

CHAPTER 5 : NATURAL, AGRICULTURAL AND CULTURAL RESOURCES

TABLE OF CONTENTS

INTRODUCTION	5-1
NATURAL RESOURCES	5-1
Geology.....	5-1
Soils	5-2
Water Resources	5-6
Woodlands	5-18
Wildlife Habitat	5-20
Significant Natural Areas.....	5-23
Key Environmental Features	5-25
Parks and Open Space.....	5-25
AGRICULTURAL RESOURCES.....	5-26
Prime Agricultural Soils	5-26
Farm Numbers and Types.....	5-27
Forest Management.....	5-29
Trends in Agriculture and Forestry.....	5-32
Environmental Impacts of Agriculture	5-34
CULTURAL RESOURCES.....	5-34
Historic and Archeological Sites	5-35
Community Design	5-35

LIST OF TABLES

Table 5.1: Soil Associations for Florence County	5-3
Table 5.2: Location and Number of Nonmetallic Mining Permits in Florence County	5-4
Table 5.3: Florence County Lakes and Ponds Greater than 50 Surface Acres.....	5-8
Table 5.4: Florence County Major Rivers	5-9
Table 5.5: Impaired Waters of Florence County	5-12
Table 5.6: State Threatened or Endangered Species in Florence County.....	5-22
Table 5.7: Significant Natural Areas, Florence County.....	5-24
Table 5.8: Florence County Park and Recreation Opportunities	5-25
Table 5.9: Farm Numbers and Types in Florence County, 1997, 2002, and 2007	5-28
Table 5.10: Timber Sales from County Forest, Florence County, 1999-2008	5-31
Table 5.11: Florence County Agricultural Land Sales, 2002-2007	5-33
Table 5.12: Florence County Forested Land Sales, 2005-2007.....	5-33
Table 5.13: National Register of Historic Places, Florence County.....	5-35

LIST OF MAPS

Map 5.1: Quaternary Geology	5-37
Map 5.2: Depth to Bedrock.....	5-39
Map 5.3: Steep Slope	5-41
Map 5.4: Watersheds/Sub-watersheds	5-43
Map 5.5: Major Named Lakes	5-45
Map 5.6: Major Rivers and Creeks	5-47
Map 5.7: Shorelands	5-49
Map 5.8: Floodplains	5-51
Map 5.9: Wetlands	5-53
Map 5.10: Woodlands	5-55
Map 5.11: Woodland Ownership.....	5-57
Map 5.12: Key Environmental Features	5-59
Map 5.13: Prime Agricultural Soils	5-61

INTRODUCTION

This section provides an inventory and description of the existing natural, agricultural and cultural resource features found in Florence County. Because they are major determinants of future development options, it is important to understand where these resources are located, how they relate to one another, and their impact on future development and redevelopment. By thoroughly inventorying and defining them, it will help limit unnecessary future expenditures, plus minimize any potential negative impacts to these valued resources as land uses change.

NATURAL RESOURCES

Natural resources are materials that occur in nature and are essential or useful to humans such as water, air, land, trees, animals, plants, soil and minerals. Some are replaceable; others are not. Trees and fish are renewable resources and can be replaced. Nonrenewable resources that include clean groundwater and natural gas are not replaceable once they have been consumed.

Natural resources are often a defining feature for local communities. People depend on natural resources to provide a clean and abundant supply of groundwater; assure good air quality; and provide natural landscapes that are fundamental to a healthy and diverse biological community. Despite their importance, Wisconsin's natural resources face significant threats due to increasing human demands by a growing population. Direct impacts of current and projected development patterns include habitat loss and fragmentation, threats to water quality, and changes in climate. Therefore, it is important that communities plan appropriately in order to preserve their important natural features.

The following text describes the types and locations of Florence County's many resources and briefly discusses the importance of them when planning for future growth of the county.

Geology

The geology that makes up the county has important implications for land use. Geologic materials make up the ground on which we walk, the dirt in which we dig foundations, and the soil in which we grow crops. It affects excavation; foundations; location and effectiveness of site wastewater treatment systems; residential and industrial development locations; and cost effectiveness of construction and maintenance of highways and streets. The soil composition and depth to bedrock can also have an impact on the natural infiltration of surface waters. In addition, the type of bedrock will determine whether an effective pathway will be available for groundwater recharge as well as its susceptibility to contaminants, including those that naturally occur in the bedrock.

Florence County is underlain by some of the oldest and most complexly formed rocks in Wisconsin. These rocks, many of which are over one billion years in age, were formed during the geologic time period known as the Precambrian Era. The rocks consist largely of granites and undifferentiated igneous and metamorphic rocks that are overlain in most places by glacial till, glacial outwash, or lacustrine deposits deposited during the Pleistocene.

Most of the ancient rock formations, with the exception of those outcrops in the southeastern portion of the county and areas which are exposed by erosion from rivers and streams, are overlain by material deposited from glacial action. Florence County's present topography, consisting of drumlins, eskers, and other glacial features, was largely the result of the last glacial

ice mass which receded ten thousand years ago. Deposits left behind by the glaciers include till, unsorted debris, and sorted and stratified water-laid deposits, referred to as glacio-fluvial deposits. Glacio-fluvial deposits which contained large ice blocks that eventually melted were pitted with depressions known as kettles. Many of these kettles filled with water and formed the majority of the lakes currently present within the county.

Various types of Quaternary geology can be found in Florence County. The majority of the county consists of outwash sand and gravel which cover the entire western portion, as well as other areas of the county. Noncalcareous sandy loamy till covers a majority of the central and portions of the western part of the county. Loamy till covers a large portion of the eastern third of the county. While ice-contact sand/gravel, and lake silt/clay cover the remainder of the county and can be found in the southeastern portion of the county.

Map 5.1 illustrates the quaternary geology of Florence County, while Map 5.2 illustrates soil depth to bedrock within the county.

Topography

Elevation differential within Florence County varies from a maximum of 1,732 feet above sea level in the northwestern part of the county to 1,033 feet above sea level at the eastern edge of the county. Land forms in the county are glacial in origin, including drumlins, esker-like ridges, and wetlands. In the eastern part of the county, the topography is controlled by the underlying bedrock in which a northwest to southeast orientation of swamps and tributaries is evident.



Several areas of steep slope are present throughout the county. These steep slope areas are more susceptible to soil erosion and therefore are better left free of development. If permission to develop these areas is granted, it is recommended that special building and construction restraints such as retaining walls, major grading efforts and specialized erosion control measures are used to avoid large scale erosion. The largest patches of steep slope are located within the Town of Fern and in the northwestern and southeastern portions of the Town of Florence. Steep slopes are considered areas with a slope equal to or greater than 12 percent. The *2004 Soil Survey of Florence County, Wisconsin* notes certain soil types based on steepness. Map 5.3 illustrates these potential areas of steep slope within the county based on the soils type.

Soils

The Natural Resources Conservation Service (NRCS) provides a detailed study of all soils in Florence County in the *Soil Survey of Florence County, Wisconsin*. The survey provides information on the suitability and limitations of soils for a variety of natural resource and engineering uses. Listed below are descriptions of the general soil types within Florence County.

Soils Description

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 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 developed under a forest cover consisting mainly of conifers and hardwoods 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 vegetative cover consisting of various species of pine, scrub oak, and savanna grasses. This area has low relief with occasional short, steep slopes.

There are seven soil associations within the county as determined by the Natural Resource Conservation Service, 2006 STATSGO Data for Florence County. They are listed below in Table 5.1.

Table 5.1: Soil Associations for Florence County

Soil Associations	Number of Acres
Pence-Padus (s8705)	111,640
Rock outcrop-Amasa (s3362)	12,666
Rock outcrop-Michigamme-Menahga-Ishpeming (s8728)	13,619
Sarona-Keweenaw (s8714)	65,030
Sayner-Rubicon-Omega (s8704)	87,498
Wabeno-Monico-Champion (s8715)	21,345
Watton-Alstad variant (s3425)	6,410
Grand Total	318,208

Source: NRCS, 2006.

Soil Limitations

Because certain limitations exist for various soil types, the composition and properties of soils should be evaluated prior to any development taking place. By utilizing the information provided by the *2004 Soil Survey of Florence County, Wisconsin* soil-related failures in various land uses can likely be avoided.

Private Sewage Systems

Private on-site wastewater treatment systems (POWTS) are systems that discharge effluent to groundwater through a subsurface infiltration system. Success of these on-site systems (i.e., drain-fields or mounds) is based on the depth and permeability of the soils where they are installed.

The *2004 Soil Survey of Florence County, Wisconsin*, provides information on the limitations of each type of soil for these sanitary facilities. Soil ratings are based on soil properties, site features and observed performance of the soils. There are three classes of limitations:

- *Severe limitations* mean soil properties or site features are so unfavorable or so difficult to overcome that these systems may require a special design that results in a significant increase in construction costs or possibly costly ongoing maintenance.

- *Moderate limitations* mean soil properties or site features are not favorable for the indicated use and too may require special planning, design, or maintenance to overcome or minimize these limitations.
- *Slight limitations* mean soil properties and site features are generally favorable for the indicated use and limitations are minor and therefore easily overcome.

Within Florence County the majority of the soils have severe limitations and there are no soils having slight limitations for septic systems.

COMM 83 health and safety code allows new technologies for private sewage systems. The code allows the use of soil absorption systems on sites with at least six inches of suitable native soil. The revised code gives property owners the opportunity and flexibility to meet environmental performance standards with several treatment technologies.

As a way to mitigate these limitations, COMM 83 allows for infill development in areas not permitted previously by the former plumbing code. Housing and population density will increase in some areas due to the revised COMM 83 code. This in turn increases the need for land use planning and integrations of environmental corridors to address the adverse impacts related to development. Planning along with land use controls (e.g. zoning) will assist in achieving more efficient development patterns.

Basements

The *2004 Soil Survey of Florence County, Wisconsin* provides information on the limitations of soils for building site development including the construction of dwellings with basements. These limitations are based on soil properties, site features and observed performance of the soils. The majority of the soils within Florence County are rated as having moderate or severe limitations for dwellings with basements, while the remainder of the county's soils are rated as having slight limitations for dwellings with basements.

