

---

**Adams County  
Land and Water Resource Management Plan  
2016-2025**



**November 2015**

Prepared by: North Central Wisconsin Regional Planning Commission

---

## **ACKNOWLEDGEMENTS**

Adams County's Land and Water Resource Management Plan was developed with the following residents and staff. Special thanks are extended to the following people:

### Land and Water Conservation Committee

Joe Stuchlak, Chair	Heidi Roekle	Paul Pisellini	Kevin Bork
Barb Morgan, Vice Chair	Dan Wysocky	Onie Karch	

### Citizen Advisory Group:

Bill Euclide	Rick Georgeson	Mark Shaw	Dan Wysocky
Eric Edwards	Linda Moonan	Barb & Jeff Tenpas	Don Yestad
Don Fornasier	Heidi Roekle	John Wallendal	

### Technical Advisory Group:

Wally Sedlar County Conservationist, Adams County Land and Water  
Reesa Evans, Lake Specialist, Adams County Land and Water  
Chuck Sibilsky Res. Conservationist, Adams County Land and Water  
Michelle Harrison Program Coordinator, Adams County Land and Water  
Phil McLaughlin Zoning administrator, Adams County Planning and Zoning  
Don Genrich, UW-Extension, Adams County (Retired)  
Dave Russell, Department of Agriculture, Trade, and Consumer Protection Engineer  
Michelle Komiskey, Natural Resources Conservation Service  
Scott Provost, Department of Natural Resources, Water Division  
Barry Benson, APHIS Wildlife abatement  
Darren Ladwig, WDNR Wildlife Management Adams County  
Greg Wolf, Milk Source Nutrient Management Planner  
Joe Stuchlak, Adams County Land and Water Conservation Committee Chairman  
Kay Olson-Martz, Adams County Farm Bureau  
Sarah Grosshuesch, Adams County Health and Human Services  
Shannon Rohde, Central Wisconsin Wind Shed  
Terri Wilson, WDNR Forestry Adams County  
Will Stites, WDNR Water Regulations and Zoning Specialist

Cover Photo: Adams County Land & Water Conservation Department

**November 2015**

---

This plan was prepared under the direction of the Adams County Land and Water Conservation Committee by the North Central Wisconsin Regional Planning Commission.

For more information contact:

NORTH CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION  
210 McCLELLAN STREET, SUITE 210  
WAUSAU, WI 54403

Phone: 715-849-5510  
[www.ncwrpc.org](http://www.ncwrpc.org)



**TABLE OF CONTENTS**

**Chapters**

Plan Summary..... 1

1. Plan Development and Public Participation ..... 6

2. Resource Assessment ..... 13

    Location ..... 13

    Geography..... 14

    Climate ..... 14

    General Land Use..... 14

    Surface Water ..... 18

        Basin & Watersheds..... 19

        Impaired Water – 303(d) Waters..... 20

        Outstanding/Exceptional Resource Waters..... 39

    Drainage Ditches..... 40

    Groundwater Resources ..... 41

    Geology ..... 44

    Mineral Resources ..... 45

    Soils..... 47

    Previous Reports Reviewed ..... 48

3. Performance Standards and Prohibitions ..... 56

4. 2007-2011 Work Plan Accomplishments ..... 61

5. 2016-2020 Work Plan And Budget..... 64

6. Regulations ..... 82

7. Monitoring and Evaluation..... 83

8. Information and Education Strategy ..... 85

9. Coordination ..... 86

10. Glossary ..... 94

## **Maps**

Map 1	Land Use
Map 2	Watersheds
Map 3	Designated Waters
Map 4	Soils
Map 5	Wind Erodible Soils

## **Attachments**

- A – Impaired Waters List – 303(d) Waters
- B – Outstanding and Exceptional Resource Waters
- C – Public Hearing Notice
- D – Conservation Practices and Cost-Share Rates
- E – Watershed Strategies for Improving Impaired Water Quality

# PLAN SUMMARY

## Introduction

The Adams County Land and Water Resource Management Plan is drafted as a 10-year plan (2016-2025) with a 5-year Work Plan (2016-2020) in accordance to the requirements set forth in Chapter 92 of the Wisconsin Statutes.

## Plan Development

To assist in the revision of the land and water resource management plan, Adams County Land and Water Conservation Department invited participants from a variety of natural resource professionals, and interested citizens representing farming, riparian owners, and others throughout the County.

The TAC met on **October 29, 2014** to identify major resource concerns in the County, and to review and revise the Resource Assessment chapter.

The CAC met on **December 10, 2014** to complete a worksheet developed from TAC identified resource concerns that allowed participants to rank:

1. The most important resource problems;
2. The importance of select areas of work; and
3. The importance of Department activities and programs.

The TAC met on **March 25, 2015** to review what the data says about the state of the natural resources in Adams County, and to identify possible Work Plan goals.

The CAC met on **May 6, 2015** to hear what the TAC identified as the state of the natural resources in Adams County, and then to rate which goals were most important for the Work Plan.

**June 25<sup>th</sup>, 2015** - Public hearing held.

**December 2015** - Presentation of Plan to the Wisconsin Land and Water Conservation Board (LWCB).

**Winter 2015/2016** - Adoption of the plan by the Adams County Board of Supervisors.

**Winter 2015/2016** - DATCP sends letter adopting the Plan following LWCB recommendations.

## Resource Assessment

Brief summaries of the land and water resources in Adams County, and how they may have changed over the past 6 years (2-year plan extension), are described in this chapter.

## **Location/Geography**

Adams County is located in the Central Sands region of Wisconsin. The County's whole west border is the Wisconsin River, and Castle Rock and Petenwell Lakes. The City of Adams and the Village of Friendship share a border and are the only incorporated municipalities in the county. Combined, Adams-Friendship have 2,692 residents as of the 2010 Census.

## **General Land Use**

Adams County is just over 50 percent covered with woodlands, with the majority of these lands in private ownership. A variety of federal and state owned lands are scattered throughout the county, in addition to county, town, city, village and other landowners. Combined federal, state, county and town governments own over 20,000 acres or about 5% of the land in Adams County. Federal ownership is concentrated in the Town of New Chester where a federal prison is located with over 900 acres. Adams County has approximately 411 acres of State Parks and 7,938 acres of wildlife and natural conservancy areas within the county.

### Agriculture

Irrigated vegetable farming is the primary agricultural enterprise (e.g. potatoes, corn, snap beans, soybeans, and peas). Cranberry production is increasingly important too. Two CAFO's have been built in the last 3 years in the county and will continue to bring approximately 52,000 acres under contract of nutrient management plans and the 3<sup>rd</sup> CAFO is planned to start construction in late 2015 or early 2016 and will be completed in 2016 or 2017 depending on the start date. This 3<sup>rd</sup> CAFO has a nutrient management plan already submitted to Adams County with an additional 18,000 acres under contract for a total of more than 70,000 acres under nutrient management.

### Forestry

Even though there is only a small amount of County Owned Land, 3244 acres owned by the county, and none of the land is under Forest Management, there are a couple state wildlife areas and state natural areas with extensive wetland environments which make up 16,454 acres and 4,900 acres of Federal Government lands. Paper company holdings offer vast areas of Managed Forest Law lands that are open to the public, approximately 30,000 acres, which in recent months have been sold and the issue of public lands open for recreational use may be reduced significantly.

### Residential Development

Most residential development occurs around the lakes in the Town of Rome, within the City of Adams and the Village of Friendship, and in the communities of Monroe and Dellwood along Castle Rock and Petenwell Lakes. Many housing subdivisions and scattered residential uses exist along town roads and inland lakes throughout the County.

### Commercial & Industrial Development

Resorts are expanding out of Wisconsin Dells along the STH 13 corridor. Many stores exist in Adams and Friendship. Mining, manufacturing, and agricultural warehousing and processing are scattered throughout the County. New

expansions within the county, such as a large golf course, may change the northern area of the county.

### **Surface Water**

Adams County has a high level of tourism, recreation, and seasonal housing resulting from people being drawn to mainly the waters of Castle Rock and Petenwell Lakes and 20 other inland-lakes with public access.

Total surface water in Adams County exceeds 26,000 acres. Thirty-two named lakes are located within the county, although they don't all have public access. Many of the lakes have been heavily developed over the years for recreational purposes. In addition, there are 30 unnamed lakes located in the county. About 73 streams stretch 235 linear miles and cover 450 surface acres. Three drainage districts cover about 28,340 acres, and contain about 17 ditches (about 44 linear miles).

As of 2015, 21 of the 22 lakes with public access have approved lake management plans. Since 2004, volunteers have monitored the lakes using the Citizen Lake Monitoring Program and recorded their data in the SWIMS database. Since 2007, thirty streams also have active volunteers monitoring water quality.

#### Impaired Waters – 303(d) Waters

In 2014, there were 6 waterbodies in Adams County on the 303(d) list. Petenwell and Castle Rock Lakes have been on the impaired waters list since 1998. Mason Lake was placed on the list in 2002. Lakes Arrowhead, Sherwood, and Friendship were newly listed in 2014. It is expected that Lake Camelot may be listed in 2016.

#### Outstanding and Exceptional Resource Waters

Adams County has 1 outstanding water, and 12 exceptional waters, one of which leads into a 303(d) listed lake.

### **Groundwater**

Groundwater is the primary source of drinking water and irrigation water in Adams County. Nearly 14 billion gallons of groundwater are used for irrigation annually, while all other groundwater use equals less than 1 billion gallons annually. Groundwater quality is generally good in Adams County.

- 88% of 3,964 private well samples met the health-based drinking water limit for nitrate-nitrogen. The other 12% are considered unsuitable for consumption by infants and women who are pregnant or trying to become pregnant.
- 28,817 acres of land in Adams County are in atrazine prohibition areas.
- Most soils in Adams County are highly susceptible to groundwater contamination.

### **Soils**

The majority of soils in Adams County result from glacial sandstone deposits, while southeast Adams County has glacial till. The soil erosion problem areas in the County contain annually cultivated glacial sandstone deposits, which are prone to wind erosion, or annually cultivated glacial till soils located on slopes that are prone to water erosion.

## **Performance Standards and Prohibitions**

Agricultural Performance Standards will continue to be achieved through education delivered in a variety of ways.

Priority farms will be identified by LWCD as those farms that allow unfiltered stormwater runoff into state waters as well as the new agricultural fields that are converted from forest land to crop production. A priority farm ranking exists.

Non-agricultural Performance Standards are regulated by the County Planning and Zoning Department through ordinances.

## **2007-2011 Work Plan Accomplishments**

Accomplishments and activities completed from the 2007-2011 Adams County Work Plan are summarized in Chapter 4.

- Streams were monitored for quality and quantity.
- A lake specialist coordinated citizen volunteers on 20 lakes who monitored water quality and inventoried aquatic invasive species.
- More than 20 aquatic plant surveys were conducted on county lakes.
- 92 agricultural compliance inventories were completed.
- Farmland Preservation program participant reviews were completed.
- A tree and shrub sale assisted about 645 people with installing conservation practices.
- The Stormwater Runoff Ordinance was completed in 2007.
- Preventing point source groundwater pollution was not met, because of workload priorities.
- Revised the Animal Waste Storage Ordinance in 2010.

## **2016-2020 Work Plan**

Based upon resource concerns identified by the Citizens Advisory Committee and Technical Advisory Committee members, the Work Plan goals are listed in priority order.

Goal 1: Create a culture where landowners take ownership of their impact on the environment. Social and Ecological resource assessments will be conducted before project details are identified.

Goal 2: Protect and improve groundwater quality and quantity as well as surface water quality.

Goal 3: Reduce wind erosion.

Goal 4: Promote working forests and farms.

Goal 5: Improve forest silviculture for multiple uses.

Goal 6: Manage wildlife conflicts.

Goal 7: Control invasive species.



## **Monitoring and Evaluation**

Performance Standards – Spot checks on a watershed basis are the main tool used to monitor erosion within the county. Spot checks will be conducted on 25% of all installed practices cost shared in the last four years. LWCD staff will spot check 25% of those farms required to update Nutrient Management Plans for compliance with the Animal Waste Management Ordinance and Nutrient Management plan completion by all required landowners will be checked off annually. The Farmland Preservation Program Plan, which is implemented in the Planning and Zoning Department, is being updated and the LWCD will conduct the compliance component of the plan once it has been updated. The future goal is to get more agricultural producers involved with the Farmland Preservation Program.

Water Quality Monitoring – Volunteers - coordinated by LWCD staff, monitor lakes and streams for water quality and inventory aquatic invasive species.

## **Information and Education**

Based upon limited success of various educational strategies in the 2007-2012 Work Plan, a different educational strategy will be utilized. The new strategy includes presenting targeted UWEXtension produced materials at local lake district/association meetings, watershed group meetings, Adams County's web site and town association meetings. Additionally, articles in widely distributed newspapers, and presentations on local radio will reach the general public.

# **PLAN DEVELOPMENT AND PUBLIC PARTICIPATION**

## **Chapter 1**

### **Introduction**

Locally led natural resource management is an important concept in Wisconsin Land and Water Conservation. State and federal agencies support the idea that local residents are best suited to identify and provide solutions for natural resource problems within a county. At the root of the county Land and Water Resource Management (LWRM) plan is the concept of cooperation among local residents and all natural resource agencies operating within the county. The Department of Agriculture, Trade, and Consumer Protection (DATPC) requires that each county Land and Water Conservation Department (LWCD) locally create a Land and Water Resource Management (LWRM) plan (Ch.92, WI Statutes) to coordinate LWCD activities. The Land and Water Conservation Committee (LWCC), and Land and Water Conservation Department (LWCD) have the responsibility of implementing a Land and Water Resource Management (LWRM) Planning Program.

Chapter ATCP 50 implements Wisconsin's Soil and Water Resource Management Program (SWRMP) under Ch. 92, WI Statutes. The Department of Agriculture, Trade and Consumer Protection administers the Soil and Water Resource Management Program (Ch. ATCP 50) in cooperation with County Land Conservation Committees, the Land and Water Conservation Board, the Department of Natural Resources and other state and federal agencies. The program has the purposes specified under Sec. 92.14(2), WI Statutes.

### **What is a LWRM Plan?**

The LWRM plan serves as a long-term strategic plan for the LWCD, county residents, and partnering state and federal natural resource agencies. The plan directs conservation efforts within the county and assists in forming annual work plans for the LWCD and agencies. It is also used to support applications for conservation grant funds, including annual state grants for county staff and support costs.

At a minimum, a LWRM plan must describe:

- Water quality and soil erosion conditions throughout the county;
- Water quality objectives;
- Key water quality and soil erosion problem areas;
- Conservation practices needed to address water quality and erosion problems;
- A plan to identify priority farms and other sites within the county;

- Strategies to encourage voluntary implementation of conservation practices;
- State and local regulations that the county will use to implement the plan;
- Compliance procedures that apply if enforcement actions occur;
- Multi-year work plan for the LWCD to implement conservation practices and achieve compliance with state runoff management performance standards; and
- How the LWCD will measure and monitor progress on the work plan, provide information and education and coordinate its conservation program with state and federal agencies.

### **Plan Development with Public Participation**

The focus of this plan’s development process was to identify and prioritize land and water resource issues to develop a Work Plan that addresses those issues. The Work Plan coordinates various agency’s efforts to conserve the land and water resources in the county.

A good start to any planning process is finding out what currently exists. NCWRPC staff and the Adams County LWCD staff collected land and water resource inventories from a variety of sources.

A Technical Advisory Committee (TAC) of natural resource and agricultural professionals was gathered to review the Resource Assessment Chapter and to add additional perspective on what data they are daily working with to determine current trends. Those perspectives were incorporated into the Resource Assessment Chapter. TAC members also reviewed and revised the Work Plan according to what actions worked well. TAC members are listed with their representation on the back of this plan’s cover.

The Citizens Advisory Committee (CAC) was a diverse group of residents identified by Adams County Land and Water Conservation Committee (LWCC) and also included some Committee members to provide priority issue feedback for this plan. CAC members are listed on the back of this plan’s cover.

---

The TAC met on **October 29, 2014** to identify major resource concerns in the County, and to review and revise the Resource Assessment chapter.

Here are questions they discussed:

Are there significant trends or anticipated changes in local land uses in the future?

- Productive forest converting to agricultural crop production.

- Forest land going to golf course.
- CAFO – more coming.
- More shoreland development.
- Frac sand mining increasing.
- Clay mining increasing.

Any near future changes in development density patterns?

If yes, then where and when?

- Sand Valley Golf Course development
- Highways 82 & 13 corridor development – development will continue expanding up from Wisconsin Dells along Hwy 13 up to Hwy 82.
- Riparian residential development to increase along major water ways.

What action do landowners take now to prevent soil erosion?

Is more action needed? What additional action should the county take?

- Farmers plant cover crops and wind breaks (need a lot more farmers doing this)
- Reduce tillage/Conservation tillage.
- Multi cropping (may actually create more soil erosion)
- Stream bank erosion
  - ◆ Leola Drainage Ditches are overflowing their banks more often due to larger storm events.
  - ◆ More debris is now found in Castle Rock and Petenwell Lakes due to bank erosion that is caused mainly by high water events.
- Shoreland erosion (Lakes and Streams)
- Clean tillage is required for higher productivity of vegetable crops.
- County should update Farmland Preservation Plan and get more people into the program.
- Possibly create an Agricultural Enterprise Area.

What are the anticipated trends in farming practices, forest management, and shoreland development that may increase soil erosion?

- Vegetable crop production and Irrigation of cropland is increasing (acres coming out of forestry).
- Certain crops don't provide enough time to establish a cover crop before winter.
- Oak wilt.
- Bur Oak blight.
- Less forestry with Plum Creek ownership transfer to other land company.

- Shoreland development increasing.
- More intensive agricultural practices being used.
- Higher use of technology (e.g. drones/UAV; GPS application of fertilizers, pesticides, and irrigation.)
- Increasing number of high capacity well installation.
- Wind erosion increasing due to windbreak removal and then tilling more land.
- Managed Forest Land acreage to remain constant.

---

The CAC met on **December 10, 2014** to complete a worksheet developed from TAC identified resource concerns that allowed participants to rank:

A. The most important resource problems:

1. Groundwater quantity
2. Groundwater quality
3. Animal waste management
4. Forest management issues
5. Land use issues
6. Large farming operations

B. The importance of select areas of work:

1. Land management
2. Water and wetlands
3. Agricultural programs
4. Environmental education
5. Invasive species

C. The importance of Department activities and programs.

CAC members prioritized various activities on the worksheet under 7 program headings. LWCD used these priorities when creating the Work Plan.

The worksheet was provided prior to the meeting, so that CAC participants would arrive with some general resource concerns in their minds.

Here are the issues identified by the CAC at the meeting:

Changes in Land Use

- Deforestation going to large row crops, more irrigation, more CAFOs, and more subdivisions, especially along the streams.
- Changes in drainage patterns (clear cutting of forested land uses, and new drainage ditches).
- Changes in water quantity due to high capacity wells increasing in number of wells and amount pumped per well, which may lead to more intermittent streams.

- Changes in water quality – more polluted runoff, manure storage issues, nutrient runoff, and more blue-green algae problems.
- Loss of smaller farms and more big farms likely.
- More runoff from an increased amount of impervious surfaces, which may lead to more stream and lake shore erosion.
- There may be more disputes about water use – bottled water issues.
- Frac sand mining and related pollutant issues.
- Need increase in farm preservation.
- Need to find balance between protecting waters and agricultural uses.
- More need for TMDL.

### Changes in Climate

- More intermittent streams.
- More wind erosion – need for wind breaks, cover crops and conservation tillage.
- More water erosion due to big storm events and flashier storm events.
- Farms may need more fertilizer or manure, which will cost more money and hurt water quality.
- Bigger need for integrated pest management.
- Water table not being replenished as fast as being depleted, and lakes may be affected.

### Tourism and Economy

- Tourism will change depending on water quality and quantity.
- Increased tourism may cause water problems in quantity and quality.
- Need for old septic systems to be inspected and repaired/replaced.
- Seems like big Agriculture is getting its way, not protecting the water that brings tourists and new people to county.
- Need to be proactive with zoning to protect the land and water quality and quantity.
- Changes in land and water quality or quantity could negatively affect property values and county income base.

---

The TAC met on **March 25, 2015** to review what the data says about the state of the natural resources in Adams County.

LWCD and NCWRPC developed goals from these resource discussions:

#### Problems and causes:

Issues as to why wind erosion is a bigger problem

Wind erosion continues to be a big problem in Adams County. As companies/producers are getting bigger with more fields to harvest – harvesting takes longer and they are not able to get a cover crop planted

in September. Moldboard plowing is more prevalent due to requirements by canneries for clean tillage to reduce crop contamination.

Companies/producers are getting 2 or more crops planted in a season – which is another reason why timing is a factor with planting a cover crop.

Trees are being taken down right to the property line – windbreaks are not being left or they are being mowed down or cut back.

Discussion took place about the Wisconsin 590 Standards – how nitrogen is not accounted for in irrigation.

Newly listed 303(d) waters in 2014: Lake Sherwood, Lake Arrowhead, and Friendship Lake – they became listed mainly due to increased levels of nutrients caused by cumulative actions by adjacent riparian owners, upstream inputs and internal loading. Lake Camelot (next to lakes Sherwood and Arrowhead) is likely to be 303(d) listed in 2016.

Possible solutions:

- \*\* Need to work with the Central Wisconsin Windshed Partnership in getting more miles of wind breaks planted. Discussion took place about Golden Sands RC&D working more with Central Wisconsin Windshed Partnership.
- \*\* Another idea was to implement a demonstration project using dry manure as mulch, as an alternative to planting a cover crop.
- \*\* Yahara Pride is a farming operation outside of Madison WI – have them come and talk to local farmers to share their new ideas/what is working and what is not.
- \*\* DATCP's contract needs to be streamlined with farmers.
- \*\* Work with NRCS to get the word out about the Stewardship program.
- \*\* Educate about shoreline buffer ordinance and streambank erosion.
- \*\* Discussion took place about working with the Leola Drainage District to resolve the concerns in northern part of Adams County.

---

The CAC met on **May 6, 2015** to hear what the TAC identified as the state of the natural resources in Adams County, and then to rate which goals were most important for the Work Plan.

CAC members were given a sheet with all the goals on them, and then given 5 points that they could allocate to show importance. Participants were concerned that if a goal did not get any points that it would be eliminated, but

staff assured them that those goals would just be last, and consequently would not receive the bulk of staff time to complete.

Here are the Adams County goals in CAC's prioritized order:

16 votes - Create a culture where landowners takes ownership of their impact on the environment.

8 votes - Protect and improve groundwater quality and quantity.

7 votes - Protect and improve surface water quality.

5 votes - Protect and improve natural resources.

4 votes - Promote working forests and farms.

1 vote - Reduce wind erosion.

No votes - Control Invasive Species.

No votes - Manage wildlife conflicts.

No votes - Improve forest silviculture for multiple uses.

The high vote count (16 votes) followed a lengthy discussion of how agriculture members and waterfront owners can each better educate and communicate solutions within their groups to protect the environment for all. Instead of this goal remaining a goal in the Work Plan, educational objectives under each goal became a high priority.

---

Public Hearing

The Public Hearing was held at 5:30 pm on the June 25, 2015, and a quorum of the LWCC was present to receive the comments.

A variety of comments came from the 4 members of the public:

- Make sure to add that contributions of non-point source pollution are draining into the Camelot Lake from 14 Mile Creek in addition to the residents living along Camelot Lake.
- Concern about enforcement.
- Excellent job getting inclusivity among the Citizens Advisory Committee. Very good tenor of the document.
- Wisconsin River TMDL needs to be prominently noted in the document.
- Move Goal 7 (“Reduce Wind Erosion”) up to the #3 position.



# RESOURCE ASSESSMENT

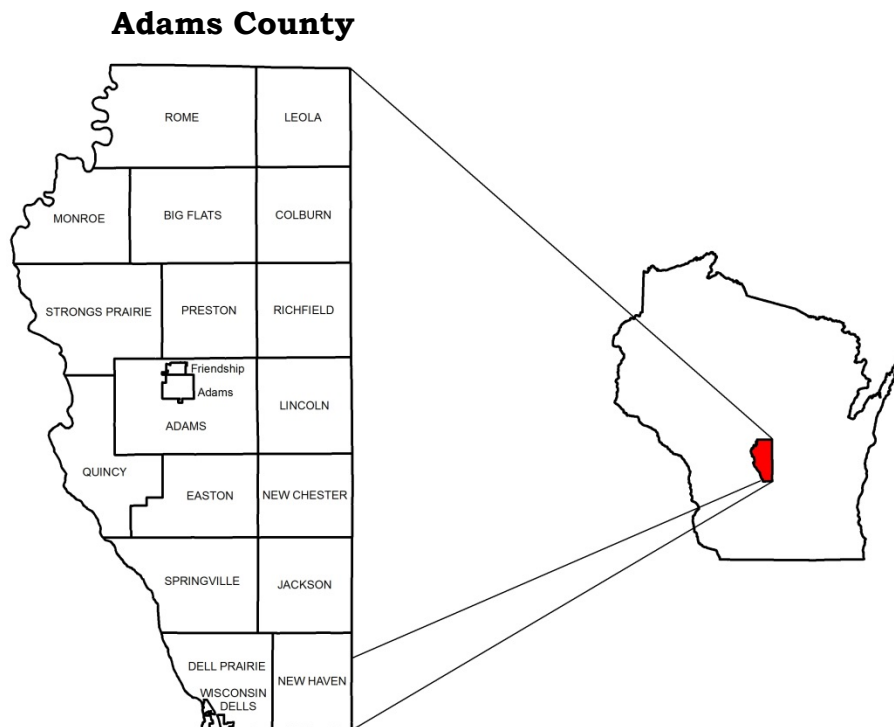
## Chapter 2

Adams County is predominantly a rural area with a large proportion of its land in agriculture, wetlands, and forests. Residents and visitors from both near and far utilize its water and expansive natural areas for recreational purposes and agricultural enterprise. The landscape is characterized by flat or gently undulating topography. Elevations along the Wisconsin River bottoms range from 850 feet in the southern part of the County to 950 feet in the northern part.

