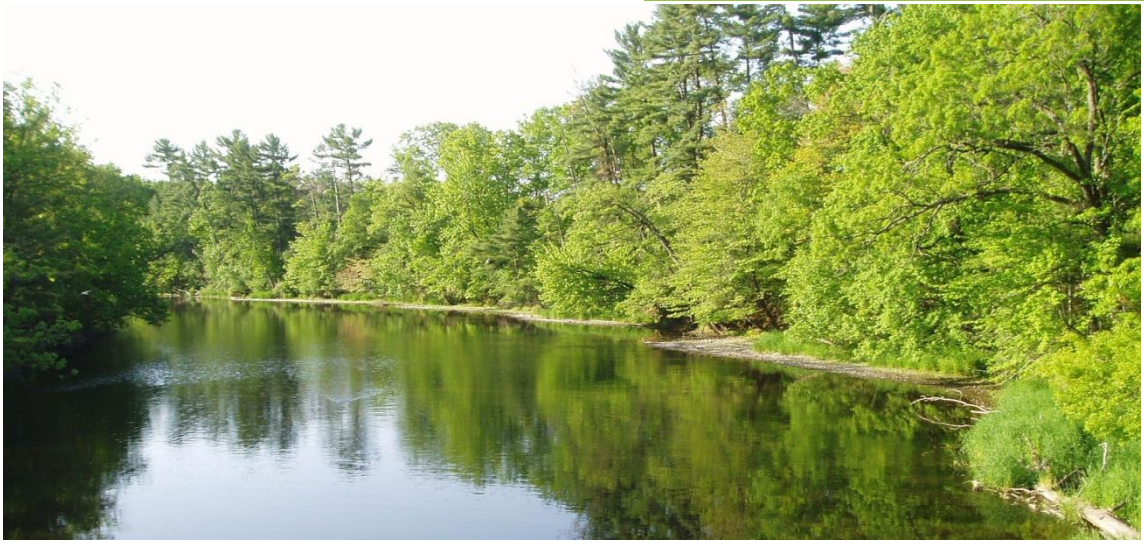
2011 Land & Water Resource Management Plan

BARRON COUNTY

SOIL & WATER CONSERVATION DEPARTMENT



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PLAN SUMMARY

The 2011 Barron County Land and Water Resource Management Plan (LWRMP) will serve as the department work plan for the next five years. The LWRMP meets the requirements of Wisconsin Act 27, Chapter 92 of the Wisconsin Statutes and is consistent with the 2010 Barron County Comprehensive Plan.

Introduction

Barron County is located in west central Wisconsin; it is perfectly square, measuring 30 miles on each side and is comprised of 25 townships. The topography was influenced by two major factors; the Blue Hills located in northeastern Barron County and the Wisconsin glacier. A primary terminal moraine of the Wisconsin glacier is located across the northwest and northern area of Barron County. The Blue Hills are the remains of an ancient mountain range that has been worn down by four episodes of continental glaciers. Nonetheless, they rise over 500 feet over the rest of Barron County. The Wisconsin glacier, which began to recede approximately 10,000 years ago, is responsible for the hummocky terrain in northern and northwestern Barron County and sandy outwash plain in the eastern 1/3 of the county. This outwash material, which gave rise to the forested conditions that were found by Europeans, also gave rise to the fertile yet thin layer of topsoil.

The major influence that the Europeans had on the land started in approximately 1870 with the logging era. Most of Barron County was logged off and agriculture began in approximately 1915. The 1920s brought dairy farming, which continues to be a major part of our agricultural economy to date. Today in Barron County, there are approximately 1600 farms which cultivate 230,700 acres of land. The annual gross sales of agricultural products in Barron County are approximately $150 million dollars. The primary animal agriculture in Barron County is dairy farming, followed by poultry, in particular turkeys, and a minor beef industry. The cropping agriculture of Barron County includes alfalfa to feed cattle, corn, soybeans, and to a lesser degree, small grains and vegetables.