Nonmetallic Mineral Resources

Sand, gravel and crushed stone are the primary minerals mined in the county. They are needed for constructing the sub-base for roads and are the primary components in concrete that are used for the building of foundations, basement walls and sidewalks.

There are 18 active mining sites in Florence County and the surrounding area that extract sand, gravel and/or crushed stone. Table 5.2 lists the location and number of nonmetallic permits issued in Florence County. The *2004 Soil Survey of Florence County, Wisconsin* identifies soils that would be the best sources for quality sand, gravel and crushed stone. These minerals are primarily found near river and stream channels, outwash plains, dunes and eskers.



Table 5.2: Location and Number of Nonmetallic Mining Permits in Florence County

Location	# of Permits
T38N, R17E, Sec. 19	1
T38N, R17E, Sec. 31	1
T38N, R18E, Sec. 11	1
T38N, R18E, Sec. 24	1
T38N, R19E, Sec. 36	1
T39N, R17E, Sec. 12	2
T39N, R19E, Sec. 05	1
T39N, R19E, Sec. 10	1
T39N, R19E, Sec. 11	3
T40N, R15E, Sec. 17	1
T40N, R15E, Sec. 31	1
T40N, R15E, Sec. 6	1
T40N, R17E, Sec. 03	1
T40N, R18E, Sec. 16	1
T40N, R18E, Sec. 20	1

Source: Florence County, 2008; and Bay-Lake Regional Planning Commission, 2008.

As Florence County and other surrounding areas experience continued growth and development, the demand for sand, gravel and crushed stone will increase. As a result, these nonmetallic mineral resources should be identified and conserved for future mining consideration. However, residential development can threaten access to these resources as competition for land increases. Therefore, it is important that land use controls are utilized to ensure the preservation of these resources so that future demands can be met.

In order to minimize land use conflicts, mining operations should show that they have little negative impact on the neighboring properties or the surrounding areas. This not only includes noise and odors, but also adverse affects on groundwater and significant wear on local roads.

Nonmetallic Mining Reclamation (NR 135)

Any new mines need to have a permit granted by the Wisconsin Department of Natural Resources (WDNR) and are subject to the requirements of NR 135.

- A. The reclamation plan is a detailed technical document with goals to successfully reclaim the area as well as limit any long-term negative impacts to the environment once the mine is abandoned.
- B. The WDNR defines successful reclamation as “the restoration of all areas disturbed by mining activities including aspects of the mine itself, waste disposal areas, buildings, roads and utility corridors.”
- C. Restoration is defined as “returning of the site to a condition that minimizes erosion and sedimentation, supports productive and diverse plants and animal communities, and allows for the desired post-mining land use.”

Depleted mining sites can be reclaimed as parkland, wildlife habitat, recreational land or other uses.

NR 135 allows landowners to register marketable nonmetallic mineral deposits as a way to prevent future development that would interfere with the extraction of those deposits. As a result, registered sites are protected from local zoning or other decisions that permanently interfere with mining on the site for at least 20 years.

Water Resources

Watersheds

There are five major watersheds covering Florence County; these include the Brule River, Pemebonwon and Middle Menominee Rivers, Pike River, Pine River, and Popple River watersheds. Within these five watersheds, there are 24 sub-watersheds. **Map 5.4** displays the location of each major watershed.

The Brule watershed covers more than 63,000 acres in the northern one-third of Florence County. The Pine River watershed, with approximately 112,000 acres within the county, lies in the central portion of Florence County. The Popple River watershed, with approximately 94,000 acres within the county, is located in the southwestern corner of Florence County. The Pemebonwon and Middle Menominee Rivers watershed, with approximately 44,000 acres within the county, covers the southeastern corner of Florence County. And the Pike River watershed, with approximately 5,000 acres within the county, covers a small section in the south central part of Florence County adjacent to the county line.

All of the major watersheds in Florence County can be classified as natural, meaning not much development is located in the watersheds. All of the major watersheds are covered by approximately 90 percent of woodlands, wetlands, or undeveloped open spaces.

Priority and Non-Priority Watersheds

Both point and non-point source pollution continues to have a tremendous impact on Wisconsin's watersheds. While rules can easily be put into place to regulate point source pollution, it is much more difficult to control nonpoint source pollution.

As a way to protect the state's watersheds from nonpoint source pollution, the Wisconsin Nonpoint Source Water Pollution Abatement Program (NPS Program) was created in 1978 by the State Legislature and is managed by the WDNR. This program selected priority watersheds based on numerous factors, including but not limited to, the potential for unique species to respond positively to nonpoint source controls and sensitivity to phosphorus loading. The program has provided financial and technical assistance to landowners and local governments to reduce nonpoint source pollution by addressing land management activities that contribute to urban and rural runoff.

Point source pollution can be defined as that which originates from a single point such as pipes, ditches, wells, and containers, while **nonpoint source pollution** can not be traced to one definitive source. Although exact sources of nonpoint source pollution can be difficult to identify, activities such as farming, construction and mining are known to produce pollution that can be carried away by runoff into local watersheds.

Florence County does not have any designated priority watersheds: however, recommendations for the three major watersheds in the county were made as part of the *Upper Green Bay Basin*

Water Quality Management Plan. The recommendations in this report indicate that there are forestry management, wildlife management and water quality assessment activities that need to be undertaken for the Pine, Popple and Brule River Watersheds in Florence County. The County's Shoreland/Wetland Ordinance offers additional water quality protection through required building setbacks and restricted development; controls removal of native shoreland vegetation; and imposes permits and other requirements for filling and grading.

Surface Water



Lakes and streams provide an abundant supply of surface water and are important assets in Florence County. Surface waters in Florence County flow almost exclusively to the southeast of the Canadian Shield and eventually into Green Bay. Major drainages in the county include the Peshtigo, Pemebonwon, Pike and Wausaukee river systems. According to *Wisconsin Lakes*, prepared by the WDNR, Florence County has 259

lakes, 101 which are named, covering 7,261 surface acres. In addition, the county has approximately 988 miles of named and unnamed rivers and creeks, including the Pine and Popple Rivers which are in the state Wild Rivers program. **Map 5.5** illustrates all lakes and ponds greater than 50 surface acres in size while **Map 5.6** shows the location of the major rivers and creeks greater than 10 miles in length in the county. These waters are also listed in Table 5.3 and Table 5.4 below.



Table 5.3: Florence County Lakes and Ponds Greater than 50 Surface Acres

Name	Location*	Size (acres)	Max. Depth (ft.)*
Boot Lake	T40N, R17E, Section 7	109	30
Brule River Flowage (WI-MI)	T40N, R18E, Section 14	297*	64
Cosgrove Lake	T40N, R19E, Section 31	96	26
Duck Lake	T40N, R15E, Section 18	56	3
Edith Lake	T40N, R17E, Section 18	65	72
Ellwood Lake	T39N, R19E, Section 17	130	25
Emily Lake	T39N, R18E, Section 8	189	43
Fay Lake	T39N, R15E, Section 16	271	10
Fisher Lake	T40N, R18E, Section 28	52	49
Grub Hoe Lake	T39N, R15E, Section 7	69	4
Halls Lake	T39N, R15E, Section 20	60	4
Halsey Lake	T39N, R15E, Section 20	513	10
Keyes Lake	T40N, R17E, Section 36	204	77
Kingsford Flowage (WI-MI)	T39N, R19E, Section 33	415*	32
Lake of Dreams	T40N, R15E, Section 33	65	12
Long Lake	T39N, R15E, Section 19	184	23
Loon Lake	T39N, R17E, Section 1	50	55
Lost Lake	T39N, R15E, Section 12	85	45
Mud Lake	T38N, R16E, Section 26	74	8
Patton Lake	T39N, R17E, Section 19	254	52
Pine River Flowage	T39N, R18E, Section 28	145*	38
Price Lake	T39N, R17E, Section 18	163	8
Reisner Lake	T39N, R15E, Section 4	99	9
Sand Lake	T38N, R18E, Section 21	51	63
Savage Lake	T39N, R16E, Section 11	144	10
Sea Lion Lake	T39N, R17E, Section 11	117	82
Seidel Lake	T39N, R17E, Section 15	53	44
Spread Eagle Chain of Lakes	T39N, R19E, Section 4	441	68
Twin Falls Flowage	T39N, R19E, Section 12	928*	50
West Bass Lake	T38N, R17E, Section 11	56	25

* Data specifically from “Wisconsin Lakes” Wisconsin Department of Natural Resources, 2005. All other information from Florence County Hydro GIS.

Source: Florence County Hydro GIS, 2008; “Wisconsin Lakes” Wisconsin Department of Natural Resources, 2005; and Bay-Lake Regional Planning Commission, 2009.

Table 5.4: Florence County Major Rivers

Name	Length
Pine River	48
Brule River	38
Popple River	31
Menominee River	21
Little Popple River	19
Woods Creek	19
South Branch Popple River	10

Source: Digital Hydro Version 5, Wisconsin Department of Natural Resources, 2005; and Bay-Lake Regional Planning Commission, 2009.

The popularity of lakes and rivers and economic expansion has led to a considerable increase in development and re-development of waterfront property on Florence County lakes and rivers. This increase in development has created pressure on the natural resources. Many of the impacts are immediately evident such as wildlife habitat loss. However, many of the impacts develop gradually such as changes in water quality, shoreline aesthetics, aquatic and shoreline plants, and wildlife populations. The impacts tend to be long term and often result from the cumulative effects of increased development.

Wisconsin Wild Rivers

The Wild Rivers concept can best be expressed by Wisconsin State Statute 30.26, which states in part “...it is in the interest of this state to preserve some rivers in a free flowing condition and to protect them from development...” and “...wild rivers...shall receive special management to assure their preservation, protection, and enhancement of their natural beauty, unique recreational and other inherent values...” In addition to being protected by state statute, Wisconsin Wild Rivers are also protected by the Florence County Shoreland Zoning Ordinance.

In Florence County, the Pine and Popple are designated as Wisconsin Wild Rivers. Land use in the watershed is devoted predominantly to timber production. Both rivers provide recreational activities such as canoeing and fishing.