### A. Location

Adams County is located in central Wisconsin and is separated from Juneau County on the west by the Wisconsin River. Marquette and Waushara Counties bound the county on the east, on the north by Portage and Wood Counties, and on the south by Columbia County. Adams County is divided into 17 towns, the City of Adams, and the Village of Friendship. The incorporated communities in the county are the City of Adams (1,967 population – 2010 Census), and the Village of Friendship (725 population – 2010 Census), which border each other and are located in the center of the county. A larger population of over 4,000 people live around the three artificially created lakes to the north in the Town of Rome.

**Figure 1**



## **B. Geography**

The county's total area is about 685 square miles, or 440,646 acres, and ranks 43<sup>rd</sup> in area among Wisconsin's 72 counties. Adams County has approximately 40 square miles or 26,099 acres in surface water area, largely due to the Petenwell and Castle Rock flowages on the Wisconsin River, and ranks 18th in the state with respect to total surface water. The county is approximately 41 miles north to south and about 21 miles east to west, and narrows at its southern end to 9.5 miles.

## **C. Climate**

Adams County has a continental climate, characterized by cold, snowy winters, warm summer days, and cool summer nights. The spring and fall seasons are frequently short, with highly variable weather. The wind speed generally ranges from 4 to 15 miles per hour and can bring about weather changes every few days – warm and cold as well as wet and dry. Mean annual precipitation is almost 32 inches, which is adequate for agricultural purposes, although some degree of soil moisture deficiency often occurs in July and August. Snow cover on the ground and ice cover on the lakes lasts from December to April. The length of the growing season in the northern part of the county is suitable for silage corn, hay, small grains, and some of the faster growing vegetables. In the southern part of the county, the somewhat longer growing season is suitable for corn for grain, potatoes, and canning vegetables, all of which may or may not be irrigated due to finer texture soil conditions.

## **D. General Land Use**

Generally development first followed along the Wisconsin River and then spread east. In the last twenty years, growth occurred fastest in both the western and central thirds of the county. Only about 1,500 people were added to the county's population between 1960 and 1970. Much of Adams County's population growth has occurred between 1970 and 1980 when three recreational lakes/reservoirs were built with housing surrounding them in the Town of Rome. Over 4,000 people moved into the county between 1970 and 1980. In the two decades following the Rome area lake development, population has been increasing slightly.

Assuming existing density patterns, about 10,200 acres will be needed to meet future residential land demands, and another 4,400 acres will be needed to meet future commercial & industrial demands. Additional agricultural land is being converted annually from forest land, which poses a shift of land value, taxing category and potential environmental impacts. The majority of additional acres being converted into agricultural is for vegetable crop production.

The following is a brief description of the major land uses and their trends in Adams County.

<b>Table 1 2010 Countywide Land Use</b>	
Land Use Category	Percent of County
Woodlands	58.7
Agriculture	21.6
Water	6.3
Open Lands	4.6
Residential	4.4
Transportation	3.4
Outdoor Recreation	0.4
Commercial	0.3
Governmental/Institutional	0.2
Industrial	0.1

Source: 2010 NCWRPC

### Agriculture

The primary agricultural enterprise in Adams County is irrigated vegetable farming. Potatoes are particularly suited to the well-drained, sandy soil prevalent in most parts of the county. Corn of both the sweet and field varieties is raised throughout the County, as are snap beans, soybeans, and peas. These vegetables are processed at plants outside the County. Adams County is also becoming increasingly known as a leading Wisconsin cranberry producer. Dairy farms constitute a minimal portion of the agricultural activity in the county, but the major trend is toward large irrigated farms. A wide variety of produce is marketed locally by several small farms and offered fresh at roadside stands.

**As of 2014**, woodlands are continuing to be converted to agricultural fields. About 51.6% of the County is Woodlands, and Agriculture is 28.7%.

Tables 2 and 3 describe agricultural trends according to the USDA Agricultural Census by number of farms for the four largest farm groups in Adams County over the past decade. The majority of farms in Adams County are for Corn, Soybeans, or Cattle and Calves. The total amount of land in farms is relatively stable, but the average size of farms is increasing and the number of farms is decreasing.

<b>Table 2 Farm Trends in Adams County</b>			
	<b>2002</b>	<b>2007</b>	<b>2012</b>
Farms	414	408	313
Farmland (acres)	123,539	115,343	118,393
Average Farm Size (acres)	298	283	378

Source: USDA Agricultural Census, 2002, 2007, & 2012.

<b>Table 3 Agricultural Trends in Adams County</b>			
	<b>2002</b>	<b>2007</b>	<b>2012</b>
Grains (primarily Corn and Soybeans)	157	145	151
Vegetables, Melons, and Potatoes	35	34	30
Berries	14	14	9
Cattle and Calves	109	104	92

Source: USDA Agricultural Census, 2002, 2007, & 2012.

A brief description of soils and their limitations for cropland and pasture is described at the end of this chapter under *Geology & Soils*.

### Forestry

The majority of forestland in Adams County is privately held. As of 2015, there are 4,900 acres of forestland owned by the federal government, 16,454 acres owned by the state of Wisconsin. County and municipal governments own 3,244 acres. The forest industry, corporations, and individuals account for approximately 239,900 acres of forestland in Adams County.

Under the Forest Crop Law (FCL) and Managed Forest Law (MFL) there are 30,764 open acres in 2015. There are 66,086 acres that are closed under MFL as of 2015. Much of MFL lands are available to the public for hunting, fishing, cross-country skiing, sightseeing, and hiking. Landowners are encouraged to make sure the land is posted as open or closed to public access to avoid confusion. All MFL program participants can restrict access without penalty to the landowner to areas that are within 300 feet of any building or harvesting operation.

Due to the development of the Sand Valley Golf Course complex, about 760 acres have been removed from the MFL program. These acres will be utilized for the golf course and supporting infrastructure. An additional 760 acres is owned by Wisconsin Dunes, LLC and is still enrolled in the MFL program, but the desire is to remove the additional 760 acres for phase two of the golf

course, for a total of five -18 holes golf courses when complete.

There has been a trend in the last two years from 2013 to 2015 to convert forest lands into agricultural land which is under irrigation. The crop production is trending toward irrigated canning crops, with an emphasis on multiple crops in one year. This will contribute to wind erosion problems and nutrient loading to the local lakes and streams due to the fact that many of the canning crops are moldboard plowed to reduce the potential for previous crop contamination. Wind erosion potential is growing due to the tillage type and number of times per year tillage occurs.

### Residential Development

Adams County's residents live in a variety of densities throughout the county. Most of the residential development occurs around the lakes in the Town of Rome, within the City of Adams and the Village of Friendship, and in the communities of Monroe and Dellwood along Castle Rock and Petenwell Lakes. Many housing subdivisions and scattered residential sites exist along town roads throughout the County.

Housing will continue to be needed throughout the county as the population continues to increase due to net migration into the county. There is projected to be an additional 4,080 acres converted to residential use throughout Adams County between 2010 and 2020.

### Commercial & Industrial Development

Resorts and other commercial developments are expanding out of Wisconsin Dells along the STH 13 corridor. Many stores exist in Adams & Friendship, and other commercial enterprises located along highways throughout the County. Industrial uses include mining, manufacturing, and agricultural warehousing and processing. See the Land Use map (Map 1) to see where major uses exist.

Brownfields are usually defined as abandoned, idle, or under-utilized industrial or commercial facilities where expansion or redevelopment is complicated by environmental contamination. There are 10 open-status sites in Adams County that have contaminated groundwater and/or soil. These sites are composed of 8 Leaking Underground Storage Tank (LUST) sites, 1 Abandoned Container, and 1 Environmental Repair (ERP) sites.

## **E. Surface Water**

Adams County is labeled a “non-metro recreation county” by the DNR. The high level of tourism, recreation, entertainment, and seasonal housing have resulted from people being drawn to the waters of Castle Rock and Petenwell Lakes and the many in-land lakes. According to the Wisconsin Department of Tourism, Adams County was ranked 18<sup>th</sup> in the state for tourism dollars spent in 2014.

Surface water is abundant, but most of the water used for agriculture and domestic purposes, irrigation, and municipal and industrial uses is from wells in glacial deposits or Upper Cambrian sandstone. Surface water in Adams County is mainly used for recreation and drawing in seasonal residents.

The total surface water area in Adams County exceeds 26,000 acres. Adams County has Thirty-two named lakes that are important due to providing to the county’s recreational area and the associated housing developments around these lakes add greatly to the county tax base. Adams County has approximately 73 streams covering 235 linear miles and 450 surface acres. The streams provide recreational opportunities and face housing development pressure. Three drainage districts cover about 28,340 acres, and contain about 17 ditches covering 44 linear miles.

For the period of 2004 to 2006, Adams Land and Water Conservation Department collected physical, biological and chemical data for the purpose of utilizing the data to develop lake management plans. The data has been compiled into lake classification reports for each lake. Adams LWCD then provided assistance with developing and implementing lake management plans, using citizen lake advisory groups to develop plans, then holding public hearings before the plans were submitted to the WDNR for approval. Adams County LWCD collaborates closely with the WDNR to ensure all requirements of the lake management plans are met.

As of 2015, approved lake management plans have been developed for 21 of the 22 lakes with public access. The other lake has no lake organization; however, an aquatic plant management plan was developed and approved for that lake, prepared by Adams County LWCD and approved by landowners at that lake. With facilitation by Adams County LWCD, plans are annually reviewed and updated and/or altered as needed. New guidelines were developed by the WDNR for lake management plans that will be incorporated into the Adams County lake management plans.

Since 2004, Adams County LWCD has coordinated volunteer and/or paid efforts to monitor the lakes in Adams County, using the Citizen Lake Monitoring Program Protocol for Aquatic Invasive Species monitoring and Clean

Boats Clean Waters Program. Data is collected and recorded in the SWIMS database.

From 2010 to 2013, Adams County LWCD also coordinated volunteers on Petenwell and Castle Rock lakes to take water clarity and temperature readings, as well as bi-weekly samples that were evaluated for the present of blue-green algae. This was a joint program with the federal NOAA and UWSP.

Since 2007, the Adams County Land and Water Conservation Department has coordinated volunteer efforts to monitor thirty streams in Adams County. Monitoring is completed by using WDNR methods and the data collected is entered into the WDNR SWIMS database. These efforts are beginning to transition into other avenues such as Total Phosphorus monitoring. Since 2013 the county has participated with the WAV program receiving a grant each year to monitor at least one site for Total Phosphorus (TP). For 2015 our volunteers received a grant to monitor three sites. As phosphorus becomes a widespread water pollutant in Wisconsin, this will help us determine how widespread it is or is not in Adams County's streams.

### **Basin & Watersheds**

There are 8 watersheds contained completely or partially within Adams County as shown on Map 2. The drainage pattern flows generally across the county from slightly north and east to the west in a well-defined drainage system of creeks and rivers. Six of the eight watersheds drain into the Wisconsin River Basin and its tributaries. Two of the watersheds (Neenah Creek and Montello River) drain into the Fox River Basin and its tributaries.

A watershed ranking process (Table 4) was developed by DNR to rank watersheds based on the extent of nonpoint source pollution, the effect on water quality and the ability to manage the pollution sources. In some cases the data was not sufficient to produce a ranking.

<b>Table 4 Non-point Source Pollution DNR Watershed Rank</b>				
Watershed	Overall Ranking	Stream Ranking	Lake Ranking	Groundwater Ranking
Seven Mile and Ten Mile Creeks	High	High	Low	High
Fourteen Mile Creek	High	Medium	Medium	High
Big Roche A Cri Creek	High	High	Low	High
Little Roche A Cri Creek	High	Medium	Low	High
Montello River	High	Medium	NR	High
Duck and Plainville Creeks	High	Low	NR	High
Neenah Creek	High	NR	NR	High
Lower Baraboo River	High	NR	NR	High

Source: WDNR, 2015 Water Assessment, Tracking and Electronic Reporting Systems (WATERS) Database

The rankings are used by DNR as a basis to award nonpoint source pollution grants to local units of government for nonpoint source pollution planning and/or cost sharing of best management practices for agricultural and urban land use.

**Impaired Waters – 303(d) Waters**

The DNR maintains a list of surface waters that do not meet specific water quality standards outlined by section 303(d) of the Clean Water Act. The DNR is required to update the list every two years.

In 2015 there were 6 Lakes in Adams County and two Streams/Rivers on the Impaired Waters list, Table 5, and Attachment A shows more detail. Map 3 shows where the Impaired Waters are in the County. The Table 5 “priority” is for DNR funding.

<b>Table 5 Impaired Waterbodies in Adams County</b>			
Name	Pollutant	Impairment Indicator	Priority
Castle Rock Lake	Total Phosphorus.	Eutrophication	High
	Dioxin, and some sites with PCBs and Mercury.	Contaminated Fish Tissue	Low
Mason Lake	Total Phosphorus.	Excess Algal Growth, Elevated pH	High
Petenwell Lake	Total Phosphorus.	Low DO, water quality use restrictions	High
	Dioxin, PCBs, and Mercury.	Contaminated Fish Tissue	Low
Wisconsin River	Mercury, PCBs, and Total; Phosphorus.	Contaminated Fish Tissue, eutrophication	High
Lake Arrowhead (New in 2014)	Chlorophyll due to high total phosphorus.	Excess Algal Growth	Low
Lake Sherwood (New in 2014)	Chlorophyll due to high total phosphorus.	Excess Algal Growth	Low
Friendship Lake (New in 2014)	Chlorophyll due to high total phosphorus.	Excess Algal Growth	Low

Source: WDNR.



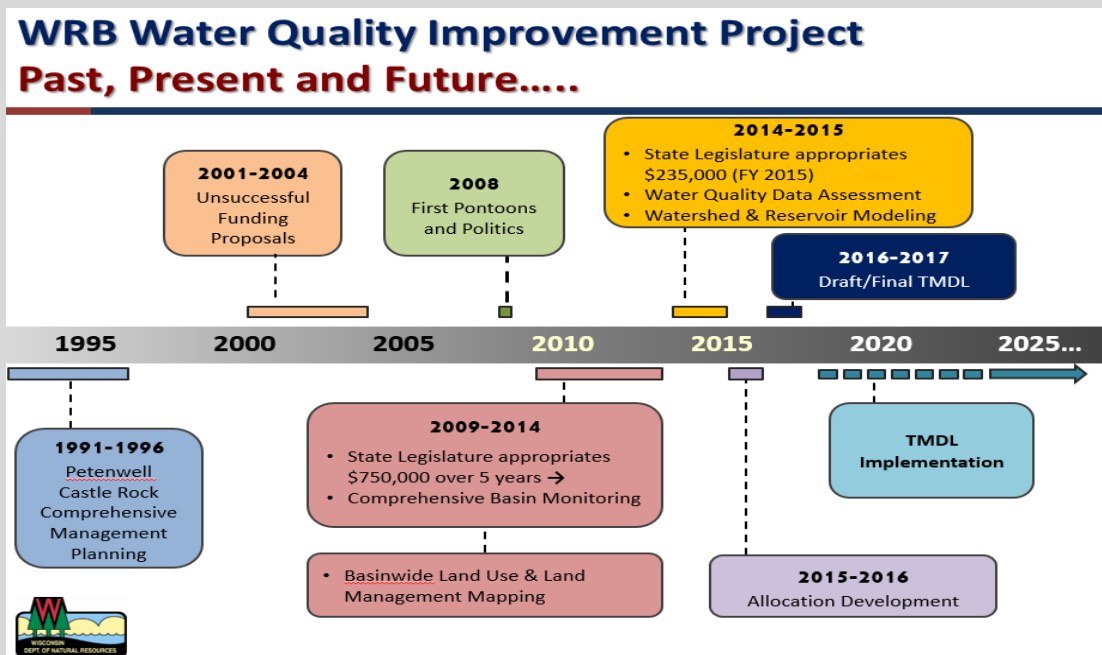
**Castle Rock Lake, Petenwell Lake and the Wisconsin River** in Adams County have high levels of Total Phosphorus due to non-point sources upstream from Adams County (per 2012-2014 DNR pollutant measurements taken as part of the **Wisconsin River TMDL**).

Local Citizens in Adams County talking with their state legislative representatives and DNR over the course of a decade, has resulted in DNR winning an EPA Clean Water award to create the **Wisconsin River TMDL**.

**Wisconsin River Total Maximum Daily Load (TMDL) Study**

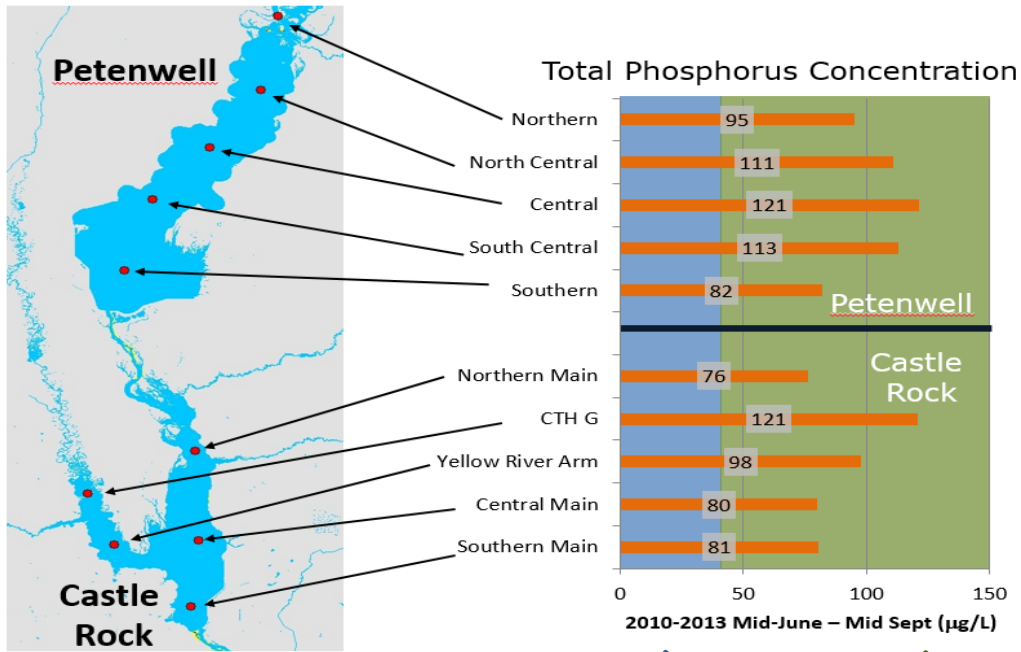
The DNR, together with many partners throughout the basin, are working to improve water quality of the Wisconsin River, its reservoirs and tributaries. The Total Maximum Daily Load (TMDL) study and implementation plan will provide a strategic framework and prioritize resources for water quality improvement in the Wisconsin River Basin. The Wisconsin River TMDL study area spans Wisconsin's central corridor from the headwaters in Vilas County to Lake Wisconsin in Columbia County, covering 9,156 square miles, approximately 15 percent of the state. The study will be completed in 2017 and the implementation portion of identified conservation practices to address the non-point source pollution issues will begin. Total length of the implantation process has not yet been identified due to the scope of the TMDL.

As shown in the Wisconsin River Basin (WRB) chart below, the TMDL is currently in progress. Adam County will use the information and data provided by this TMDL to address the pollution issues specifically related to Adams County.



Wisconsin River Basin (WRB) monitoring results for two major reservoirs – Petenwell and Castle Rock. The east halves of these reservoirs are in Adams County.

## Major Reservoir Monitoring Results



**Blue** = acceptable level of phosphorus.

**Green** = Phosphorus in excess of acceptable limits.  
Resulting in a 303(d) water.

- **Mason Lake Data**

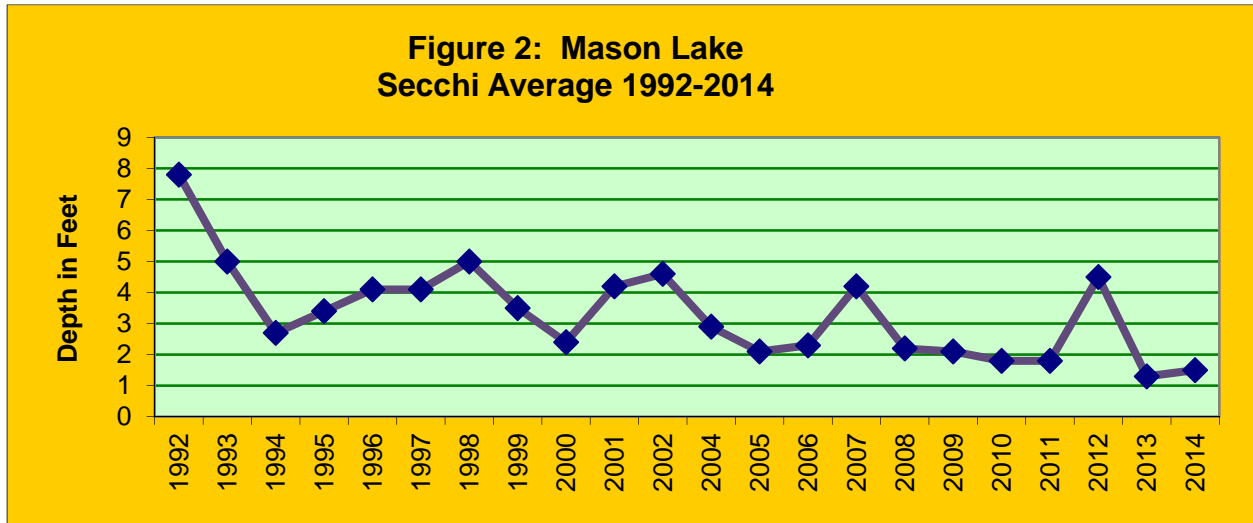
**Mason Lake** has high levels of Total Phosphorus due to non-point sources within that lake’s basin. The creeks, along with Mason Lake itself, were placed on the 303(d) list of impaired waterways in 2002 due to five recognized problems: (1) high sedimentation; (2) high nuisance-level aquatic plant growth; (3) high phosphorus levels; (4) heavy algal growth; and (5) degraded habitat. A Total Daily Maximum Load determination needs to be made for Mason Lake by the Wisconsin Department of Natural Resources.

The Mason Lake watershed was part of the Neenah Creek Priority Watershed Program from 1992 through 2002. Certain goals and projects were identified by that plan, published in 1992, although not all were achieved. A Targeted Runoff Management Grant was awarded to Adams County Land & Water Conservation Department for 2004 for the Mason Lake Management Plan. Currently the Mason Lake District and Neenah Creek Watershed have been identified as an area which needs to have a “Social and Ecological Resource Assessment” plan developed to consider addressing the water quality issues that still persist in the watershed. Adams County is considering hiring the University of Wisconsin Stevens-Point to conduct the assessment with the intentions of following up with water quality sampling if the entire watershed is interested in addressing the water quality issues. A plan for addressing non-point source pollution entering Mason Lake will need to be identified to meet the water quality standard desired by the Adams County LWCD and the DNR.

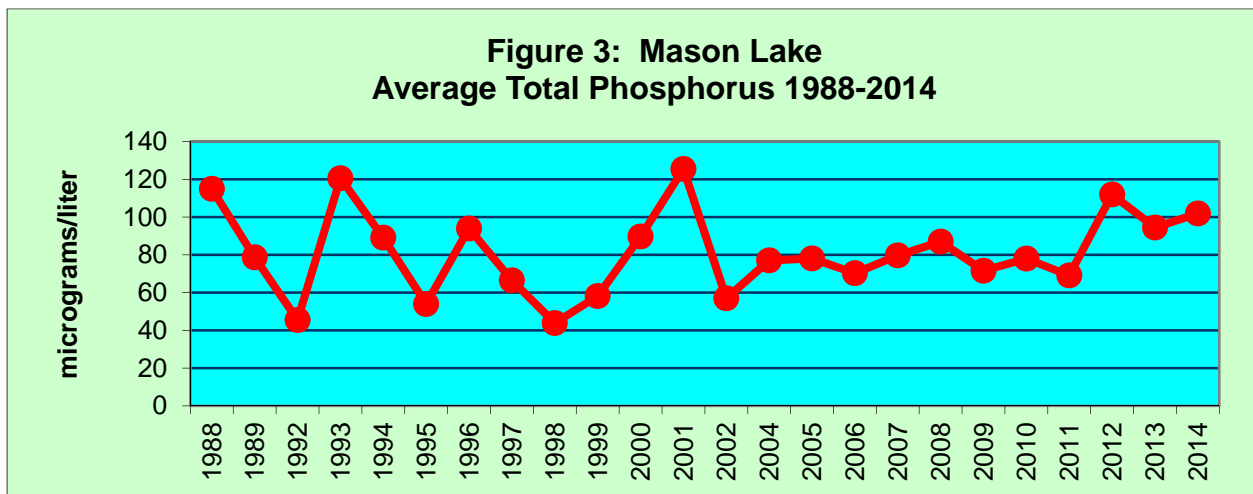
Mason Lake is located in the Town of New Haven, Adams County, WI, in the Town of Douglas, Marquette County, and in the Town of Lewiston, Columbia County, in the south central part of Wisconsin. The largest part of the impoundment lies in Adams County. The impoundment (man-made lake) has 855 surface acres, maximum depth of 9 feet, with a surface watershed covering 28 square miles. The Town of Douglas owns the dam forming Mason Lake. A dam was first installed in 1852-1853 to operate a sawmill.

In 2002, Mason Lake was placed on the federal impaired waterways list (commonly called the “303(d)” list). The reasons for this placement included highly-elevated phosphorus level, eutrophication, high turbidity, pH problems, NPS contamination and degraded habitat. Two streams that feed Mason Lake are also on the impaired waterways list. Mason Lake is one of the WDNR’s “trend lakes”, meaning that the WDNR regularly examines the lake for water quality and related issues. The Mason Lake District, formed in 1955, manages Mason Lake. Sporadically, volunteers have also taken water quality samples through the Citizen Lake Monitoring Program and Adams County LWCD has also taken samples.