Public Participation

An advisory committee of seven citizens with various backgrounds was chosen to review the plan and offer suggestions. The committee met several times in January; minutes of these meeting are on file at the SWCD office. A public hearing was held on March 28, 2011 at 4:00 p.m. with two members of the public and one member of the Citizen Advisory Committee in attendance. A copy of the public notice is in the appendix and minutes and affidavits of publication are on file at the SWCD. The Barron County Board of Supervisors is scheduled to review and approve the 2011 Land and Water Resource Management Plan on April 19, 2011.

Resource Concerns

Wisconsin Act 27, Chapter 92 of the Wisconsin Statutes was amended to require counties to develop a land and water resources management plan. The plan will be primarily focused on soil conservation and water quality, describing our implementation strategies for bringing

County landowners in compliance with NR 151 standards. It defines our goals in resource conservation as:

- Soil Erosion & Depletion
- Non-Point Pollution of Surface Water
- Loss of Productive Farmland
- Quality & Quantity of Groundwater
- Loss of Resources/Habitat Protection
- Protect Forested Areas & Wildlife Habitat

The plan will lay out the objectives for meeting these goals and will identify the federal, state and local resources that will be used.

High Priority Work Plan

The work plan chart identifies the goals and associated action items necessary to improve or maintain the resources specified as priorities. It is broken down by resource concern and includes partner agencies, funding sources and evaluation tools.-

Priority Farm Designation

Priority farm status will be given to farms with one or more of the following: known prohibition sites, FPP participant needing assistance, located in glacial outwash or in 303 (d) designated waters.

Performance Standards & Prohibitions Implementation

Implementing the Agriculture Performance Standards and identifying and rectifying manure prohibitions are main components of the 2011 LWRMP. It is our intension to evaluate onsite every suspected prohibition site by the end of 2012.

Monitoring & Evaluation

A variety of tools will be used to monitor and evaluate plan effectiveness, including soil transect surveys, GIS tracking of the status of manure storage facilities, prohibition violation sites, conservation planning and nutrient management planning. The LCC will review the plan annually, assessing progress as outlined in the plan.

Conclusion

The public has a vested interest in protecting soil and water conservation. Barron County has productive soils that are the result of thousands of years of formation. The loss of soil productivity would diminish the agricultural portion of our economy and degrade the lakes, rivers and wetlands, harming our quality of life in Northern Wisconsin.

Implementing this plan is dependent on funding from the State and county. Currently, the State statutory funding amounts are not being met and inadequate to fully implement all work plan actions.

Barron County Soil and Water Conservation Department

MISSION STATEMENT

Our mission is to promote, assist and implement wise land use decisions in order to protect and sustain Barron County's soil, water and other natural resources.

*The mission statement was updated on October 6, 2008 by the Land Conservation Committee.

ASSESSMENT OF NATURAL RESOURCES

SOIL

While Barron County shares the same average precipitation and climate as other counties on the same latitude, it boasts much more productive soils. The reason for this is that the Late St. Croix lobe of the Wisconsin glacier stopped in northwestern Barron County (with State Highway 63 running along the moraine). This allowed soil formation to continue on previously glaciated areas, producing the foundation for our current dairy industry. After the Ice Age, Barron County became predominately forested and the soils that formed over the next 10,000 years were the typical thin, but fertile forest soils. Logging of Barron County began about 1870 and continued for about forty years. Once the forests had been cleared, agriculture was the next industry to use the soils of Barron County. Today, nearly 230,700 acres or 40% of Barron County land is under agricultural production.

After the last Ice Age and after 10,000 years of forested condition, a typical soil profile in Barron County is 10-12 inches of silt loam soil, underlain by several inches of silty loam subsoil and further underlain by sand and gravel.