The Pine River has an overall length of 43.5 miles and an average width of 102 feet. It is a medium hard water river having slightly acid, light brown water. This river, a tributary to the Menominee River, has been designated for management as a *state wild river*. One impoundment, the Pine River Flowage, with a maximum depth of 38 feet, is located on the river. Fish species known to inhabit the river are brook trout, brown trout, rainbow trout, walleye, northern pike, largemouth bass, smallmouth bass, white sucker, panfish and forage species. Above the Pine River Flowage, the stream is classified as trout waters. Except for northern pike and forage species, most of the warm water game fish are found below the Pine River Flowage. Public access is provided at 5 road crossings and the wilderness type is also available as 25 percent of the stream frontage is in public ownership, primarily Chequamegon-Nicolet National Forest land. Conditional public access of the wilderness type is also available from private forest crop land that adjoins the river.

The river essentially flows through wild areas with only scattered developments located on the banks. Waterfowl make moderate use of this river as do furbearers and other wildlife. White water areas provide for challenging canoe trips, particularly during high water periods. One campground, with 6 camping units, is maintained by the Chequamegon-Nicolet National Forest at Chipmunk Rapids. The watershed is primarily forested with very limited areas of agriculture.

Popple River has an overall length of 28.1 miles and an average width of 64 feet. It is a hard water stream having slightly acid, light brown water. This stream, tributary to the Pine River, has been designated for management as a *state wild river*. Known fish species inhabiting the stream are brook trout, brown trout, rainbow trout, northern pike, black bullhead, white sucker, and forage species. This entire river is classed as trout water. Sixty-three percent of the stream frontage is in public ownership, primarily Chequamegon-Nicolet National Forest land, thus there is excellent opportunity for wilderness access. Five road crossings also provide public access. The river essentially flows through a wilderness area with very limited development. Excellent white water areas provide challenges for the canoeist, especially in the lower portions of the river and during high water. The watershed is primarily forested with limited areas of agriculture land.

Activities in Navigable Waters

Placement of structures, dredging and similar activities in or adjacent to navigable waters are regulated under Chapter 30 of Wisconsin Statutes. These activities often require a permit from WDNR before they can begin. Chapter 30 provides permit exemptions for the following activities:

- Boat shelters, lifts, and hoists
- Biological shore erosion control
- Culvert replacement (previously permitted and up to 24" in diameter)
- Dry fire hydrant
- Fish habitat structures
- Intake or outfall structure
- Manual dredging
- Pier or wharf
- Pilings
- Riprap repair
- Riprap replacement
- Swim rafts
- Wildlife habitat structure

Although Chapter 30 provides some exemptions, none of these exemptions are allowed in "Areas of Special Resource Interest" (ASNRI) and many are limited in "Public Rights Features" and "Priority Navigable Waters," all of which are defined in NR 1.05. Florence County contains a large number of surface water features that fall under one of these designations. This should be considered when making decisions about development around these areas.

Wisconsin's Impaired Waters

Section 303(d) of the Federal Clean Water Act requires each state to periodically submit to the U.S. Environmental Protection Agency (EPA) a list of impaired waters. Impaired waters are those that are not meeting the state's water quality standards. The WDNR submitted an updated list to EPA in 2008; however, it has not been approved by EPA and is subject to change prior to the final approval. Prior to the 2008 list, the WDNR submitted an updated list to EPA in May

2006 and received approval in September 2006. Table 5.5 lists each of the impaired waters that are located in Florence County.

Table 5.5: Impaired Waters of Florence County

Water Body	Pollutant	Priority	Year Added
Brule River Flow (Wi-71 Acres)	Mercury	Low	2002
Emily Lake	Mercury	N/A	Delisted 2006
Sand Lake (T. of Homestead)	Mercury	Low	1998
Sea Lion Lake	Mercury	Delist	1998

Source: Wisconsin Department of Natural Resources, 2008; and Bay-Lake Regional Planning Commission, 2009.

Waterfalls

Florence County has several other local natural features which enhance the county's environmental splendor. Several waterfalls exist along the Pine River and Popple River. In all there are seven waterfalls: Washburn Falls, Little Bull Falls, Big Bull Falls, and Jennings Falls, which are located on the Popple River. The remaining three: Meyers Falls, Bull Falls, and the county's most majestic waterfall, LaSalle Falls, are located on the Pine River. The waterfalls are accessible by trails or canoe.

Shorelands

Shorelands are viewed as valuable environmental resources both in rural and urbanized areas. As a result, the State of Wisconsin requires counties and incorporated communities to adopt shoreland/floodplain regulations to address the problems associated with development in shoreland and floodplain areas. Even though development within shoreland areas is generally permitted, specific design techniques must be taken into consideration. In more environmentally sensitive locations, any alteration of the shoreland is strictly regulated, and in some cases, not permitted under any circumstances.

The authority to enact and enforce shoreland and other zoning provisions is set forth in Chapter 59.692 of the Wisconsin Statutes and Wisconsin Administrative Codes NR 115,116, and 117. Chapter 10, Subchapter 2 of the *Florence County Zoning Ordinance* establishes zoning standards for the use of all shorelands in the county located along navigable waters. Florence County contains approximately 87,700 acres of shorelands around lakes and streams as illustrated by [Map 5.7](#).

Shorelands are land areas within the following distances from the ordinary high water mark of navigable waters:

- A. 1,000 feet from a lake, pond or flowage; and
- B. 300 feet from a river or stream or to the landward side of the floodplain, whichever distance is greater.

Floodplains

Floodplains are normally defined as those areas, excluding the stream channel, subject to inundation by the 100-year recurrence interval flood event. This event has a one percent chance of occurring in any given year. Floodplains, as identified by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), provide for storm water retention, groundwater recharge, habitat for various types of waterfowl and wildlife and are considered a valuable recreational resource. Furthermore, floodplains serve to provide flood and erosion control by storing floodwaters, reducing flood velocities, diminishing flood peaks and reducing sedimentation.

When buildings are constructed in the floodplain, the floodplain's storage capacity becomes reduced and other functions of the floodplain can be adversely affected. This could cause future flood events to be of higher intensity and allow the flood to overwhelm areas outside of the historic floodplain. As a way to protect floodplains, Section 87.30(1) of the Wisconsin Statutes and Wisconsin Administrative Code NR 116 require counties, cities and villages to adopt floodplain zoning ordinances to address the problems associated with development in floodplain areas.

The Florence County Floodplain Ordinance (Chapter 10, Subchapter 4) was adopted to regulate floodplain development in order to protect life, health, and property; and to minimize flood losses in areas subject to flood hazards. The ordinance regulates residential development, storage of hazardous materials, and actions which may be detrimental to permitted uses in adjoining districts, sewage disposal, wells for drinking water, and wastewater ponds or facilities, except those permitted under NR 110.15 within the FEMA designated floodplain area.

The floodplains have been identified within Florence County according to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps. Floodplains within the county are located along four major waterways: 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. Several of the lakes in eastern Florence County which have floodplains along them include: Spread Eagle Chain of Lakes, Emily Lake, Patten Lake, Keyes Lake, Boot Lake, Fisher Lake, Elwood Lake, and several smaller lakes and ponds. The majority of the floodplains are shown 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. Within the county there are approximately 6,264 acres in the 100-year floodplain and 64 acres in the 500-year floodplain. They are displayed on [Map 5.8](#).

Wetlands

Because of their importance, there are strict regulations regarding wetlands. WDNR mandates that shoreland wetlands be protected in both the rural and urban areas of the state. Wetlands not in the shoreland zone are protected from development by the federal government through Section 404 of the Clean Water Act and Wisconsin Administrative Code NR 103. It should be noted that all wetlands, no matter how small, are subject to WDNR and possible federal regulations, if they meet the state definition.

According to the WDNR, **wetlands** are areas where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophilic vegetation. Other common names for wetlands are swamps, bogs, and marshes. Wetlands provide scenic open spaces; act as natural pollution filters for lakes, streams and drinking water; serve as groundwater discharge areas, and retain floodwaters; and give valuable and irreplaceable habitat for plants and animals.

Within Florence County, there are approximately 49,587 acres of wetlands as identified by the Wisconsin Department of Natural Resources. The wetlands primarily lay adjacent to the major surface water features within the county. A majority of the wetlands in the county (66.3 percent) are classified as forested wetlands by the WDNR. More than 75 percent of the wetlands in Florence County have some

forest cover or forest cover mixed with shrubs or emergents. **Map 5.9** illustrates the WDNR inventoried wetlands greater than two acres.

Groundwater

Groundwater is stored in porous and permeable strata, more commonly known as aquifers. According to the *Soil Survey of Florence County, Wisconsin, 2004* groundwater is available in quantities that are adequate to meet present and anticipated future needs for domestic, agriculture, municipal, and industrial needs because only a small part of the total potential is being utilized. Areas in the county of large-scale pumpage are relatively few and the population density is low. The availability of groundwater will differ by location and a detailed investigation will be needed to guide the development of groundwater resources.

Florence County's groundwater source comes from sand and gravel aquifers and bedrock aquifers. Sand and gravel aquifers occur mainly in the western and northwestern parts of the county, with wells generally yielding 100 to 500 gallons of water per minute. In the central and southeastern part of the county these aquifers are typically isolated, shallow, and less permeable yielding 10 to 100 gallons per minute. The bedrock aquifers in the county are generally not very productive. More than half of the wells yield less than 5 gallons per minute.

Groundwater is the water that occupies spaces between soil particles and rocks located below the earth's surface. Groundwater, lakes, and rivers are all connected as water commonly flows between them. Groundwater is also connected to the surface of the land by rain and melted snow which carry substances from the surface down to the groundwater and nearby wells.

Overall, the *Soil Survey of Florence County, Wisconsin 2004* concludes that the groundwater in Florence County is generally of good quality. The least mineralized water is from the sand and gravel aquifers. The total mineralization in these aquifers is less than 300 milligrams per liter. Water in the bedrock aquifers may have a high concentration of calcium magnesium bicarbonate, calcium magnesium sulfate, or sodium chloride. Data in these aquifers is insufficient to measure water quality. Minor water problems in the county are caused by hardness and, in some areas, by high concentrations of iron.