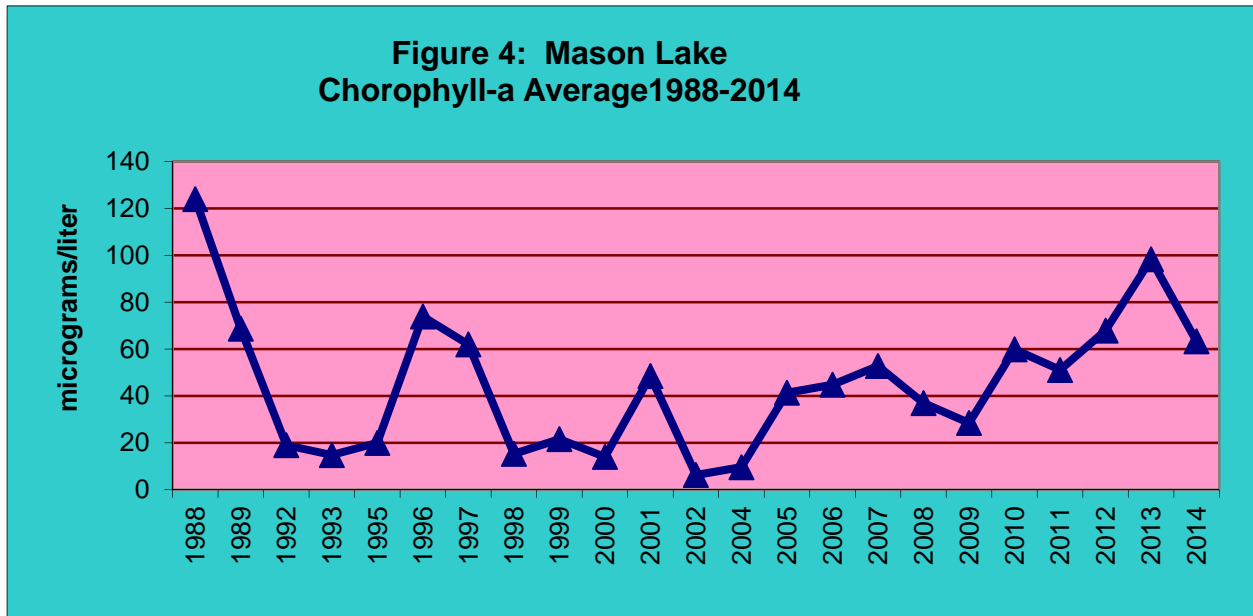
Overall, the water clarity readings in Mason Lake are poor (see Figure 2). Occasionally, there will be a spike into a better category, but the average growing season level remains at 3.34 feet, in the “poor” category.



Phosphorus levels have been routinely elevated in Mason Lake (see Figure 3). The lowest annual average recorded is 54 micrograms/liter (in the “poor” category) in 1995; the highest annual average was 240 micrograms/liter in 1977. The average total phosphorus level for all the years for which records could be found is 87.5 micrograms/liter; the average for the past ten years is 84.2 micrograms/liter.



Chlorophyll-a, associated with the presence of algae, has also remained high in Mason Lake (see Figure 4). The overall average level for all years for which records were found is 48.4 micrograms/liter (very poor), with the average for the past ten years standing at 54.5 micrograms/liter.



There is a long history of high plant and algae growth and overall water quality problems for Mason Lake. As early as 1935, the water was called “green” with “thick weeds.” In 1945, a survey also noted “green” water, with lots of floating and emergent aquatic vegetation, and a water clarity reading of only 1 foot. Intense algal blooms, dense aquatic plant growth and frequent winterkills continued over the years until the early 1950s, when the large number of carp in the lake had nearly denuded the lake bottom of aquatic plants. After a drawdown of the lake and a poisoning to remove carp in 1955, the aquatic vegetation came back, and water clarity readings continued to be generally low: in July 1956, the water clarity was 17 inches; in August 1956, it was 10 inches. Remarks such as “film of algae over most of the lake” and “water always dirty” continued to be noted. Problems with heavy algal blooms, thick aquatic plant growth and fishkills continued for many years. As recently as 2005, the lake was described as “overvegetated”, with aquatic plant and algae growth so thick that boating was slow and difficult.

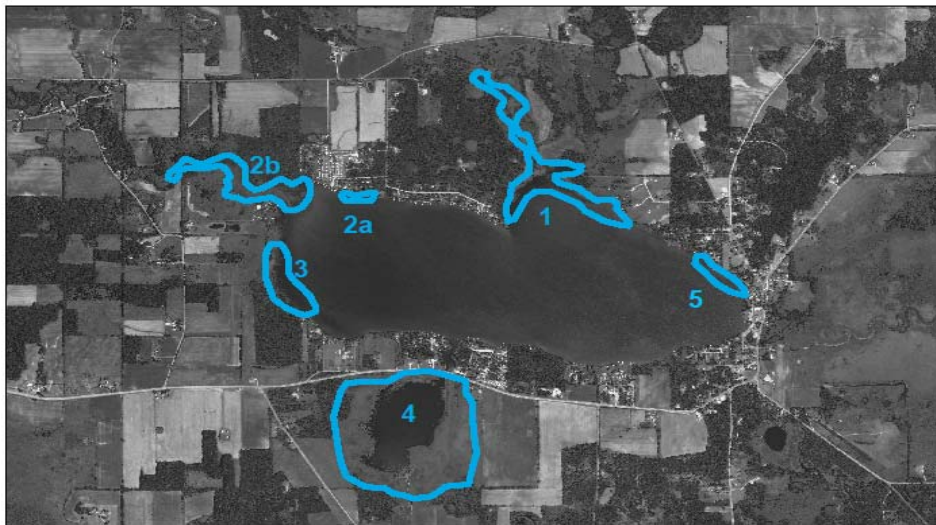
However, since 2005, aquatic plant growth has drastically decreased in Mason Lake, for reasons unknown at this time. A 2005 aquatic plant survey found 18 aquatic plant species, with the lake bottom over 90% vegetated. By 2009, although the same number of species were found, only 49.7% of the lake bottom was vegetated. In 2013, time of the most recent survey, 37 species

were found—but only 24.4% of the lake bottom was vegetated. Further, the species number included at least five invasive species, including one found in only four other lakes in Wisconsin. The co-dominant species in 2013 were Coontail (*Ceratophyllum demersum*), the invasive Eurasian Watermilfoil (*Myriophyllum spicatum*) and the free-floating species, Watermeal (*Wolffia columbiana*). Aquatic invasive species comprised over 20% of the aquatic plant community in 2013.

Based on water clarity and the concentrations of algae and nutrients, Mason Lake was an eutrophic/hypereutrophic lake with poor/very poor water quality and poor water clarity from 1986-2014. Since 1986, nutrient levels have increased, and water clarity has decreased. Although aquatic plant growth in Mason Lake should be favored by the high nutrients of its trophic state, hard water, dominance of rich sediments, the shallow depth of the lake and the very gradually sloped littoral zone, such growth is no longer occurring in Mason Lake. The aquatic plant growth in Mason Lake continues to decrease coverage of the lake, even by plants tolerant of high disturbance and lower water quality and clarity.

The field study for possible critical habitat areas in Mason Lake was conducted in September 2003. Ultimately, five areas, shown on Figure 5, were designated as “critical habitat” as defined by Wisconsin Rule 107.05(3)(i)(I).

**Figure 5 Mason Lake Designated Critical Habitat Areas**



**MASON LAKE DESIGNATED CRITICAL HABITAT AREAS**

## Mason Lake Designated Critical Habitat Areas

Note: ML 1 = "1" on Figure 5.

**Area ML1 – Burn's Cove** extends along approximately 4000 feet of shoreline in the cove and up the stream, averaging 3 feet in depth and supports important near-shore terrestrial habitat, shoreline habitat and shallow water habitat. The area provides visual and sound buffers and a unique area of outstanding beauty for lake residents and visitors. The aquatic plant community includes several emergent and submergents, as well as some free-floating species. Eurasian watermilfoil and curly-leaf pondweed are present. The area is important to Mason Lake because the submerged and floating-leaf vegetation in this area ties up nutrients in their tissues that would otherwise be available for algae growth; the wetlands are filtering water that enters the lake and preventing shoreline erosion.; the submergent vegetation protects the lake bottom from resuspension of sediments; the site is a stream inlet that provides water for the lake. The area provides spawning and nursery sites for several species of fish. Carp and rusty crayfish are present. A wild rice bed was found in this area in 2013.

**Area ML2: 2a Northwest Shore** This sensitive area extends along 800 feet of shoreline and supports near-shore terrestrial habitat. The shoreline is wooded and shrub growth sandwiched between cottages. The value of the large woody debris for fish habitat that is abundant in the shallow zone. Submergent and free-floating vegetation are common. Eurasian watermilfoil and curly-leaf pondweed are present. The area provides spawning and nursery sites for several species of fish. Carp and rusty crayfish are present.

**2b – Big Spring Inlet** covers 800 feet along the lake shore at the mouth and up the Big Spring tributary, averaging 2 feet in depth and supports important near-shore terrestrial habitat, shoreline habitat and shallow water habitat. The shoreline is entirely wooded with small areas of shrub and herbaceous plant growth. The wetlands contain emergent herbaceous wetlands and shallow open water wetlands. Fallen woody material is present in the shallow zone for habitat. The area provides visual and sound buffers and a unique area of outstanding beauty for lake residents and visitors. Emergent, rooted floating-leaf plants, submergents are all present, as are Eurasian watermilfoil and curly-leaf pondweed. The site is a stream inlet water source for Mason Lake.

**Area ML3 – West Wetland** extends along 2000 feet of shoreline, averaging 2 feet in depth and supports important shoreline habitat and near-shore terrestrial vegetation. The shoreline at this sensitive area extends for about half of its length along a wooded shoreline and half of its length along and emergent wetland. Large woody cover for habitat is present along the wetland, but is common along the wooded stretch. All four structure types of aquatic

plants—emergent, rooted floating-leaf, free-floating, and submergent—are present here. Eurasian watermilfoil and curly-leaf pondweed are also present.

**Area ML4 – Amey's Pond** covers approximately 60-acres, the entire wetland pond south of the highway, averaging 3 feet in depth and supporting important near-shore terrestrial habitat, shoreline habitat and shallow water habitat. Similar vegetation to the other sites occur here.

**Area ML5 –Spawning Site** area extends along 1000 feet of shoreline and supports important spawning habitat (Figure 1). The shoreline is 75% developed, 20% wooded and 5% shrub and native herbaceous growth. Similar vegetation is present. Panfish spawning occurs here.

**Lake Arrowhead, Lake Sherwood,** and in central Adams County, **Friendship Lake** are all recently listed (2014) as Impaired Waters due to elevated phosphorus levels that are causing algal blooms that exceed recreational use thresholds. These three lakes are polluted due to residential non-point sources of pollution as well as the agricultural non-point sources entering through the tributaries. Map 3 shows that Friendship Lake's inlet waters are both listed as Exceptional Streams (extremely low levels of water pollutants flowing into the lake). Due to the low pollutant load flowing in from the watershed into Friendship Lake, residential uses and internal loading may be the source of pollution that placed Friendship Lake on the Impaired Waters list in 2014.

Since the lake physiology and surrounding land uses are similar for all of the Tri-Lakes in Rome as they are around Friendship Lake, then a direct correlation can be made that residential uses in Rome are cumulatively providing the sources of pollution that have placed 2 of the 3 Tri-Lakes onto the Impaired Waters list in 2014. Due to pollutant measurements coming in too late to make the 2014 Impaired Waters list, **Lake Camelot** *is likely to be* proposed to be on the 2016 Impaired Waters list.

- **Lake Arrowhead Data**

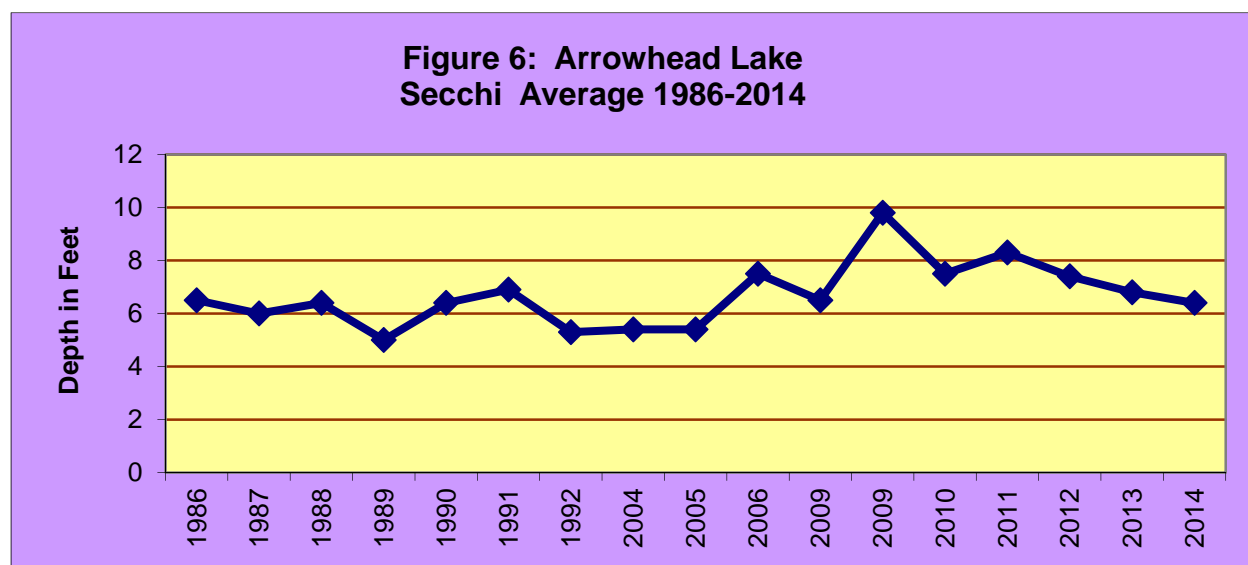
**Arrowhead Lake** is located in the Town of Rome, Adams County, Wisconsin. The impoundment is 300 surface acres in size. Its maximum depth is just over 25 feet, with an average depth of 8 feet. The dam impounds Fourteen-Mile Creek downstream from the dams at Lower and Upper Camelot Lakes, Lake Sherwood, and Arrowhead Lake, on its way to the Wisconsin River. The dams on these lakes are owned and operated by Adams County. There is a public boat ramp located on southwest side of the lake owned by The Adams County Parks Department, as well as a public swimming beach. Heavy residential development around the lake is found along most of the lakeshore. The first



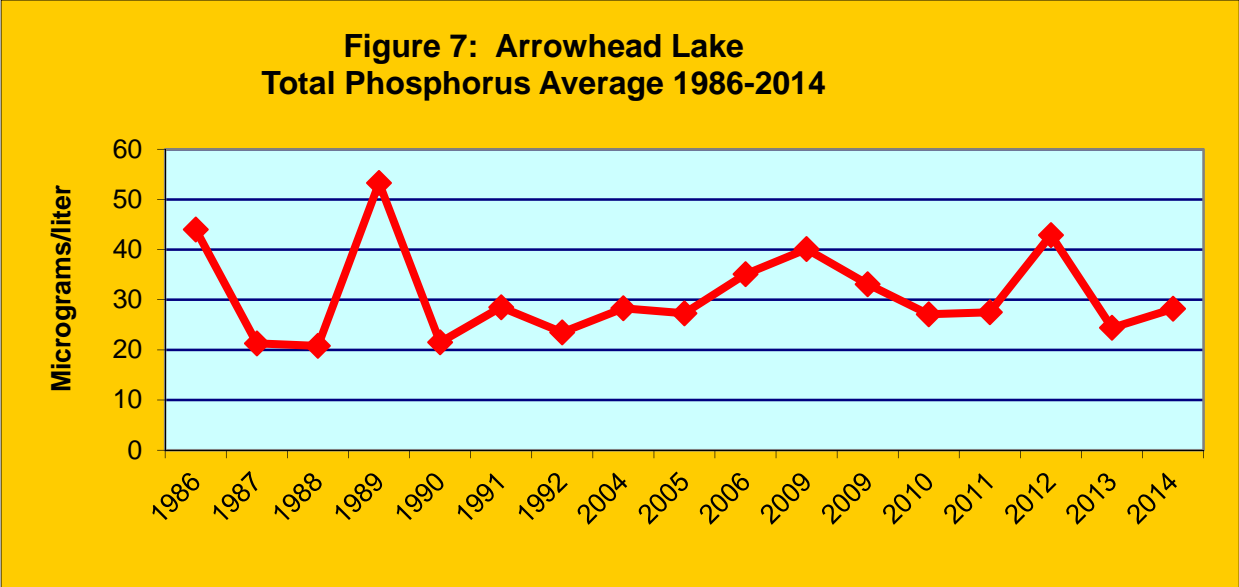
100 feet landward from the water is owned by the Lake Arrowhead Association, which also operates two golf courses, a restaurant, swimming pool and marinas around the lake for use by Lake Arrowhead property owners.

In 2014, Lake Arrowhead was placed on the federal impaired waters list for Wisconsin at the request of the Wisconsin Department of Natural Resources. According to the WDNR short report, “water is impaired due to one or more pollutants and associated quality impacts...chlorophyll sample data exceed 2014 WisCALM listing thresholds for Recreation use; however, total phosphorus data do not exceed REC thresholds. Total phosphorus and chlorophyll data do not exceed Fish and Aquatic Life threshold.” The impairment specifically listed was “excess algal growth”, and a priority determination for addressing non-point source pollution was “low.”

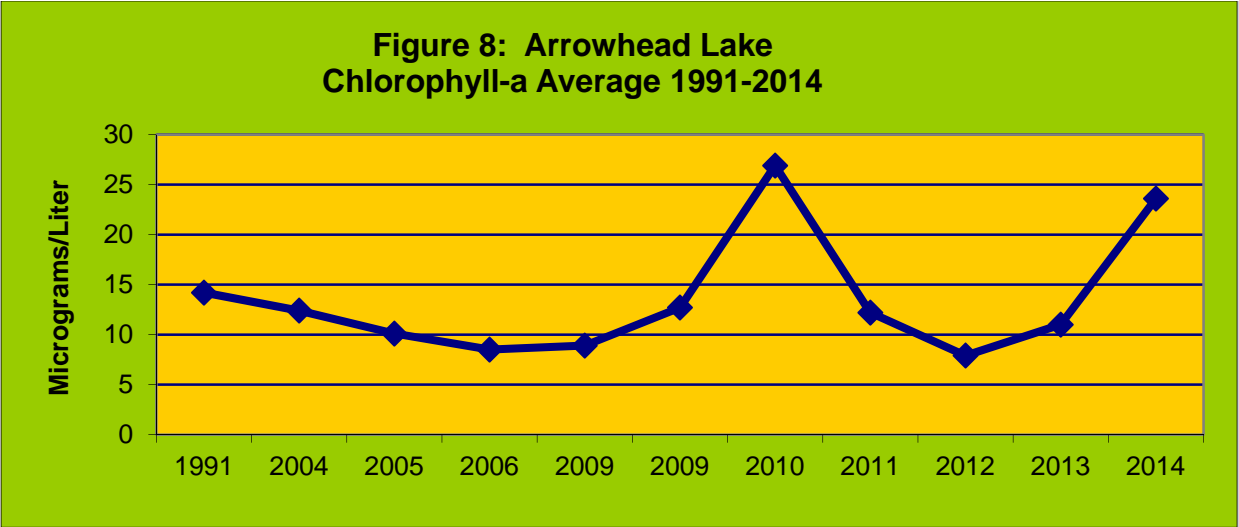
Water quality monitoring has been occurring for many years at Lake Arrowhead (see Figure 6), sometimes with volunteers, sometimes with paid staff. The average growing season water clarity of 6.67 feet has remained in the “good” category (6 to 8 feet).



The total phosphorus levels have also been checked several times each year (see Figure 7). The average growing season total phosphorus level is 30.99 micrograms/liter, just on the border between “good” and “fair”. The average for the past 10 years (2004-2014) is 31.4 micrograms/liter, still at the “fair” level.



The WDNR 303(d) short report specifically mentions high chlorophyll levels as an issue on Lake Arrowhead. The overall average of this parameter is 13.49 micrograms/liter, which is in the “fair” category (see Figure 8). Average for the past ten years is similar at 13.42 micrograms/liter. It is true, however, that in the past five years, annual average for chlorophyll has crept toward 30 micrograms/liter in two of the years.



Information about the diversity, density and distribution of aquatic plants is an essential component in understanding the lake ecosystem due to the integral ecological role of aquatic vegetation in the lake and the ability of vegetation to impact water quality (Dennison et al, 1993). Aquatic plant surveys have been conducted on Arrowhead Lake several times over the past fifteen years, with the most recent one completed in 2014. Sufficient nutrients (trophic state),

hard water, good water clarity, shallow lake, and nutrient-rich inputs from increased shore development at Arrowhead Lake favor plant growth.

The lake does have a mixture of emergent, free-floating, and submerged plants. Since 2000, the percentage of emergent plants has been slowly increasing. Coontail (*Ceratophyllum demersum*) remains the most frequently-occurring species in the lake, although other more sensitive native species like Northern Milfoil (*Myriophyllum sibiricum*) and Water Stargrass (*Heranthia dubia*) are nearing its frequency of occurrence. Submergent plants are the top six most-commonly occurring aquatic species. Although the coverage of submergent plants has reduced slightly, they continue to dominate the aquatic plant community in Arrowhead Lake.

There remain several invasive aquatic plant species. Currently, none of the exotic species appear to be taking over the aquatic plant community, but Eurasian Watermilfoil (*Myriophyllum spicatum*), although declining from its highest frequency of occurrence in the 2010 survey, is still over 3% of the overall aquatic community. Since this species spreads most by fragmentation, mechanical harvesting needs to be carried out carefully to avoid further spreading this species.

Overall, the aquatic plant community in Arrowhead Lake is in the category of those very tolerant of disturbance, probably due to selection by a series of past disturbances. In Arrowhead Lake, the likely disturbances include the high recreational use of the lake (which includes boat traffic, tubing, jet-skiing, and water-skiing), the on-going mechanical harvesting from May to September each year, heavy shore development, high level of docks and other hard structures close to the water, erosion, and the presence of aquatic invasives. A comparison of the aquatic plant results suggest that although some of the aquatic plant species found have changed, to the extent that the aquatic plant community and water quality results mirror the health of Arrowhead Lake, Arrowhead Lake has remained relatively stable for at least the past 10 years.

Arrowhead Lake was found to have zebra mussels (*Dreissena polymorpha*) in 2004. The Tri-Lakes Management District, the Adams County Land & Water Conservation Department and the WDNR have been monitoring the presence every year since then using a number of methods. Aquatic plants collected in 2009, 2010 and 2014 were covered with zebra mussels of various sizes. Some of the plants were so covered that it was difficult to determine their identification. Zebra mussels have obviously spread throughout the lake, attaching not only to docks, rocks and other hard structures, but also to grains of sand and aquatic plants (and to each other).

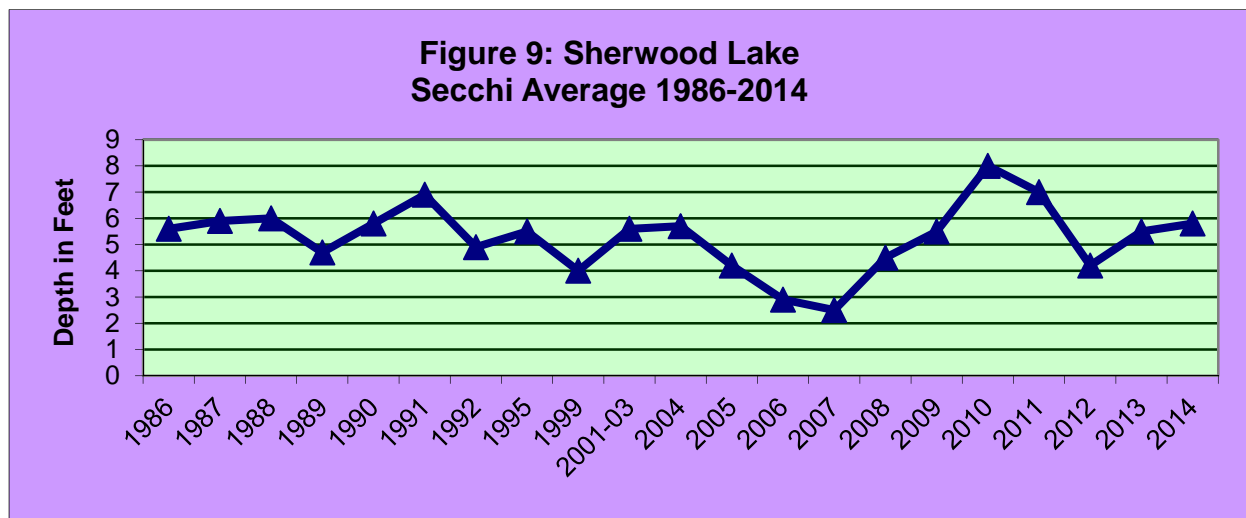
- **Lake Sherwood Data**

**Sherwood Lake** is located in the Town of Rome, Adams County, WI, in the south central part of Wisconsin. The impoundment of 14-Mile Creek is slightly over 243 surface acres in size. Maximum depth is 24 feet, with an average depth of 8 feet. Both Upper and Lower Camelot Lakes flow through dams into Sherwood Lake. Sherwood Lake flows through a dam into Arrowhead Lake. All the Tri-Lakes dams are owned and operated by Adams County. There is a public boat launch on Sherwood Lake on the southwest edge of the lake owned by the Parks Department of Adams County. Heavy residential development around the lake is found along most of the lakeshore. Sherwood Lake is managed by the Tri-Lakes Management District. There is also an active Sherwood Property Owners Association.

