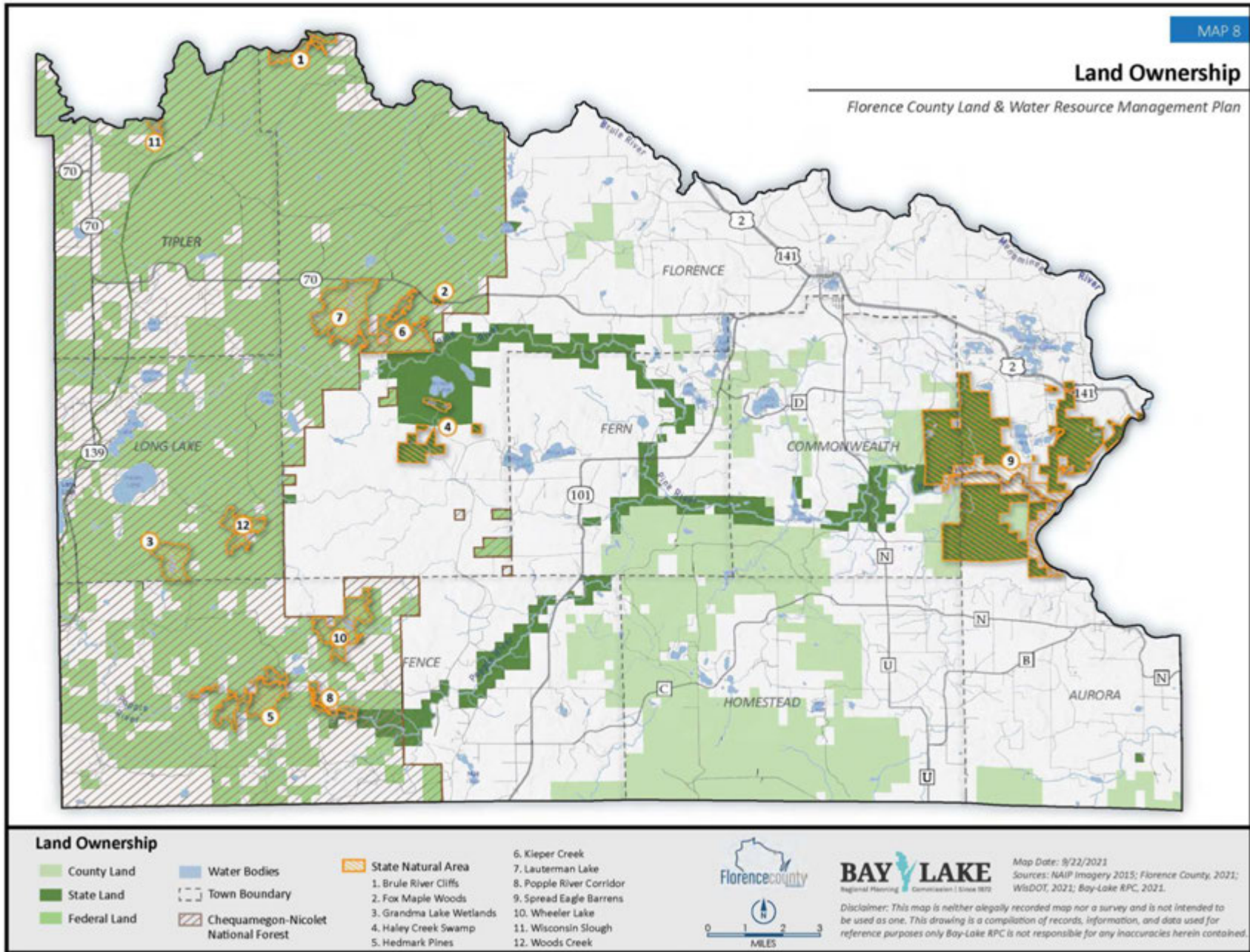
Exhibit 7. Land Use

Land use type	Total acres	Total Land (%)
Developed/Open space	9,057.6	2.85%
Forest	287,719.5	90.37%
Cropland*	10,498.5	3.41%
Open Water	7,010.8	2.20%

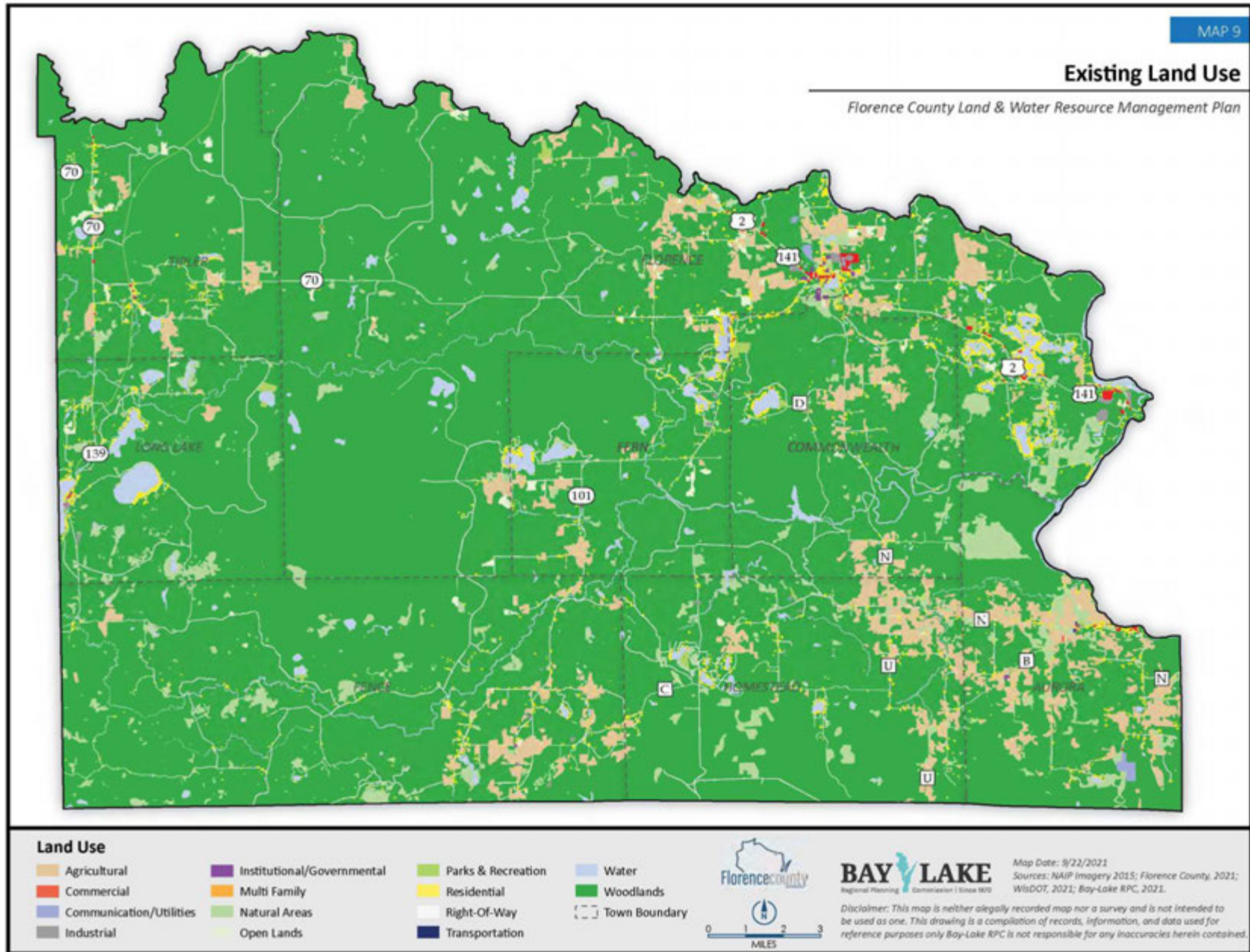
Source: Source: USDA and Agriculture Counts 2020 Cropland Data Layer.

* Note: Cropland does not include land used for agriculture purposes other than crop fields.

Map 8. Land Ownership



Map 9. Existing Land Use



Agriculture

The amount of land in farms has increased from about 13,392 acres in 2012 to 18,609 acres in 2017, according to the USDA 2012 and 2017 Census of Agriculture Florence County factsheet. From 2012 to 2017, the number of full-time farms increased from 90 to 101. Most cropland acres are pasture or perennial hay crops and are used by beef and horse operations for grazing.

The total number of cattle farms has increased in Florence County from 31 farms with 794 total cattle in 2012 to 45 farms with 1,464 total cattle in 2017. Only one dairy farm was included in the total 45 cattle farms, and since 2017 it has shut down. Sheep farms have increased from three farms in 2012 to 11 farms with a total of 146 sheep in 2017. Of the animal operation farms in the county, approximately 75% of them are beef and horse operations. Overall, from 2012 to 2017, there has been an increase in farming in Florence County. When new data from the Census of Agriculture is available it can be used to determine if farming has continued to grow in Florence County since 2017.