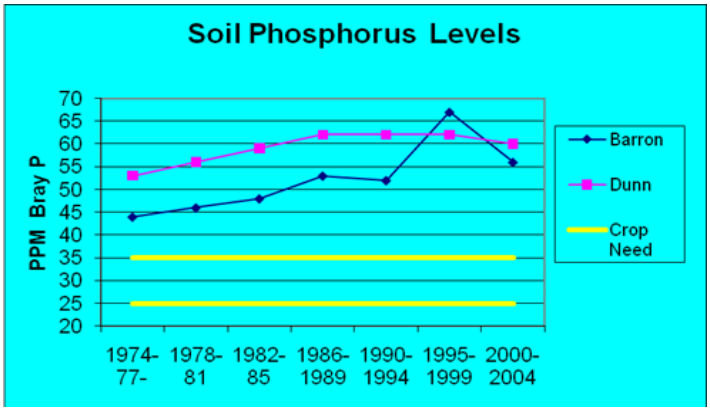
Conserving our soil must become our primary goal. The Tolerable "T" soil loss for soils in Barron county ranges from 3 – 5 tons/acre/year. Our 2010 Soil Erosion Transect Survey showed that 86% of the cropland was being farmed at or below "T". However, 11.6% were at 1-2x "T", 1.5% 2 -3x "T" and .7% at greater than 3x "T". This shows that while much of the land is being farmed properly, 13.7% is higher than "T". This amounts to 37,000 acres or 1.5 townships of land being farmed above the tolerable soil loss. It is in these fields that we must work to lower soil erosion. The USDA NRCS is in the process of evaluating what the Tolerable soil loss for different soils and some may have a lower number. This will require additional conservation measures to be implemented in order to maintain compliance with the Federal and State programs. See Appendix H.

However, T or "tolerable soils loss," has no scientific basis and is higher than the soil formation process. Therefore, we should actually be striving to reduce soil loss to below T. In order for a soil to be farmed at a sustainable rate, or at the same rate of soil formation, the soil loss per acre would need to be approximately 1.5 ton /acre/year.

Barron County has had two professional soil surveys completed: the first in 1940 and another in 1990. The Soil & Water Conservation Department conducted a comparison of the soil profiles mapped in 1940 with those mapped in 1990, which suggests that between 2 and 3 inches of topsoil were lost between 1940 and 1990. It would take nearly 1000 years to replace the soil lost in the past 50 years.

Along with the actual loss of topsoil, the quality of the soil would also be damaged. Soil quality can be described as soil health. Loss of soil quality results in poor tilth and water holding capacity, loss of organic matter and less living organisms in the soil. Loss of soil quality has a dramatic impact on crop yields.

From years of farming, both dairy and turkey manure production, along with naturally occurring sources, Barron County soils have developed high levels of phosphorus. This makes the implementation of nutrient management that much more critical as an environmental protection tool. By applying P only to crop needs in conjunction with using conservation practices that limit runoff of soluble and particulate P, we will over time reduce soil test P levels to an acceptable range while improving water quality.



Based on soil tests of Barron & Dunn County crop fields, Wisconsin Soils lab.

SURFACE WATER QUALITY

With 364 lakes and 470 miles of rivers and streams, water is important in Barron County. While water quality varies from water body to water body, generally most lakes, rivers and streams in Barron County have been adversely affected by non-point pollution. The greatest source of non-point pollution is soil sediment from erosion and the nutrients that it carries. The amount of pollution from barnyard feeding operations has decreased with the number of farms and a change in management philosophy to increased confinement.

In Barron County there are several bodies of water are designated as 303(d) (impaired) by the Clean Water Act. Those with excess nutrient problems are the Red Cedar River, Lake Desair and the Chetek Chain of Lakes. Nearly all of Barron County (excluding the Clam River and Apple River Watersheds on our western border), drains to the Red Cedar River and ultimately Tainter Lake in Dunn Co which is also on the 303(d) list. See Appendix F for pollutant details.