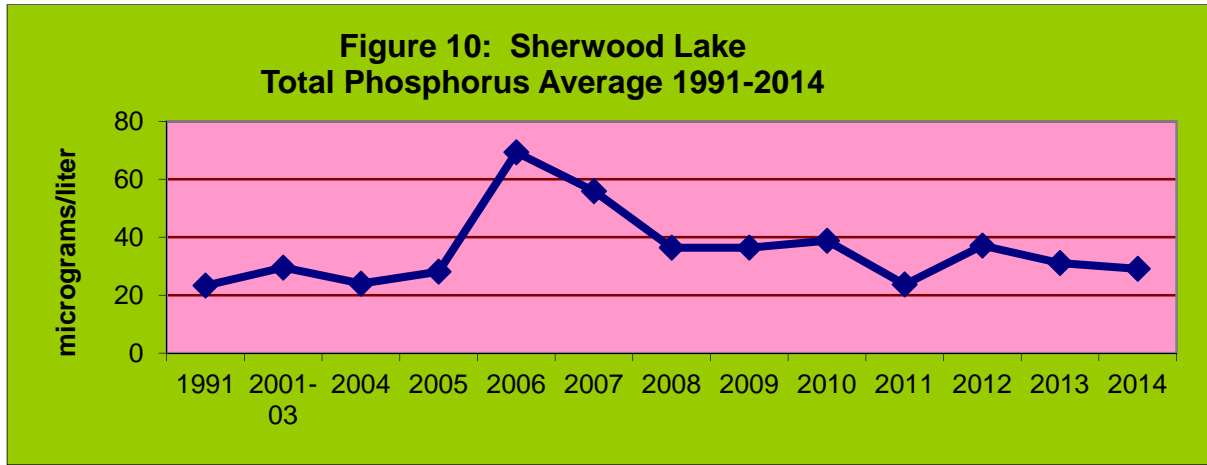
**Impaired Waters**

In 2014, Lake Sherwood was placed on the federal impaired waters list for Wisconsin at the request of the Wisconsin Department of Natural Resources. According to the WDNr short report, “water is impaired due to one or more pollutants and associated quality impacts...chlorophyll sample data exceed 2014 WisCALM listing thresholds for Recreation use; however, total phosphorus data do not exceed REC thresholds. Total phosphorus and chlorophyll data do not exceed Fish and Aquatic Life threshold.” The impairment specifically listed was “excess algal growth”, and a priority determination for addressing non-point source pollution was “low.”

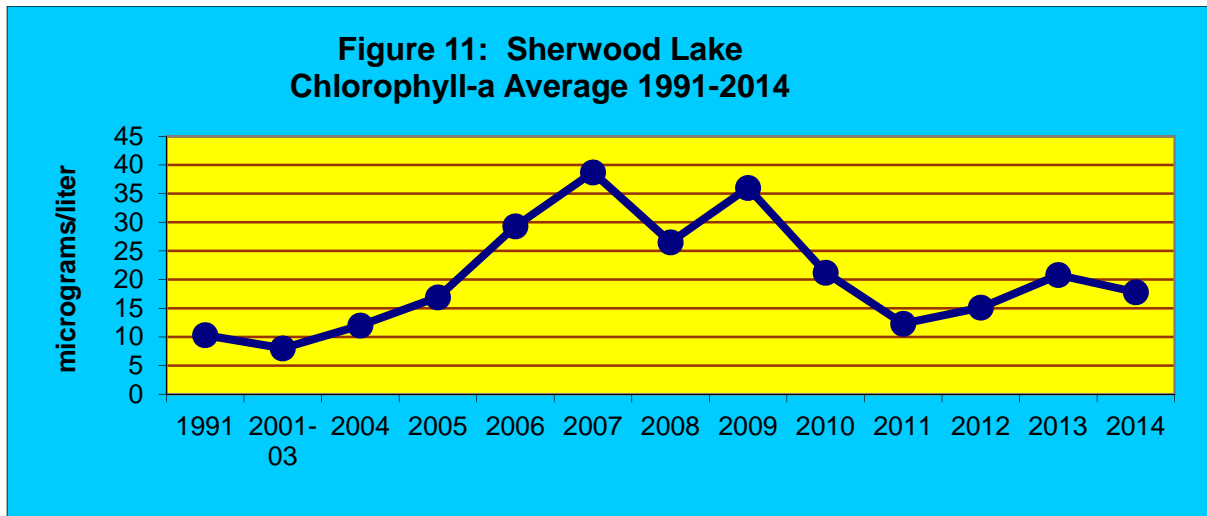
Water quality monitoring has been occurring for many years at Lake Sherwood (see Figure 9), sometimes with volunteers, sometimes with paid staff. It is one of the WDNr’s “trend lakes”, so testing is done by both volunteers and WDNr staff. The average growing season water clarity of 5.27 feet has remained in the “fair” category (5 to 6 feet).



The total phosphorus levels have also been checked several times each year (see Figure 10). The average growing season total phosphorus level is 35.6 micrograms/liter, in the “fair” category. The average for the past 10 years (2004-2014) is 37.3 micrograms/liter, still at the “fair” level.



The WDNR 303(d) short report specifically mentions high chlorophyll levels as an issue on Lake Sherwood. The overall average of this parameter is 20.38 micrograms/liter, which is in the “poor” category (see Figure 11). Average for the past ten years is similar at 22.4 micrograms/liter, still squarely in the “poor” category.



Information about the diversity, density and distribution of aquatic plants is an essential component in understanding the lake ecosystem due to the integral ecological role of aquatic vegetation in the lake and the ability of vegetation to impact water quality (Dennison et al, 1993). Aquatic plant surveys have been conducted on Sherwood Lake several times over the past fifteen years, with the most recent one completed in 2014. Sufficient nutrients (trophic state), hard

water, good water clarity, shallow lake, and nutrient-rich inputs from increased shore development at Sherwood Lake favor plant growth.

The most frequently occurring aquatic plant in the 2014 survey were *Heteranthis dubia* (Water Stargrass), and *Potamogeton pusillus* (Small Pondweed). No other 2014 species came close to this frequency of occurrence. All five of the most frequently-occurring plants were submergent species. There remain several invasive aquatic plant species. Currently, none of the exotic species appear to be taking over the aquatic plant community, but Eurasian Watermilfoil (*Myriophyllum spicatum*) is still a significant part of the overall aquatic community. Since this species spreads most by fragmentation, mechanical harvesting needs to be carried out carefully to avoid further spreading this species.

Sufficient nutrients (trophic state), hard water, good water clarity, shallow lake, and nutrient-rich inputs from increased shore development at Sherwood Lake favor plant growth. Structurally, the aquatic plant community contains emergent plants and a few submergent plants, but has no rooted floating-leaf and little free-floating aquatic vegetation. The aquatic plant community in Sherwood Lake is in the category of those very tolerant of disturbance, probably due to selection by a series of past disturbances and heavy shoreline development.

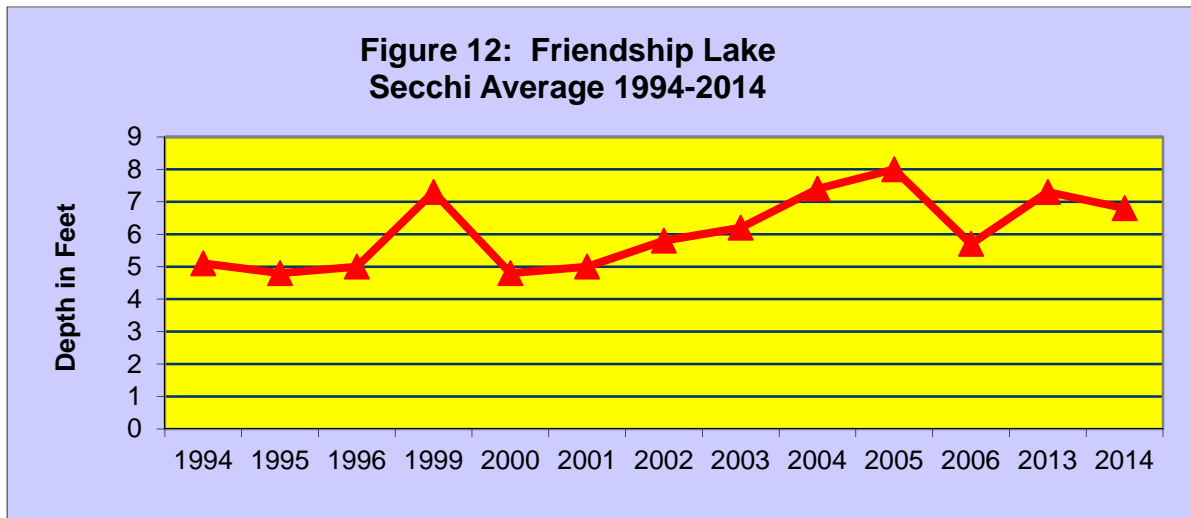
Zebra mussels (*Dreissena polymorpha*) were verified in Sherwood Lake in 2010. The Tri-Lakes Management District, the Adams County Land & Water Conservation Department and the WDNR have been monitoring the presence every year since then using a number of methods. Aquatic plants collected in 2009, 2010 and 2014 were covered with zebra mussels of various sizes. Some of the plants were so covered that it was difficult to determine their identification. Zebra mussels have obviously spread throughout the lake, attaching not only to docks, rocks and other hard structures, but also to grains of sand and aquatic plants (and to each other).

- **Friendship Lake Data**

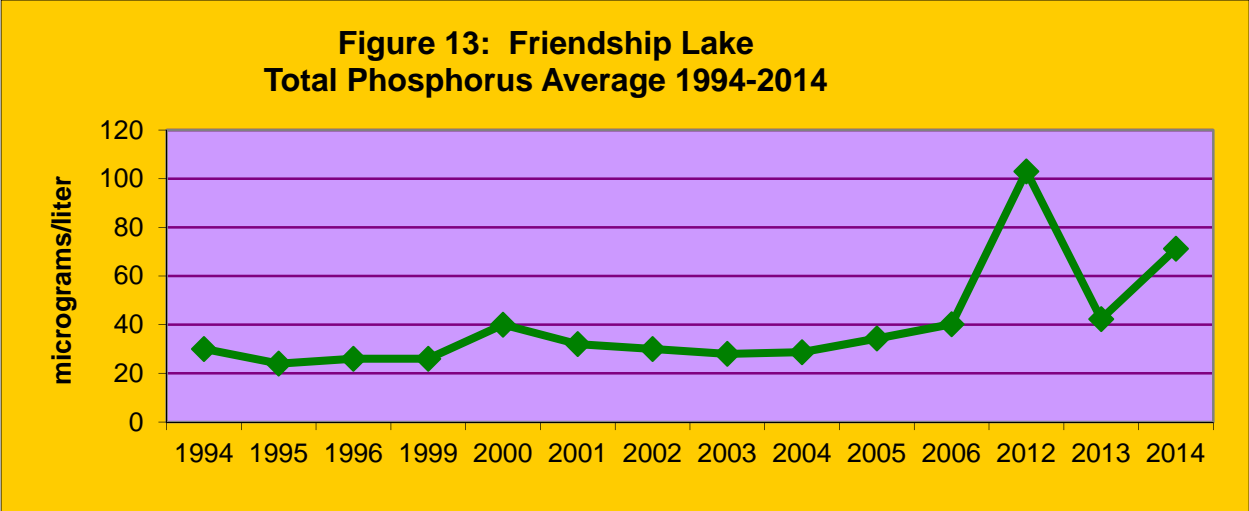
**Friendship Lake** is located adjacent to the Village of Friendship and is a 115-acre impoundment (man-made) lake located in the Towns of Adams and Preston, Adams County, in the Central Sand Plains Area of Wisconsin. This lake is formed by an impoundment of Little Roche a Cri Creek. Little Roche a Cri Creek ultimately empties into the Wisconsin River. The Little Roche a Cri Creek watershed is large, covering 196.20 square miles and extending into the next county east of Adams. Friendship Lake has two public boat ramps, one connected to a public park and beach; the other a rough ramp near a bridge.

In 2014, Friendship Lake was placed on the federal impaired waters list for Wisconsin at the request of the Wisconsin Department of Natural Resources. According to the WDNR short report, “water is impaired due to one or more pollutants and associated quality impacts...chlorophyll sample data exceed 2014 WisCALM listing thresholds for Recreation use; however, total phosphorus data do not exceed REC thresholds. Total phosphorus and chlorophyll data do not exceed Fish and Aquatic Life threshold.” The impairment specifically listed was “excess algal growth”, and a priority determination for addressing non-point source pollution was “low.”

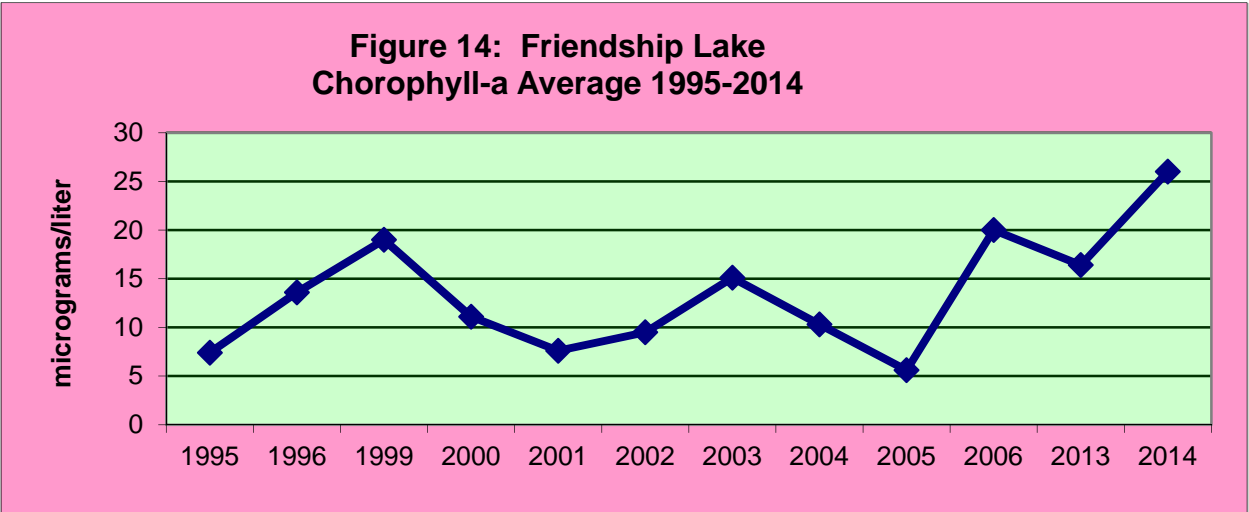
Water quality monitoring has been occurring for several years at Friendship Lake, usually by volunteers (see Figure 12). The average growing season water clarity of 6.1 feet has remained in the “good” category (6 to 8 feet).



The total phosphorus levels have also been checked several times each year (see Figure 13). The average growing season total phosphorus level is 39.7 micrograms/liter, in the “fair” level. However, in the last ten years, average total phosphorus in Friendship Lake has increased to 53.3 micrograms/liter, putting the lake into the “poor” category for total phosphorus.



The WDNR 303(d) short report specifically mentions high chlorophyll levels as an issue on Friendship Lake. The overall average of this parameter is 13.5 micrograms/liter, which is in the “fair” category (see Figure 14). Average for the past ten years is similar at 17.0 micrograms/liter, which would move the lake into the “poor” category for chlorophyll.



Information about the diversity, density and distribution of aquatic plants is an essential component in understanding the lake ecosystem due to the integral ecological role of aquatic vegetation in the lake and the ability of vegetation to impact water quality (Dennison et al, 1993). Aquatic plant surveys have been conducted on Friendship Lake several times over recent years, with the most recent one completed in 2012. Sufficient nutrients (trophic state), hard water, good water clarity, shallow lake, and nutrient-rich inputs from increased shore development at Friendship Lake favor plant growth.



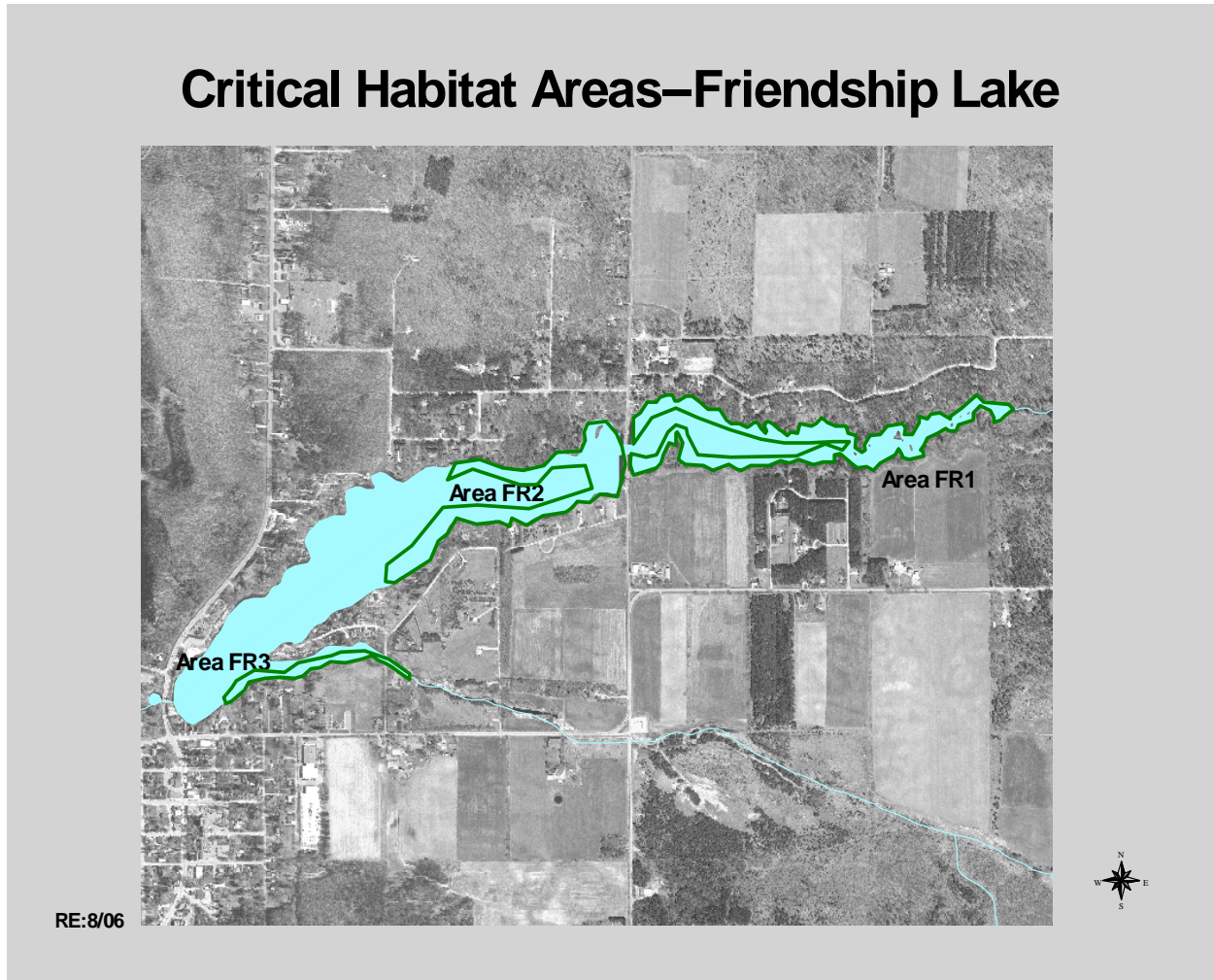
Friendship Lake is a mesotrophic/eutrophic lake with poor water clarity and fair water quality. The aquatic plant community colonized almost the entire lake. In the most recent survey, Common Waterweed (*Elodea canadensis*) dominated, with Coontail (*Ceratophyllum demersum*) co-dominant, Eurasian Watermilfoil. The Friendship Lake aquatic plant community is characterized by average quality and good species diversity.

*Myriophyllum spicatum* (Eurasian Watermilfoil), has been present in Friendship Lake since at least 2003, when it was found with just over 13% occurrence frequency. It has continued to spread, so that by 2012, it had an occurrence frequency of about 40%. *Potamogeton crispus* (Curly-Leaf Pondweed), another invasive, was also found during the 2003 survey, with an occurrence frequency of 11.7%. Unlike Eurasian Watermilfoil, it has stayed at about the same occurrence (12% in 2012). The presence of these highly-aggressive invasive species, along with the heavy use history of the lake, suggests that the lake continues to be vulnerable to incursions of invasives.

Field work for a critical habitat area study was performed in September 2006, on Friendship Lake, Adams County (see Figure 15). Three areas were designated as “critical habitat” as defined by Wisconsin Rule 107.05(3)(i)(I)

Figure 15

Friendship Lake Designated Critical Habitat Areas



Friendship Lake Designated Critical Habitat Areas

Note: FR 1 = “Area FR1” on Figure 15.

**Critical Habitat Area FR1** extends along over 6000 feet of the shoreline on both sides of the eastern end of Friendship Lake. This area of Friendship Lake is very shallow and is largely undeveloped. 46.7% of the shore is wooded; 21.7% has shrubs; the remaining shore (31.6%) is native herbaceous cover. Much of this area is a marsh. Large woody cover is common for habitat. With little human disturbance along this shoreline, the area has natural scenic beauty. Maximum rooting depth of aquatic vegetation in FR1 was 5 feet. Nine emergent species were found at this site. Three species of free-floating plants and one species of floating-leaf rooted plant were found here. Ten submergent aquatic plant species, including the invasive *Myriophyllum spicatum*, were found in this area. Emergents provide important fish habitat and spawning areas, as well as food and cover for wildlife. Floating-leaf vegetation provides

cover and dampens waves, protecting the shore. A diverse submergent community provides many benefits.

**Critical Habitat Area FR2** covers approximately 5000 feet of the north and south shoreline in the middle of the lake's length. 35% of the shore is wooded; 14% has shrubs; 38% is native herbaceous cover. The remaining shoreline is bare/eroded sand and some hard structures. Large woody cover is common for habitat. With minimal human disturbance along this shoreline, some of the area has natural scenic beauty. Maximum rooting depth in FR2 was 18 feet. No threatened or endangered species were found in this area. Two exotic invasives, *Myriophyllum spicatum* (Eurasian watermilfoil) and *Phalaris arundinacea* (Reed Canarygrass) were found in this area. Filamentous algae occurred at all sites, especially near the shores. Found at this site were seven species of emergent aquatic plants, three species of free-floating aquatic plants, one species of floating-leaf rooted plant, and eleven submergent aquatic species.

**Critical Habitat Area FR3** extends along approximately 2100 feet of the southwest shoreline. 47.5% of the shore is wooded; 5% has shrubs; 15% is native herbaceous cover—the remaining shore is bare sand and hard structure. This critical habitat area includes some of most developed area of Friendship Lake, although the southeast side of this area is currently undeveloped. Large woody cover is present, but not as much as in the other two critical habitat areas. Scenic beauty in part of the area is lessened on the north and southwest sides due to the human development, but the southeast area of this site is still pretty. This area does still provide spawning and nursery areas for many types of fish, as well as several types of wildlife. Maximum rooting depth in FR3 was 13 feet. No threatened or endangered species were found in this area. All of the area had filamentous algae, especially near the shores. Only one emergent species was found here. Two species of floating-leaf rooted plants were present. Also present were three species of free-floating plants. Six submergent plant species were found. This is a less diverse submergent community than the other critical habitat sites in Friendship Lake.

### **Outstanding/Exceptional Resource Waters**

ORWs typically do not have any point sources discharging pollutants directly to the water (for instance, no industrial sources or municipal sewage treatment plants), though they may receive runoff from nonpoint sources. New discharges may be permitted only if their effluent quality is equal to or better than the background water quality of that waterway at all times—no increases of pollutant levels are allowed.

Adams County has 1 ORW – See Map 3, and Attachment B.

ERWs are more likely designated if a waterbody has existing point sources at the time of designation. Like ORWs, dischargers to ERW waters are required to maintain background water quality levels.

Adams County has 12 ERW – See Map 3, and Attachment B.

Designation as an ORW or ERW has implications for permitting, in order to protect the quality of the waterway.

## **F. Drainage Ditches**

Drainage districts were formed under Chapter 88 of Wisconsin Statutes to plan and implement area-wide drainage improvements to correct problems of high water tables and poor drainage that interfere with agricultural uses and practices.

In 1977, drainage ditches were exempted from being considered navigable water and are not subject to the Public Trust Doctrine (§30.10(4)(c) Wis. Stats.) unless they had a proven stream history. The maintenance and dredging of these ditches within an active drainage district is exempt from the requirement for a permit from DNR. Part of the maintenance of these ditches involves removal of woody plants from an area twenty feet on either side.

Three drainage districts cover about 28,340 acres in Adams County. There are about 17 ditches covering 43.6 linear miles. All ditches have a number, and formerly natural creeks and rivers also retain their original name.

One inactive drainage district covers almost all of the Town of Leola and extends into Portage and Waushara counties. The Leola District has been in suspended status since 1967, removing the Adams County Drainage Board's ability to levy assessments there. In July 2015, the 2015-2017 state biennial budget passed, which included a framework for addressing the problems with suspended districts. Such districts must either be dissolved or reinstated. Dissolution of a drainage district must include landowner notification, and public hearing process. The remaining two drainage districts in Adams County, which remain active are the Colburn District, located in the northern half of the Town of Colburn; and the Widow Green District in the Town of Jackson. These Districts have the power to levy assessments on property in the district based upon the benefit to the property. Although not a part of County government, the Adams County Drainage Board governs all three districts.

## **G. Groundwater Resources**

Groundwater is the primary source of drinking water and irrigation water in Adams County. Adams County uses nearly fourteen billion gallons of groundwater for irrigation per year, while drinking water uses in the County require less than one billion gallons annually. An adequate supply of usable groundwater is an important issue in Adams County as the demand for groundwater increases.

The supply of groundwater comes from unconsolidated glacial deposits and underlying sandstone aquifers. Generally, unconsolidated outwash deposits cover the northern half and the southeastern part of the county. Wells located in these areas yield 500 to 1,000 gallons of water per minute. Unconsolidated deposits become thinner and siltier in the southeast portion of the county and wells tend to yield less.

Depth of groundwater generally ranges from 0 to 20 feet in the outwash glacial lake deposits, 50 to 100 feet in the pitted outwash, and up to 170 feet in the end moraines.

Regional groundwater flow is generally from the northeast to the southwest towards the Wisconsin River. A groundwater divide exists in the eastern portion of the county, causing the groundwater to flow southeast toward the Fox River.

Groundwater quality is generally good in Adams County. There are some areas that have non-threatening problems with iron, dissolved solids, and hardness. Nitrates are an issue in the parts of the county where land use is dominated by agricultural production and/or housing developments with on-site septic systems. Groundwater pollutants affect the health of humans, livestock, and wildlife. Groundwater pollution occurs more slowly than surface water pollution therefore; it is difficult to identify sources and times of the pollution. Adams County understands that groundwater is very difficult to purify once polluted and may take many years to clean through the dilution process or due to pollutant degradation.