Soil Erosion and Sedimentation Information

Statistics about land in farming in Florence County was gathered using 2017 factsheets created by USDA and Agriculture Counts. Croplands are concentrated near Aurora, Fence, Florence, and Homestead in Florence County with scattered cropland elsewhere. Concern regarding cropland soil erosion is generally low in the county because of the limited amount of cropland and low erosion rates. Only a small percentage of total ag land receives annual tillage, the majority of agriculture acres in Florence County maintain perennial-based pasture and hay fields used by beef and horse operation. The USDA, (NRCS), *Web Soil Survey* was used to analyze potential soils with soil erosion concerns in Florence County.

The data gathered from the *Web Soil Survey* indicates that 56.8% of the soils in the county are at or below the tolerable soil erosion rate of three tons per acre. The most common “T” rate in the county is three tons per acre per year, at 39.3% of the county. The second most common “T” rate is five tons per acre per year, at 35.3% of the county. The remaining soil erosion rates are 2.6% at 4 tons per acre and the remaining 17.5% is at 1 to 2 tons per acre.

The *1999 Cropland Transect Survey* report indicates that 50 percent of the croplands are on slopes of 0-2 percent, 29 percent are on slopes of 3-4 percent, 19 percent on slopes of 5-7 percent, one percent on slopes of 8-10 percent, and one percent on slopes greater than 10 percent. This data, and limited amount of annual tillage in the county supports the finding that there is little concern for soil erosion on cropland in Florence County.

Nonpoint Source Pollution

Due to the significant amount of forest cover in Florence County, nonpoint pollution has not been considered a significant problem for much of the county. Identified nonpoint source pollution includes runoff from limited number of agricultural fields, improper handling of agricultural animal wastes, excessive nutrients from residential lawn fertilization, salt from winter street application, and some animalwaste from pets. These nonpoint sources of pollution effect both surface waters and groundwater within the county.

Soil and Water Issues

Lake development is a continuing issue in the county. Many lakes are surrounded by residential development which often results in excessive nutrient and pesticide loading to the surface waters. Problem sources include malfunctioning septic systems, deteriorating erosion control measures, increased lake recreation, and poor lawn and garden practices. Some urban runoff containing salt from winter road application is also present.

Shoreline erosion is a big issue on many of Florence County's lakes. The main source of erosion comes from wave activity caused by boaters using the lake for recreation. Although this isn't the only cause for shoreline erosion, stormwater, lack of a 35-foot vegetative buffer, ice pushes, and other issues have also increased shoreline erosion in Florence County.

Lake development, general lake recreation, ATV/UTV trails (Map 10), and other processes have increased the spread of aquatic and terrestrial invasive species and pests. Invasive species and pest management represents money and time that could be spent on other duties or not at all if invasive species and pests were prevented in the first place. According to the WI DNR \$8.4 million was spent on invasive species management alone in 2015.

Not only do invasive species and pests pose a financial risk, but they also degrade and change the landscape to the detriment of the animals, plants, humans, and other species who call Florence County home. Terrestrial invasive species like garlic mustard chemically alter the soil composition so other plants are unable to grow. Pests such as emerald ash borer have been detected in 2020 in Florence County and represents a financial and ecosystem health risk to the county's ash tree population. Terrestrial invasive species can also have a major impact on water quality and health by killing off native riparian plant species which stabilize banks, reduce nutrient runoff, and provide food and habitat for animals. Aquatic invasive species like the rusty crayfish outcompete native crayfish because of their aggressive nature which allows them to reproduce more successfully and outcompete native species for resources. These invasive species are a threat to natural resources, ecosystems, and the humans who use these resources.

- **Top three Aquatic Invasive Species:**
 - Eurasian watermilfoil (*Myriophyllum spicatum*)
 - Zebra mussel (*Dreissena polymorpha*)
 - Rusty crayfish (*Orconectes rusticus*)

- **Top three Terrestrial Invasive Species:**
 - Wild Parsnip (*Pastinaca sativa* L.)
 - Emerald ash borer (*Agrilus planipennis*) – first documented in the county in 2020.
 - European marsh thistle (*Cirsium palustre*).

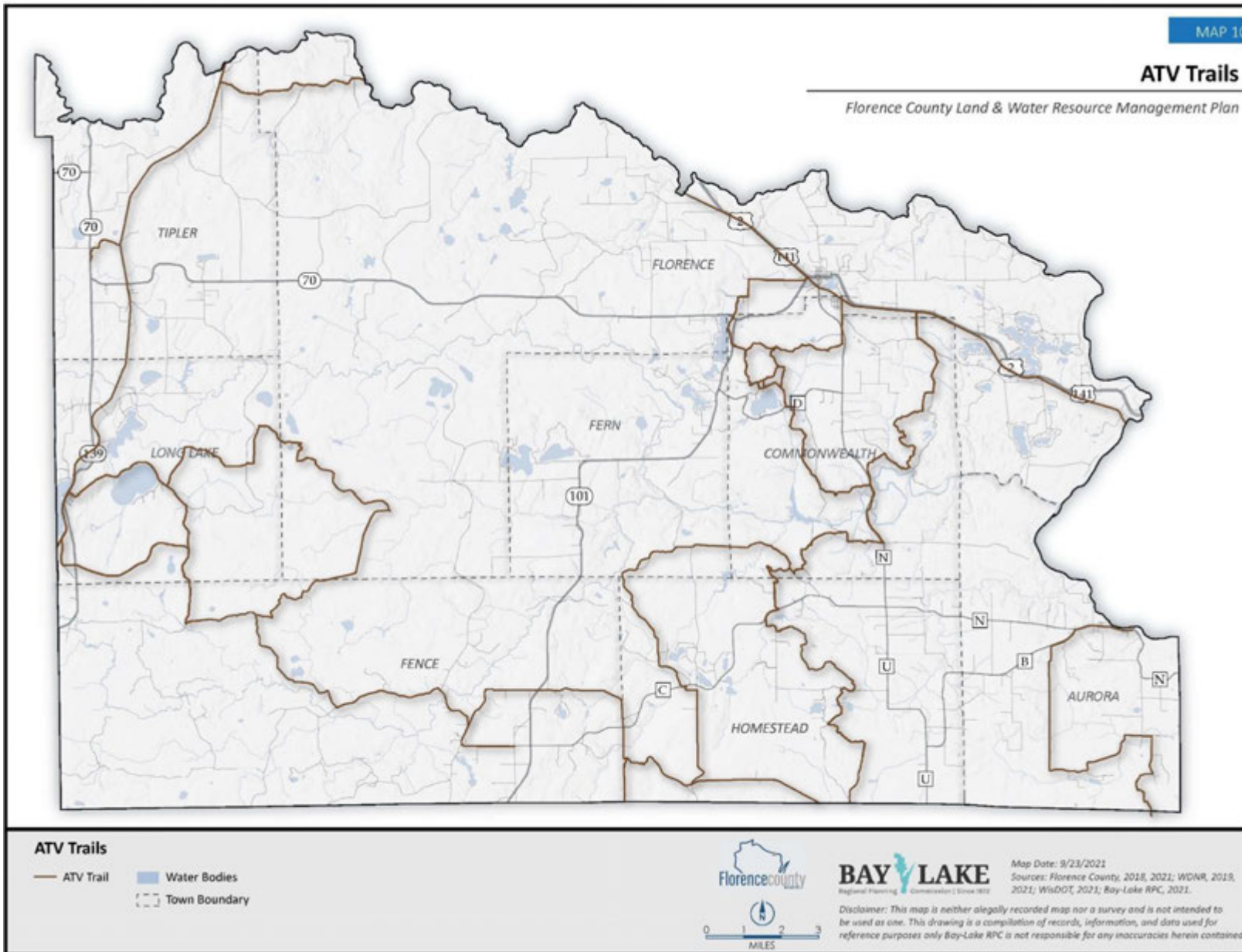
Agricultural land in Florence County continues to be a relatively minor land use. Though agricultural production is not nearly as prevalent as forestry; farm tenure has remained relatively stable with most farms operated by individual families. Even though the agricultural industry is relatively small compared to other parts of the state, there are still some soil erosion concerns and potential water pollution problems to address.

To identify priority farms, the Land Conservation Department will work with the County Zoning and Property Listing as well as the Farm Service Agency, University of Wisconsin Extension, Natural Resource Conservation Service and the Department of Natural Resources to identify critical farm sites using the criteria listed below:

- Farms subject to a DNR notice of intent under s. 281.20, Wisconsin Statutes, or notice of discharge under ch. 283, Stats.
- Farms located in watersheds draining to waters that DNR has listed pursuant to 33 USC 1313. This is also known as the "303(d) list of impaired waters".
- Farms that have large numbers of livestock, or significant problems with manure management.
- Farms making clearly excessive nutrient applications. Farms with clearly excessive rates of cropland erosion. Farm's proximity to surface water.
- Public complaint.

Inventory and evaluations will be based on: Farm Conservation Plans; Status Reviews; Record of installed Best Management Practices (BMPs); Farmland Preservation Program compliance and spot checks; and Highly Erodible Land (HEL). Operations found to be out of compliance will be referred to the Department of Natural Resources for further action.