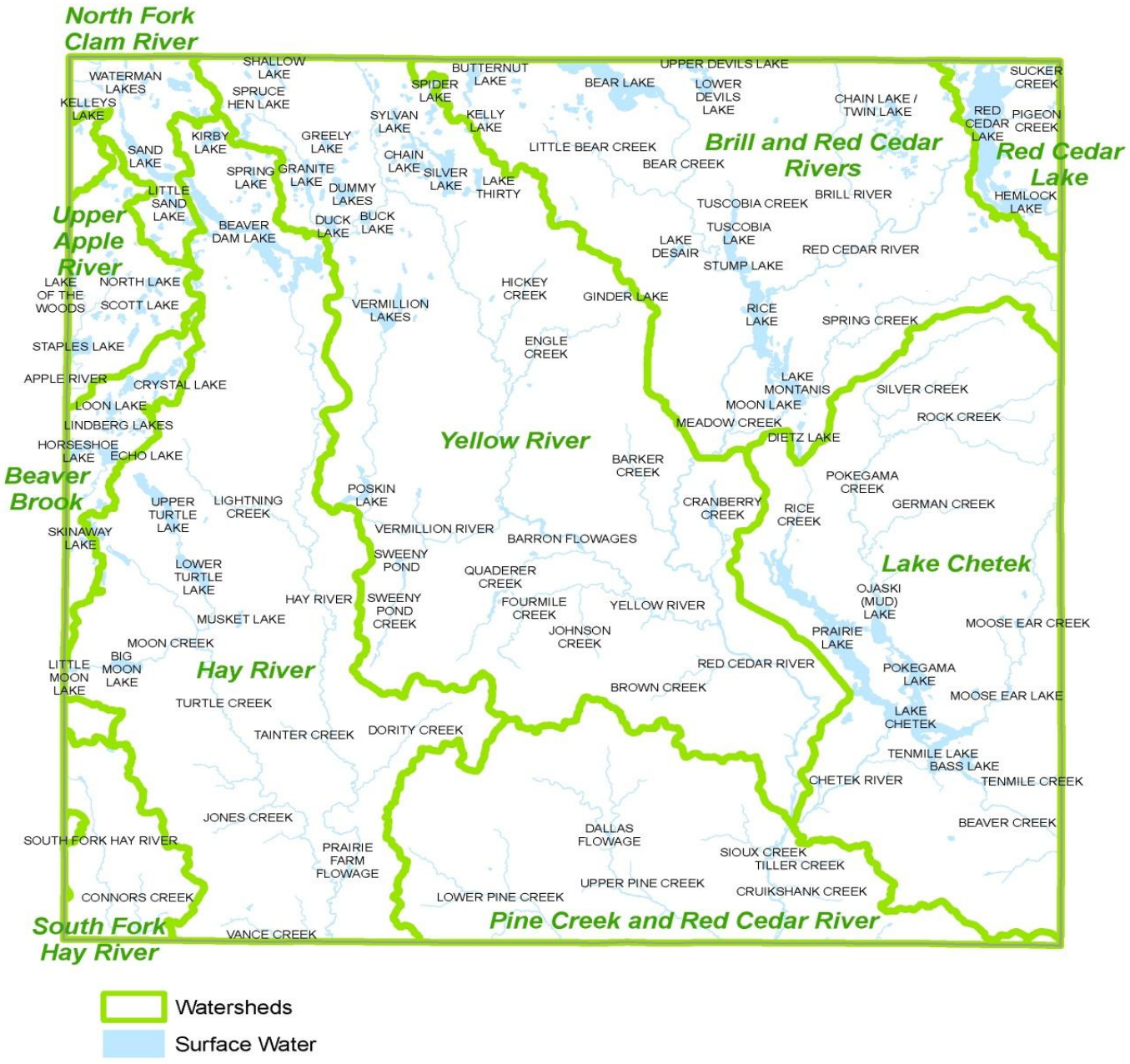
Wisconsin has designated many of the state's highest quality waters as Outstanding Resource Waters (ORWs) or Exceptional Resource Waters (ERWs). Waters designated as ORW or ERW are surface waters which provide outstanding recreational opportunities, support valuable fisheries and wildlife habitat, have good water quality, and are not significantly impacted by human activities. These waters have been determined to warrant additional protection from the

effects of pollution, with ORWs receiving maximum protection due to point source pollution of ERWs. See Appendix F for a detailed list.