### Groundwater quality summary:

- 88% of 3,964 private well samples collected in Adams County from (1988-2013) met the health-based drinking water limit for nitrate-nitrogen. Meanwhile the other 12% are considered unsuitable for consumption by infants and women who are pregnant or trying to become pregnant.
- A 2008 study estimated that 33.5% of private drinking water wells in Wisconsin contained a detectable level of a herbicide or herbicide metabolite. The most commonly detected pesticide compounds included

metolachlor ESA, alachlor ESA, atrazine and atrazine metabolites. The frequency of wells containing pesticides was greater in areas with a higher intensity of agricultural land, but can occur anywhere pesticides are stored or applied.

Potential sources of groundwater contamination summary:

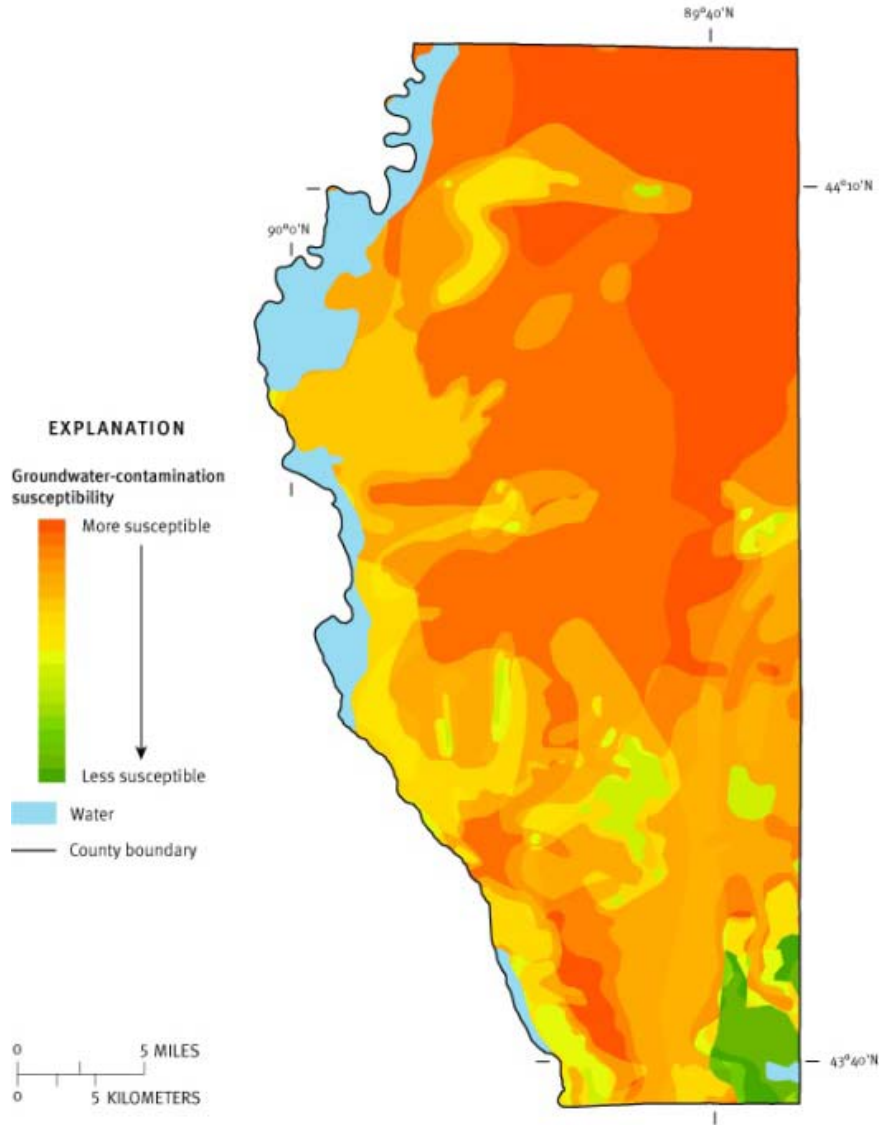
See Figure 16 to see how susceptible Adams County's soils are to being polluted by surface application (due to spills or direct application) of chemicals and nutrients.

Non-point source pollution, also known as polluted runoff, is a leading cause of water quality problems in Wisconsin. Polluted runoff is caused by rainfall or snowmelt moving over and through the ground picking up natural and human-made pollutants, depositing them into rivers, lakes, wetlands and groundwater. Pollutants include fertilizers, nutrients, oil, grease, sediment and bacteria from agricultural, urban and residential areas.

- 28,817 acres of land in Adams County are in atrazine prohibition areas.
- There are 27 open-status sites in Adams County that have contaminated groundwater and/or soil. These sites include 19 Leaking Underground Storage Tank (LUST) sites, 5 Environmental Repair (ERP) sites and 3 spill sites.
- There are 2 concentrated animal feeding operations (CAFO) in Adams County: Opitz Custom Heifers and New Chester Dairy (Milk Source) and a third CAFO was just approved Richfield Dairy (Milk Source) with construction to begin in 2016.
- There is 1 licensed landfill in Adams County (Adams County Landfill and Recycling Center, 1420 STH 21, Strongs Prairie).
- There are no Superfund sites in Adams County.
- Nitrate Nitrogen has become an area of concern in Adams County with 12 percent of the wells sampled showing greater than 12 ppm concentrations, 2012 study in Adams County, and will be an area which will be targeted for monitoring and reduction in the future.

**Figure 16**

**Adams County – Groundwater Contamination Susceptibility Analysis**



This map is a composite of five resource characteristic maps, each of which was derived from generalized statewide information, and cannot be used for any site specific purposes.

Source: DNR PUBL-WR-177-87, 27p.

## **H. Geology**

Sandstone bedrock, generally defined as the “Dresbach Group undifferentiated”, lies under Adams County. Overlying this bedrock are outwash and glaciolacustrine (glacial lake) deposits associated with the terminal moraine that lies in the southeastern part of the county and near the County’s northeastern border. The Dresbach Group is comprised of sedimentary sandstone of late (Upper) Cambrian Age that overlies crystalline basement rocks of Precambrian Age. Both the crystalline rock surface and the sandstones decline gently toward the south and the sandstones thicken in the direction of the decline from less than 100 feet in the northern part to nearly 400 feet in the southern part of the county. In places, the sandstones project up through overlying materials to create the scenic sandstone mounds and castle rocks of Adams County. The flat tops of these buttes and mesas are capped by resistant sandstone layers, which are better cemented than average. These sandstones range from fine to coarse in grain and are relatively permeable. The precipitous cliffs, irregular crags, and towers result from a breakdown in the sandstone along vertical joints caused by rain and wind erosion. These rocks fall to pieces and are blown or washed away, slowly making mesas into buttes, and buttes into conical towers. There is one small “pocket” of Precambrian Quartzite bedrock to the southeast of Rome near Lake Camelot.

The extensive outwash plains extend southward along the terminal moraine and covers nearly 400 square miles of the Driftless Area. These plains consist largely of glacial sand and gravel with some silt and clay cover. Outwash deposits also occur east of the terminal moraine. Average thickness of these deposits is about 100 feet, but may be as much as 200 feet deep in some places. Generally, outwash deposits are very permeable. The rest of Adams County is covered by glacial lake deposits, consisting of sand, silt, and clay covered with a fine to coarse grain. The lake deposits are less permeable and are generally twenty-five feet or less in thickness. In the northern half of the county, lake deposits actually lie on top of outwash. Unlike areas near the Mississippi River, there are no thick loess deposits adjacent to the outwash deposits in Adams County. This may have been due to local climate, preglacial weathering, topography, or the composition of the glaciers, but the exact reason for this absence is not definitively known.



## I. Mineral Resources

There are a number of clay, top soil, rock, sand, and other aggregate mines throughout the county that are often referred to as pits or quarries. Sites are currently producing unconsolidated material such as sand or gravel. Rock and sand deposits are mostly mined in the area of the Town of Rome. Meanwhile, gravel pits may be found in a variety of locations in the County.

### Metallic Minerals

Metallic mineral deposits are defined as naturally occurring, local concentrations of metal-bearing minerals.

The majority of Adams County contains no useful deposits of metallic mineral ore since these deposits are generally associated with Precambrian bedrock (most of Adams County is Cambrian sandstone). There is, however, a small “pocket” of Precambrian Quartzite bedrock in the eastern edge of the Town of Rome near Lake Camelot. This site could potentially yield iron ore.

### Sand

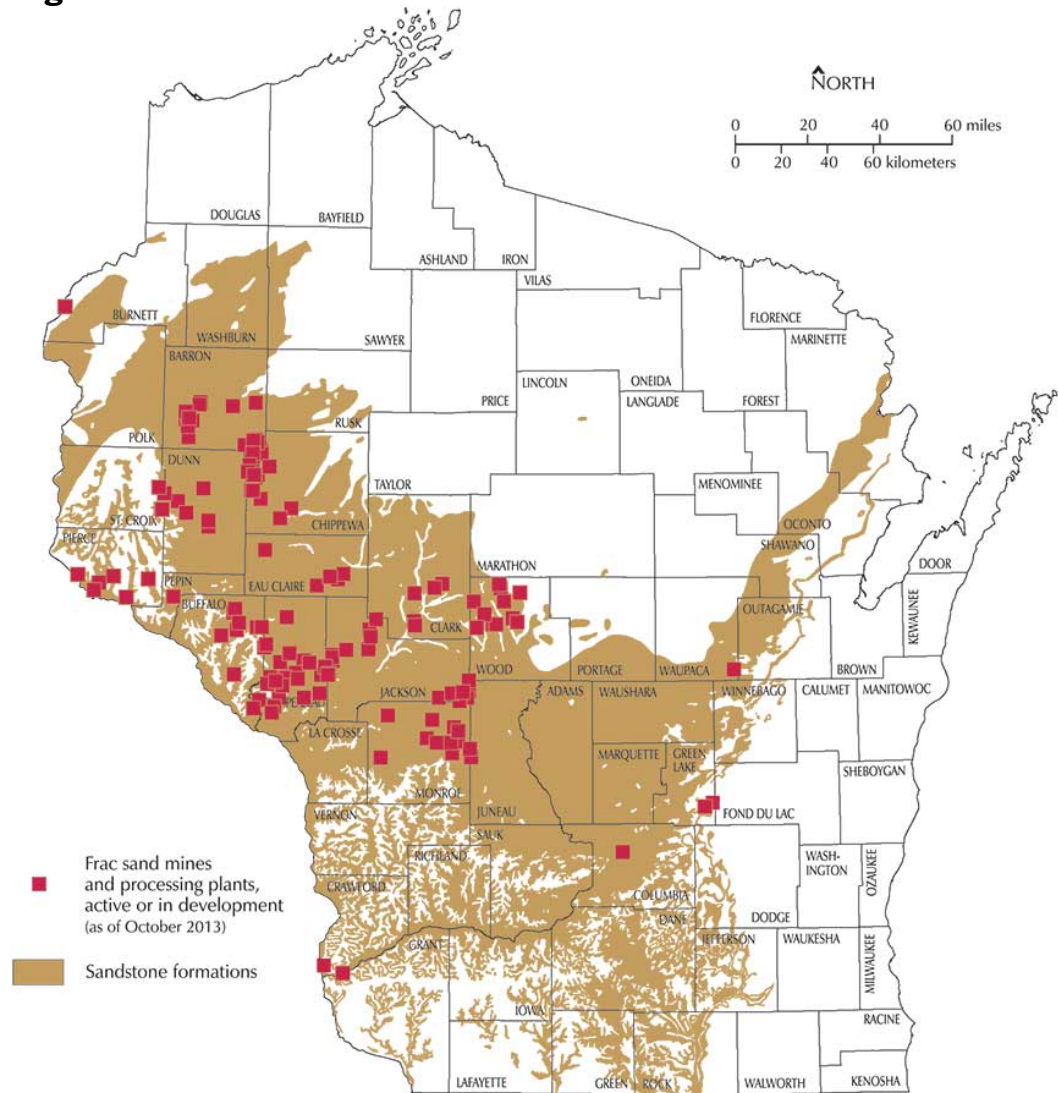
Sand mining has occurred in Wisconsin for more than 100 years. Fracking has been used by our domestic oil and gas industry for the past 75 years. Recently, the development of new horizontal drilling technology using hydraulic fracturing has made possible production of previously unrecoverable natural gas resources in the eastern, western, and southwestern United States. See Figure 17 for the extent of frac sand deposits in Wisconsin.

#### **Frac Sand**

A type of sand perfect for fracking. Characteristics of frac sand include: spherical shape, high silica (quartz) content, hardness (can withstand high pressure), uniform particle shape and size.

Source: UWSP CLUE.

**Figure 17 Frac Sand in Wisconsin**



Source: WGNHS, 2014.

Wisconsin’s sands, especially from the bedrock of western and central Wisconsin, have all the right characteristics in addition to being near the surface and easy to mine.

Glaciation in Wisconsin led to the deposition of sand as melting and glacial retreat occurred, but those sands are too impure to make frac sand. The frac sand industry in Wisconsin involves removal of the sand and processing it. The map in Figure 17 shows where sandstone formations are located.

Sand in Adams County is suitable for a variety of uses including frac sand, foundry sand, glass sand, bedding sand, filter sand or aggregate (gravel and sand) for roads and other types of construction, and other types of uses.

## J. Soils

The majority of the soils in Adams County result from glacial sandstone deposits, while southeast Adams County has glacial till. See Maps 4 and 5. The soil erosion problem areas in Adams County contain annually cultivated glacial sandstone soils that are prone to wind erosion or annually cultivated glacial till soils located on slopes that are prone to water erosion.

Soils are classified based upon physical characteristics between the soils and the topography of the area. The U.S. Natural Resources Conservation Service (NRCS) has grouped Adams County soils into ten associations.

Briggsville-Kewaunee-Poygan: This association occurs in the southeast corner of the County on undulating relief. Soils in this group developed in sandy to clay material and range from well to poorly drained and are **susceptible to water erosion**. The clay soils in this group have slow permeability and have high shrink-swell potential.

Delton-Wyeville-Plainfield: These soils occur on nearly level slopes bordering on the Wisconsin River and its major tributaries. This association is comprised of well-drained, sandy soils developed in old glacial lake deposits and **are susceptible to wind erosion**.

Dickinson-Dakota-Billett: These soils occur on nearly level relief in the south central region of Adams County. They are comprised of well drained, loamy and sandy soils developed over glacial outwash and **are susceptible to wind erosion**.

Fordum-Sturgeon-Dunnville: This association occurs on nearly level to undulating relief. This loamy sand may be found in areas adjacent to the Wisconsin River and is comprised of poorly drained sandy soils **susceptible to wind erosion**.

LaFarge-Urne-Norden: This association is found on rolling relief in the southwestern part of the County along the Wisconsin River. Soils in this association are loess and loamy deposits over sandstone **susceptible to wind erosion**, well drained, and closely associated with sandstone bedrock.

Newson-Meehan-Friendship: This association is found on nearly level relief and is comprised of sandy soils with high water tables and organic soils in depressional areas. These soils are primarily found in the northeast portion of the County and in areas south of the Adams-Friendship community. The soils are **susceptible to wind erosion**.

Plainbo-Boone-Eleva: This association is found on rolling relief in the southern part of the County. Soils in this association are sandy-to-sandy loam, well drained, and closely associated with sandstone bedrock. Soils are **susceptible to wind erosion**.

Plainfield-Friendship-Meehan: This association occurs on nearly level to undulating relief. It is primarily found in the western part of the County and is comprised of well-drained sandy soils (with inclusions of organic soil) and sandy soils with high water tables. **Groundwater contamination and wind erosion** can be a hazard on these soils.

Plainfield-Richford-Friendship: These soils occur on nearly level relief and are confined mainly to the eastern portion of the County. They are comprised of well-drained, loamy and sandy soils **susceptible to wind erosion**.

Plainfield-Wyocena-Okee: These soils are found on undulating to rolling relief in the southeastern part of the County. Soils in this association are sandy to sandy-loam, well drained and stony in places. Because of their sloping relief and sandy nature, these soils are **susceptible to water and wind erosion**.

## **K. Previous Reports Summarized**

Plans that were used to make this LWRM Plan are summarized below:

Adams County Land & Water Resource Management Plan 2007-2011

<http://www.adamscountylwcd.net/>

This Plan provides a framework for local/state/federal conservation program implementation efforts. Implementation of this plan will help protect and improve the valuable natural resources in Adams County. Some of the plan's recommendations include: slowing the spread of invasive species, minimizing the negative impacts of development on state waters, protecting shorelands, and reducing erosion from all lands. A copy is available in the Adams County Land and Water Conservation Department.

Adams County Comprehensive Plan 2006-2026

<http://www.ncwrpc.org/adams/adamscp.html>

Adams County's Comprehensive Plan update is at the early stages of development. New resource management data will be included from this Land and Water plan.

Protecting Wisconsin's Groundwater Through Comprehensive Planning  
(<http://wi.water.usgs.gov/gwcomp/>)

USGS, UW Extension, and WDNR developed this web site as an inventory of groundwater data from a variety of public sources.

NRCS Soil Survey for Adams County, 1984  
[http://soils.usda.gov/survey/online\\_surveys/wisconsin/](http://soils.usda.gov/survey/online_surveys/wisconsin/)

The Natural Resource Conservation Service (NRCS) is a federal agency that prepared the Adams County, Wisconsin Soil Survey. The survey contains predictions of soil behavior for selected land uses and also highlights the limitations and hazards inherent in the county's soil. A series of detailed maps identifying the location of soil types in Adams County accompanies the survey.

The *Geology & Soils* section of the LWRM Plan was based on the Soil Survey, and several other sections also took material from this survey.

Wisconsin Land Legacy Report 2006-2056  
A copy is available at WDNR Service Centers or online at:  
[http://dnr.wi.gov/Master\\_Planning/land\\_legacy](http://dnr.wi.gov/Master_Planning/land_legacy).

This report is a comprehensive inventory of the special places that will be critical to meet future conservation and outdoor recreation needs for the next fifty years. Some of the questions asked to guide creation of this report were: Which lands and waters remain unprotected that will be critical for conserving our plants and animals and their habitats? What gaps exist now (and will likely emerge in the future) in providing abundant and satisfying outdoor recreation? How can we most effectively build upon the state's existing investment in protected lands to fill conservation and recreation gaps? What special places will our children and grandchildren wish we had protected? The study focused on identifying what of our state or regionally significant green infrastructure remains to be protected.

The report recommends protection of these lands by using federal, state, and local funding opportunities; along with possibly creating new kinds of incentives for landowners, working to draft comprehensive plans, or offering different types of technical assistance.

Each Adams County Legacy Area is summarized below with 5 stars representing the highest level for that category:

**CG** Central Wisconsin Grasslands

Size Large  
 Protection Initiated Moderate  
 Protection Remaining Moderate  
 Conservation Significance ★★★★★  
 Recreation Potential ★★★

**NN** Neenah Creek

Size Small  
 Protection Initiated Moderate  
 Protection Remaining Limited  
 Conservation Significance ★★  
 Recreation Potential ★

**CU** Colburn-Richfield Wetlands

Size Small  
 Protection Initiated Substantial  
 Protection Remaining Limited  
 Conservation Significance ★★★  
 Recreation Potential ★★

**QB** Quincy Bluff and Wetlands

Size Medium  
 Protection Initiated Substantial  
 Protection Remaining Moderate  
 Conservation Significance ★★★★★  
 Recreation Potential ★★

**MW** Middle Wisconsin River

Size Large  
 Protection Initiated Limited  
 Protection Remaining Moderate  
 Conservation Significance ★★  
 Recreation Potential ★★★★★

# PERFORMANCE STANDARDS AND PROHIBITIONS

## Chapter 3

The County land and water resource management plans are the local mechanism to implement performance standards and prohibitions. Through Wisconsin Act 27, the Wisconsin Legislature amended State statutes to allow LWCCs to develop implementation strategies for addressing local water quality priorities related to controlling erosion, sedimentation, and nonpoint source water pollution. Wisconsin DNR Rule NR 151, sub-chapter II – Agricultural Performance Standards and Prohibitions became effective October 1, 2002, revised in 2010 and became effective January 1<sup>st</sup>, 2011. These rules are the premise for which this plan will be implemented to address agricultural runoff and aid in the reduction of Nitrogen and Phosphorous to ground and surface waters. Administrative Rule ATCP 50 is DATCP’s rule that establishes the guidelines to implement Wisconsin’s Soil and Water Resource Management program as specified in state statute 92.14. Adams County LWCD will utilize NR151, ATCP 50 along with Adams County’s Ordinances to enforce prohibition standards. Adams County will cooperate with the DNR and DATCP for enforcement of the performance standards. Enforcement will be utilized as a last resort if non-compliance is not achieved through voluntary conditions.

### Implementation strategies for each part of the Agricultural Performance Standards (NR 151):

NR 151.02 Sheet, rill and wind erosion: All land where crops or feed are grown shall be cropped to achieve a soil erosion rate equal to, or less than, the “tolerable” (T) rate established for that soil. A snapshot of soil loss due to water erosion calculated by RUSLE 2 from 43,614 acres tabulated in SNAP Plus V2 for 2015 came up with an average soil loss of .5 Tons/Acres. Wind erosion calculations are needed to be updated and this will be a priority in this plan. Livestock pastures and winter grazed areas will also need to meet tolerable soil loss as of July 1, 2012.

**Conservation practices that will achieve compliance with this standard are: contour farming; cover and green manure crop; crop rotation; diversion; field windbreaks; residue management; strip cropping; grassed waterways; filter strips and terrace systems.**

NR 151.03 Tillage Setback: The purpose of this standard is to prevent tillage operations from destroying stream banks and depositing soil directly in surface waters.

**Conservation practices that will achieve compliance with this standard are: filter strips, buffers and tillage set-backs greater than 5 feet but no more than 20 feet. 70% ground cover is required. Adams County is applying for CREP eligibility.**

NR 151.04 Phosphorus Index: Cropland, pastures and winter grazing areas shall average a phosphorus index of 6 or less over the accounting period and may not exceed a phosphorus index of 12 in any individual year within the accounting period.

**Conservation practice that will achieve compliance with this standard are: nutrient management plan.**

NR 151.05 Manure storage facilities: All livestock producers building new manure storage facilities, substantially altering existing manure storage facilities, or choosing to abandon their manure storage facilities shall comply with this standard. If a facility is altered or built after January 1, 2011 the storage shall be capable of containing the volume of a 25 year, 24 hour storm. Manure storage volume cannot exceed the margin of safety level or Maximum Operating Level (MOL) identified at any time during the year.

**Compliance shall be achieved by meeting USDA-NRCS design, construction and maintenance standards for waste storage facility, closure of waste impoundments and manure transfer.**

NR 151.055 Process Waste Water Handling: All livestock producers shall comply with this section. There may be no significant discharge of process wastewater, defined by NR 243.03(53) to waters of the state.

**Compliance shall be achieved by meeting USDA-NRCS design, construction and maintenance standards for process waste water systems.**

NR 151.06 Clean Water Diversions: All livestock producers within a Water Quality Management Area shall divert clean water from feedlots, manure storage areas and barnyard areas. A Water Quality Management Area is: land within 1,000 feet from the ordinary high water mark of a lake, pond or flowage; land within 300 feet from the ordinary high water mark of a navigable stream or river; land susceptible to groundwater contamination or land with potential to be a direct conduit for contamination to reach groundwater

**Conservation practices that will achieve compliance with this standard are: diversion; roof runoff system; subsurface drains and underground outlets.**

NR 151.07 Nutrient Management: All livestock and crop producers that apply manure, commercial fertilizers and/or other forms of nutrients to agricultural fields shall control nutrient runoff into the waters of the state.

**Compliance shall be achieved by implementing a nutrient management plan that meets USDA-NRCS Nutrient Management standard.**

NR 151.08 Manure Management Prohibitions: All livestock producers shall comply with no overflow from manure storage facilities, no unconfined manure stacks within Water Quality Management Areas, no direct runoff from feedlots



and manure storage facilities and no unlimited access of livestock to state waters preventing maintenance of adequate sod cover on the shoreland area.

**Compliance shall be achieved by meeting USDA-NRCS design, construction and maintenance standards for waste storage facility, closure of waste impoundments and manure transfer, barnyard runoff system, roof runoff system, sediment basin, subsurface drains, underground outlets, wastewater treatment strip, fencing, access road, cattle crossing, livestock watering facility, prescribed grazing.**

**Identification of Priority Farms:** Administrative Code ATCP 50.12(2)(f) requires Adams County to identify farms located in the county requiring priority assistance. The Adams County Land and Water Conservation Department (LWCD) shall pick priority farms per the following ranking: (1) landowners who allow unfiltered stormwater runoff into state waters; (2) those farms that have converted forested areas into agricultural crop production; (3) newly developed farms, irrigated fields; (4) farms in high nitrate well contamination areas; and (5) Farmland Preservation Program participants that come out of compliance with pollution controls.

Newly converted, irrigated agricultural fields will be another area of focus due to the intensive tillage and crop management that has contributed to wind erosion issue. As per NR 151.09 implementation and enforcement procedures for cropland performance standards the newly converted cropland will require a nutrient management plan which will need to be updated annually to meet compliance standards. Several thousand acres have been converted since the October 1st 2002 deadline and these cropped fields will be updated during the implementation of this plan and continue as deforestation occurs. The Wind Erosion Prediction System (WEPS) will be used to assess the impacts of agricultural crop production on the lands within Adams County and utilized to soil loss calculations to address nutrient loading via wind transported sediment as external loading to water bodies, especially 303 (d) listed water. Nutrient management plans will also be identified as a priority for CAFO's. CAFO nutrient management plans fall within NR243 for the years manure is applied and then NR 151 Agricultural Performance Standards specifically NR 151.02 and NR 151.07 will be areas of emphasis for the years when manure is not being applied to reduce the impact of nutrients reaching the ground water and surface waters in Adams County. High nitrate well contaminations areas will be an area of focus.

**Compliance Determination:** Adams County LWCD has completed compliance determination in the Adams County portion of 14 Mile Creek and Mason Lake subwatershed. Mason Lake, located within the Neenah Creek Watershed has been identified as an area which needs to have a "social assessment" conducted to identify if more water quality issues can be addressed and if there is an interest by the agricultural and riparian landowners to move toward a

more focused environmental assessment and water quality monitoring program to address the 303(d) concerns. Compliance determinations shall occur in the next 5 years in this order with continual assessment and evaluation for water quality:

1. Neenah Creek Watershed/Mason Lake
2. Duck Creek/Plainville Watershed;
3. Big Roche A Cri Watershed;
4. Little Roche A Cri Watershed; and
5. Fourteen Mile Creek.