Map 10. ATV Trails



Chapter 3. Natural Resources Standards

Introduction

Performance standards and prohibitions are an important concept in county Land and Water Resource Management plans. Through Wisconsin Act 27, the Legislature amended the state statutes to allow county land conservation committees to develop and adopt standards and specifications for management practices to control erosion, sedimentation, and nonpoint source water pollution.

Performance Standards and Regulations

Wisconsin's rules to control polluted runoff from farms, as well as other non-agricultural sources, went into effect October 1, 2002, through NR 151. These standards help protect Wisconsin's lakes, streams, and groundwater.

WDNR Administrative Rule NR 151 establishes runoff pollution performance standards for non-agricultural facilities and transportation facilities, and performance standards and prohibitions for agricultural facilities and practices designed to achieve water quality standards as required by law.

Florence County has supported additional protection through adoption of its Shoreland Zoning Ordinance.

Florence County's Shoreland Zoning Ordinance purpose is to:

- Further the maintenance of safe and healthful conditions and prevent and control water pollution.
- Protect spawning grounds, fish, and aquatic life.
- Control building sites, placement of structures and land uses.
- Preserve and restore shoreland vegetation and natural scenic beauty.

Agriculture Performance Standards and Prohibitions

All cropland and livestock operations in Wisconsin, regardless of size, must abide by the agriculture performance standards and manure management prohibitions.

Conservation practices to meet the performance standards identified in ATCP 50:

- Soil Erosion Control: erosion must not exceed tolerable rates
- Nutrient Management Plan:
 - Build, modify or abandon manure storage facilities to accepted standards.
 - Divert clean runoff away from livestock and manure storage areas located near streams, rivers, lakes, or areas susceptible to groundwater contamination.
 - Apply manure and other fertilizers according to an approved nutrient management plan.
- Tillage Setbacks: at minimum a 5-foot setback is required, unless greater setbacks are required because of factors including bank material, height, slope, soil type, and other factors that affect *bank integrity*.

Manure Management Prohibitions:

- No overflow of manure storage facilities.
- No unconfined manure piles in water quality management area.
- No direct runoff from feedlots or stored manure in state waters.
- No unlimited livestock access to waters of the state in locations where high concentrations of animals prevent the maintenance of adequate or self-sustaining vegetative cover.

NR 151 also sets urban performance standards to control construction site erosion, manage runoff from streets and roads, and manage fertilizer use on large turf areas.

Enforcement Process

Florence County assists any landowners who voluntarily wants to meet state performance standards with technical and financial information. Cost-share funding may also be available to the extent possible.

Any landowner that is out of compliance with state performance standards and refuses technical and financial assistance from the Florence County Land Conservation Department will be referred to the Wisconsin Department of Natural Resource for enforcement.

The Florence County Board of Adjustment shall have the power to hear and decide landowner petitions for county variances and appeals and shall follow the process as stated in Chapter 10, Subchapter 2 of the Shoreland Zoning Ordinance.

Inventory of Existing Standards and Prohibitions

Water Quality Standards

In addition to Florence County's Shoreland Zoning Ordinance, the Wisconsin Department of Natural Resources water quality standards are the foundation of the water quality-based control program mandated by the federal Clean Water Act. Water quality standards for surface waters are described in Chapters NR 102, 104 and 105 of the Wisconsin Administrative Code.

Forest Management Standards

Florence County is dominated by forested lands. Many of the private and public lands are certified under Sustainable Forestry Initiative (SFI) and Forest Stewardship Council (FSC) standards to ensure proper sustainable forest management is taking place. The Florence County Forest lands and Wisconsin DNR forest land management follow the WDNR Best Management Practices for water quality and invasive species control.

Soil Erosion Standards

Erosion control standards in Florence County are typically achieved through a voluntary educational approach. One-on-one contacts with landowners and operators who request technical assistance is commonly used to promote soil conservation. Construction site erosion is regulated through the state mandated Uniform Dwelling Code (SPS 321.125). Mining operations are permitted and monitored through the County's Non-Metallic and the Metallic Mining Reclamation Ordinances.

The *Northern Wisconsin Cropland Study*, conducted in 1999, surveyed cropland in Florence County.

Cropland soil erosion was found to be negligible.

Soil and Water Conservation Standards

The Wisconsin Farmland Preservation Program helps farmers and local governments preserve farmland, protect soil, and water, and minimize land use conflicts. Through participation in the program:

- Counties develop farmland preservation plans.
- Local governments can develop farmland preservation zoning districts.
- Landowners and local governments together can form Agricultural Enterprise Areas.
- Landowners meet soil and water conservation standards to become eligible to claim an income tax credit.

The *Florence County Farmland Preservation Plan* was created in 2016 and outlines the county's plan to participate in the Wisconsin Farmland Preservation Program and establishes a policy for continued support of farmland preservation, agricultural development, and a healthy agricultural economy into the future.

Soil conservation practices in agriculture enhance the soil and water resources found in Florence County by decreasing soil and nutrient run-off into bodies of water and increasing the organic matter in the soil. Implementation of these practices is voluntary, and information on agricultural conservation practices is available through UW-Extension, and the NRCS.

Florence County and partner agencies will provide ongoing farm conservation and nutrient management planning services for area producers and those participating in state and federal preservation programs. Available technical services and cost share will be offered for implementation of conservation practices such as conservation tillage, rotational grazing, or others identified in ATCP 50. Conservation representatives will conduct site visits annually to at least 25 percent of those enrolled in farmland preservation programs.

Standards Development

Development or use of performance standards and the ordinances to implement those standards will be used to reach the following plan goals:

- Goal 1: Promote, protect, and enhance shorelands, wetlands, and surface water resources.
- Goal 2: Protect land and water ecosystems from invasive species.
- Goal 3: Increase public participation.
- Goal 4: Promote healthy forests to improve soil and water quality.
- Goal 5: Protect enhance and restore soil resources.
- Goal 6: Protect ground water quality.

Chapter 4. 2016 -2021 Work Plan Accomplishments

This chapter provides a summary of the Work Plan goals and how they were accomplished from 2016-2021.

2016-2021 Work Plan Activities

- **Goal #1: Promote healthy shorelands that protect and enhance Florence County surface water resources.**
 - Continued to monitor work site near shorelines and wetlands for erosion control standards compliance.
 - Coordinated with several organizations on the education of two classrooms on the importance of vegetative buffers and prepared them for the Envirothon competition.
- **Goal #2: Protect biodiversity of native land and water ecosystems.**
 - Monitored up to seven boat landings and 30 lakes and rivers throughout Florence County for AIS.
 - Provided yearly education on AIS to 5,000 people at the boat landings.
 - Coordinated projects such as culvert replacements, shoreline restoration, and critical area plantings which improved erosion, improved resiliency, restored habitat, improved water quality, and removed barriers for fish.
 - Coordinated with WRISC in the treatment of invasive species.
 - Mapped land and aquatic invasive species using a UAV purchased in 2017 and a ROV.
 - Reviewed and inspected 13 nonmetallic and frac sand mining sites.
- **Goal #3: Collaborate with multiple agencies and departments to evaluate, protect, and enhance local soil and water resources.**
 - Collaborated with several organizations in creation of workshops and educational programs which enhanced the public's understanding of several natural resource topics and issues.
 - Collaborated with several organizations in the implementation of projects enhancing soil and water resources.
- **Goal #4: Improve, enhance, and promote forest land management to protect wildlife habitat and water quality, while controlling sedimentation and erosion.**
 - Supported the Annual Sustainable Forestry Conference.
 - Supported the replanting 21,000 trees on private and public land annually.
 - Promoted education on forestry best management practices (BMPs).
- **Goal #5: Promote and support sustainability of agricultural and forest lands along with other significant green spaces.**
 - Coordinated with several organizations on the creation of educational workshops and promotion of programs which helped members of the public reduce crop damages and provided temporary fencing.

- Continued field surveys and provided information to landowners on programs provided by other organizations.
- **Goal #6: Minimize destruction, degradation, and fragmentation of wildlife habitat, providing food, water, cover and space for native species to thrive.**
 - Continued to support the Wildlife Abatement Program.
 - Continued to support wetland buffer setbacks.
 - Continuing to seek funding for the Crossroads Trail project, a wetland restoration project that creates a multi-recreational trail system.
- **Goal #7: Provide and maintain appropriately managed universal public access of the pristine natural areas of Florence County.**
 - Maintained access to the pristine natural areas of Florence County by replacing culverts and reducing road-side erosion.



Top Left: LePage Creek culvert replacement

Right: Shoreline Restoration, Lake Ellwood

Bottom Left: Woods Creek final culvert

Chapter 5. Identification and Prioritization of Issues and Problems

Public and Professional Input

Public input for this report was derived from the CAC and TAC meetings, and the Public Hearing.