Non-point pollution from urban areas, while far less in magnitude when compared to the runoff from agricultural areas, is a growing problem in Barron County. Individual construction sites and runoff from parking lots and streets can have local and severe impact on water quality. As the urban footprint of Barron County increases, the contribution of urban areas to non-point pollution has increased.

Non-point pollution of our lakes, rivers and streams continues to be a concern. Excessive weed and algae growth and sedimentation of rivers, streams and lakes have caused a general degrading of the water quality of Barron County. If future generations are going to enjoy the water resources of Barron County, we must be diligent in solving the non-point source pollution problems that exist today.

SURFACE WATERS & WATERSHEDS OF BARRON COUNTY



LAKES

There are 364 lakes in Barron County; 176 named lakes and 188 unnamed. In 1964 the DNR published a book entitled The Surface Water Resources of Barron County, gave considerable detail on each lake in Barron County, including the development, the size and depth of the lake, the existing fishery, as well as the limnology information. In 1996, with funding from a lake management grant, the Barron County Soil & Water Conservation Department did a two-year study of county lakes for the purpose of updating the 1964 publication; much has changed in reference to development around our lakes. The goal of the book was to educate the public on how to minimize human impacts to our lakes. Below is a list of some of the information included in this book.

Lake Size Information

- 17,533 acres on named lakes
- 756 acres on unnamed lakes
- 18,289 total acres of lakes in Barron County
- Largest lake: Red Cedar – 1,841 acres
- Smallest named lake: Robinson Lake, Pea Viner Lake and Meadow Lake - all at 3 acres
- Deepest lake: Beaver Dam – 106'
- Shallowest lake: Couderay – 3'

All named lakes ranked for susceptibility for harm from acid precipitation:

- High susceptibility: 4 – Bailey, Butternut, Little Granite and Round (Bear Lake Tn.)
- Medium susceptibility: 41 lakes
- Low susceptibility: 131 lakes
- Mercury in lakes: 20 lakes have been tested; 11 have had mercury advisories issued, some have since been delisted.

Lake Development

Total dwellings on lakes:

1963 – 1856
2010 – 4342

The most significant impacts on our lakes remain the following:

- runoff from agricultural land
- runoff from urban areas adjacent to them. (Beaver Dam, Rice Lake, Chetek Lakes)
- development along lakeshores that results in the removal of vegetation and coarse woody debris near the shore causing destruction of wildlife and fish habitat.
- invasion of exotic species including purple loosestrife, Eurasian milfoil, curly leafed pondweed.
- extensive use of our lakes by large and powerful boats
- mercury deposition from airborne sources

Many lakes in Barron County have changed from oligotrophic to mesotrophic lakes or from mesotrophic to eutrophic lakes. There are 25 lakes in Barron County that are classified as hyper-eutrophic. It is primarily non-point pollution sources, such as those listed above that are causing these water quality changes in our lakes.

WETLANDS

Before logging, agriculture and development there were more wetlands in Barron County. Like much of Wisconsin, many of our wetlands have been lost due to draining and filling. Although we continue to lose wetlands, the rate of loss has decreased dramatically due to Federal and State laws. Wetlands provide natural filtering runoff, groundwater recharge, wildlife and fisheries habitat, and storing of flood waters to protect downstream areas. In the 1990 soil survey, 44,000 acres of hydric soils were mapped and the WDNR inventory shows 42,600 acres of wetlands in units larger than 2 acres. The SWCD is committed to protecting our remaining wetlands and will not fund or provide assistance for any project involved in draining or filling of these valuable resources.