This order was selected based upon the amount of land that is actively managed for agricultural production and has been identified as an area of concern due to deforestation and conversion into agricultural crop production or intensive crop rotations and irrigation.

Complaints filed stating a farm is in violation of the NR 151 Performance Standards will become priority and an on-site visit to determine compliance will occur immediately.

After completing a visit, the producer will receive from the Adams County LWCD a letter containing the status of compliance, instructions for appeals and suggested measures needed for compliance. Adams County LWCD goal is to utilize our Global Position System (GPS) to record compliance. The Department staff will record data on the GPS and transfer the data to a geo-database to produce reports and maps.

Utilizing current staff and meeting other department workload demands, we anticipate contacting 50 landowners per year to determine compliance. We estimate it will take 5 years to inventory all the agricultural producers in Adams County.

**Compliance Assistance:** Adams County LWCD will provide technical and financial assistance to landowners for the purpose of installing hard and soft practices to meet NR151 requirements. Adams County LWCD will utilize financial assistance from DATCP, WDNR and USDA-NRCS to provide the landowners with an offer of cost-share.

**Enforcement:** Enforcement will be coordinated with the Wisconsin DNR Non-point Source Coordinator for Adams County. A working agreement will be developed with the WDNR to implementation strategies for the performance standards and prohibition implementation to ensure a seamless and efficient approach. This agreement will eliminate duplication of efforts and develop a line of communication for managing violations. If an agricultural producer chooses to remain in noncompliance or refuses financial assistance for compliance, the Adams County LWCD will forward all violation information to DATCP and WDNR and will notify the agricultural producer by registered mail they are subject to an enforcement action pursuant to NR 151.09.

Adams County has adopted Animal Waste Management and Stormwater Management Ordinances. The Animal Waste Management Ordinance pertains to NR151.09, NR151.095 and ATCP 50.08. The Stormwater Runoff Ordinance will define the regulation of cropland erosion such as sheet, rill and gully erosion due to concentrated storm events. This ordinances will provide NR151 compliance for NR 151.02 for Sheet, rill and gully erosion, but Adams County needs to address wind erosion issues. NR 151.03 - tillage setback will be addressed by the Stormwater Runoff Ordinance as well as NR 151.06 clean water diversions.

# 2007-2011 WORK PLAN ACCOMPLISHMENTS

## Chapter 4

This chapter is a summary of how each of the Work Plan goals was accomplished. Actions for each goal are described. Knowing what has occurred helps to determine which actions to continue with when creating the next 10-year Work Plan. Goals are not arranged in importance or priority.

**Goal 1: Monitor streams for water quality and quantity.**

Goal was successfully met by the Adams County Land and Water Conservation Department (LWCD) in cooperation with WDNR for organizing and coordinating 16 citizen volunteers who monitored and collected physical and biological data on all major streams in Adams County.

**Goal 2: Assist lake organizations to protect and/or improve lake water quality and quantity.**

Goal was successfully met by the Adams County Land and Water Conservation Department (LWCD) who provided a Lake Specialist who organized and coordinated citizen volunteers on 20 lakes within Adams County for the purpose of monitoring and collecting water quality and aquatic invasive species data which was used to develop management strategies. Citizen volunteers on Petenwell and Castle Rock lakes were trained, monitored, and coordinated for water quality testing and sampling for blue-green algae. The Lake Specialist also interacted with lake advisory groups for each of the 20 lakes and assisted with lake management plan development and updates. WDNR provides Grant funding to offset some of the cost to Adams County, as well as technical support.

**Goal 3: Implement NR151 Agricultural Performance Standards.**

Goal was partially met by the Adams County Land and Water Conservation Department (LWCD) by completing 92 compliance inventories on agricultural producers located in 2 watersheds that drain to 303(d) water bodies during the years 2008 and 2011.

**Goal 4: Implement Farmland Preservation Program.**

Goal was partially met by the Adams County Land and Water Conservation Department (LWCD) by completing reviews on all existing participants while informing approximately 84 agricultural producers between the years 2009 and 2011.

**Goal 5: Implement Soil and Water Resource Management Program.**

Goal was successfully met by the Adams County Land and Water Conservation Department (LWCD) by completing the DATCP annual allocation requesting \$100,000 cost-share annually. While we were never allocated the full amount requested, we successfully entered into cost-share agreements with landowners to spend all our annual cost-share while providing design and installation assistance for conservation practices. From 2007 to 2011 we provided financial, design and construction oversight assistance to 49 landowners. Conservation compliances is monitored for the duration of the contracts as required by the WDNR and DATCP. Adams County has applied independently and jointly with Wisconsin Land and Water for a WDNR grant to fund a tracking software purchase which was denied in 2015. Adams County is currently looking into developing a tracking system within the GIS (WEB Map Update) software to ensure conservation compliance is maintained for the duration of the project cost share requirements.

**Goal 6: Provide assistance to non-ag. Landowners to install conservation practices.**

Goal was successfully met by the Adams County Land and Water Conservation Department (LWCD) by completing a tree and shrub sale with sales to approximately 644 people from 2007 to 2011 as well as providing design assistance to approximately 66 non-agricultural producers located in Adams County for shoreland buffer restoration.

**Goal 7: Inform contractors, developers and citizens about construction site erosion control.**

Goal was successfully met by the Adams County Land and Water Conservation Department (LWCD) by completing a Stormwater Runoff Ordinance in 2007. The LWCD reviewed and issued 11 permits and provided assistance to 46 landowners to correct Stormwater Runoff Ordinance violations.

**Goal 8: Control Invasive Species.**

Goal was successfully met by the Adams County Land and Water Conservation Department (LWCD) who provided a Lake Specialist who organized and coordinated citizen volunteers on 20 lakes within Adams County for the purpose of monitoring and controlling aquatic invasive species. Biological methods were established on two lakes, while several others were inventoried for the ability to establish biological control methods. WDNR support was provided for technical and financial assistance.

**Goal 9: Provide landowners reimbursement for wildlife damage.**

Goal was successfully met by the Adams County Land and Water Conservation Department (LWCD) by providing assistance and education to 80 landowners. Work with APHIS and WDNR partnership to assist landowners for technical and financial support.

**Goal 10: Prevent point source groundwater pollution.**

Goal was not successfully met by the Adams County Land and Water Conservation Department (LWCD) because of workload priorities, the sheer scope of the project and it has become more of a WDNR regulated issue.

**Goal 11: Inspect, operate, and maintain 9 dams owned by the County so they meet state law.**

Goal was successfully met by the Adams County Land and Water Conservation Department (LWCD) by operating dams to maintain lake levels within State defined operating ranges; completing inspections by dates established by the WDNR and maintained dams by completing needed repairs as soon as possible.

**Goal 12: Participate in Golden Sands RC&D.**

Adams County Land and Water Conservation Committee participated in just about every Council meeting as the representative for Adams County. The County Conservationist or Lake Specialist participated as the LWCD representative for Adams County.

**Goal 13: Participate in Central Wisconsin Windshed Partners (CWWP).**

Adams County Land and Water Conservation Committee participated in just about every Board meeting, while the Resource Conservationist participated as the LWCD representative.

**Goal 14: Provide educational and information to residents of Adams County.**

Goal was successfully met by the Adams County Land and Water Conservation Department (LWCD) by providing education and information to 10,957 people while participating in WLWCA, school activities and lake meetings; attending Town and County Board meetings and answering phone calls and walk-in visits. The LWCD also sponsored the High School Envirothon each year, providing educational and financial assistance for the teams to be able to compete at this state competition.

**Goal 15: Minimize impacts of nonmetallic mining reclamation on the natural resources.**

Goal was successfully met by the Adams County Land and Water Conservation Department (LWCD) by reviewing and issuing 2 new permits while reviewing and renewing 11 permits.

**Goal 16: Minimize impacts of animal manure storage on the natural resources.**

Goal was successfully met by the Adams County Land and Water Conservation Department (LWCD) by completing a revision of the Animal Waste Storage Ordinance in 2010. The Ordinance was renamed Animal Waste Management Ordinance and provided standards for the land application of animal waste for the purpose of providing nutrients to crops. The LWCD reviewed and issued 4 permits and provided assistance to 2 landowners to correct Ordinance violations.

# **2016-2020 WORK PLAN AND BUDGET**

## **Chapter 5**

Based upon the resource concerns identified by the Citizens Advisory Committee and Technical Advisory Committee members, the Work Plan was updated from the 2007-2011 plan. Goals, objectives, and actions in the Work Plan are listed in priority order. This 2016-2020 Work Plan will focus LWCD activities over the next five years.

The LWCD along with agency partners will implement the action items listed in the Work Plan as staff and funding become available.

Additional staff are needed to accomplish the activities in this plan.

The goals are listed below in order of priority as determined by the Adams County Land and Water Conservation Committee in association with recommendations from the Citizens Advisory Committee and the Technical Advisory Committee.

### **2016-2020 Work Plan Goals:**

**Goal 1: Create a culture where landowners take ownership of their impact on the environment.**

**Goal 2: Protect and improve groundwater quality and quantity as well as surface water quality and quantity.**

**Goal 3: Reduce wind erosion.**

**Goal 4: Promote working forests and farms.**

**Goal 5: Improve forest silviculture for multiple uses.**

**Goal 6: Manage wildlife conflicts.**

**Goal 7: Control invasive species.**

High priority objectives and activities are **bolded**. The lead agencies to complete or initiate the tasks are **bolded**. Tracking measures given will allow for ease of annual reporting to the state and findings as to the successes of the work plan activities. Work plan activities will take place as often as is stated in the Measurement Tools column from 2016 through 2020. An update to the activities outlined here will take place again in 2020.

Specific goals, objectives, and activities are detailed in the Work Plan on the following pages.

**BUDGET ESTIMATE:** An annual estimated budget for the 2016-2025 work plan is outlined here. In estimating the budget, it is presumed that the county will continue to staff the Land and Water Conservation Department at its current level of 4.375 persons. It is further presumed that DATCP and WDNR will meet their financial obligations for staffing of local conservation personnel and projects.

YEAR	COUNTY	DATCP	WDNR	COST SHARE	TOTAL ESTIMATE
2016	\$152,716	\$136,000	\$34,640	\$85,000	\$408,456
2017	\$155,000	\$136,300	\$34,640	\$85,000	\$410,940
2018	\$155,000	\$136,300	\$40,000	\$85,000	\$416,300
2019	\$155,000	\$139,000	\$40,000	\$85,000	\$419,000
2020	\$158,000	\$136,000	\$37,000	\$85,000	\$416,000
2021	\$160,000	\$132,000	\$37,000	\$85,000	\$414,000
2022	\$161,000	\$132,000	\$34,000	\$85,000	\$412,000
2023	\$163,000	\$132,000	\$34,000	\$85,000	\$414,000
2024	\$163,000	\$132,000	\$34,000	\$85,000	\$414,000
2025	\$165,000	\$132,000	\$34,000	\$85,000	\$416,000

Adams County has been successful in attaining funding from a number of sources in the past. During the implementation phase of the following work plan, we intend to continue applying for grants to sustain the current level of staff and project funding. Potential sources of conservation funding may come from the following:

- Natural Resource Conservation Service (NRCS) Public Assistance Programs
- Department of Agriculture, Trade, and Consumer Protection (DATCP) Soil and Water Resource Management funding
- Wisconsin Department of Natural Resources (WDNR) Lake Planning and Protection Grant Programs; and AIS Education & Management Programs
- Wisconsin Department of Natural Resources (WDNR) Targeted Runoff Management Program - Small scale non-TMDL projects
- Other funding sources as they may become available

**See Chapter 10 Glossary for definitions of abbreviations used here.**



**Goal 1: Create a culture where landowners take ownership of their impact on the environment.**

*(Resource Concerns – With the right information, citizens will make good choices for the greater good.)*

<b>Objective</b> (Highest priority in bold)	<b>Activities</b> (Highest priority in bold)	<b>Responsible Agencies</b> (Lead agency in bold)	<b>Measurement Tools</b>
<b>A. Restore Leola Drainage District</b>			
	1. Identify why district was suspended and work on water quality issues in the drainage area.	<b>LWCD, LWCC, Corp. Council.</b>	Leola Drainage District is reactivated or dissolved.
<b>B. Provide information clearinghouse.</b>			
	<b>1. Provide information about land &amp; water resource management and educational information relating to all the goals in this plan.</b>	<b>LWCD, AIS, UWEX</b>	Web site will have information about all Work Plan goals, and digital copies of information and brochures. Staff will perform multiple presentations (10 annually), answer office visit questions, and distribute brochures.
	2. Maintain county webpage for LWCD services - www.adamscountylwcd.net	<b>LWCD, AIS, UWEX</b>	Update web site for LWCD, ongoing.
	3. Link DNR and UWEX shoreland restoration web sites to LWCD web site.	<b>LWCD, AIS, P&amp;Z</b>	Provide 1 separate link for DNR, provide 1 separate link for UWEX , provide 1 separate link for P&Z.
	4. Link various organizations (e.g. UWEX-Lakes, NRCS, DATCP, RC&D) to LWCD web site.	<b>LWCD, AIS</b>	Provide links to other natural resource sites & pursue additional links annually.
	5. Provide a contact list of resource professionals	<b>LWCD, UWEX</b>	Provide list of 15 resource professionals, update list annually.
	6. Landowner led programs/conservation initiative, where innovative BMPs may be used.	<b>LWCD, UWEX, DNR</b>	Create 1 active group annually.

**(Continue on next page)**

Adams County 2016-2020 WORK PLAN

<b>C. Reduce wind erosion.</b>			
	1. Work with Central Wisconsin Windshed Project to install tree and shrub wind breaks and provide cost sharing as allowed.	<b>LWCD, CWWP</b>	Install at least 3 miles, annually, of wind breaks with 10-year easements.
	<b>2. Utilize the wind erosion prediction models (WEPS) to gain knowledge and install conservation practices to reduce sedimentation into stream and lakes within the county.</b>	<b>LWCD, NRCS</b>	<b>Wind Erosion Prediction and soil monitoring with development of tracking system.</b>
<b>D. Control invasive species.</b>			
	1. Work with DNR and AIS Coordinator	<b>LWCD, AIS, DNR</b>	Harvesting, chemical application plans, lake groups, volunteers. AIS Coordinator update 4 plans annually.
	2. Identify invasive species in lake management plans and develop methods to reduce potential spread of aquatic and terrestrial species.	<b>AIS, LWCD, DNR</b>	Establish PI surveys to develop historical data and plant species. Implement control methods. Update management plans.

**Goal 2: Protect and improve groundwater quality and quantity as well as surface water quality.**  
*(Resource Concerns – Soil Erosion, Nutrient Loading, and Shoreline Buffer/Stabilization)*

<b>Objective</b> (Highest priority in bold)	<b>Activities</b> (Highest priority in bold)	<b>Responsible Agencies</b> (Lead agency in bold)	<b>Measurement Tools</b>
A. Control soil erosion on agricultural lands			
	<b>1. Develop conservation plans using a model that meet the tolerable soil loss on cropland as a minimum standard to achieve water quality soil &amp; soil erosion (NR 151.02).</b>	<b>LWCD, NRCS</b>	<b>4 plans annually.</b>
	<b>2. Provide technical assistance and cost sharing (if available) to landowners, contractors, and others as requested.</b>	<b>LWCD, UWEX, NRCS</b>	As requested.
	3. Promote ground cover through the implementation of best management practices for Shoreland buffers/filter strips.	<b>LWCD, UWEX, NRCS</b>	5 acres annually.
	4. Promote conservation tillage.	<b>LWCD, UWEX, NRCS</b>	200 acres annually.
	5. Promote rotational grazing to livestock farmers.	<b>LWCD, UWEX, NRCS</b>	1 news release or training session annually.
	6. Educate landowners on soil erosion performance standards through newsletter(s), landowner visits, and informational meetings.	<b>LWCD, UWEX, NRCS</b>	1 news release; landowners visit or informational meeting, department newsletter.
	7. Pursue cost sharing to install projects that reduce wind and water erosion.	<b>LWCD, NRCS</b>	1 annually.
	8. Encourage landowner participation in EQIP.	<b>LWCD, NRCS</b>	1-2 newsletters annually.
	9. Educate the public about wind erosion.	<b>LWCD, NRCS</b>	1-2 newsletters annually.

(Continue on next page)

Adams County 2016-2020 WORK PLAN

<b>B. Promote nutrient management.</b>			
	<b>1. Provide training session for agricultural producers to develop and implement nutrient management plans for their cropland and pastures (NR 151.04).</b>	LWCD, UWEX	<b>Annual training session to attract 10 farmers and on-site visits.</b>
	2. Educate landowners of the value of nutrient management planning	LWCD, UWEX	Annual training session 1 news release annually.
	3. Print restriction maps for Nutrient Management Plan.	LWCD	As requested (Maps available on line).
	4. Provide a list of crop consultants certified for nutrient management planning.	DATCP, LWCD	Have 10 copies available at the front desk. Update list annually.
	5. Encourage landowner participation in EQIP.	NRCS, LWCD	2 new landowners annually.
	6. Pursue cost sharing for nutrient management planning.	LWCD, NRCS	Apply annually.
	7. Educate rural non-farm residents about what to expect living next to a farm.	LWCD, UWEX, P&Z, WDNR	1 news release annually. Send document to real estate agencies to be given to potential rural resident clients.
	8. Ensure landowners with manure storage systems installed since county ordinance became effective have a nutrient management plan.	LWCD	Annually submittal of NMP for each issued permit (based on number of issued permits).
	9. Encourage landowner participation in FPP.	LWCD	1 news article annually.
<b>C. Protect groundwater from contamination.</b>			
	<b>1. Provide technical assistance and cost sharing (if available) to landowner to properly decommission a well.</b>	LWCD, P&Z	3 annually.
	2. Distribute literature in office literature racks about groundwater protection.	LWCD, P&Z, Health	Provide 20 copies annually in office literature racks.
	3. Ground water/ well testing	Health, UWEX	Suggest testing be done with change in rural resident landownership.
	4. Encourage landowner participation in EQIP.	LWCD, NRCS	During on-site visits – 10 annually.
	5. Consider nutrient loss via leaching in sandy soils when developing Nutrient Management Plan.	LWCD, NRCS, DNR	3 annually.
	6. Work with WDNR groundwater division staff to address high nitrate levels in wells.	LWCD, UWEX, HHS, DNR	Create a plan to mitigate health effects of high nitrate wells.

(Continue on next page)

<b>D. Properly manage animal waste.</b>			
	<b>1. Administer, and enforce Adams County's Animal Waste Management Ordinance</b>	<b>LWCD</b>	<b>Annual NMP spot check for all farms with WPDES permits and 590 checklist.</b>
	2. Educate landowners through landowner visits, newsletter, and informational meeting.	<b>LWCD</b>	1 or 2 newsletters annually. During visit for FPP done every 4 years Email as new information is made available.
	3. Provide technical assistance and possibly cost share for new animal waste storage facilities.	<b>LWCD, NRCS</b>	As requested.
	4. Encourage landowner participation in EQIP.	<b>LWCD, NRCS, UWEX</b>	2 landowners annually.
	5. Pursue cost sharing for upgrading existing animal waste storage facilities.	<b>LWCD, NRCS, DNR</b>	As needed in the farming community.
<b>E. Implement agricultural performance standards.</b>			
	<b>1. Provide technical assistance to landowners with NPS discharges.</b>	<b>LWCD, NRCS, UWEX, P&amp;Z, DNR</b>	<b>As needed.</b>
	2. Make a list of native plants available to area landowners.	<b>LWCD, P&amp;Z</b>	Provide 15 copies of plant list annually in office public literature racks, and place list on web site.
	3. Work with P&Z to create a shoreland zoning fact sheet, and publish online to encourage compliance with the non-agricultural performance standards and prohibitions.	<b>LWCD, P&amp;Z, NCWRPC</b>	Provide 15 copies annually in office public literature racks. Provide to all new shoreland property owners in their mailing.
	4. Promote development of nutrient management plans (NR 151.07)	<b>LWCD, UWEX, P&amp;Z</b>	1 or 2 newsletters annually. During visit for FPP done every 4 years Email as new information is made available.

(Continue on next page)

Adams County 2016-2020 WORK PLAN

	5. Provide technical assistance and possibly cost sharing to ensure: a. No overflowing manure storage facility; b. No unconfined manure pile in a water quality management area; c. No direct runoff from feedlot or stored manure pile; d. Restricted access by livestock to waters of the state.	<b>LWCD</b>	1-2 newsletters send annually.  During the 2 to 4 FPP spot checks done every year.  Add performance standards and prohibitions fact sheets on county web site.
	6. Promote BMPs to implement NR 151 and ATCP 50.	<b>LWCD, NRCS, P&amp;Z</b>	2 annually.
	7. Encourage landowner participation in EQIP.	<b>LWCD, UWEX, NRCS</b>	2 annually.
	<b>8. Monitor NR 151 compliance of all non-FPP farms per operation and maintenance agreements.</b>	<b>LWCD, DATCP</b>	25% of non-FPP farms annually.
<b>F. Implement non-agricultural performance standards.</b>			
	1. Inform contractors, developers, and citizens about non-agricultural performance standards.	<b>LWCD, DATCP, P&amp;Z</b>	Have copies available in office public literature racks. Provide a copy with every zoning permit issued.
	2. Educate about ground water contamination	<b>Health, UWEX, P&amp;Z, LWCD</b>	Department newsletters, Have copies available in office public literature racks.
	3. Educate public about damage caused by failing septic systems	<b>Health, P&amp;Z</b>	1 news article annually.
	4. Educate public about damage caused by wind/rain and lack of vegetative cover has on the shoreland	<b>P&amp;Z, LWCD</b>	3 shoreland restoration annually.
	<b>5. NR 151 compliance checks will be completed annually on 25% of practices completed each year for the maintenance life of the project</b>	<b>LWCD, DATCP, NRCS</b>	<b>15-16 projects annually.</b>

(Continued on next page)

Adams County 2016-2020 WORK PLAN

<b>G. Establish and protect vegetated shoreland buffers.</b>			
	<b>1. Promote the benefits of shoreland buffers through presentations</b>	<b>LWCD, P&amp;Z, AIS</b>	<b>3 events Annually.</b>
	2. Work with lake district /associations to distribute educational information.	<b>LWCD, DNR, AIS</b>	25% of district/associations annually.
	3. Distribute educational handouts on shoreland health, including brochures, to the public on display rack at Land Water Cons. Office.	<b>LWCD, UWEX</b>	Have copies available in office public literature racks, and on county web site.
	4. Provide access to cost-sharing for shoreline and stream bank restoration through DATCP allocations.	<b>LWCD, P&amp;Z, DATCP</b>	2 Annually.
	5. Create technical design for shoreline and stream bank restorations projects.	<b>LWCD, P&amp;Z, NRCS</b>	2 Annually.
	6. Encourage voluntary restoration of shoreland buffers through cost-sharing using Lake Protection Grant funds.	<b>LWCD, P&amp;Z, DNR</b>	3 Annually.
	7. Maintain shoreland buffer restoration demonstration sites on county owned shoreland properties (Dams) for examples of restoration.	<b>LWCD, P&amp;Z, DNR</b>	Annually.
	8. Stock and update displays at demo sites with educational information on shoreland buffer health.	<b>LWCD</b>	Refresh brochures annually.
	9. Share techniques used in shoreland restoration with other counties and agencies.	<b>LWCD, P&amp;Z, LWCD, UWEX</b>	Two annual meetings.
	10. Develop a tracking system to accurately track conservation practices and Shoreland restoration practices.	<b>LWCD, P&amp;Z</b>	Update current tracking system as projects are completed and update past conservation practices.
	11. Hold workshop for contractors and landowners on proper techniques and practices for shoreline stabilization and buffer restoration.	<b>LWCD, P&amp;Z</b>	Annually.

(Continued on next page)

Adams County 2016-2020 WORK PLAN

H. Increase compliance with ordinances.			
	<b>1. Educate public on shoreland ordinances and waterways classification obligations and benefits through presentations.</b>	LWCD, P&Z, DNR	<b>2 annually.</b>
	2. Educate new shoreland owners on shoreland health and landowner’s obligations through an information packet mailed to them upon purchase of property.	P&Z, LWCD	Monthly, based on change in land ownership.
	3. Use shoreland zoning ordinance to increase number of vegetated buffers by requiring restoration or protection with certain zoning permits.	P&Z, LWCD	10 annually.
	4. Monitor properties for compliance with shoreland restoration permits.	P&Z, LWCD	15 annually.
I. Inform contractors, developers, and citizens about construction site erosion control.			
	Distribute a fact sheet regarding construction site erosion control to contractors or landscapers at workshop on teaching proper BMPs for shoreline stabilization and lake buffers.	P&Z, LWCD	Distribute fact sheet to 10 contractors & landscapers annually.

(Continued on next page)



Adams County 2016-2020 WORK PLAN

J. Assist agricultural producers on proper nutrient management, conservation plan development, and agricultural best management practices (BMP's)			
	<b>1. Create a list of agriculture producers in the county</b>	<b>LWCD, UWEX</b>	<b>Updated annually.</b>
	2. Implement agricultural BMPs with voluntary producers	<b>LWCD, DATCP, NRCS</b>	3 agricultural producers annually.
	3. Review and record nutrient management plans for landowners and land users and conduct in field verification for compliance	<b>NRCS, LWCD, UWEX, DATCP</b>	3 nutrient management plans annually.
K. Promote rotational grazing to protect surface and ground water.			
	1. Provide information to local producers during pasture walks.	<b>LWCD, UWEX</b>	1 pasture walk annually.
	<b>2. Develop rotational grazing plans for farmers in the county.</b>	<b>LWCD, DATCP, NRCS, UWEX</b>	<b>Develop 1 plan annually.</b>
L. Reduce pollution from stormwater runoff in developed areas.			
	1. Provide guidance and/or technical assistance for two local units of government on storm water management	<b>LWCD, DNR, P&amp;Z</b>	Send information to 19 local gov'ts, & assist 2 local gov'ts.
	2. Assist local units of government with the County Storm Water Runoff Ordinance	<b>LWCD, P&amp;Z, DNR</b>	Send information to 19 local gov'ts, & assist 1 gov't.
	3. Encourage local units of government to apply for stormwater management funding through DNR's Targeted Runoff Management Program (TRM)	<b>LWCD, DNR, P&amp;Z</b>	Send information to 19 local gov'ts.
	4. Encourage landowners to use rain gardens and rain barrels to address stormwater runoff.	<b>LWCD, UWEX</b>	Provide annual rain barrel sale.