Public Meetings

On October 20, 2021, the Florence County Land Conservation Committee invited natural resource organizations, public officials, and interested parties to offer input in the process of updating the *Florence County Land and Water Resource Management Plan*. A Citizen Advisory Committee was formed that developed a list of goals and objectives that were brought forward to the Technical Workgroup for approval. The members of both committees provided feedback on draft versions of the plan which was then incorporated into the plan.

Technical Workgroup and LCC Members to address priorities

The *LWRM Plan* Technical Workgroup met on November 9, 2021, to review the *2011 Land & Water Resources Management Plan*, the CAC goals and objectives, and the draft version of the *2022 Land & Water Resource Management Plan*. The Florence County Land Conservation Committee (LCC) also reviewed the drafted plan.

The LCC held a Public Hearing on December 6, 2021, at the Florence County Courthouse, large conference room to solicit comments on the plan. The notice of the hearing and minutes are included. (Appendix C)

Issue Prioritization Based on Input

Based upon inventories, citizen input, and personal knowledge of resource conditions in the county, the goals were prioritized 1 to 6, with “1” being the top priority.

Goal Ranking:

1. Promote, protect, and enhance shorelands, wetlands, and surface water resources.
2. Protect land and water ecosystems from invasive species.
3. Increase Public Participation.
4. Promote healthy forests to improve soil and water quality.
5. Protect, enhance, and restore soil resources.
6. Protect groundwater quality.

Chapter 6. Goals and Objectives

The goals established in Chapter 4 of this plan will be implemented over a five-year planning period beginning in 2022 and running through the year 2026. They represent priorities for land and water resource management for Florence County and are listed by greatest priority first. The objectives provide more detailed and readily measurable steps toward reaching each goal.

- **Goal #1: Promote, protect, and enhance shorelands, wetlands, and surface water resources.**

Objectives:

- Administer cost-share program.
- Protect and restore shoreland buffers.
- Identify, inventory, and prioritize surface water resources for potential restoration and protection areas.
- Promote reduction of wave energy on the shorelines.
- Encourage conservation and restoration of wetland function.
- Continue a watershed approach to protect and restore water quality.
- Reduce erosion at road-stream crossings (e.g., culverts).
- Reduce agricultural non-point source pollution.
- Promote nutrient management planning.
- Properly manage animal waste as it relates to animal farm operations in the county.

- **Goal #2: Protect land and water ecosystems from invasive species.**

Objectives:

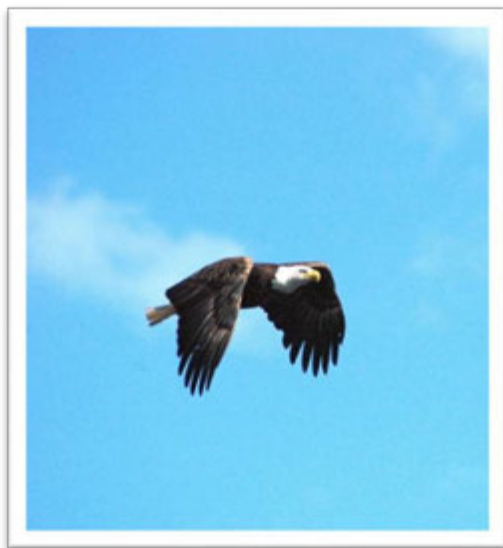
- Continue providing education and outreach.
- Continue prevention and containment strategies for new and existing invasive species.
- Continue early detection of, and response to, new invasive species and infestations.
- Continue to build capacity through cooperation with other groups.
- Promote restoration of native species and habitat after invasives are removed.
- Promote and use of established and consistent messaging for education and outreach.
- Control and manage invasive species following Best Management Practices.

- **Goal #3: Increase public environmental education and participation**

Objectives:

- Build capacity.
- Promote basic and advanced conservation workshops.
- Promote youth education.
- Promote citizen science.

- Establish a greater online presence through outreach, promotion, and communication.
- Coordinate with other organizations on educational outreach.
- Monitor and evaluate educational outreach for effectiveness.
- **Goal #4: Promote healthy forests to improve soil and water quality.**
Objectives:
 - Increase private landowner knowledge and awareness of Forest Management Plans and resources for the creation of and implementation of these plans.
 - Promote and follow Best Management Practices (BMPs) to improve forest productivity and provide high-quality wildlife habitat.
 - Work with the county Forestry & Parks Department to ensure BMPs are used on county lands.
 - Provide rental of departmental tree planter to public as needed.
 - Support local tree sales.
- **Goal #5: Protect, enhance, and restore soil resources**
Objectives:
 - Promote conservation practices to improve soil health on agricultural lands.
 - Support County Zoning Department on non-metallic mine reclamation.
 - Promote and support Farmland Preservation in the county.
- **Goal #6: Protect ground water quality**
Objectives:
 - Work with other county departments (Health, Forestry, Zoning) to reduce groundwater contamination.
 - Continue support of the Florence County Water Laboratory for testing ground water.



Top Right: Land Conservation Department staff Bush Lake monitoring

Top Left: Hand-pulling Eurasian water milfoil Barrens Lake.

Middle Right: Land Conservation Department staff Montgomery Lake monitoring

Middle Left: Bald Eagle (*Haliaeetus leucocephalus*), Sea Lion Lake

Bottom: Grade stabilization Lake Ellwood

Chapter 7. Plan Implementation Process

Many agencies and organizations are involved in land and water resource protection activities in Florence County. Though the Land Conservation Department is identified as the lead agency for most activities in the work plan, due to staff size and county funding limitations, all the agencies identified in the work plan will work together to successfully implement this plan.

Regulations for Plan Implementation

The following state regulations are being used for the implementation of the plan:

- Chapter ATCP 48 Drainage Districts, and 50 Soil and Water Resource Management Program.
- Wisconsin State Statutes Chapter 30, 88, 92, 281, and 283.
- NR 120 Priority Watershed and Lake Program.
- NR 151 Runoff Management.
- NR 216 Stormwater Discharge Permits and Construction Site Erosion Control.
- NR 243 Animal Feeding Operations.
- Wisconsin Pollution Discharge Elimination System Permits.
- Wisconsin Uniform Dwelling Code.

Florence county Zoning and Solid Waste Department administers a Zoning Ordinance, and with its subchapters cover different topics important to soil and water health. Applicable subchapters are:

- Shoreland Wetland Zoning;
- Floodplain;
- Livestock;
- Minimum Housing Code Standards;
- Private Sewage System; and
- Metallic and Non-Metallic Mining.

Florence County Zoning Ordinance, Chapter 10, Subchapter 1 and Shoreland Zoning Ordinance, Chapter 10, Subchapter 2, Florence County Code of Ordinances

- Adopted under the authority of Section 59.69, 59.962, 59.963, 59.964, 59.696, 59.698, Subchapter V of Ch 91, and 144.26 of the Wisconsin Statutes.
- Further the maintenance of safe and healthful conditions and prevent and control water pollution, protect spawning grounds, fish and aquatic life, control building sites, placement of structures and land uses, and preserve shore cover and natural beauty.
- Establishes setbacks for buildings and structures from navigable waters; controls removal of shoreline vegetation; imposes permit and other requirements for filling, grading, and dredging near shorelands; regulates development including lake access.
- Requires a conditional use permit for certain livestock operations; imposes nutrient management

and other standards for livestock facilities; enforces the manure management prohibitions; establishes building and manure spreading setbacks from natural features and buildings, regulates construction of single-family residences near livestock operations, authorizes intervention to abate a hazardous condition or nuisance.

- Provides these compliance procedures: a board of adjustment for variances and appeals, notice requirements, public hearings, enforcement, and penalties such as forfeitures for violations, review and appeals.

This ordinance is available from the Florence County Zoning Office.

Soil and Water Conservation Standards Adopted Under s. 92.105, Wis Stats.

- Required for all lands for which landowners claim the farmland preservation tax credit.
- Must be updated to incorporate new farm conservation practices under s. ATCP 50.04, and must be included as standard for revised farm conservation plans
- Incorporates these compliance procedures in s. ATCP 50.16: compliance monitoring, notice of non-compliance, including suspension of tax credits

These standards are available from the Florence County Land Conservation Department.

Cooperative Agreements

Several cooperative agreements have been developed to clarify roles and responsibilities of agencies that manage natural resources in Florence County. Agencies included in these agreements with the Florence County Land Conservation Department are: U.S.D.A. Natural Resources Conservation Service, U.S. Forest Service, Wisconsin Department of Natural Resources, Wisconsin Department of Agriculture, Trade and Consumer Protection, the Dickinson County Conservation District, Bay-Lake Regional Planning Commission, the Forest County Highway Department, Marinette County Land & Water Conservation, the Florence County Lakes and Rivers Association, and Wild River Invasive Species Coalition.

All county lake associations will be encouraged to participate in the implementation of this plan. Though each organization has goals and objectives specific to its own water body, many goals will be consistent with the county plan.