A large percentage of water used by municipalities and in homes in Florence County comes from groundwater. Industrial water users in Florence County use groundwater. Drinking water is supplied via municipal sources or private wells. The Town of Florence has four municipal wells that provide drinking water to its residents. The wells range in depth from 108 to 140 feet. In addition, the Town of Fern and Florence County Schools have private high capacity wells with depths of 54 feet and 130 feet respectively. The groundwater source for all the wells are from sand and gravel aquifers.

Fertilizers, manure, land application of sewage, pesticides, on-site sewage disposal systems, chemical spills, leaking underground storage tanks, landfills, existing land uses, and landowner practices are all potential pollutants for drinking water wells. The susceptibility of groundwater to contamination from these activities can be highly variable depending on location. Depth to bedrock, aquifer type, soil type, and depth to groundwater are all factors.

According to a Source Water Assessment dated August, 9, 2007 for the Town of Florence, the wells are susceptible to contamination by volatile organic compounds, (VOCs), synthetic organic

compounds, (SOCs), nitrate, antimony, and arsenic. The system has moderate susceptibility to contamination by microbes and low susceptibility to ethylene dibromide (EDB).

Groundwater Management

In order to provide protection for groundwater resources, the WDNR has adopted maximum contaminant level (MCL) standards that apply to all public water supplies in the state. The standards regulate concentrations of pollutants in public water supplies (NR 809) and nitrate removal from public drinking water (NR 122).

Under Wisconsin's Groundwater Standards Law (NR 160), state programs for landfills, hazardous wastes, spills, wastewater, septic tanks, salt storage, fertilizer storage, pesticides, and underground storage tanks must comply with the established standards. In addition, Wisconsin Administrative Code chapters NR 140, 141 and 142 regulate groundwater quality, groundwater monitoring, well requirements and water management and conservation.

Despite regulation, groundwater resources in Wisconsin are still subject to contamination. As development in the area continues to increase, so does the amount of impervious surfaces such as roofs and parking lots. It is important to understand that the amount of water that infiltrates to the groundwater depends on such factors as vegetation cover, slope, soil composition, and depth to the water table. Therefore, wise land use decisions, particularly in critical groundwater recharge areas and areas of shallow soils, could help to increase groundwater recharge rates and limit contamination by minimizing the amount of impervious surface.

It is important to ensure protection of groundwater from construction and agricultural runoff events. These events can lead to contamination of private wells, fish kills and an influx of nutrients into surface waters causing harmful algal blooms. Methods to protect groundwater resources include utilizing local planning and zoning tools, advocating for best management practices, implementing wellhead protection programs, and strictly enforcing regulations on private sewage systems.

Wellhead Protection Planning

Wellhead protection plans can be an effective method of protecting groundwater quality and quantity. These plans are developed to achieve groundwater pollution prevention measures within public water supply wellhead areas. As of July 2008, the Town of Florence has adopted a wellhead protection plan for three of their four wells. The WDNR recommends implementing a plan for well 1 and to identify and manage improperly abandoned wells that may provide direct pathways for contamination to enter the aquifer.

Runoff refers to water from precipitation (stormwater), irrigation, or other sources that moves over and through the ground. These waters generally flow over impervious surfaces such as rooftops, driveways, sidewalks, streets and parking lots. As the water flows over these impervious surfaces it picks up and carries away natural and man-made pollutants, eventually depositing them into lakes, rivers, wetlands, coastal waters and groundwater supplies. The polluted run-off can destroy lake and river ecosystems, contaminate drinking water, and clog drainage ways with sediment which increases the likelihood of flooding.

Runoff/Stormwater Management

In October 2002, the State of Wisconsin established Run-off Management Administrative Rules to address uncontrolled run-off from urban and rural land use activities. These administrative rules establish a variety of best management practices, performance standards, and regulations and permit requirements that farms, cities and construction sites must follow as a way to reduce polluted runoff.

The following are the eight rules written by the WDNR and one by the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) that are intended to reduce the affects of runoff:

- NR 120 Priority Watershed and Priority Lake Program
- NR 151 Runoff Management (Performance Standards and Prohibitions)
- NR 152 Model Ordinances for Construction Site Erosion Control and Post-Construction Storm Water Management
- NR 153 Targeted Runoff Management Grant Program
- NR 154 Best Management Practices and Cost-Share Conditions
- NR 155 Urban Nonpoint Source Water Pollution Abatement and Storm Water Management Grant Program
- NR 216 Storm Water Discharge Permits
- NR 243 Animal Feeding Operations
- ATCP 50 Soil and Water Resource Management Program

These rules have a direct impact on private actions and on local government activities. They require that certain local governments take specific action to control storm water. As more impervious surfaces are created, causing a decrease in the amount of land that is available for filtration, these rules may require local governments to construct costly stormwater diversion and storage facilities. Furthermore, construction and agricultural activities within the community can contribute heavily to pollution issues if these requirements are not followed properly. Therefore, it is important that these requirements are addressed through local planning activities by promoting and utilizing best management practices. These practices will help to preserve the quality of the groundwater supply, protect surface waters from pollution, and safeguard significant aquatic habitats. For more information regarding best management practices and nonpoint source pollution control, visit the WDNR's runoff management website.

Florence County will provide landowners with technical information to assist them in voluntarily meeting state performance standards. It will also, to the extent possible, assist by making state cost-share funding available. Noncompliance will be enforced by the Wisconsin Department of Natural Resources, Florence County Zoning Department with support from the Florence County Land Conservation Department. 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 and Wetland Zoning Ordinance. Copies of ordinances can be reviewed at the Florence County Zoning Department offices.

Soil Erosion Standards

Erosion control standards in Florence County are 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 as is non-metallic mining operations permitted and monitored through the Non-Metallic Mining Ordinance.

The *Northern Wisconsin Cropland Study*, conducted in 1999, surveyed cropland in Florence County. Cropland soil erosion was found to be negligible. Florence County has requested and received a waiver from the requirement to develop a county-wide cropland erosion control plan

Forest Management Standards



Florence County is dominated by forested lands which require standards for forest management to ensure that wildlife habitat and runoff problems do not occur. Clear-cutting of some species is the most efficient and productive method of forest management. All public agencies attempt to control erosion during the cutting process by maintaining buffer strips along lakes and streams in accordance with state guidelines. The use of chemicals for defoliation purposes is not allowed in the

management of forestland under control of the US Forest Service or by the Wisconsin Department of Natural Resources (WDNR). Prohibitions related to forest management include:

1. No logging of trees within 30 to 50 feet of a perennial stream within Florence County on land not within the Nicolet-Chequamegon National Forest.
2. No clear-cutting is allowed within 300 feet of a Class I and selected Class II trout streams within the Nicolet-Chequamegon National Forest.
3. The use of pesticides has been suspended on all national forest land within the county.
4. There is a rutting policy and all contractors are required to be SFI certified when working within County forest.

Soil and Water Conservation Standards

Conservation plans, which plan individual crop fields to the tolerable soil loss rate, are prepared for participants in the Farmland Preservation Program. Participation is through voluntary individual 10 to 25 year agreements. Agricultural areas were mapped in the 1982 Florence County Farmland Preservation Plan. The Florence County Land Conservation Department manages agreements for cropland within these areas. There is no exclusive agricultural zoning in Florence County.

Areas will be targeted for conservation practices in the future using the following criteria:

- the total amount of erosion occurring;
- the extent to which current estimated erosion rates for cropland fields exceeds the soil erosion standards;
- the off-site damages, including water degradation caused by soil erosion;
- the extent to which soil erosion is preventable;
- the cost of preventing erosion;
- the feasibility of implementing the erosion control strategy; and
- other factors to be identified by the land conservation committee.

A variety of conservation practices are available for the control of cropland soil erosion. Producers in Florence County also tend to use several years of hay in crop rotation. Practices that most effectively address soil erosion problems in the county will be used in the implementation of this plan. Appropriate practices will be selected on an individual basis. Preference will be given to the conservation practices that allow producers to continue to produce essentially the same crops.

Florence County will provide on-going farm conservation planning services for participants in the Farmland Preservation Program and will assist with nutrient management planning. Technical assistance will be provided for implementation of conservation practices such as conservation tillage or rotational grazing. The Farmland Preservation Plan will be updated as required by changes to the program on a statewide level. The county will encourage participation in federal and state conservation programs.

As Florence County had just 10 participants in the Farmland Preservation Program countywide in 2006, the county will conduct one to two FPP site visits annually.

Woodlands

According to the 2009 land use inventory of Florence County, there are a total of approximately 273,908 acres of woodlands within Florence County. [Map 5.10](#) illustrates the woodlands within the county.

When planning future development, keep in mind that woodlands provide aesthetic views, wildlife habitat, and offer multiple recreational choices. Woodlands also maintain watershed cover, provide shade, serve as a windbreak, help reduce soil erosion, act as a noise barrier, and screen unsightly developments.

National Forest

By the beginning of the Great Depression, the majority of the Northwoods had been harvested and the land left barren. When farming proved not to be a productive use of the land and was abandoned by landowners could not pay their taxes, the State of Wisconsin and the federal government knew something had to be done to protect and reforest the lands to bring them to their original productivity. Under the Weeks Law of 1911 and the Enabling Act of 1925, the Federal Government was able to purchase, control and administer Wisconsin lands as National Forest.

Florence County is home to the Chequamegon-Nicolet National Forest. The forest has a total of more than 1,500,000 acres in eleven counties; approximately 84,474 acres are located in Florence County. Since the forest was purchased and not carved from large blocks of land, it is characterized by a fragmented ownership pattern.

County Forests

Due to the barren, tax delinquent land left by the homesteaders of failed farms in the early 1900's, several new state laws were passed that promoted the conversion of the land to productive forests. In 1927, the State Legislature passed the Forest Crop Law (FCL) that authorized counties to create county forests. It was later amended in 1929 allowing counties to take ownership without paying the required taxes. The new laws allowed for trees to be grown as

a crop of sorts. They also “empowered counties to adopt zoning ordinances that would prohibit certain land uses in forested areas.”