**Goal 3: Reduce Wind Erosion.**

*(Anticipated Outcome – Reduce soil loss by wind erosion to increase cropland productivity and to prevent nutrient loading into the lakes and stream)*

Objective (Highest priority in bold)	Activities (Highest priority in bold)	Responsible Agencies (Lead agency in bold)	Measurement Tools
Provide creative BMP's to reduce soil loss and develop sound tracking methods to document the reductions.			
	<b>1. Develop wind erosion data collection and tracking system to verify wind erosion issues located in county.</b>	<b>LWCD, NRCS, UWEX</b>	<b>WEPS documentation and GIS/Arc Map tracking system developed for future planning an erosion control. 2000 acres annually tracked.</b>
	2. Host farmer lead field days to promote conservation methods.	<b>LWCD, UWEX</b>	Seek landowner participants for 3 farmer lead field demonstrations, annually, to promote the use of cover crops and alternative forage types as well as tillage methods to reduce wind erosion and nutrient loading.
	3. Establish cost share practices to promote sound erosion control methods.	<b>LWCD, UWEX</b>	Ongoing demonstration projects to document the soil loss reductions. Provide cost share to landowners for conservation BMP promotion.
	4. Provide public with brochure about economic impact on the environment due to soil loss related to wind erosion.	<b>LWCD, UWEX</b>	Have brochure available in public literature racks by each office.
	5. Promote proper buffers along riparian land to reduce sediment deposition into waterways.	<b>LWCD, UWEX, P&amp;Z, Co-ops</b>	Aid agricultural producers to become compliant with shoreland buffer ordinance in Adams County.
	6. Inform public about ground water contamination reductions via nutrient uptake with alternative cropping systems to reduce soil loss and nitrogen movement in the soil.	<b>LWCD, UWEX</b>	Develop and promote conservation practices to reduce impacts to ground water and nutrient management.

**Goal 4: Promote Working Forests and Farms.**

*(Anticipated Outcome – Preserve economically viable farmland and forestland for future generations.)*

<b>Objective</b> (Highest priority in bold)	<b>Activities</b> (Highest priority in bold)	<b>Responsible Agencies</b>  (Lead agency in bold)	<b>Measurement Tools</b>
<b>A. Maintain economically viable forests.</b>			
	1. Provide technical assistance to local governments to implement comprehensive plans.	<b>P&amp;Z,</b> NCWRPC	Quarterly NCWRPC newsletter to every local government. Maintain local plans and map revisions online.
	<b>2. Promote involvement in Managed Forest Law program for tax benefits.</b>	<b>DNR, P&amp;Z,</b> LWCD	Ongoing, Increase MFL Program Acres.
<b>B. Preserve productive farmland.</b>			
	<b>1. Update Farmland Preservation Plan from 1981 version, will be updated by fall of 2016.</b>	<b>P&amp;Z, LWCC,</b> NCWRPC, LWCD	Created new Farmland Preservation Plan.
	2. Encourage landowner participation in FPP.	<b>LWCD, LWCC,</b> P&Z	Annually create newsletter. Annually speak at local Farm Bureau meeting.
	3. Require development in agricultural area to be consistent with the Comprehensive Plan	<b>P&amp;Z, LWCD</b>	Review of all zoning change requests in agricultural lands.
	4. Provide technical assistance to local governments to implement comprehensive plans.	<b>P&amp;Z,</b> NCWRPC, LWCD	Quarterly NCWRPC newsletter to every local government. Maintain local plans and map revisions online.

**Goal 5: Improve forest Silviculture for multiple uses.**

*(Anticipated Outcome – Maintain a healthy vigorous forest, while also providing for wildlife habitat, water quality, and recreation .)*

<b>Objective</b> (Highest priority in bold)	<b>Activities</b> (Highest priority in bold)	<b>Responsible Agencies</b> (Lead agency in bold)	<b>Measurement Tools</b>
A. Improve forest management to control sediment, erosion and protect habitat cover types.			
	1. Encourage private landowners to use professional forestry assistance	<b>DNR</b> , LWCD, AIS, NRCS, UWEX	5 landowners annually.
	2. Promote teacher use of DNR Environmental Education for Kids (EEK) program	<b>DNR</b>	Annually.
	3. Promote use of forestry best management practices (BMPs.)	<b>DNR</b> , LWCD	Information provided when logger permits are issued.
	4. Encourage participation in EQIP	<b>NRCS</b> , DNR, LWCD	2 landowners annually.
	5. Promote use of county owned tree planters	<b>DNR</b> , LWCD	3 landowners annually.
	6. Provide information on invasive species to general public.	LWCD, DNR, <b>AIS</b> , NRCS, UWEX	Have information available in office public literature racks.

**(Continue on next page)**

Adams County 2016-2020 WORK PLAN

B. Control illegal garbage dumping on commercial, county, state, federal and private forestlands.				
	1. Support volunteers and groups to assist with clean up along roadways in the county.	<b>Highway Dept., Wellness</b>		Volunteer groups to meet with Hwy Department annually.
	2. Help promote and support the "Clean Sweep" program.	<b>Solid Waste, LWCD</b>		Program advertised at all towns with garbage transfer sites.
C. Reduce erosion and habitat degradation caused by trail use.				
	1. Assist ATV clubs by providing erosion educational materials for users.	<b>LWCD, Parks</b>		Annually.
	2. Provide technical assistance for erosion problems and trail development.	<b>LWCD, P&amp;Z, Parks</b>		As needed.

**Goal 6: Manage wildlife conflicts.**

*(Anticipated Outcome – Less crop damage from wildlife.)*

<b>Objective</b> (Highest priority in bold)	<b>Activities</b> (Highest priority in bold)	<b>Responsible Agencies</b> (Lead agency in bold)	<b>Measurement Tools</b>
A. Reduce wildlife damage to crops.			
	<b>1. Provide technical assistance to agricultural producers.</b>	<b>APHIS, LWCD</b>	<b>Assist landowners having wildlife issues. Usually 4-6 per year.</b>
	2. Participate in <i>Venison Donation Program</i>	<b>APHIS, LWCD</b>	Usually 4-6 donations annually.
	3. Meet with APHIS technician	<b>APHIS, LWCD</b>	Usually 4 times a year.
	4. Crop damage assessment and claims	<b>APHIS, LWCD, LWCC</b>	Usually 2 times a year.
	5. Deer, bear and wolf management and provide assistance as needed to verify damage issues related to agricultural crop production.	LWCD, <b>APHIS</b>	6-10 landowners annually.
B Provide input to DNR & Conservation Congress about hunting and harvesting goals for large game.			
	1. Attend DNR meeting prior to the spring Conservation Congress meeting.	<b>LWCD, DNR</b>	Annually.
	2. Adams County Deer Council.	<b>LWCD</b>	Bi-monthly to quarterly.

**Goal 7: Control Invasive Species.**

*(Anticipated Outcome –Native ecosystem protection.)*

<b>Objective</b> (Highest priority in bold)	<b>Activities</b> (Highest priority in bold)	<b>Responsible Agencies</b> (Lead agency in bold)	<b>Measurement Tools</b>
A. Control Terrestrial and Aquatic Invasive Species.			
	<b>1. Pursue DNR grants to continue Terrestrial &amp; AIS employee.</b>	<b>LWCD</b>	<b>2 annually or per granting cycle.</b>
	2. Inventory populations on county owned properties (e.g. campgrounds, boat landings)	<b>LWCD, DNR</b>	5 sites per year.
	3. Hold Terrestrial and Aquatic Invasive ID workshops	<b>AIS, DNR</b>	1 workshop annually.
	4. Educate public.	<b>DNR, UWEX</b>	Have brochures available in office public literature racks, and on county web site. Create 3 newspaper articles annually.
	5. Signs at trail access points: install, inspect and replace if needed.	<b>Parks, DNR</b>	2 sites per year.
	6. Install boot brushes at trail access points, and inspect and replace if needed.	<b>Parks, DNR</b>	Install at 2 sites per year.
	7. Eradication workdays.	<b>LWCD, AIS, DNR</b>	2 times annually.
	8. Remain active in TIP.	<b>LWCD</b>	Ongoing.
	9. Educate timber contractors on TIS with each contract.	<b>DNR</b>	Information provided with each county timber sale.
	10. Educate ATV riders, trappers, ice fishermen and hunters about the spread on invasive species	<b>Parks, LWCD, AIS, P&amp;Z</b>	Annually.
	11. Share information where invasive species are located in forested areas	<b>LWCD, AIS, DNR</b>	Update master map of TIS annually.
	12. Participate in <i>Ice Your Catch 4<sup>th</sup> of July boat landing blitz</i> for Clean Boats - Clean Water	<b>LWCD, AIS</b>	Annually.

**(Continued on next page)**

Adams County 2016-2020 WORK PLAN

	13. Clean Boats - Clean Waters training session	<b>AIS, LWCD</b>	1 annually, or as requested by individual lake.
	14. Citizen lake monitoring workshop	<b>AIS, DNR, Lake Districts</b>	1 annually, or as requested by individual lake.
	15. Attend public events and fairs with education tables	<b>AIS, UWEX, LWCD</b>	2 annually.
	16. Release beetles to control purple loosestrife	<b>AIS, LWCD, Lake Districts</b>	8 pots of beetles will be released near infestations annually.
	17. Attend lake group/waterway meetings	<b>AIS, LWCD, Lake Districts</b>	Usually there are 12 requests annually.
	18. Provide information to every new shoreland owner	<b>P&amp;Z, LWCD</b>	Every new land owner will received a packet of information based on ownership changes to tax parcels.
	19. Public access sign maintenance	<b>AIS, DNR</b>	4-5 signs annually.
	20. Shoreland demo education	<b>LWCD, P&amp;Z</b>	1 annually.
	21. Support lake association & lake district's grant requests with letters of support	<b>LWCD, P&amp;Z</b>	2 or 4 annually.
	22. Monitor for AIS	<b>LWCD, DNR</b>	20% of lakes annually.
	23. Assist manual removal	<b>AIS, Lake Districts</b>	2 lakes annually.
	24. Aquatic Plant Surveys	<b>AIS, Lake Districts</b>	20% of lakes annually.
	25. Lake Management Plan Development and updates	<b>AIS, Lake Districts</b>	20% of lakes annually.



# **REGULATIONS**

## **Chapter 6**

### **Regulation Types**

Adams County has relied on the following State regulations for the protection of natural resources:

- Department of Natural Resources – Chapter 30, Wisconsin Statutes – Navigable Waters.
- Department of Natural Resources – Wisconsin Pollution Discharge Elimination System Permits.
- Department of Natural Resources – Performance Standards - Administrative Code NR 151.
- Department of Natural Resources – NR 216, Stormwater Discharge Permits and Construction Site Erosion Control.
- Department of Agriculture, Trade & Consumer Protection – ATCP 50, Soil and Water Resources Management Program.
- Department of Natural Resources – NR 115.
- Drainage Districts – Dissolution or reinstate per ATCP 48 & Chapter 88.

Local regulations used to protect natural resources in Adams County are:

- Animal Waste Management Ordinance(02-2012).
- Stormwater Runoff Ordinance(28-2007).
- Shoreland Protection Ordinance(14-2011).
- Ordinance Regulating Distribution of Manure By Spray Irrigation(21-2015).
- Non-Metallic Mining Ordinance(02-2011).

### **Enforcement Process**

A landowner who is out of compliance with state performance standards and prohibitions and refuses technical and financial assistance from the LWCD will be notified by mail that they are subject to enforcement actions. A copy of the enforcement letter will be sent to the Department of Agriculture, Trade, and Consumer Protection. Landowners who are in violation of the Adams County Ordinances will be notified and informed of the issue and provided technical and financial assistance. If the landowner refuses to cooperate, they shall be referred to Adams County Corporation Counsel.

# **MONITORING AND EVALUATION**

## **Chapter 7**

### **Introduction**

This chapter addresses both water quality monitoring and briefly summarizes the plan for progress and evaluating the effectiveness of the LWRM plan.

The Adams County LWRM plan is intended to be a working document that will be reviewed annually by the LWCC and LWCD to track progress in accomplishing the goals and actions of the Work Plan. Monitoring and evaluation of specific resource issues can be accomplished in many different ways. Some of the methods to track the progress of the LWRM plan are:

#### **1. Performance Standards and Prohibitions Monitoring and Evaluation**

Ongoing Compliance Monitoring: LWCD is committed to assisting landowners with maintaining practices to meet NR151 Performance Standards. Adams LWCD goal is to monitor 25% of the total number of non-FPP landowners previously determined to be in compliance.

GIS technology will be used as a tool to track and monitor landowner compliance with the performance standards and prohibitions. In addition, all data regarding landowner compliance with the performance standards and prohibitions will be kept in hard copy format in the landowner file.

#### **2. Water Quality Monitoring**

Citizen volunteer monitoring is used for lakes and streams in Adams County. LWCD coordinates and supervises the volunteers, as well as entering the data into the WDNR SWIMS database. Currently we have 9 volunteers monitoring 30 stream sites. Citizen volunteers on 20 in-land lakes also take water quality samples, 3 per year, while Adams LWCD takes a spring ice-out sample on the same lakes within 2 weeks of ice-out. These samples are checked for total phosphorus and chlorophyll-a levels. Water clarity and temperature readings are taken at the same time. In 2013, Adams County applied for a grant through the WDNR for Base flow monitoring in the Wisconsin Central Sands Area, which includes a water-rich region spanning 6 counties. This grant was funded for all 6 counties. Our county has been monitoring 12 stream sites and 8 lakes for the past two years and will continue in 2015. Also in 2013, WAV (Water Action Volunteers Program) had a unique opportunity to open funding to volunteers that were concerned about streams that may have elevated phosphorus levels. A local volunteer in Adams County along with a LWCD staff member received the funding to monitor Total Phosphorus at a site in Adams County. Since 2013 we have received the funding to continue this monitoring and now Adams County has 3 sites in 2015 being funded and monitored. Tri-lakes Management District has conducted in lake water quality monitoring in the Town of Rome through grants which they have received. Adams County has installed sandpoint wells on the eight natural lakes

located within the county to document the water level fluctuations if any occur. Adams County is in the second year of a Lake Protection grant for Nutrient Management planning and have re-scoped the grant to include the installation of wind breaks, filter strips, residue and tillage management and the planting of cover crops to reduce the impact of wind erosion.

### **3. Phosphorus Loading**

Nutrient loading can adversely affect water quality by promoting excessive plant and algae growth. In order to reduce nutrient loading by animal waste, all newly installed barnyard systems will be evaluated to ensure compliance with the Wastewater Treatment Strip Standard, which requires phosphorus reduction. The Wastewater Treatment Strip and program spreadsheet will be used to determine compliance with the standard.

### **4. Nutrient Management**

In cooperation with DATCP, Adams County will monitor and measure nutrient management progress by tracking nutrient management plan checklists for the acreage with the planner, and by performing periodic plan reviews to monitor compliance with soil test levels. Farmer trainings will be conducted for landowners to develop their own nutrient management plans on the most current SNAP Plus version. One-on-one farmer training will also be conducted to update farmer developed plans.

### **5. Annual Reporting/Spot checks**

As required, Adams County will report to DATCP and DNR on progress towards implementation of the performance standards and prohibitions as well as other soil and water resource activities. In addition, DATCP and NRCS conduct annual engineering and conservation planning spot checks to ensure compliance with all applicable technical standards. If 8 projects are completed in one year then 25% or more of projects completed, or 2 of the 8 projects will be inspected for compliance each year for the maintenance life of the project.

### **6. Lake Management**

Adams County LWCD coordinates and supervises citizen volunteers to monitor the presence of AIS within the lakes, assist in developing and updating lake management plans that cover topics such as: aquatic plant management recommendations and goals, AIS determinations, recreational management, shore land and buffer management, educational efforts and other environmental concerns. It also attends lake meeting to address lake-related and environmental concerns. LWCD performs pre and post evaluations of AIS control measures and assists in developing harvesting maps. LWCD completes aquatic plant surveys on at least 4 lakes per year to provide information to lake organizations for making management decisions and keeping the lakes eligible for grant processes.

# **INFORMATION AND EDUCATION STRATEGY**

## **Chapter 8**

Information and education strategies are an integral part of this plan and Adams County's conservation programs. Educational opportunities for youth and property owners are necessary to heighten awareness about protecting and enhancing the land and water resources they enjoy daily.

Based upon limited success of various educational strategies in the 2007-2011 Work Plan, a different educational strategy will be utilized, such as working with the UW-Extension office to provide articles and promote conservation practices; presenting informational sessions on the local radio station; participating in local lake district/association meetings, watershed group meetings and town meetings to inform them of resources the LWCD can provide. The information will explain cost share opportunities that are broadly available to all types of landowners, including hobby farmers and riparian landowners. Newsletters and information packets may be mailed out to those that are interested in environmental issues throughout the county, inserted into widely distributed newspapers, or posted on town bulletin boards and lake organizations web sites. Other possible educational strategies include posting information on the Internet, creating new brochures, holding workshops, continuing group presentations and developing environmental field days for school aged children in the Adams-Friendship Area School District. As plan implementation proceeds and as groups meet to determine how to solve a resource concern, the LWCD will further define how to create additional information and education strategies and other public presentations.

There are several additional general activities that are not listed in this Work Plan, but are regularly performed by LWCD staff, including: working with Area and State conservation associations to coordinate a multi-County and/or State approach to conservation programming; planning and coordinating the public information and educational programs of the LWCD and LWCC, attending and participating in Golden Sands Resource Conservation and Development (RC&D) council meetings; attending and participating in Lake Winnebago Land and Water Conservation Association (LWLWCA) area meetings; supporting and attending Wisconsin Land & Water Conservation Association (WLWCA) meetings; attending Adams County Lakes Alliance meetings; attending Wisconsin Lakes (WL) State convention; and attending Wisconsin Land and Water Conservation Association (WLWCA) annual conference; attending and participating in the Central Wisconsin Windshed Partnership (CWWP) meetings; attending and participating in the Petenwell and Castle Rock Stewards (PACRS) organization; participate in Wisconsin River TMDL; attending GrassWorks annual Grazing Conference; attending NRCS trainings and meeting, UWEX, DNR and AIS trainings and participate in Wisconsin River Alliance meeting.

Technical assistance requested by any of these organizations, towns, and lake organizations is provided by LWCD when needed.

# COORDINATION

## Chapter 9

### Coordination

The LWCD staff seeks input from and works closely with a diverse group of agencies, associations, and organizations involved in resource management and protection in Adams County. Federal, State and Local organizations and programs will be utilized to implement the Adams Land and Water Resource Management Program. Some organizations and programs provide both technical and financial assistance while others provide only technical assistance or financial assistance. It is the goal of the Adams County Land and Water Conservation Department to utilize the following organizations and programs:

#### **Federal Organizations and Programs**

---

USDA - Natural Resources Conservation Service: Works with landowners on private lands to conserve natural resources. Nearly three-fourths of the technical assistance provided by the agency goes to helping farmers and ranchers develop conservation systems uniquely suited to their land and individual ways of doing business. The agency also provides assistance to other private landowners and rural and urban communities to reduce erosion, conserve and protect water, and solve other resource problems. **Adams LWCD goal is to annually coordinate with NRCS staff for engineering, planning and financial assistance.**

Conservation Compliance Plan: In order to participate in USDA farm programs, Federal law requires that all persons that produce agriculture commodities must protect their highly erodible cropland from excessive erosion. In addition, anyone participating in USDA farm programs must certify that they have not produced crops on converted wetlands and did not convert a wetland.

Conservation Stewardship Program (CSP): The Conservation Stewardship Program (CSP) is a voluntary NRCS program that provides financial and technical assistance for the conservation, protection, and improvement of soil, water, air, energy, plant and animal life, and other conservation purposes on Tribal and private lands. The program provides payments for producers who practice good stewardship on their agricultural lands and incentives for those who want to do more. The program is designed to reward the best conservation stewards of the most environmentally sensitive areas in targeted watersheds. **Adams LWCD goal is to promote and request on an annual basis a CSP for the Central Sands Region.**

Conservation Reserve Program (CRP): A voluntary Farm Service Agency program for agricultural landowners. Through CRP, you can receive annual rental payments and cost-share assistance to establish long-term, resource-conserving covers on eligible farmland.

The Environmental Quality Incentives Program (EQIP): A voluntary NRCS conservation program. It supports production agriculture and environmental quality as compatible goals. Through EQIP, farmers may receive financial and technical help with structural and management conservation practices on agricultural land. **Adams LWCD goal is to utilize EQIP to provide funding for Nutrient Management, Grazing and other Conservation practices. Estimate 5 agricultural producers per year to sign up for EQIP.**

Wetlands Reserve Program (WRP): a voluntary NRCS program to restore and protect wetlands on private property. It is an opportunity for landowners to receive financial incentives to restore wetlands that have been drained for agriculture. **Adams LWCD goal is to utilize WRP to provide funding to restore wetlands on cropland.**

Wildlife Habitat Incentives Program (WHIP) is a voluntary NRCS program for people who want to develop or improve wildlife habitat on private lands. The WHIP Program offers technical and financial assistance to help establish and improve wildlife habitat. **Adams LWCD goal is to utilize WHIP to provide funding to establish and improve wildlife habitat on private lands.**

U.S. Fish and Wildlife Service: Their mission is, working with others, to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

Partners for Fish and Wildlife Program: A US Fish and Wildlife Service program that assist in wetland restoration, fish and wildlife habitat improvement and restoration of habitats of special concern. **Adams LWCD goal is to utilize Partners for Fish and Wildlife Program to provide funding to restore wetlands on cropland, fish and wildlife habitat improvement and trout stream habitat.**

## **State Organizations and Programs**

---

WI Land+Water (WIL+W): [formerly called: Wisconsin Land & Water Conservation Association (WLWCA)] is a nonprofit organization representing Wisconsin's County Board Land Conservation Committees and Departments. WIL+W assists LWCCs and LWCDs with their work to protect and sustain Wisconsin's natural resources through education and governmental interaction." **Adams LWCD goal is to support WIL+W by paying annual dues and the County Conservationist serving as a WIL+W Board Advisor. Adams County will participate annually in the WIL+W State Conference.**

Wisconsin Lakes (WL): They carry out the mission of having clean, safe, healthy lakes for everyone, by providing lake education opportunities and serving as an advocate for sound lake related policy. **Adams LWCD goal is to support WL by making an annual contribution. Adams County will utilize WL staff for educational assistance for protecting and improving lakes in Adams County.**

University of Wisconsin-Extension (UWEX): Through their mission, Access and lifelong learning, all Wisconsin people can access university resources and engage in lifelong learning, wherever they live and work. **Adams LWCD goal is to utilize University of Wisconsin-Extension staff for educational assistance for nutrient management and other agronomic practices.**

Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP): A state agency that inspects and license more than 100,000 businesses and individuals, analyze millions of laboratory samples, conduct hundreds of hearings and investigations, educate businesses and consumers about best practices, adopt rules that have the force of law, and promote Wisconsin agriculture at home and abroad. **Adams LWCD goal is to utilize DATCP staff for engineering, planning and regulatory assistance.**

Soil and Water Resource Management Program (SWRMP): DATCP is authorized by s. 92.14, Wis. Stats., to award annual grants to eligible county Land & Water Conservation Committees (LWCCs) and other cooperators to support conservation activities. DATCP awards grants to counties to pay for county conservation staff and to finance landowner cost sharing. **Adams LWCD goal is to contribute tax levy funding approximately equal to the SWRMP funding received for conservation staff and to request \$85,000 per year to finance landowner cost sharing. Adams County will allocate cost-share funds based on a policy developed annually by the Land and Water Conservation Committee.**

Wisconsin Farmland Preservation Program (FPP): Created in 1977, the program preserves agricultural resources by supporting local government

efforts to manage growth. Eligible farmland owners receive a state income tax credit. To participate in the program, the county must have an agricultural preservation plan that meets the standards of Chapter 91, Wisconsin Statutes, and has been certified by the state Land and Water Conservation Board (LWCB). **Adams LWCD goal is to promote the program to 5- 7 landowners per year and to determine program and NR151 performance compliance on all current FPP contracts (7) by 2016. Starting in 2016, Adams County's goal is to review 20% of existing FPP contracts annually.**

Wisconsin Department of Natural Resources (WDNR): is dedicated to the preservation, protection, effective management, and maintenance of Wisconsin's natural resources. It is responsible for implementing the laws of the state and, where applicable, the laws of the federal government that protect and enhance the natural resources of our state. **Adams LWCD goal is to utilize WDNR staff for engineering, planning and regulatory assistance.**

WDNR Aquatic Invasive Species Control Grants: funding for an aquatic invasive species control project for any waters of the state including lakes, rivers, streams and the Great Lakes. **Adams LWCD goal is to utilize these grants for staff support and to assist with implementing watershed and lake management plans.**

WDNR Brownfield Site Assessment Grants: funding for Phase I and Phase II environmental site assessments and ch. NR 716 site investigations; demolition of structures, buildings, or improvements, including necessary asbestos abatement; and removal of underground petroleum product storage tank systems and hazardous substance storage tank systems, and removal of abandoned containers. **Adams LWCD goal is to utilize these grants to assist with implementing watershed management plans.**

WDNR County Conservation Aids: provides financial assistance to enhance county fish and wildlife programs. **Adams LWCD goal is to utilize these grants to assist with implementing watershed and lake management plans.**

WDNR Forestry Aids to Counties: forest Crop and Managed Forest Laws provide tax breaks to landowners who manage their woodlots in accordance to approved timber management plans. **Adams LWCD goal is to direct woodland owners to the WDNR Regional Forester as stated in watershed management plans.**

WDNR Lake Protection and Classification Grants: funding for lake management, are eligible to apply for funding to protect and improve the water quality of lakes and their ecosystems. **Adams LWCD goal is to utilize these**