The lake organizations in Florence County are listed below. Lake associations, districts, and other water protection organizations and volunteers in Florence County will be crucial to effectively monitoring and collecting water quality data on the lakes and rivers of the county. Florence County Lake Associations are:

- Lake Ellwood
- Lake Emily
- Keyes Lake
- Florence County Lakes and Rivers

- West Bass Lake District
- Long Lake
- Fay Lake and Forest
- Spread Eagle Chain of Lakes

The Land Conservation Department, in conjunction with other state and local agencies, will provide assistance and encouragement to lakefront property owners who wish to form lake organizations.

Florence County will notify landowners of any determination of soil erosion or other nonpoint sources of pollution as determinations are made through implementation of the land and water resource management plan, conservation agreement, or other inventory method.

Information and Education Strategy

Information and education objectives are critical to reaching each soil and water resource goal of the plan. Success in meeting the goals will mean that many individuals in the county have made behavioral or procedural changes to protect soil and water resources. Individuals will not make these changes unless they understand the importance of the maintaining quality natural resources, the ways to protect them, and are aware of assistance available.

In the information and education strategy, educational objectives for each goal have been detailed. The strategy also lists important conservation messages and activities to deliver and measure a countywide information and education approach. Implementation of the strategy will be evaluated and modified each year.

Components of the information and education strategy will be available to all citizens who reside, visit and work in Florence County; however, several distinct target audiences have been identified to help focus the work plan efforts. These audiences include:

- Riparian Audience - Landowners who live or conduct an enterprise adjacent to a lake, river, or stream. Also, seasonal, and short-term visitors that come to recreate on the county's lakes and rivers.
- Agricultural Audience - Agricultural and horticultural producers, agricultural consultants, and cooperating agencies.
- Forestry Audience - Loggers, consulting and industrial foresters, forest landowners, users, and consumers of public forest resources.
- Institutional Audience - Lake Associations and districts, local government, sporting and environmental groups, business associations, chamber of commerce, news media, service clubs and churches.
- Commercial Audience - Contractors, developers, realtors, well drillers, resorts owners, store, and shop owners.
- Recreational users – Hunters, anglers, boaters, paddlers, ATV/OHV riders, equestrian, hikers; at the individual level, and user groups.
- Educational Audience - teachers, students, school administrators.

The information and education strategy section was developed by Florence County staff. The Florence

County Land Conservation Department (LCD) will take lead responsibility for the implementation of the information and education strategy with support from NRCS, WDNR and DATCP. The LCD personnel will work with and seek support from local units of government, sporting and environmental organizations, lake districts and associations, and other community groups and businesses.

Specific messages and activities, in support of the resource conservation goals, are as follows:

Goal #1: Promote, protect, and enhance shorelands, wetlands, and surface water resources.

Objectives:

- Administer cost-share program.
- Protect and restore shoreland buffers.
- Identify, inventory, and prioritize surface water resources for potential restoration and protection areas.
- Promote reduction of wave energy on the shorelines.
- Encourage conservation and restoration of wetland function.
- Continue a watershed approach to protect and restore water quality.
- Reduce erosion at road-stream crossings (e.g., culverts).
- Reduce agricultural non-point source pollution.
- Promote nutrient management planning.
- Properly manage animal waste as it relates to animal farming operations in the county.

Target Audience:

- Local landscapers, local government officials, agricultural riparian landowners, residential riparian landowners, general public

Message:

- Shoreline development is occurring at a rapid pace throughout much of northern Wisconsin.
- Increased sedimentation and nutrient loading from failing septic systems and excessive use of fertilizers impact the water quality of lakes and rivers.
- Nonpoint pollution impacts fish and wildlife habitats and negatively effects shoreline aesthetics. Healthy lifestyles for healthy living.

Measurement Tools:

- Track public service announcements, brochures distributed, website hits, etc.; contacts with landowners, producers, suppliers; and participants in natural resource educational programming.
- Document water quality data; use standard units of measurements in conservation practices installed; track contacts with suppliers and producers.
- Workshop participation/content; department public exposure; landowners recognized; and, annual accomplishment report.

Activities:

- Educate the public, lake association members, riparian landowners, producers, local officials, and contractors about the multiple benefits associated with a healthy shoreland.
- Partner with natural resource educators, involved in supporting youth and adult educational programming that promotes healthy lifestyles for healthy living which includes maintaining healthy shorelands.
- Promote riparian buffer shoreland restoration techniques that utilize native plants and materials which will reduce sediment and nutrient loading into local waters while effectively decreasing nonpoint source pollution and minimizing impacts caused by erosion.
- Increase public awareness regarding the significance of preserving the critical role of area wetlands, with benefits such as floodwater storage, wildlife habitat, unique biological productivity, and water quality.
- Educate area landowners, local officials, contractors, and producers, of the state and local shoreland/wetland rules and ordinances, etc. and related permits used in the protection of Florence County lakes, rivers, streams, and wetlands.
- Promote approved riparian buffer shoreland restoration techniques that utilize native plants and materials that will reduce sediment and nutrient loading into local waters while effectively decreasing nonpoint source pollution and minimizing impacts caused by erosion.
- Collect county surface water quality data, monitor trends, and share results with other agencies and departments.
- Continue support of the Florence County Surface Water Laboratory; assess securing state certification.
- Continue the use and research of new remote technology, (e.g., small Unmanned Aerial Systems, Remotely Operated Vehicles), for survey, data collection, imaging, and other conservation activities.
- Offer available technical assistance and cost-share funds to provide landowner reimbursement for approved shoreland restoration techniques used to reduce sediment and nutrient loading to area surface waters.
- Promote the use of lawn fertilizers that are phosphorus free or low phosphorus to improve water quality and lessen nuisance and toxic algae and excessive macrophyte growth.
- Offer available technical assistance and cost-share to producers addressing barnyard runoff, approved manure storage and spreading techniques, along with nutrient management planning.
- Develop a self-help local lake monitoring database with the support and coordination of department staff, along with lake association members and volunteers.
- Offer public workshops related to approved shoreland management techniques.
- Promote department exhibits, brochures, websites, etc. describing department efforts, landowner and volunteer natural resource protection participation and practices implemented.
- Recognize landowners and producers who exemplify conservation goals.
- Compile annual report for funding agencies, county board supervisors, partner agencies and staff outlining increased public awareness, conservation activities and objectives reached in local natural resource preservation.

Goal #2: Protect land and water ecosystems from invasive species.

Objectives:

- Continue providing education and outreach.
- Continue prevention and containment strategies for new and existing invasive species.
- Continue early detection of, and response to, new invasive species and infestations.
- Continue to build capacity through cooperation with other groups.
- Promote the use of established and consistent messaging for education and outreach.
- Promote restoration of native species and habitat after invasives are removed.
- Control and manage invasive species following Best Management Practices.

Target Audience:

- Local landscapers, local government officials, agricultural landowners, residential landowners, public.

Message:

- Native plantings protect from invasion of exotic species, are adapted to the local conditions and provide habitat for native wildlife species.
- Unplanned development and fragmentation of land use degrades the environment.

Measurement Tools:

- Track public service announcements, brochures distributed, website hits, etc.; record contacts with landowners, lake association members; and training hours and courses.
- Track grant dollars awarded; treatment reimbursements received; and provide an annual accomplishment report.

Activities:

- Promote partnerships with Wisconsin Department of Natural Resources, UW-Extension, members of Florence County Lake and River Associations and others to educate the public about the adverse biological and economical effects of both aquatic and terrestrial invasive species.
- Train agency staff, public officials, lake association members, landowners, sportsmen and volunteers to monitor and identify pioneer outbreaks of invasive species throughout Florence County.
- Update lake and river organizations with information about the latest aquatic invasive species. Support watercraft inspection programs and track treatment progress that is undertaken in local and neighboring communities.
- Provide grant funding information to lake association members and others interested in education, planning, prevention and treatment used in controlling the spread of invasive species.
- Seek grant funding and local support for the development and continuance of a county-wide

invasive species program.

- Promote effective cost-share reimbursement funding of treatments approved for invasive species controls applied for public benefit, minimizing the negative environmental and economical
- Periodic surveys, mapping, and documenting of invasive species on Florence County ATV/OHRV trails to better understand current infestations and spread.
- Develop plans to prevent, contain, and eliminate invasive species on Florence County ATV/OHRV trails.
- Promote invasive species awareness and spread reduction on county hiking/hunting trails.
- Impacts to Florence County's natural resources and residents.
- Provide an annual report to funding agencies, county board supervisors and interested parties on the status of invasive species and their impacts to Florence County.

Goal #3: Increase public environmental education and participation

Objective:

- Build capacity.
- Promote basic and advanced conservation workshops.
- Promote youth education.
- Promote citizen science.
- Establish a greater online presence through outreach, promotion, and communication.
- Coordinate with other organizations on educational outreach.
- Monitor and evaluate educational outreach for effectiveness.

Target Audience:

- Developers, contractors, agricultural landowners. residential landowners, Local government elected officials and staff
- General public

Message:

- Preserving and maintaining public access areas protects water resources and enhances natural areas.