In 1963, the laws were amended to create the County Forest Law, establishing a permanent program of county forest that would be managed in accordance with a 15-year Comprehensive Land Use Plan developed by the County, with the assistance of the Wisconsin DNR. The County Forest system has created approximately 2.35 million acres of county forest in 29 counties in Wisconsin. Collectively, the County Forests are the largest public landholder in Wisconsin totaling over 40 percent of all public land.



The County Board approved the first entry of county forest in 1935 with 26,841 acres. The early phases of development consisted mainly of planting vast open areas using the Civilian Conservation Corps. The first timber sale was made in 1941; and with the exception of 1943, sales have been made annually to date. Today the county forest has 36,670 acres.

The Florence County Forest provides a number of opportunities for the public including hunting, fishing, hiking, camping, nature viewing and other recreational activities. These lands also play a major role in the economy of Florence County by providing employment in the production and manufacture of forest products.

Private Forest

Private forests comprise the largest percentage of forest land in the state at 57 percent. About 360,000 private, non-industrial landowners care for 10.4 million acres of woodland in Wisconsin.

The Forest Crop Law (FCL) passed in 1927, not only allowed the creation of county forest, but was also designed to help large forest owners. Early state tax policy was creating such a burden on landowners that they were overcutting their timber to pay their tax obligation. Therefore, the FCL was a way for the State to encourage proper forest management on private lands by providing tax incentives to landowners. Contracts require a 40 acre minimum, are for 25 or 50 year lengths, and require the land owner to permit public access for hunting and recreation. In lieu of taxes, land owners are required to make an annual acreage share payment along with a tax when timber is harvested and when the contract is terminated. In addition, the WDNR annually pays municipalities 20 cents per acre for FCL land within its jurisdiction.

In 1954, the Woodland Tax Law (WTL) was enacted for small woodland owners to acquire tax incentives. Contracts were for 10 acres or more, 15 year contracts, and didn't require public access. There was no state contribution and land owners did not have to pay taxes at harvest or contract termination.

Due to the creation of the Managed Forest Law (MFL) in 1985, both the FCL and WTL closed enrollment for new contracts in January 1986. Since FCL contracts can be 50 years in length, the last contracts will expire in 2035. Since WTL contracts were for 15 years, the last WTL contracts expired in 2000.

The MFL combined many aspects of both the FCL and WTL. Land owners have the option of choosing a 25 or 50 year contract period and is open to land owners owning 10 acres or more of woodlands. Land owners are required to follow a forest management plan and allow public access for hunting and recreation. However, in exchange for paying a higher share payment, up to 160 acres can be closed to public access with no more than 80 acres being enrolled before April 28, 2004. There is a state contribution and land owners are required to pay an acreage share, a tax at harvest, along with other taxes and fees.

As of 2007, there are approximately 2,470 acres still enrolled in the FCL. As of 2008, there are 72,033 acres enrolled in the MFL. Out of the 72,033 acres, 48,303 acres are open to the public for hunting and recreation. These lands enrolled in both FCL and MFL provide payments, in the form of taxes, withdrawal payments, and annual aids, to the different towns of Florence County. In 2007, payments on a county wide level totaled \$253,972 and in 2008 they totaled \$96,637.

Map 5.11 illustrates approximate ownership of federal, state, county, and private forests in Florence County.

School Forest

School forests were introduced to Wisconsin in the mid to late 1920's by Dean Russell of the University of Wisconsin-Madison College of Agriculture. In 1927, Russell spearheaded legislation that permitted school districts to own land for forestry programs. Within the year, three tracts of land were donated or purchased for the first school forests in Wisconsin; Laona, Crandon, and Wabeno. They were dedicated in the spring of 1928. In 1935, legislation was passed mandating that conservation education be taught in all high schools, vocational schools, and universities or colleges. School Forests provided great outdoor classrooms for this type of education, and now seemed to have a firm place in a new and exciting educational movement. With the arrival of World War II, many school forests disappeared when many smaller country school districts were dissolved into larger ones. However, today many school and community forests are alive and strong providing a place for education.

The Florence School District has a total of approximately 118 acres in forest land. The land is divided into two separate units. The first unit is 80 acres and is called the "Lake Emily Unit" because of its proximity to Lake Emily. The Florence County Board conveyed this 80 acre parcel to the Florence School District for a school forest. The second unit is 38 acres and is referred to as the "Poor Farm Unit" because it was once a farm operated by Florence County to take care of indigent persons. Various species of trees have been planted on both units since the 1960's.

Wildlife Habitat

Wildlife habitat can be defined as areas that provide the arrangement of food, water, cover, and space required to meet the biological needs of an animal. Different wildlife species have different requirements and vary over the course of a year. Additionally, various plants provide fruit and food in different seasons, therefore maintaining beneficial habitats to support diverse wildlife. Woodlands, wetlands, floodplains and the water features within the county provide habitat for many species of wildlife. White-tailed deer, turkey, grouse, rabbits, gray squirrel, and chipmunks are some of the more well known species found in the county. The inland surface waters of the county also provide habitat for fish and migratory fowl that frequent the area.

Connectivity is essential for the survival of numerous wildlife species. Many wildlife populations are unable to flourish, and countless ecological processes will not function if natural connections are severed. A planned connection of natural landscape features and stream corridors – parks, State Natural Areas, riparian areas, wetlands, woodlands, and other green spaces – is critical to maintain fundamental ecological processes and services, and to maintain the health of wildlife populations and water quality.

Rare, Threatened, and Endangered Species

Declines in populations of plants and animals are caused by more than one event. Habitat degradation and destruction by humans are the most serious threats to wildlife and plants. Destruction occurs through development activities; environmental pollution; introduction of invasive, nonnative species; overharvesting of wild species; and conversion of habitat to other uses. Many species are indicators of environmental quality. When a species is threatened or endangered, it usually means that something is wrong with a resource that we also depend upon. These species are of aesthetic, ecological, cultural, educational, historical, medicinal, recreational, and/or scientific importance to the land and people.

State and Federally Listed Threatened and Endangered Species

Florence County has 10 state endangered and 10 threatened species and no species that are listed as a federally endangered species. As defined by WDNR, state listed endangered species are those whose continued existence as a viable component of this state's wild animals or wild plants is determined by WDNR to be in jeopardy based on scientific evidence. State listed threatened species are those that appear likely, within the near future, based on scientific evidence to become endangered. Table 5.6 lists and ranks all state endangered or threatened plants and animals in Florence County.

National Heritage Inventory

The Wisconsin Natural Heritage Inventory (NHI) program is part of an international network of NHI programs. NHI programs focus on locating and documenting occurrences of rare species and natural communities, including state and federal endangered and threatened species.

The Wisconsin NHI Program conducts inventory around the state and works with people in business, industry, government and private conservation organizations to apply the results. The collected data are used for a variety of purposes including land management, state land master planning, community planning, conservation planning and endangered resources review of public and private activities across the state.

A key feature of the NHI methodology is a system for assessing rarity of the various elements at the global and state level. These ranks have proven useful in directing action toward the elements most in need of conservation. The methodology was developed by The Nature Conservancy and is currently coordinated by NatureServe, an international non-profit organization.

Table 5.6: State Threatened or Endangered Species in Florence County

Species Common Name	Species Type	State Status	Listing Date	State Rank*
Osprey	Bird	Threatened	8/1/1989	S4(Breeding)
Red-shouldered Hawk	Bird	Threatened	10/1/1979	S3S4(Breeding), S1
Spruce Grouse	Bird	Threatened	8/1/1997	S1S2(Breeding), S1
Northern Blue	Butterfly	Endangered	8/1/1989	S1
Pygmy Snaketail	Dragonfly	Threatened	8/1/1989	S3
American Marten	Mammal	Endangered	10/1/1972	S3
Dwaft Huckleberry	Plant	Endangered	10/1/1979	S2
Green Spleenwort	Plant	Endangered	10/1/1979	S1
Heart-leaved Foam Flower	Plant	Endangered	11/1/1981	S1
Little Goblin Moonwort	Plant	Endangered	4/1/1985	S3
Moor Rush	Plant	Endangered	8/1/1989	S1
Small Yellow Water Crowfoot	Plant	Endangered	11/1/1981	S2
Smith Melic Grass	Plant	Endangered	11/1/1981	S1
Western Jacob's Ladder	Plant	Endangered	8/1/1997	S1
Braun's Holly-fern	Plant	Threatened	11/1/1981	S3
Fairy Slipper	Plant	Threatened	8/1/1989	S3
Marsh Valerian	Plant	Threatened	11/1/1981	S2
Ram's-head Lady's-slipper	Plant	Threatened	10/1/1979	S2
Round-leaved Orchis	Plant	Threatened	10/1/1979	S2
Wood Turtle	Turtle	Threatened	10/1/1975	S2

* S1 = Critically imperiled in Wisconsin because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation from the state. S2 = Imperiled in Wisconsin because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state. S3 = Rare or uncommon in Wisconsin (21 to 100 occurrences). S4 = Apparently secure in Wisconsin, with many occurrences. S5 = Demonstrably secure in Wisconsin and essentially ineradicable under present conditions.

Source: Wisconsin Department of Natural Resources, 7/23/2008; and Bay-Lake Regional Planning Commission, 2009.

NHI data further reflects that Florence County is an ecologically rich county; made evident by the fact that approximately 35 mammal, bird, fish, turtle, herptile, butterfly, invertebrate, and plant species of special concern live within the county.