**grants to assist with implementing lake management plans, including the new Healthy Lakes program.**

WDNR River Protection Management Grants: funding to protect and restore rivers and their ecosystems. **Adams LWCD goal is to utilize these grants to assist with implementing watershed management plans.**

WDNR Nonpoint Targeted Runoff Management Program (TRM): funding up to 70 percent of eligible costs associated with installing Best Management Practices (BMP) to limit or end nonpoint source (run-off) water pollution. **Adams LWCD goal is to utilize this program to obtain funding to implement NR151 Performance Standards and other nonpoint sources of water pollution.**

WDNR Urban Nonpoint Source and Storm Water Grants (UNPS and SW): funding to improve urban water quality by limiting or ending sources of urban nonpoint source (run-off) pollution. Funded projects are site-specific and targeted to address high-priority problems in urban project areas. **Adams LWCD goal is to utilize this program to obtain funding to protect shorelines, restore riparian buffers and address storm water runoff.**

WDNR Small and Abandoned Dam Removal Grant Program: funds to remove small or abandoned dams. Small dams are those with a hydraulic height of less than 15 feet and an impoundment of 100 surface acres or less at normal pool. Abandoned dams are those declared abandoned using the process under s. 30121(4), Wis. Stats. The DNR will fund 50% of eligible project costs, with a maximum grant award of \$50,000. Eligible project costs include labor, materials, and equipment directly related to planning the actual removal, the dam removal itself, and the restoration of the impoundment. **Adams LWCD goal is to utilize this program to provide funding for removing nonfunctioning small dams or dams that have been abandoned in Adams County.**

WDNR Well Compensation Grant Program: funds provide financial assistance for individuals to replace, reconstruct, or treat contaminated private water supplies. **Adams LWCD goal is to direct landowners with contaminated wells to the WDNR as stated in watershed management plans.**

WDNR Wildlife Damage Abatement and Claims Program: funding is available to establish a county-administered wildlife damage abatement and claims program to assist landowners that have excessive levels of agricultural crop damage from deer, bear, geese, wolves, or turkeys. **Adams LWCD goal is to participate in the program and provide financial assistance to agricultural producers that have excessive levels of agricultural crop damage from wildlife.**

WDNR Wisconsin Forest Landowner Grant Program (WFLGP): funding to assist private landowners protect and enhance woodlands by installing best management practices. Emerald Ash Borer concerns need to be identified and information needs to be passed on to landowner and foresters to reduce the potential of its spread. **Adams County LWCD goal is to promote the program, direct landowners to the WDNR and provide technical assistance for installing best management practices.**

**UW-Extension Lakes/WDNR Citizen Lake Monitoring Program**: This program supplies equipment and lab testing for water quality monitoring. Adams LWCD serves as the coordinator and training of lake citizens on more than 20 lakes in the county on an annual basis. **Adams LWCD goal is to continue to coordinate and train citizens, using the program's assistance, and to provide technical assistance to the lakes in evaluating lake water quality and taking necessary steps for protection or improvement of the lake water quality.**

**Clean Boats, Clean Waters**: This program, through UW-Extension Lakes and WDNR, helps in the education about and prevention of aquatic invasive species. Adams County LWCD provides the training, coordination and information for the paid and volunteer watercraft inspectors on at least 12 lakes in the county with public access. **Adams LWCD goal is to continue this program, assisting lakes in obtaining funding if necessary, and continuing to train and coordinate.**

### **Other Organizations and Programs**

---

Central Wisconsin Windshed Partners (CWWP): is a cooperative venture of organizations within the Central Sands Region. The organization installs windbreaks to control wind erosion, create shelterbelts, create living snow fences and create wildlife habitat. **Adams County's goal is to support CWWP by the County Conservationist or designated representative and a Land and Water Conservation Committee member to serve on the CWWP Board. Adams County will utilize annually CWWP for installing windbreaks, living snow fences and wildlife habitat.**

Golden Sands Resource, Conservation and Development (RC&D): Their mission is to manage natural and human resources in ways consistent with sound conservation principles by working across county lines to address local concerns. **Adams LWCD goal is to utilize Golden Sands RC&D staff for providing Aquatic Invasive Species technical assistance and grazing resources.**

Adams County Lake Alliance is an organization consisting of representatives from Adams County lake organizations. The group identifies lake improvement and protection ideas and develops methods to implement the ideas as well as serving as a forum for to share lake-related information. **Adams LWCD goal is to provide facilitation and administrative assistance as requested by the group.**

Adams Water Action Volunteer Program: a group of volunteers coordinated by the Adams LWCD whose purpose is to monitor stream water quality and identify stream protection issues. **Adams LWCD goal is to provide coordination and financial support to the Adams Water Action Volunteer Program.**

PACRS (Pettenwell and Castle Rock Stewards): Organization which has developed to watch for environmental issues that develop on the flowages on the Wisconsin River system which forms the Western Boundary of Adams County.

Adams County Tree/Shrub Sale and Tree Planter Rental: an annual sale conducted by the Adams LWCD for the purpose of providing a source of large quantities of trees/shrubs and tree planters available to landowners to plant trees. **Adams LWCD goal is to conduct an annual tree/shrub sale by taking orders from landowners and ordering trees/shrubs for pick up. Adams LWCD goal is to own tree planters and rent them to landowners.**

Adams County Shoreland Protection: Adams County Planning and Zoning Department administers an ordinance that regulates activities within shore lands (areas within 1,000 feet of lakes, ponds, flowages and areas within 300 feet of navigable rivers and streams). **Adams LWCD goal is to provide technical assistance for installing best management practices for ordinance violations, special exceptions and ordinance variances.**

Adams County Animal Waste Management: Adams LWCD administers an ordinance that regulates the location, design, construction, installation, alteration, operation, maintenance and use of animal waste and manure storage facilities and the application of waste and manure from all storage facilities covered by this ordinance. **Adams LWCD goal is to administer the ordinance and provide technical assistance to livestock producers who need to comply with the ordinance.**

Adams County Nonmetallic Mining Reclamation: Adams Planning and Zoning Department administers an ordinance that ensures the effective reclamation of nonmetallic mining sites. **Adams LWCD goal is to aid in administer the ordinance and provide technical assistance for reclaiming nonmetallic mining sites.**

Adams County-Owned Dam Property: Adams LWCD administers an ordinance that regulates activities associated with county-owned dam property. **Adams LWCD goal is to administer the ordinance and to inspect, operate and maintain the 9 county-owned dams.**

Erosion Control and Stormwater Management: Is designed to reduce soil erosion, sediment transport, improve water quality and limit the quantity of stormwater runoff. **It is the goal of Adams LWCD to administer and provide technical assistance for the Stormwater Management Ordinance.**

Adams County Lake Districts: Easton, Fawn, Friendship, Jordon, Mason, Patrick, Peppermill, Big Roche-a-cri, McGinnis, Goose and Tri-Lakes. **It is the goal of Adams LWCD to provide technical assistance for the Lake Districts.**

Adams County Lake Associations: Arkdale, Crooked, Fenner, Parker and Wolf Lakes. **It is the goal of Adams LWCD to provide technical assistance for the Lake Associations.**

River Alliance of Wisconsin (RAW): is a non-profit, non-partisan group of citizens, organizations and businesses dedicated to advocating for the protection, enhancement and restoration of our rivers and watersheds. **Adams LWCD goal is to support RAW by making an annual contribution. Adams County will utilize RAW staff for educational, and facilitation assistance for stream monitoring and restoration.**

# GLOSSARY

## Chapter 10

**303(d) Waters** – Also called **List of Impaired Waters**. This list identifies waters that are not meeting water quality standards, including both water quality criteria for specific substances or their designated uses. It is used as the basis for development of Total Maximum Daily Loads (TMDLs) under the provisions of section 303(d)(1)(C) of the Clean Water Act, U.S. Environmental Protection Agency (EPA). The EPA requires that the DNR update its list every 2 years.

**Animal Waste Management Program** – This regulatory program, administered by the DNR via NR 243, seeks to identify and correct animal waste-related water quality problems.

**Animal and Plant Health Inspection Service – Wildlife Services (APHIS-WS)** – Part of USDA, APHIS-WS provides assistance to manage animal damage.

**ATCP 50** – The chapter of Wisconsin’s Administrative Code that implements the Land and Water Resource Management Program as described in Chapter 92 of the WI Statutes. It identifies those conservation practices that may be used to meet performance standards.

**Best Management Practices (BMPs)** – The most effective conservation practice or combination of conservation practices for reducing nonpoint source pollution to acceptable levels.

**Chapter 92** – Portion of Wisconsin Statutes outlining the soil and water conservation, agricultural shoreland management, and animal waste management laws and policies of the State.

**Citizens Advisory Committee (CEC)** – Citizens Advisory Committee is a person who has volunteered to aid the county in providing input for conservation needs identified in the Land and Water Resources Management Plan.

**Conservation Plan** – A record of decisions and intentions made by land users regarding the conservation of the soil, water and related natural resources of a particular unit of land.

**Conservation Reserve Enhancement Program (CREP)** – An add-on to the CRP program, which expands and builds on CRP’s success in certain areas of the State.

**Conservation Reserve Program (CRP)** – A provision of the federal Farm Bill that takes eligible cropland out of production and puts it into grass or tree cover for 10-15 years.

**Cooperator** – A landowner or operator who is working with, or has signed a cooperative agreement with, a County LWCC.

**County Conservationist** – County Land and Water Conservation Department head, responsible for implementing programs assigned to the LWCD and for supervising LWCD staff.

**Critical Sites** – Those sites that are significant sources of nonpoint source pollution upon which best management practices shall be implemented as described in s. 281.65(4)(g) 8.am., WI stats.

**Crop Consultants (CCA)** – Independent Crop Consultants provide services to growers in integrated crop and farm management programs, working directly with farmers, and advising them in areas such as watershed management, integrated nutrient and pest management, and animal waste management. Their primary purpose is implementing scientific and technological advances to enhance environmental sustainability and profitability on clients' farms.

**CWWP** – Central Wisconsin Windshed Partnership.

**Department of Administration (DOA)** – The State agency responsible for establishing the comprehensive planning grant program.

**Department of Commerce (COMM)** – The State agency responsible for statewide standards for erosion control at building sites, and for private on-site wastewater treatment systems.

**Department of Agriculture, Trade, and Consumer Protection (DATCP)** – The State agency responsible for establishing Statewide soil and water conservation policies and administering the State's soil and water conservation programs. The DATCP administers State cost-sharing funds for a variety of LWCC operations, including support for staff, materials and conservation practices. Referred to in the LWRM plan guidelines as the “department”.

**Department of Natural Resources (DNR)** – The State agency responsible for managing State owned lands and protecting public waters. DNR also administers programs to regulate, guide and assist LWCCs, LWCDs and individual land users in managing land, water, fish and wildlife. The DNR administers State cost-sharing funds for priority watershed projects, Targeted Runoff Management (TRM) grants, and Urban Nonpoint Source Construction and Planning grants.

**District Conservationist (DC)** – NRCS employee responsible for administering federal conservation programs at the local level.

**Environmental Protection Agency (EPA)** – The agency of the federal government responsible for carrying out the nation's pollution control laws. It provides technical and financial assistance to reduce and control air, water, and land pollution.

**Environmental Quality Incentives Program (EQIP)** – Federal program to provide technical and cost-sharing assistance to landowners for conservation practices that provide water quality protection.

**Farm Service Agency (FSA)** – USDA agency that administers agricultural assistance programs including price supports, production controls, and conservation cost sharing.

**Farmland Preservation Program (FPP)** – A DATCP land-use program under Chapter 91, Wisconsin Statutes, that helps preserve farmland through local planning and zoning, promotes soil and water conservation, and provides State tax relief to participating landowners.

**Geographic Information System (GIS)** – A computerized system of maps and layers of data about land including soils, land cover, topography, field boundaries, roads and streams. Such geographically based data layers improve the ability to analyze complex data for decision making.

**Health & Human Services** – The Health Department of Adams County. This term is used in the Work Plan.

**Highway** – The Highway Department of Adams County. This term used in the Work Plan.

**Impaired Waters List** Same as the 303(d) list.

**ITS** – Information Technology Department in Adams County. This term used in the Work Plan.

**Land and Water Conservation Board (LWCB)** – This Statewide board is composed of three local elected officials, four appointed by the Governor (one shall be a resident of a city with a population of 50,000 or more, one shall represent a governmental unit involved in river management, one shall be a farmer, and one shall be a member of a charitable corporation, charitable association or charitable trust) and leaders from DNR, DATCP, and DOA. The LWCB oversees the approval of County land and water management plans (s.92.04, stats.).

**Land and Water Resource Management Plan (LWRM plan)** – A locally developed and implemented multi-year strategic plan with an emphasis on partnerships and program integration. The plan includes a resource assessment, identifies the applicable performance standards and related control of pollution from nonpoint sources, identifies a multi-year description of planned activities, establishes a progress tracking system, and describes an approach for coordinating information and implementation programs with other local, State and federal agencies, communities and organization (s. ATCP 50.12).

**LWCC (Land & Water Conservation Committee)** – The unit of county government empowered, by Chapter 92 of the Wisconsin Statutes, to conserve and protect the County’s soil, water and related natural resources. Referred to in the LWRM guidelines as the “committee.”

**Land and Water Conservation Department (LWCD)** – The department of county government responsible for administering the conservation programs and policies of the Land and Water Conservation Committee.

**List of Impaired Waters** – Also called **303(d) Waters**. This list identifies waters that are not meeting water quality standards, including both water quality criteria for specific substances or the designated uses. It is used as the basis for development of Total Maximum Daily Loads (TMDLs) under the provisions of section 303(d)(1)(C) of the Clean Water Act, U.S. Environmental Protection Agency (EPA). The EPA requires that the DNR update its list every 2 years.

**Natural Resources Conservation Service (NRCS)** – Part of USDA, NRCS provides soil survey, conservation planning and technical assistance to local land users.

**Nonpoint Source Pollution (NPS)** – Pollution from many small or diffuse urban and rural sources. Livestock waste finding its way into a stream and causing water pollution is an example of non-point source pollution.

**Nonpoint Source Pollution Abatement Program** – A DNR water quality program under Chapters 120 and 281, Wisconsin Statutes, provides technical assistance and cost-sharing to landowners to develop and maintain management practices to prevent or reduce nonpoint source water pollution in designated watersheds.

**North Central Conservancy Trust (NCCT)** – The North Central Conservancy Trust is a non-profit organization whose mission is to protect the worthy, scenic, working lands and environmental resources for the benefit of the people of Central Wisconsin. The NCCT is based in Stevens-Point, WI.

**NR 151** – DNR’s administrative code that establishes runoff pollution performance standards for non-agricultural facilities and transportation facilities and performance standards and prohibitions for agricultural facilities and practices designed to meet water quality standards.

**Nutrient Management Plan** – The Nutrient Management Plan means any of the following: (a) A plan required under s. ATCP 50.04 (3) or 50.62 (5) (f). (b) A farm nutrient plan prepared or approved, for a landowner, by a qualified nutrient management planner.



**ORW/ERW** – DNR classifies streams as Outstanding Resource Waters (ORW) and Exceptional Resource Waters (ERW) as listed in NR 102.10 and NR102.11. ORW waters have excellent water quality and high-quality fisheries and do not receive wastewater discharges. ERW waters have excellent water quality and valued fisheries but may already receive wastewater discharges.

**PACRS** – Petenwell and Castle Rock Stewards lake organization.

**Parks** – Adams County Parks Department. An agency listed in the Work Plan.

**P&DC** – Planning and Development Committee in Adams County. This term is used in the Work Plan.

**P&Z** – Planning and Zoning Department in Adams County. This term used in the Work Plan.

**Priority Farms** – Farms identified by the County for having excessive runoff from soil erosion, wind erosion and/or manure resulting in existing or potential water quality problems.

**RC&D** – Resource Conservation and Development. Adams County is one of 9 counties in the Golden Sands RC&D Council. This term used in the Work Plan.

**Shall** – The term “shall” in the guideline represents components of a LWRM plan that are required in law and rule.

**Soil and Water Resource Management Program (SWRMP)** – DATCP program that provides counties with funds to hire and support Land and Water Conservation Department staff and to assist land users in implementing DATCP conservation programs (ATCP 50).

**Soil Loss Tolerance (“T”)** – Erosion rate in tons per acre per year of soil that a field could lose and still maintain productivity.

**Soil Survey** – NRCS conducts the National Cooperative Soil Survey and publishes soil survey reports. Soils data is designed to evaluate the potential of the soil and management needed for maximum food and fiber production.

**Surface Water Integrated Monitoring System (SWIMS)** – SWIMS is the WDNR’s repository for water and sediment monitoring data collected for Clean Water Act work and is the source of data sharing through the federal Water Quality Exchange Network.

**Technical Advisory Committee (TAC)** – Technical Advisory Committee is a person who has technical background related to environmental issues and has volunteered to aid the county in providing input for conservation needs identified in the Land and Water Resources Management Plan.

**TIP** – Terrestrial Invasive Plants. A term used in the Work Plan.

**United States Department of Agriculture (USDA)** – Branch of federal government with responsibilities in the areas of food production, inspection, and storage. Agencies with resource conservation programs and responsibilities, such as FSA, NRCS, APHIS-WS, and Forest Service and others are agencies of the USDA.

**University of Wisconsin-Extension (UWEX)** – The outreach of the University of Wisconsin system responsible for formal and informal educational programs throughout the State.

**Water Quality Management Area (WQMA)** – The area within 1,000 feet from the ordinary high water mark of navigable waters that consist of a lake, pond or flowage, except that, for a navigable water that is a glacial pothole lake, the term means the area within 1,000 feet from the high water mark of the lake; the area within 300 feet from the ordinary high water mark of navigable waters that consist of a river or stream; and a site that is susceptible to groundwater contamination, or that has the potential to be a direct conduit for contamination to reach groundwater.

**Watershed** – The geographic area that drains to a particular river, stream, or water body providing its water supply.

**Watershed Advisory Group (WAG)** – Watershed Advisory Groups consists of representatives from city, town, and county governments, land uses, county, state, and federal agencies, local businesses and lake organizations. The Watershed Advisory Groups (WAGs) are facilitated by the LWCD and they meet biannually for the purpose of updating and revising the watershed management plans, which were used to create this LWRM Plan.

**Wellness** – A county committee that develops, implements, and monitors wellness activities for all of Adams County’s government employees. A term used in the Work Plan.

**Wetlands Reserve Program (WRP)** – A provision of the federal Farm Bill that compensates landowners for voluntarily restoring and protecting wetlands on their property.

**Wildlife Habitat Incentives Program (WHIP)** – Federal program to help improve wildlife habitat on private lands.

**Wisconsin Land and Water Conservation Association (WLWCA)** – Membership organization that represents the State’s 72 County Land and Water Conservation Committees and Departments.

**Work Plan** – A 5-year plan of federal/State/local agency activities based upon Citizens Advisory Committee, and Technical Advisor Committee developed goals, and objectives.

# **ATTACHMENT A**

## **Impaired Waters List – 303(d) Waters**

## 2014 Impaired Waters in Adams County

Counties	Local Waterbody Name	Water Type	Date Listed	Source Category	Pollutant	Impairment Indicator	TMDL Priority	Listing Detail
Adams,Juneau	Castle Rock Flowage	IMPOUNDMENT	4/1/1998	Contam. Sed.	Dioxin	Contaminated Fish Tissue Water Quality Use Restrictions,	Low	TMDL Needed (5A)
Adams,Juneau	Castle Rock Flowage	IMPOUNDMENT	4/1/1998	PS/NPS	Total Phosphorus	Eutrophication	Medium	TMDL Needed (5A)
Adams	Friendship Lake	LAKE	4/1/2014	PS/NPS	Unknown	Excess Algal Growth	Low	TMDL Needed (5A)
Adams	Friendship Lake	LAKE	4/1/2014	PS/NPS	Unknown	Excess Algal Growth	Low	TMDL Needed (5A)
Adams	Goose Lake	LAKE	4/1/2014	PS/NPS	Total Phosphorus	Impairment Unknown	Low	Phosphorus Listed (5P)
Adams	Goose Lake	LAKE	4/1/2014	PS/NPS	Total Phosphorus	Impairment Unknown	Low	Phosphorus Listed (5P)
Adams	Lake Arrowhead	IMPOUNDMENT	4/1/2014	PS/NPS	Unknown	Excess Algal Growth	Low	TMDL Needed (5A)
Adams	Lake Arrowhead	IMPOUNDMENT	4/1/2014	PS/NPS	Unknown	Excess Algal Growth	Low	TMDL Needed (5A)
Adams	Lake Sherwood	IMPOUNDMENT	4/1/2014	PS/NPS	Unknown	Excess Algal Growth	Low	TMDL Needed (5A)
Adams	Lake Sherwood	IMPOUNDMENT	4/1/2014	PS/NPS	Unknown	Excess Algal Growth	Low	TMDL Needed (5A)
Adams,Marquette	Mason Lake	LAKE	4/1/2002	NPS	Total Phosphorus	Excess Algal Growth, Elevated pH	Low	TMDL Needed (5A)
Adams,Juneau	Petenwell Flowage	IMPOUNDMENT	4/1/1998	Contam. Sed.	Dioxin	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau	Petenwell Flowage	IMPOUNDMENT	4/1/1998	Contam. Sed.	Mercury	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau	Petenwell Flowage	IMPOUNDMENT	4/1/1998	Contam. Sed.	PCBs	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau	Petenwell Flowage	IMPOUNDMENT	4/1/1998	PS/NPS	Total Phosphorus	Water Quality Use Restrictions,	Medium	TMDL Needed (5A)
Adams	Unnamed Trib To Mason Lake	RIVER	4/1/1998	NPS	Sediment/Total Suspended	Degraded Habitat	Medium	TMDL Needed (5A)
Adams,Juneau,Sauk,Columbia	Wisconsin River	RIVER	4/1/1998	Contam. Sed.	Mercury	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau,Sauk,Columbia	Wisconsin River	RIVER	4/1/1998	Contam. Sed.	PCBs	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau,Wood	Wisconsin River	RIVER	4/1/1998	Contam. Sed.	PCBs	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau	Wisconsin River (At Castle Rock Lake)	RIVER	4/1/1998	Contam. Sed.	Dioxin	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau	Wisconsin River (At Castle Rock Lake)	RIVER	4/1/1998	Contam. Sed.	Mercury	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau	Wisconsin River (At Castle Rock Lake)	RIVER	4/1/1998	Contam. Sed.	PCBs	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau	Wisconsin River (At Castle Rock Lake)	RIVER	4/1/1998	PS/NPS	Total Phosphorus	Contaminated Fish Tissue	Medium	TMDL Needed (5A)
Adams,Juneau	Wisconsin River (At Petenwell Lake)	RIVER	4/1/1998	Contam. Sed.	Dioxin	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau	Wisconsin River (At Petenwell Lake)	RIVER	4/1/1998	Contam. Sed.	Mercury	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau	Wisconsin River (At Petenwell Lake)	RIVER	4/1/1998	Contam. Sed.	PCBs	Contaminated Fish Tissue	Low	TMDL Needed (5A)
Adams,Juneau	Wisconsin River (At Petenwell Lake)	RIVER	4/1/1998	PS/NPS	Total Phosphorus	Low DO	Medium	TMDL Needed (5A)

# **ATTACHMENT B**

## **Outstanding and Exceptional Resource Waters**

**ADAMS COUNTY**

<b><u>Waterbody Name</u></b>	<b><u>Portion Within ORW/ERW Classification</u></b>	<b><u>Status</u></b>
Big Roche-a-Cri creek	Upstream from CTH W	ORW
Big Spring Creek	Above dam on Big Spring Pond	ERW
Campbell Creek	Upstream from Easton Pond	ERW
Carter Creek	Upstream from CTH G	ERW
Chester Creek	All	ERW
Corning Creek	All	ERW
Fairbanks Creek	All	ERW
Fordham Creek	All	ERW
Gulch Creek	All	ERW
Lawrence Creek	All	ERW
Little Roche-a-Cri Creek	10th Ave upstream to 8th Ave	ERW
Neenah Creek	All	ERW
Plainville Creek	Upstream from Hwy 13	ERW

# **ATTACHMENT C**

## **Public Hearing Notice**

**Adams County  
Land Conservation Department**

PO Box 287  
Friendship, WI 53934  
608-339-4268  
FAX: 608-339-4504  
Web site: [www.adamscountylwcd.net](http://www.adamscountylwcd.net)

Adams County  
Land and Water Conservation Committee  
Public Hearing Notice

Notice is hereby given that the Adams County Land Conservation Committee will hold a public hearing on June 25, 2015 beginning at 5:30 P.M. in the Adams County Community Center Room, 569 N Cedar Street, Adams Wisconsin on the Adams County Land and Water Resource Management Plan 2016-2026. This plan is a guide for the integration of land and water resource management programs in Adams County.

A paper copy of the plan is available at the Adams County Library, 569 N Cedar St, Adams, WI 53910. The plan is available online at: <http://www.ncwrpc.org/adams/lwrmp/>

All interested persons are invited to attend said hearing and be heard. Written comments may be sent to: Wally Sedlar, PO Box 287, Friendship, WI, 53934.

Joe Stuchlak, Chair  
Land and Water Conservation Committee

Dated this 8th day of June, 2015 at Friendship, Wisconsin

Place in newspaper on this date .....June 10, 2015



# **ATTACHMENT D**

## **Conservation Practices and Cost-Share Rates**

**Adams County  
Conservation Practices and Cost-Share Rates**

Adams County promotes the following practices and maximum cost share rates:

Wisconsin Department of Agriculture Funding: ATCP 50 SWRMP

Practices – ATCP 50.61 through ATCP 50.98

Maximum Cost Share Rates - ATCP 50.42

Wisconsin Department of Natural Resources Lake Protection Grant

Practices – Riparian Buffer, Biological Shoreline Erosion Control Practices, Rain Gardens and necessary storm water conveyance systems.

Maximum Cost Share Rate – 75%

\*\*\*\*\*

# **ATTACHMENT E**

## **Watershed Strategies for Improving Impaired Water Quality**

\*\*\*\*\*

This attachment is a placeholder to provide convenient space for plan revision when Adams County has determined all nine key elements to solving specific water pollution issues on a watershed basis.

\*\*\*\*\*