Measurement Tools:

- Share access evaluation with several agencies; measure trails and public accesses maintained; acreage purchased; and, provide an annual accomplishment report to funding agencies, county supervisors and participating staff.

Activities:

- Contract for professional services regarding an environmental evaluation and assessment of

public accesses on waterbodies located in Florence County.

- Encourage local youth involvement in the annual land and water conservation speaking and poster contest.
- Encourage trail and park maintenance suitable to accommodate public activities with limited exposure to soil erosion and habitat degradation.
- Support the purchase of land and/or easements to provide public admittance at manageable accesses.

Goal #4: Promote healthy forests to improve soil and water quality.

Objectives:

- Increase private landowner knowledge and awareness of Forest Management Plans and resources for the creation of and implementation of these plans.
- Promote and follow Best Management Practices (BMPs) to improve forest productivity and provide high-quality wildlife habitat.
- Work with the county Forestry & Parks Department to ensure BMPs are used on county lands.
- Provide rental of departmental tree planter to public as needed.
- Support local tree sales.

Target Audience:

- Builders, developers, contractors, landowners Agricultural riparian landowners
- Residential riparian landowners
- Local government elected officials and staff General public

Message:

- Forests cover a substantial portion of Florence County.
- Active management of forest resources will protect and enhance the forests for everyone's use. Unplanned development increases the costs of public services to all taxpayers.
- Planned development can protect wildlife habitat and water resources.

Measurement Tools:

- Landowner contacts made; track conservation technical assistance provided, and practices installed; acreage of forest management plans developed; and, provide an annual accomplishment report to funding agencies, county supervisors and participating staff.

Activities:

- Reinforce the use of forestry Best Management Practices (BMPs) and distribute manuals with every timber sale.
- Educate residents and visitors about the proper use of ATV trails, with emphasis on maintaining quality wildlife habitat and reducing erosion.

- Encourage sustainable forestry practices on private and public lands.
- Promote approved forest road construction and culvert installation methods through educational workshops/materials and technical assistance.
- Support youth and adult educational activities that promote a healthy, sustainable forest land management.
- Educate the public and private landowners about Florence County’s ordinances.
- Provide available technical assistance and cost-share reimbursements to qualified landowners for installing approved forestry projects including those that conserve soil and water, initiate forest regeneration, reduce damage from wildfire and pests, and restore natural plant communities.
- Promote stream bank protection with the availability and use of a portable timber bridge.
- Assist public and private landowners in developing approved forest management plans that meet soil and water conservation standards.

Goal #5: Protect enhance and restore soil resources

Objective:

- Promote conservation practices to improve soil health on agricultural lands.
- Support County Zoning Department on non-metallic mine reclamation.
- Promote and support Farmland Preservation in the county.

Target Audience:

- Developers, contractors, agricultural landowners. residential landowners, Local government elected officials and staff, general public

Message:

- Preserving and maintaining green space protects water resources.
- Explore alternative agricultural practices to sustain agricultural lands in the county.

Measurement Tools:

- Landowner contacts made; track technical assistance provided; and, provide an annual accomplishment report to funding agencies, county supervisors and participating staff.

Activities:

- Assist Farm Service Agency in distributing producer information regarding the efficient and equitable administration of farm commodity programs; farm ownership, operating and emergency loans; conservation and environmental programs; and emergency disaster relief.
- Provide education to the public and local producers about the goals of the Wisconsin Farmland Preservation Program: preserving Wisconsin farmland by means of local land use planning and soil conservation practices; and, to provide property tax relief to farmland owners.
- Continue to support a wildlife abatement and claims program which provides producers with

available damage prevention assistance and partial compensation when wild deer, bear, geese, and turkeys damage their agricultural crops.

- Assist local producers in providing sound nutrient management planning that utilizes approved methods to determine fertilizer needs and protects water quality.
- Offer available cost-share programming for fencing of agricultural lands that promotes shoreline stabilization and water quality protection.
- Communicate with producers about achieving performance standards as stated through state and local regulations.
- Conduct compliance checks with county participants in the Farmland Preservation Program annually.

Goal #6: Protect ground water quality.

Objectives:

- Work with other county departments (Health, Forestry, Zoning) to reduce groundwater contamination.
- Continue support of the Florence County Water Laboratory for testing ground water.

Target Audience:

- Local government elected officials and agency staff developers.
- Realtors Landowners General public

Message:

- Unplanned development increases the costs of public services to all taxpayers. Planned development can protect water resources.
- Preserving and maintaining green space protects water resources.

Measurement Tools:

- Track landowner contacts, water tests performed, kits distributed, conservation practices installed, monitor trends; and provide an annual accomplishment report
- Develop a multi-agency cooperative agreement for natural resource protection activities

Activities:

- Provide education, technical assistance and available federal and state cost-sharing funds to local landowners and producers for implementing approved well decommissioning practices.
- Support acquiring local aquifer data, monitoring trends and sharing information with partner agencies such as the WDNR, local Health Departments and municipal water utilities.
- Develop a formal multi-agency agreement to protect the County's natural resources through planning, education, available technical assistance/cost-share, and enforcement as needed.

Plan Implementation Budget

Florence County intends to make full use of its state cost-share funding from DATCP, and any additional federal and state programs, to address priority problems identified in this plan. The county will try to leverage these funds against available federal program funds, such as Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Incentives Program (WHIP), and private grant sources, such as the Florence County Lakes and Rivers Association, to achieve better cost effectiveness of conservation program implementation. Exhibit 8 shows the projected cost-share funding that the county expects to receive to repair and protect natural resources.

Evaluation of Plan Progress

The Land Conservation Department will take responsibility each year to collect information from cooperating agencies and summarize it in a report. This evaluation will be used in yearly planning sessions to update the work plan for the next calendar year.

Those elements of the work plan with specific activities to be undertaken over a time will be reviewed during these planning sessions to determine whether they have been completed or if additional time, funds and/or staff are required to complete them.

Effectiveness of the information and education objectives will be more difficult. A separate evaluation report will be prepared listing planned and completed activities each year. For promotional techniques, people will be asked how they heard about the program when they sign up for an activity or inquire about a management practice. Knowledge of management techniques gained from workshops and other activities will be evaluated with questionnaires prior to and after events.

Water Quality Monitoring

A partial list of efforts to monitor water resources is listed in Exhibit 8.

Exhibit 8. Florence County Monitoring Efforts

Program	Resource	Responsible Agency
Self Help Lakes Monitoring	Lakes	WDNR, Lakes Assoc., Volunteers
Lakes Planning Grant Studies	Lakes	UWEX, WDNR, Lakes Assoc., Zoning
Rivers Planning Grant Studies	Rivers/Streams	UWEX, WDNR, Lakes Assoc., Zoning
Water Quality Appraisals	Lakes/Streams	WDNR
Lake Classification	Lakes	UWEX, WDNR, Zoning
Groundwater Testing Aquatic Invasive Species	Groundwater Lakes/Rivers	UWEX, Health Department LCD, WDNR, WRISC

Nonpoint Source Inventories

Nonpoint source inventories track changes in land use or land management practices that affect water quality. Several methods are currently used by resource agencies to track these changes. Florence County will upgrade its monitoring capabilities to meet the growing need for accurate, up-to-date knowledge of resource conditions. The LCD will also respond to additional monitoring and assessment requirements and share data with other agencies and citizens.

Plan Integration

The *Florence County LWRM Plan* will be used as a working document that supports other natural resource management plans such as the county's comprehensive plan, forest plan, parks and recreation plan, and the wild rivers invasive species management plan.

Appendix A. Citizen Advisory Committee Meeting Minutes



501 Lake Avenue, Room #255, Court-
house¶
P.O. Box 410, Florence, WI 54121
PH: (715) 528-5940¶
Department Administrator: Kelly Sleeter¶

November 9, 2021¶

Florence County LCD Land & Water Resource Management Plan 2021 Update Citizens Advisory Committee Meeting

October 20, 2021

Minutes

Roll Call: In-person:

Cary Anderson (Keyes Lake Assoc.), Kathy Bednarski (Ag Producer), Matt Burnette (County Board/Homestead), Adam Christensen (Bay-Lake RPC), Scott Goodwin (FCLCD), Chad Hedmark (County Board), Mick Mlinar (FCLARA), Gary Moore (Aurora), Tom Krans (Aurora), Brandon Robinson (Bay-Lake RPC), Kelly Sleeter (FCLCD), Susan Theer (County Board), Rich Wolosyn (County Board).

On-line:

Tim Bomberg (Florence), Scott Reynolds (SECOLA).

Unavailable:

John Roberts and Patrick Smith submitted written comments. Fred Erwin (Fern), Fran Modschiedler (Tipler), Jon Rodaer (Long Lake) were invited, but could not attend.

Introduction:

Kelly Sleeter called the meeting to order, thanked the members of the CAC for their time and work on the LWRM Plan update. Sleeter introduced Adam Christensen from Bay-Lake Regional Planning Commission (BLRPC).

Christensen explained the purpose of the LWRM Plan for state funding of the Land Conservation Department and projects and explained the CAC would focus on the Goals and Objectives of the new LWRM plan.