Invasive Species

Florence County, along with much of the country, is or will need to deal with invasive species from other regions and countries. Invasive species are nonnative species including all viable life-stages and any hybrids, cultivars, and genetically modified variants. These non-native plants, animals, and disease-producing organisms displace native species, disrupt ecosystems, and have a negative economic and environmental impact on agriculture and woodlands, along with recreational activities such as fishing, boating, and hiking. Some known invasive species impacting Florence County include:

Bishops goutweed

Aegopodium podagraria

Garlic mustard

Alliaria petiolata

Japanese barberry

Berberis thunbergii

Smooth brome <i>Bromus inermis</i>	Spotted knapweed <i>Centaurea biebersteinii</i>	Canada thistle <i>Cirsium arvense</i>
European swamp thistle <i>Cirsium palustre</i>	Bull thistle <i>Cirsium vulgare</i>	Autumn olive <i>Elaeagnus umbellata</i>
Helleborine orchid <i>Epipactus helleborine</i>	Leafy spurge <i>Euphorbia esula</i>	Orange hawkweed <i>Hieracium aurantiacum</i>
Tall hawkweed <i>Hieracium piloselloides</i>	St. Johns wort <i>Hypericum perforatum</i>	Ox-eye daisy <i>Leucanthemum vulgare</i>
Eurasian honeysuckle <i>Lonicera spp.</i>	Purple loosestrife <i>Lythrum salicaria</i>	White sweet-clover <i>Melilotus alba</i>
Yellow sweet clover <i>Melilotus officinalis</i>	Forget-me-not <i>Myosotis scorpioides</i>	Wild parsnip <i>Pastinaca sativa</i>
Reed canary grass <i>Phalaris arudinacea</i>	Canada bluegrass <i>Poa compressa</i>	Kentucky bluegrass <i>Poa pratensis</i>
Common buckthorn <i>Rhamnus cathartica</i>	Glossy buckthorn <i>Rhamnus frangula</i>	Sheep sorrel <i>Rumex acetosella</i>
Red clover <i>Trifolium pretense</i>		

Invasive species can spread rapidly and aggressively since they lack the predators and competitors from their place of origin. Controlling invasive species is difficult, and they are often impossible to get rid of. Many people aid in spreading invasive species, but they can also help keep them from spreading. For more information on identifying and controlling invasive species, visit the WDNR online at <http://dnr.wi.gov/invasives>.

Significant Natural Areas

A number of sites located within the county may be considered significant natural features. These areas may be designated as WDNR State Natural Areas, State Wildlife and Fishery Areas, Significant Coastal Wetlands, or Land Legacy Places.

The following text offers a brief description of the significant natural features designations. Table 5.7 details the significant natural areas in Florence County along with their designation(s).

WDNR State Natural Areas

The Wisconsin State Natural Areas program was established to designate sites that are in natural or near natural condition for scientific research, the teaching of conservation biology, and most of all, preservation of their natural values and genetic diversity for the future. These areas are not intended for intensive recreation use, but instead to serve the mission of the Natural Areas Program. The State Natural Areas program, established in 1951 under ss. 23.27, 23.28 and 23.29 Wis. Stats, is managed by the WDNR.



Source:
WDNR

State Wildlife and Fishery Areas

State wildlife and fishery areas are lands that have been acquired by the WDNR in order to preserve wild lands and game for people interested in the outdoors. By managing these lands it is the intent of the WDNR to protect important habitat for wildlife while also keeping them open for public use.

Land Legacy Places

The WDNR has identified places that will play a critical role in meeting Wisconsin's conservation and outdoor recreation needs over the next 50 years in order to effectively plan for potential future conservation needs within the state. By designating an area as a "Legacy Place," the WDNR intends to guide future land use decisions about certain places. However, it does not supersede any existing state or local regulations.

Wisconsin Forest Legacy

Established in 1990 as part of the Farm Bill, the Federal Forest Legacy Program works in partnership with states and private landowners to identify and protect ecologically important forests that are threatened by development. Typically, conservation easements are purchased for the land identified, which restrict development while ensuring public access, sustainable timber management and wildlife habitat.

Table 5.7: Significant Natural Areas, Florence County

Significant Natural Area	Designation			
	State Natural Area	State Wildlife and Fishery Area	Land Legacy Place	Wisconsin Forest Legacy
Fox Maple Woods	x			
Spread Eagle Barrens	x	x	x	
Brule River Cliffs	x			
Grandma Lake Wetlands	x			
Wisconsin Slough	x			
Lauterman Lake	x			
Popple River Corridor	x			
Hedmark Pines	x			
Wheeler Lake	x			
Woods Creek	x			
Kieper Creek	x			
Haley Creek Swamp	x			
Goodman Forest			x	
Menominee River			x	
Chequamegon-Nicolet National Forests			x	
Wild Rivers Legacy Forest				x

Source: Wisconsin Department of Natural Resources, 2008; The Nature Conservancy, 2008; and Bay-Lake Regional Planning Commission, 2009.

Key Environmental Features

When considering future development, it is important to understand that key environmental features serve many purposes such as protecting local water quality; serving as buffers between different land uses; use as a means of controlling, moderating, and storing floodwaters while providing nutrient and sediment filtration; and providing fish and wildlife habitat and recreational opportunities.

Map 5.12 illustrates the key environmental features of Florence County as defined by the Bay-Lake Regional Planning Commission (BLRPC). In order to produce this map, the BLRPC identified valuable coastal, natural and cultural resources throughout the county consistent with Wisconsin’s Comprehensive Planning legislation. These features were mapped using the Commission’s Geographic Information Systems (GIS) and include:

- Navigable waters with a 75-foot setback;
- Wetlands with a 50-foot buffer;
- 100-year FEMA floodplains; and
- Steep slopes (12 percent or greater);

Key Environmental Features are areas on the landscape that contain and connect natural areas, green space and scenic, historic, scientific, recreational, and cultural resources. They often lie along waterways and other natural features.

These features combined comprise complex ecosystems that provide many ecological and human-valued services, such as a improved water quality, means for wildlife movement, protection of natural resources, groundwater recharge, recreation areas and stormwater management, to name a few.

Other features that can be considered key environmental elements based on an area-by-area definition include unique and isolated woodland areas, scenic viewsheds, unique geologic features, wetland mitigation sites and exceptional wildlife habitats.

These key environmental features are strictly an advisory tool that can be utilized in various community planning efforts as a way to promote preservation of areas with environmental significance.

Parks and Open Space

Various natural settings in the county are utilized as recreational sites by the public. Table 5.8 lists the different recreational opportunities provided by Florence County.

Table 5.8: Florence County Park and Recreation Opportunities

Extensive Recreation Uses	Intensive Recreational Areas	Motorized Trails	Non-Motorized Trails
Hunting	Campgrounds	Snowmobiles	Hiking
Fishing	Picnic Areas	All terrain vehicles (ATV's)	Horse
Picnicking	Swimming Areas	Liscensed motor vehicles	Biking
Camping	Boat Landings	Four wheel drive vehicles	Cross county skiing
Skiing (Keyes Peak)	Waysides		Other
Tubing (Keyes Peak)	Shooting Range		
Snow boarding			

Source: Florence County Forest Comprehensive Land Use Plan, 2005; and the Bay-Lake Regional Planning Commission, 2009

In addition to the county owned facilities, there are a number of other recreational facilities located throughout the county that are owned by the state or individual county municipalities. For a full inventory of all the park and recreation areas located in Florence County see the *Florence County Comprehensive Outdoor Recreation Plan, 2006*. In addition, Chapter 9, Parks and Recreation Section of this document will contain more detailed information of the park and open space areas.



AGRICULTURAL RESOURCES

Agricultural resources encompass all materials and activities needed for the production of food and fiber and other goods through farming and forestry. They often define the identity and culture of rural communities; and along with the related businesses provide important contributions to many local economies. Despite their importance, Wisconsin's agricultural resources face significant threats due to increasing human demands by a growing population. Direct impacts of current and projected development patterns include fragmentation and the loss of land for production. Therefore, it is important that communities plan appropriately in order to preserve their important agricultural features.

Prime Agricultural Soils

The USDA, Natural Resources Conservation Service (NRCS) defines prime agricultural soils as lands that have the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed and other agricultural crops, with minimum inputs of fuel, fertilizer, pesticides and labor, and without intolerable soil erosion.

According to the NRCS prime, agricultural soils cover approximately 66,490 acres of Florence County. **Map 5.13** illustrates areas in Florence County that can be classified as prime agricultural soils based on the soil types found there. The county has approximately 84,000 acres of additional farmland that is classified as being of statewide importance.

Since agriculture plays an important role in the economic, cultural and social structure of Florence County, it will be important to preserve these areas from future development. Once agricultural land is disturbed or replaced by another land use, it cannot be effectively returned to agricultural production.

Prime farmland is considered land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses. It has the combination of soil properties, growing season and moisture supply needed to produce sustained high yields of crops in an economic manner if it is treated and managed according to acceptable farming methods.

Farmland of statewide importance is land not identified as prime farmland on a nationwide basis but is important in Wisconsin for the production of various food, feed, fiber and forage crops.

Prime farmland only where drained are areas where soils have wetness limitations, but can be or are used effectively for agricultural production with installation of a tile drainage system.

Farm Numbers and Types



The US Census of Agriculture, is conducted by the US Department of Agriculture (USDA) National Agricultural Statistics Service every five years with the latest census occurring in 2007. According to the 2007 census, Florence County had 115 farms with a total of 20,264 acres. The average farm

size was 176 acres. These farms support a variety of agricultural activities. Table 5.9 lists the number of farms that were operating in 1997, 2002, and 2007 by type, as well as the number of animals, or acres of land, that could be attributed to each particular farm type.