Goals & Objectives:

The CAC members reviewed the Goals and Objectives from the 2012 Florence County LWRM Plan, and current LWRM Plans from Forest and Oneida Counties. After a series of discussions lead by Christensen

the CAC agreed to the following Goals and Objectives for the new LWRM Plan.

Goal 1: Promote, protect and enhance shorelands, wetlands, and surface water resources

- Administer cost-share program.
- Protect and restore shoreland buffers.
- Promote reduction of wave energy on the shorelines.
- Encourage conservation and restoration of wetland function.
- Continue a watershed approach to protect and restore water quality.
- Reduce erosion at road-stream crossings (e.g., culverts).
- Reduce agricultural non-point source pollution.
- Promote nutrient management planning.
- Properly manage animal waste.

Goal 2: Protect land and water ecosystems from invasive species.

- Continue providing education and outreach.
- Continue early detection of, and response to, new invasive species and infestations.
- Control and manage invasive species following Best Management Practices.
- Continue to build capacity through cooperation with other groups.
- Promote restoration of native species and habitat after invasives are removed.

Goal 3: Protect ground water quality.

- Work with other county departments (Health, Forestry, Zoning) to reduce groundwater contamination.
- Continue support of the Florence County Water Laboratory for testing ground water.

Goal 4: Promote healthy forests to improve soil and water quality.

- Promote and follow Best Management Practices (BMPs).
- Work with the county Forestry & Parks Department to ensure BMPs on county lands.

Goal 5: Protect enhance and restore soil resources

- Support County Zoning Department on non-metallic mine reclamation.
- Promote and support Farmland Preservation in the county.

Respectfully submitted,
Scott W. Goodwin
Conservation Technician
Florence County Land Conservation Department
P.O. Box 410; 501 Lake Ave.

Appendix B. Technical Workgroup Meeting Minutes



November 9, 2021

501 Lake Avenue, Room #255, Court-
house
P.O. Box 410, Florence, WI 54121
PH: (715) 528-5940
Department Administrator: Kelly Sleeter

Florence County LCD Land & Water Resource Management Plan 2021 Update Technical Advisory Committee Meeting

November 9, 2021

Minutes

Roll Call: On-line:

Justin Bourneville (USFS), Adam Christensen (Bay-Lake RPC), Andrew Craig (WDNR), Scott Goodwin (FCLCD), Terry Kafka (WDNR), Beth Mueller (FSA), Lindsay Peterson (WRISC), Kelly Sleeter (FCLCD), Michael Stinebrink (NRCS), Scott Van Egeren (WDNR), Rich Wolosyn (County Board).

Note: At the time of this meeting the county did not have a University of Wisconsin Extension agent to participate

Introduction:

Kelly Sleeter called the meeting to order, thanked the members of the TAC for their time and work on the LWRM Plan update. Sleeter introduced Adam Christensen from Bay-Lake Regional Planning Commission (BLRPC).

Christensen moderated introductions of the TAC members, discussed the agenda, and the status of the draft plan.

Goals & Objectives:

The TAC members reviewed the Goals and Objectives put forward by the Citizens Action Committee.

After a series of discussions lead by Christensen the TAC suggested the following additions to the CAC's Goals and Objectives for the new LWRM Plan.

Goal 1: Promote, protect and enhance shorelands, wetlands, and surface water resources

- Administer cost-share program.
- Protect and restore shoreland buffers.
- Inventory surface waters for restoration and/or protection prioritization. (Van Egeren/Craig)
- Promote reduction of wave energy on the shorelines.

- Encourage conservation and restoration of wetland function. Continue a watershed approach to protect and restore water quality. Reduce erosion at road-stream crossings (e.g., culverts).
- Reduce agricultural non-point source pollution. Promote nutrient management planning.
- Properly manage animal waste as it relates to animal farm operations in the county. (Craig)

Goal 2: Protect land and water ecosystems from invasive species.

- Continue providing education and outreach.
- Continue prevention and containment strategies for new and existing invasive species. (Peterson/Bourneville/Van Egeren) Promote and use of established and consistent messaging for education and outreach. (Peterson)
- Continue early detection of, and response to, new invasive species and infestations. Control and manage invasive species following Best Management Practices.
- Continue to build capacity through cooperation with other groups.
- Promote restoration of native species and habitat after invasives are removed.

Goal 3: Protect ground water quality.

- Work with other county departments (Health, Forestry, Zoning) to reduce groundwater contamination. Continue support of the Florence County Water Laboratory for testing groundwater.

Goal 4: Promote healthy forests to improve soil and water quality.

- Promote and follow Best Management Practices (BMPs).
- Work with the county Forestry & Parks Department to ensure BMPs on county lands.
- Promote development of Forest Management Plans for private lands. (Stinebrink)
- Promote BMPs to improve forest productivity and high-quality wildlife habitat. (Stinebrink) Provide rental of departmental tree planter to public as needed. (Goodwin)
- Support local tree sales. (Goodwin)

Goal 5: Protect, enhance, and restore soil resources

- Support County Zoning Department on non-metallic mine reclamation.
- Promote conservation practices to improve soil health on agricultural lands. (Stinebrink)
- Promote and support Farmland Preservation in the county.

Goal 6: Increase public participation.

- Build capacity.
- Establish a greater on-line presence. (Sleeter)
- Promote workshops both in-person and virtual from basic to advanced concepts. (Peterson)
- Promote youth education. Promote citizen science.

- Promote and continue cooperation with partners to achieve the goals. (Bourneville)
- Periodic evaluate of the outreach and education efforts. (Van Egeren)

Resources Section Open Discussion

Craig suggested a map showing county watershed boundaries and impaired waters. Include the extant of animal feeding operations and how to meet the performance standards that apply to ag lands. Make it clear in the plan that the small amount of agriculture in the county, backed by land use data, allows the LCD to focus on other important areas

Bourneville brought up the current plan has a good description of aquatic invasive species, but is lacking for terrestrial invasives. As Florence County is dominated by forestlands, and there are terrestrial invasive species that threaten these lands. Provide equal consideration for terrestrial concerns.

Peterson suggested that additionally, forest pests such as emerald ash borer and oak wilt be included. Also, that the ATV and off-road trails are very popular recreational activity in Florence County, and are a vector for spreading invasives. The plan should include this, including a map of the trail system.

Van Egeren said goal six is a little generic, and that we should consider target audiences for the different objectives and potential partners to work with. Develop evaluation methods to understand outcomes and/or problems.

Conclusion

As no participants had further points to add, TAC members were thanked and were reminded additional comments could be submitted in writing. The meeting was then concluded.

Respectfully submitted,
Scott W. Goodwin
Conservation Technician
Florence County Land Conservation Department
P.O. Box 410; 501 Lake Ave.
Florence, WI 54121
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Appendix C. Public Hearing Announcement

**Class 2 Notice under Chapter 985 of the Wisconsin Statutes
FLORENCE COUNTY
NOTICE OF PUBLIC HEARING
ON THE PROPOSED 2022-2031 FLORENCE COUNTY LAND AND WATER RESOURCE
MANAGEMENT PLAN**

PLEASE TAKE NOTICE, the Florence County Land Conservation Committee will hold a public hearing on the proposed *2022-2031 Florence County Land and Water Resource Management Plan*. The public hearing will be held on Monday 6:00 pm December 6th, 2021 at the Florence County Courthouse, located at 501 Lake Ave., Florence, Florence County, WI. The proposed plan assesses the soil and water resources in Florence County and the goals and objectives to promote, protect, restore, and enhance these resources.

Copies of the proposed *2022-2031 Florence County Land and Water Resource Management Plan* will be available for review at the following locations:

- A physical copy at: Florence County Courthouse, RM 255 Land Conservation Department and
- Florence County Website
<https://www.florencecountywi.com/departments/?department=e4bf7b476ac4/> or
<https://www.florencecountywi.com>
- Bay-Lake Regional Planning Commission
<https://baylakerpc.org/florenceLWRMP>

Submitted by Rich Wolosyn – LCC Chairperson Florence County, WI



501 Lake Avenue, Room #255, Courthouse
P.O. Box 410, Florence, WI 54121
PH: (715) 528-5940
Department Administrator: Kelly Sleeter
Conservation Technician: Scott Goodwin

Monday, December 6, 2021

6:00 P.M.

LAND CONSERVATION COMMITTEE

Florence County Courthouse

SECOND FLOOR CONFERENCE ROOM

PUBLIC HEARING MINUTES

Public Hearing on Land & Water Resource Management (LWRM) Plan Update to Take Public Input Committee Chair Wolosyn called the Public Hearing to order.

There was no audience present. Conservation Technician Goodwin read the written changes proposed by John Roberts:

- On page 11 and 12. Both pages still incorrectly have the Little Popple River in the Popple River Watershed. The Little Popple runs into the Menominee river, not into the Popple River.

Goodwin then read the additions and corrections to the draft plan developed by LCD staff. With no further input Committee Chair Wolosyn closed the Public Hearing.