Table 5.9: Farm Numbers and Types in Florence County, 1997, 2002, and 2007

Livestock and Poultry						
Type	Number of Farms			Total Animals		
	1997	2002	2007	1997	2002	2007
Cattle and Calves	57	50	48	2,055	1,727	2,040
Hogs and Pigs	4	5	1	20	22	(D)
Poultry*	11	2	20	208	(D)	515
Horses and Ponies	-	45	45	-	238	261
Sheep and Lambs	6	3	3	(D)	83	(D)
Milk Goats	-	2	12	-	(D)	100
Deer	-	4	4	-	168	283
Rabbits	-	5	9	-	100	15
Harvested Crops						
Type	Number of Farms			Total Acres		
	1997	2002	2007	1997	2002	2007
Alfalfa Hay	53	47	38	3,270	2,946	3,021
Small Grain Hay	4	6	7	(D)	33	431
Other Tame Hay	42	24	28	2,516	1,235	2,670
Wild Hay	15	13	21	(D)	818	703
All Haylage, grass silage, and greenchop	13	13	9	921	1,334	828
Forage**	-	70	79	-	5,515	7,176
Corn for silage or greenchop	25	18	16	619	624	606
Rye	-	2	2	-	(D)	(D)
Corn for grain	-	8	1	-	(D)	(D)
Wheat for grain	-	2	1	-	(D)	(D)
Oats for grain	17	6	2	145	74	(D)
Barley	-	3	2	-	43	(D)
Vegetables	5	4	5	23	18	11
Land in orchards	-	5	3	-	8	15
Christmas Trees	-	4	5	-	34	51
Other Crops						
Type	Number of Farms			Number of Taps		
	1997	2002	2007	1997	2002	2007
Maple Syrup	10	15	8	7,258	13,800	3,970

“-” indicates lack of data availability, “(D)” indicates the data was withheld to avoid disclosing data for individual farms.

*Layers 20 weeks and older

**Land used for all hay and all haylage, grass silage, and greenchop

Source: USDA National Agricultural Statistics Service, Census of Agriculture, 2002; 2007 Census, Volume 1 Chapter 2: County Level Data; and Bay-Lake Regional Planning Commission, 2009.

Concentrated Animal Feeding Operations (CAFO)

Over the past ten years, Wisconsin has become home to an increasing number of Concentrated Animal Feeding Operations (CAFOs). In order to ensure proper management of animal waste from these facilities, WDNR requires that CAFOs have a Wisconsin Pollutant Discharge Elimination System (WPDES) CAFO permit. These permits are designed to ensure that operations use proper planning, construction, and manure management to protect water quality from adverse impacts. All livestock and poultry operations that expand to 1,000 or more animal units must apply for a WPDES permit at least 180 days (six months) before reaching that size. Currently there are no CAFO permits in Florence County.

Forest Management

Modern forest management usually involves the practice of sustainable forestry. Sustainable forestry is a proactive form of management that provides for multiple uses of the forest by balancing a diversity of both present and future needs. It is a process of informed decision-making that takes into account resource needs, landowner objectives, site capabilities, existing regulations, economics, and the best information available at any given time. In order to ensure that all of Wisconsin's forest resources supply a range of ecological, economic and social benefits for years to come, the Wisconsin Department of Natural Resources, Division of Forestry has dedicated itself to helping forest landowners and has many programs available to help them sustainability manage their lands. For a complete list see <http://dnr.wi.gov/forestry/LP-sustaining.htm>.

Forest Certification

Forest Certification means that Wisconsin landowners are managing their forests to meet strict standards for ecological, social and economic sustainability and are subject to an independent third party inspection. Forest certification is not only a responsible management choice, but helps Wisconsin remain competitive in global markets. In recent years manufactures have expanded the use of certified wood in their products, due to customer concerns of forest products being grown and produced in a sustainable fashion.

There are three certification programs available to state, county, and private forest lands: Forest Stewardship Council (FSC) standards, Sustainable Forest Initiative (SFI) standards and the American Tree Farm System (ATFS) Group Certification. Details on each of the certifications can be found on the Wisconsin Department of Natural Resources, Division of Forestry website.



Source:
WDNR

Federal Land

National Forests are managed for multiple uses – “Caring for the Land and Serving People” is their motto. Serving people by providing sustainable forests, beautiful landscapes, clean water, clean air as well as forest products that people want and need. The Chequamegon-Nicolet National Forests (CNNF) is divided into five Ranger Districts and is managed according to the 2004 Land and Resource Management Plan. The plan establishes: forestwide multiple-use goals and implementing objectives; forestwide management requirements; Management Area direction, including area-specific standards and guidelines, desired future conditions and management practices; identification of lands suited/not suited for timber management; monitoring and evaluation requirements, and recommendations to Congress for additional Wilderness. To determine the efficacy of the plan, the National Forest Management Act (NFMA) regulations (36 CFR 219) require regular scheduled monitoring and evaluation.

The National Forest provides a number of opportunities for the public including hunting, fishing, hiking, camping, nature viewing and other recreational activities. These lands also play a major role in the economy of Florence County by providing employment in the production and manufacture of forest products. According to the CNNF Fiscal Year 2007 Monitoring and Evaluation Report, the U.S. Forest Service has statutory authority (16 U.S.C. 500) to distribute twenty five percent of gross receipts generated on National Forest lands during the fiscal year.

The monies generated are distributed through the state to the townships within counties where National Forest lands reside. For the CNNF, timber is the primary revenue source. In 2007, CNNF paid a total of \$1,894,925 to be distributed to local counties.

State Land

State forests are managed on the principles of sustainable forestry and in accordance with a master plan. In addition, state forests are dual certified in both FSC and SFI. As part of forest management, trees are periodically harvested. Timber harvesting on state forestlands plays an important role in the economies of local communities and the state. Revenue from timber sales is placed in a general forestry account for the State which funds programs such as fire control and forest health protection. Although, there are no state forests located in Florence County, the State of Wisconsin Department of Natural Resources and The Nature Conservancy hold a working forest conservation easement on the Wild Rivers Legacy Forest.

County Land

County forests are governed by the County Forest Law, which states in s. 28.11(1) Wis. Stats. that the purpose of the county forestry plans are:

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

The county forests are also required to update their forest plans every 15 years, a process that includes approval both by each forest's county board and the WDNR. In order to ensure Wisconsin remains competitive in the global forest products industry, the County Forest Program are also managed in a cooperative framework with WDNR to attain group certification under the two most widely accepted forest certification standards in North America: the Sustainable Forestry Initiative (SFI) and the Forest Stewardship Council (FSC). County forests became third-party certified in March 2005 and confirms the excellent management of our county forests and their importance to the social, ecological and economic health of Wisconsin.

WDNR currently holds the certificate for 27 of Wisconsin's 29 county forest. Individual counties are free to choose either or both Sustainable Forestry Initiative (SFI) and Forest Stewardship Council (FSC) standards.

The *Florence County Forest Plan* was last updated and approved on February 1, 2005. According to this plan, “the mission of the County Forest is to manage, conserve and protect these resources on a sustainable basis for present and future generations.” In addition:

“County Forest resources should be protected from natural catastrophes such as fire, insect and disease outbreaks, and from human threats such as encroachment, over-utilization, environmental degradation and excessive development. While managed for environmental needs including watershed protection, protection of rare plant and animal communities, and maintenance of plant and animal

diversity, these same resources must also be managed and provide for sociological needs, including provisions for recreational opportunities and the production of raw materials for wood-using industries.”

A commitment to sustainability has led Florence County to dual certify its forest land by both FSC and SFI. In addition to the passive and active recreational opportunities the county forest provides, the lands also play a major role in the economy of Florence County by providing employment in the production and manufacture of forest products. Table 5.10 illustrates the number of sales established, acres cut, and the value of timber sales from Florence County Forests between 1999 and 2008. As shown by the table, the county conducts an average of 12 sales yearly resulting in the harvesting of about 774 acres with its value of approximately \$663,000.

Table 5.10: Timber Sales from County Forest, Florence County, 1999-2008

Year	# of Sales	Acres cut	Average Sale Size	Total Volume (cfs)	Total value	\$ per acre sold	\$ per acre of county forest*
2008	11	752	68	17260	\$838,254.85	\$1,114.70	23.09
2007	11	968	88	18725	\$646,469.06	\$667.84	17.81
2006	12	918	77	19370	\$893,567.50	\$973.39	24.62
2005	13	702	54	16725	\$1,033,336.15	\$1,471.99	28.47
2004	14	815	58	18345	\$849,557.50	\$1,042.40	23.41
2003	9	702	78	13020	\$486,884.35	\$693.57	13.41
2002	15	873	58	18862	\$713,318.90	\$817.09	19.65
2001	12	707	59	12757	\$414,742.70	\$586.62	11.43
2000	10	589	59	10597	\$309,928.00	\$526.19	8.54
1999	12	713	59	14149	\$440,287.00	\$617.51	12.13
Average	12	774	66	15981	\$662,634.60	\$851.13	\$18.26

* Based on County Forest acreage of 36,296.81 acres

Source: Florence County Forestry and Parks, October, 8, 2008.

Private Forest Lands

While private landowners are primarily responsible for the management of their land, help is available from the WDNR and other public and private sources. WDNR foresters work with about 9,000 landowners every year to provide personalized on-site service. They administer a number of planning, management, property tax incentive and cost-sharing programs. Guidance for private landowners is available from private cooperating foresters. Other partners, which can be found at <http://dnr.wi.gov/forestry/private/assist/othrassis.htm>, also offer informational bulletins, conferences about forestry and help organizing local forestry associations.

Many private landowners opt to certify their forestland. Certification gives them the ability to sell their timber in the certified marketplace, to participate in carbon markets, and an opportunity to educate neighbors and the public about the importance of well-managed private forests. To help landowners, the Department of Natural Resources manages a Group Certification program for non-industrial forestland enrolled in the Managed Forest Law (MFL). As part of the program, third-party auditors determine if the MFL Group conforms to American Tree Farm System® (ATFS) and Forest Stewardship Council (FSC) principles and performance measures. ATFS and FSC recognition of MFL creates the largest group certification program for private landowners in North America. Membership in the state includes over 42,000 MFL orders of designation on 2

million acres. The MFL Certified Group Program is free and entirely voluntary for landowners with 10 to 2,470 total acres under MFL. Individual MFL participants may elect to deactivate affiliation with the Certified Group without dropping out of MFL. Currently, only two percent of the eligible landowners decided against participating. Large industrial-owned tracts in MFL are not included in the MFL Certified Group but many are certified on their own. Florence County has approximately 31,118 acres of forest land in the MFL Certified Group.

School Forest

The WDNR foresters help the Florence County School District with management of its forest. A timber harvest is typically scheduled every three to four years. Revenues generated from those sales are deposited back into the school's general fund. In addition to timber management, the school district has established a nature trail on the Lake Emily unit.