Note: Full comments on file.

Regular LCC Meeting Followed

DRAFT MINUTES

1. **Roll Call:** Committee Chair Rich Wolosyn called the meeting to order. Present were County Board Supervisors Jeanette Bomberg, Matt Burnette, Chad Hedmark. County Board Supervisor Gary Steber, Committee, member Yvonne Van Pembroke, and Farm Service Agency Representative Todd Broullire were excused. Also, in attendance were County Conservationist Kelly Sleeter, Conservation Technician Scott Goodwin. AIS Coordinator Shawna Broullire was excused. Adam Christensen from Bay-Lake Regional Planning Commission was in attendance by phone.
2. **Approval of the Agenda:** On a motion from Burnette, with support from Bomberg, motion passed unopposed.
3. **Approval of Previous LCC Meeting Minutes** On a motion from Bomberg, with support from Burnette, motion passed unopposed.
4. **Discussion/Action: Approval of Draft LWRM Plan Update and Forward to**

DATCP and Florence County Board for February deadline: Wolosyn thanked LCD Staff, the members of the Citizen Advisory Committee and the Technical Advisory Committee, Oneida County for use of their LWRM Plan as a template, Adam Christensen, Brandon Robinson, Nicole Barbiaux, and the full staff at Bay-Lake Regional Planning Commission for the work to turn the LWRM Plan Update around in the compressed timeframe. Christensen thanked the LCC members and county staff for the opportunity to work on the plan. County Board Chair Bomberg thanked Wolosyn for his time and commitment to oversee the plan update.

On a motion from Bomberg, with support from Burnette, to incorporate the corrections and additions from the Public Hearing and to advance the LWRM Plan Update to DATCP for review and approval, and to the Florence County Board of Supervisors for approval in February. Motion passed unopposed.

5. **Agency Partner Reports/Open Forum:** None.
6. **AIS Coordinator Report:** Goodwin reported on the status of the 2021 LMPN grant.
7. **Conservation Technician Report:** In addition to his written report Goodwin reported the Hendricks Creek culvert project was awarded a \$50,000.00 We Energies MEF grant. Goodwin was also able to secure \$12,481.00 of 2021 bond cost-share funds from Forest County to be attached to the Hendricks Creek project to carry over to 2022.
8. **County Conservationist Summary** Sleeter thanked the LCD staff and Wolosyn for their work on LWRM Plan update.
9. **Discussion/Action: Approval for Hendricks Creek project cost-share agreement:** On a motion from Hedmark, with support from Burnette, to sign a cost-share contract with the Town of Florence for a 2022 installation, and to carry over remaining 2021 funds for the project. Motion passed unopposed.
10. **Discussion/Action: Approval to host an Exotic Pet Surrender Event in July 2022:** Bomberg explained that any event must be approved by the County Board to be covered under the insurance. Goodwin reported he would confer with County Clerk Trudell and John Moyles of J&R Aquatic Animal Rescue on insurance. On a motion from Hedmark, with support from Bomberg, to forward to County Board, motion passed unopposed.
11. **Discussion/Action: November Expense Vouchers:** On a motion from Hedmark, with support from Burnette, to forward to Audit & Budget.
12. **Future Agenda Items/Upcoming Meetings:** Hedmark initiated a discussion about a dam on Mud Lake and for LCD staff to be available for consultation and to assess if any plan developed may qualify for department cost-share funds.

Appendix D: Conservation Practices List

1. Cost-share practices – ATCP 50.61
2. Manure Storage Systems – ATCP 50.62
3. Manure storage system closure – ATCP 50.63
4. Barnyard runoff control systems – ACTP 50.64
5. Cover Crops – ATCP 50.68
6. Critical area stabilization – ATCP 50.69
7. Diversions – ATCP 50.70
8. Feed storage runoff control systems – ATCP 50.705
9. Field windbreaks – ATCP 50.71
10. Filter strips – ATCP 50.72
11. Grade stabilization structures – ATCP 50.73
12. Livestock fencing – ATCP 50.75
13. Nutrient Management – ATCP 50.78
14. Pesticide Management – ATCP 50.79
15. Prescribed grazing – ATCP 50.80
16. Relocating or abandoning animal feeding operations – ATCP 50.81
17. Residue management – ATCP 50.82
18. Riparian buffers – ATCP 50.83
19. Roof runoff systems – ATCP 50.85
20. Sediment basins – ATCP 50.86
21. Streambank or shoreline protection – ATCP 50.88
22. Well decommissioning – ATCP 50.97
23. Wetland development or restoration – ATCP 50.98

Appendix E. Partner Agencies

- **NRCS.** The Natural Resources Conservation Service is an agency of the United States Department of Agriculture (USDA). NRCS is the lead federal agency for conservation on private lands. Since 1985, the federal Farm Bills have included conservation provisions to reduce soil erosion on highly erodible farmland and to encourage wetland protection. The provisions include: Conservation Compliance and Sodbuster; Conservation of Private Grazing Land; Conservation Reserve (& Enhancement) Programs; Conservation Security Program; Environmental Quality Incentives Program; Farm and Ranch Lands Protection Program; Grassland Reserve Program; Natural Resource Inventory; Plant Materials Program; Resource Conservation and Development; Soil Survey; Swampbuster; Watersheds; Wetlands Reserve Program; and Wildlife Habitat Incentives Program.
- **FSA.** The Farm Service Agency is also part of the USDA and administers a variety of agricultural assistance programs including production controls, price supports and conservation. Each Land Conservation Committee has an FSA representative as one of its members. Programs administered by FSA include: Emergency Conservation Program; and the Conservation Reserve and the Conservation Reserve Enhancement Programs.
- **USFS.** The U.S. Forest Service is an agency within the United States Department of Agriculture, which manages the Chequamegon-Nicolet National Forest in Northern Wisconsin. The FS also provides funding and technical assistance to all counties through DNR foresters.
- **Lumberjack RC&D.** Resource Conservation and Development (RC&D) is a rural development program focusing on conservation, development, and utilization of area natural resources to improve social, economic, and environmental conditions for area citizens. The National RC&D program was established by federal legislation in 1962. This federal act directs the U.S. Department of Agriculture (USDA) to help local units of government conserve and properly utilize natural resources to solve local problems. Local councils, with input from area citizens, set program priorities. A variety of organizations, companies, and government entities provide assistance to locals in accomplishing their program goals. Lumberjack RC&D was established in 1968 and covers Florence County and neighboring region.
- **WRISC.** The Wild Rivers Invasive Species Coalition is a partnership formed of federal, state, and local government agencies, land managers, utility companies, civic organizations, and individuals interested in implementing a comprehensive plan to manage the invasive species found in northeastern Wisconsin and Upper Michigan. The five county region includes: Dickinson and Menominee Counties in Michigan, and Florence, Forest, and Marinette Counties in Wisconsin.
- **New North.** New North is a 501(c)3 nonprofit, regional marketing and economic development corporation which covers 18 counties including Florence County. They partner with Wisconsin Economic Development Corporation (WEDC) and the State of Wisconsin, as well as local economic development partners and represents more than 100 private investors.

Appendix F. List of Acronyms

BMP	Best Management Practice
CAC	Citizen Advisory Committee
CRE	Conservation Reserve Enhancement Program
CRP	Federal Conservation Reserve Program
CSA	Cost Share Agreement
CSP	Conservation Security Program
DATCP	Wisconsin Department of Agriculture, Trade, and Consumer Protection
DNR	Wisconsin Department of Natural Resources
EQIP	Environmental Quality Incentives Program (USDA)
FFA	Future Farmers of America
FIP	Forestry Incentive Program
FISTA	Forest Industry Safety Training Alliance
FMP	Forest Management Plan
FPP	Wisconsin Farmland Protection Program
FSA	Farm Service Agency
FSA	Farm Service Agency (United States Department of Agriculture)
FSC	Forest Stewardship Council
FSP	Forest Stewardship Plan
GIS	Geographic Information System
I&E	Information and Education
LCC	Land Conservation Committee
LCD	Land Conservation Department
LUST	Leaking Underground Storage Tank
LWCB	Land and Water Conservation Board
NAWCA	North American Waterfowl Conservation Act

NPM	Nutrient and Pest Management
NRCS	Natural Resources Conservation Service
RC&D	Resource Conservation and Development Area
RPC	Regional Planning Commission
SFI	Sustainable Forestry Initiative
SIP	Stewardship Incentive Program
SOS	Signs of Success Monitoring Program
“T”	Soil Loss Tolerance
TAC	Technical Advisory Committee
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UWEX	University of Wisconsin-Extension
WCC	Wisconsin Conservation Corps
WGNHS	Wisconsin Geological and Natural History Survey
WHIP	Wildlife Habitat Incentives Program
WPDES	Wisconsin Pollutant Discharge Elimination System [permit system]
WRISC	Wild Rivers Invasive Species Coalition
WRP	Wetland Reserve Program
WUWN	Wisconsin Unique Well Number assigned to well sample sites