Trends in Agriculture and Forestry

According to the US Census of Agriculture, over the past ten years Florence County saw a seven percent increase in farms from 1997 to 2002, however that growth was negated by a negative five percent decline from 2002 to 2007. In 2007, the county had 115 farms with a total of 20,264 acres. The average size of a farm in the county in 1997 was 198 acres. By 2007, the average farm size decreased to 176 acres.

Livestock Operations

Although the county saw a decrease in the number of farms over the past ten years, the overall number of cows in Florence County has remained steady. Dairy farms are the primary livestock operation in Florence County. According to the 2007 US Census of Agricultural, Florence County had 436 dairy cows that generated \$1.4 million in dairy products sold, while cattle sales generated an additional \$565,000.

Harvested Cropland



According to the US Census of Agricultural, the amount of harvested cropland throughout the county in 2007 was 8,194 acres. The county had 8,497 acres in 1997 and 6,816 acres in 2002. Of the harvested grain crops shown in Table 5.9, most either saw the number of acres in production stay consistent or decline over the ten years timeframe of 1997 to 2007. However, the production of small grains and forage are exceptions to this trend. The number of acres planted in small grains increased from 33 in 2002 to 431 by 2007 and forage acreage increased from 5,515 acres 7,176 acres within this same time period. Total value of all county crop sales in 2007 amounted to \$435,000.

Farm Ownership

According to the USDA's 2007 calculations, Florence County had 115 farms with approximately 86 percent owned by individuals or families while an additional 10 percent are owned by partnerships. Family-owned and non-family owned corporations account for about three and half percent of the farms in the county. These ownership comparisons are down from 2002 but are

more consistent with 1997 percentages. Of these 115 farms, operators are full owners of approximately 68 percent of the farms and only 51 (approximately 44 percent) of the farms are the primary occupation of the operator.

Agricultural Land Use Trends

The amount of agricultural land sold over time is a good indicator of how much development has taken place. As shown in Table 5.11, 647 acres of agricultural land was sold between 2002 and 2006 in Florence County. During these six years, 190 acres, or about 29 percent of the total agricultural land sold in the county during that time, was converted to non-agricultural uses. According to the USDA, the value of each acre diverted from agriculture to non-agriculture use has risen from \$2,337 per acre in 2002 to \$3,000 per acre in 2004.

The total amount of agricultural land sold and preserved as such from the years 2002 to 2007 has remained higher than the amount of land being converted to non-agricultural uses. However, there was an exception in 2004 where all the agriculture land sold was converted to non-agricultural uses. Furthermore, from 2005 to 2007 there was no agricultural land converted to other uses. Overall, 30 percent of agricultural land was diverted to other uses.

Florence County and its communities are encouraged to plan for future changes in land uses to help keep the cost of services down and assist with the preservation of Florence County's valuable farmlands and rural landscape. For instance, farmlands provide revenues to local governments and require very few services. Conversely, residential land uses may cost communities more to provide services than gained through local property tax increases. This becomes evident in areas of widespread development as infrastructure additions and maintenance, school transportation, police service and fire protection will likely increase the overall cost of services throughout the entire community.

Table 5.11: Florence County Agricultural Land Sales, 2002-2007

Year	Acres Continuing as Agricultural Land	Average Cost per Acre	Acres Diverted from Agricultural Land	Average Cost per Acre	Total Acres Sold
2002	112	\$1,837	35	\$2,337	147
2003	105	\$1,867	58	\$1,313	163
2004	-	-	97	\$3,000	97
2005	172	\$1,803	-	-	172
2006	68	\$2,068	-	-	68
2007	-	-	-	-	-
Total	457	\$7,575	190	\$6,650	647
Average	114	\$1,894	63	\$2,217	129

Source: National Agricultural Statistical Service, Wisconsin Publications and Services, 2002 – 2007; and Bay-Lake Regional Planning Commission, 2009.

Forestry Land Use Trends

As provided in Table 5.12, from 2005 to 2007, approximately 2,769 acres of forest land was sold in Florence County. Of that only 345 acres, or about 12 percent, was diverted from forest related land use. This is a good indicator that the county is retaining its forest resources and preventing those lands from being sold and developed as residential, commercial, or industrial uses.

Table 5.12: Florence County Forested Land Sales, 2005-2007

Year	Forest land continuing in forest use		Forest land being diverted to other uses		Total Forest Acres Sold
	Acres sold	Average Cost per Acre	Acres sold	Average Cost per Acre	
2005	1,323	\$1,584	-	-	1,323
2006	888	\$1,739	45	\$2,500	933
2007	213	\$1,711	300	\$1,554	513
Total	2,424	5,034	345	4,054	2,769
Average	808	1,678	173	2,027	923

Source: National Agricultural Statistical Service, Wisconsin Publications and Services, 2005 – 2007; and Bay-Lake Regional Planning Commission, 2009.

According to WDNR, one of the biggest challenges facing Wisconsin woodlands is the inevitable shift in forest ownership from large landowners to multiple smaller land owners or the continued parceling of land. Presently, almost 60 percent of all family forest landowners in Wisconsin are 55 years or older and about half of Wisconsin's forestland owners (49 percent) are already retired, and more than 10 percent of Wisconsin's privately owned forest lands will be sold, subdivided, or converted to non-forest uses in the next five years.

In addition, as land is sold and converted to other uses, care has to be taken so that future development does not fragment the forest landscapes. Fragmentation leads to a numbers of factors that can significantly affect forest health and modify the goods and services provided by forest ecosystems. Some of these factors include: loss wildlife and plant habitat, more susceptibility to invasive species, decreased forest health, and increased difficulty in managing lands for forest products, wildlife and recreation.

Environmental Impacts of Agriculture

Most of the agricultural lands within the county are interspersed with water features, wetlands, steep slopes and other natural features and could negatively impacted by nearby agriculture operations. The integration of agriculture and natural resources can raise concerns.

Soil erosion from farm fields and surface runoff of crop nutrients and agricultural chemicals can impact the quality of streams, rivers, lakes and underground aquifers and ultimately impacting drinking water supplies. Specific crop rotations, livestock and tillage practices all affect the amount of soil erosion and nutrient losses.

As a result, farm operators are encouraged to work with their local land conservation and UW-Extension staff to identify and implement specific resource conservation practices to better protect the environmental features in and around farms.

If properly managed, agricultural lands and those areas not cropped such as woodlots and stream corridors have a positive impact on a community. These lands provide balanced habitat for wildlife and waterfowl, in addition to providing open space lands.

CULTURAL RESOURCES

Cultural resources are typically sites, structures, features and/or objects of some importance to a culture or community for scientific, aesthetic, traditional, educational, religious, archaeological, architectural or historic reasons.

Historic and Archeological Sites

The National Register of Historic Places is the Nation's official list of cultural resources worthy of preservation. Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. Properties listed in the Register include districts, sites, buildings, structures and objects that are significant in American history, architecture, archeology, engineering and culture. Table 5.13 is a listing of sites in the county that appear on the National Register of Historic Places.



Preservation of historical and archeological sites located within the county can be important in retaining the character of the area. These sites help to educate the public about the history of the county while also providing tourism and recreation opportunities.

Table 5.13: National Register of Historic Places, Florence County

Resource Name	Location	Date Listed
Fay Outlet Site	Long Lake	1/17/1989
Fern School	Florence	3/20/1981
Florence County Courthouse and Jail	Florence	12/2/1985

Source: National Park Service, National Register Information System, 2008; and Bay-Lake Regional Planning Commission, 2009.

Community Design

Community design (character) deals with the large-scale organization and design of the county. An evaluation of community design is often subjective and requires personal judgment. In an effort to remove this subjectivity, the community design resources of the county have been inventoried that represent the building blocks and language of community design:



Landmarks

Landmarks are important reference points that represent a prominent landscape feature and has the ability to distinguish a locality, mark the boundary of a piece of land, or symbolize an important event or turning point in the history of the county. This picture is a panoramic view of Florence County from Keyes Peak.

- Old Gold Mine (T. of Aurora)
- Fern Town Hall (T. of Fern)
- County Fairgrounds(T. of Florence)
- Brule River Dam
- Buckeye Tower (T. of Commonwealth)
- County Courthouse (T. of Florence)
- Keyes Peak (T. of Florence)
- Brown School (T. of Homestead)

- Whisker Lake Wilderness
- Florence County Natural Resource Center (T. of Florence)
- Menominee River Dam
- Grimord's / Homestead Store (T. of Homestead)

Pathways

Pathways are linear features that represent both vehicular and pedestrian movement. Pathways provide connections between places, as well as along them. Whether a major arterial, local street, or undefined woodland trail, pathways are hierarchical and represent a degree of usage. The following pathways are considered important elements of the county's character.

- County Highway B
- County Highway N
- State Highway 70
- State Highway 139
- Old railway grades
- Pine River
- County Highway C
- County Highway U
- State Highway 101
- U.S. Highways 2 and 141
- Brule River
- Popple River

Edges

Like pathways, edges are linear. Edges are important organizing elements that represent boundaries that can be soft or hard, real or perceived. These edges do not necessarily coincide with jurisdictional boundaries.

- Chequamegon-Nicolet National Forest
- Spread Eagle Chain of Lakes
- Spread Eagle Barrens
- Goodman Grade

Districts

Districts encompass areas of commonality. These areas represent buildings and spaces where clearly defined and separate types of activities take place.

- Emergency and Fire Districts
- Aurora industrial park
- Florence utility district
- Florence School District

Nodes

Nodes are specific points of recognition. They are destinations and very often represent the core or center of a district. In addition, nodes are closely associated with pathways as they provide access to and from districts.

- "4 corners" – intersection of County Highways C, N, U, and

Map 5.1: Quaternary Geology

Map 5.2: Depth to Bedrock

Map 5.3: Steep Slope

Map 5.4: Watersheds/Sub-watersheds

Map 5.5: Major Named Lakes

Map 5.6: Major Rivers and Creeks

Map 5.7: Shorelands

Map 5.8: Floodplains

Map 5.9: Wetlands

Map 5.10: Woodlands

Map 5.11: Woodland Ownership

Map 5.12: Key Environmental Features

Map 5.13: Prime Agricultural Soils