In addition to the total loss of acres of wetlands, the quality of many of our wetlands has been reduced. Common causes are trampling by livestock and by siltation from agricultural and urban lands. This may cause near monocultures of non-native invasive species such as reed canary grass, narrow-leaf cattail and phragmites. Another threat to our wetlands is purple loosestrife. There has been a widespread infestation of purple loosestrife throughout the county. Methods such as deadheading, herbicide use and raising and distributing Galerucella beetles have been used by the SWCSD to control purple loosestrife in the county's wetlands, and will continue along with eradication efforts for other aquatic invasive species. Protecting our wetlands from loss to other land uses and from degradation is an important goal for the future

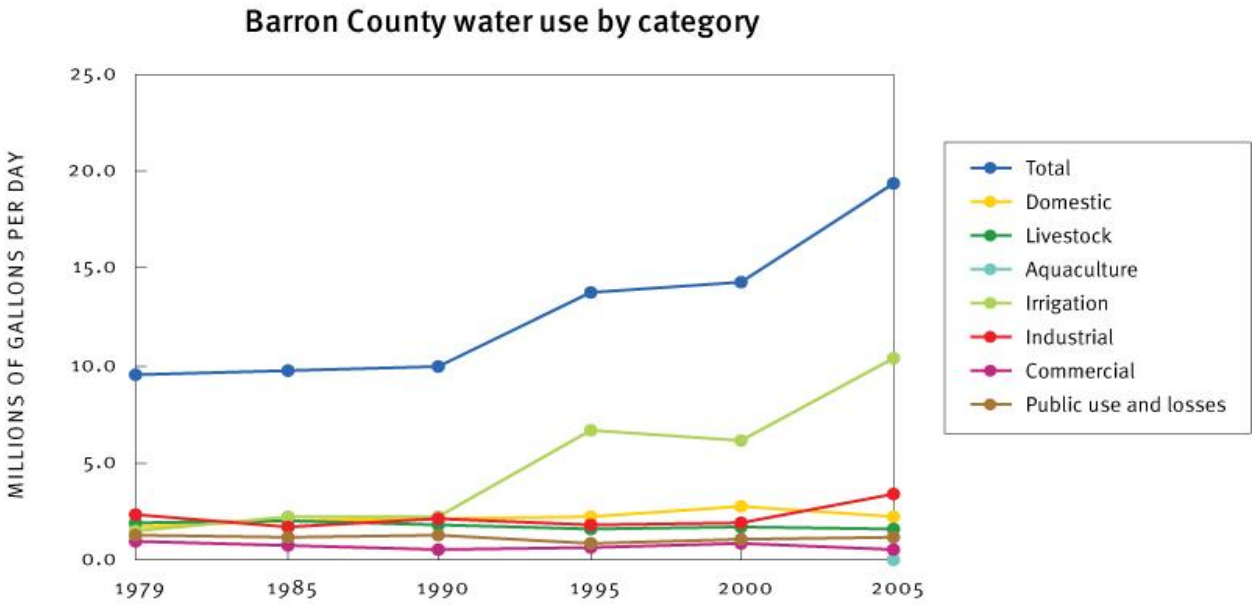
GROUNDWATER

In 1983, Barron County contracted with the Wisconsin Geological and Natural History Survey to do a comprehensive groundwater study for Barron County. The fieldwork for this study, which was conducted between 1983 and 1985, included over 700 water samples taken throughout the county and the analysis of hundreds of well installation reports. In 1986 the mapping was completed and in 1987 the Atlas of Groundwater Resources and Geology of Barron County, was published. This is a comprehensive study of the groundwater of Barron County that helps resource people and others learn more about our groundwater and make informed decisions about placing septic systems, landfills, manure storage facilities and other structures and practices that could have an impact on our groundwater.

Because of the glacial and geological history of Barron County, we are located on a large deposit of sand and gravel. This has become the sand and gravel aquifer that supplies us with the majority of our groundwater.

The groundwater quantity of Barron County is plentiful and the quality is generally good. However, there are pollution problems in Barron County and the plentiful supply of high quality groundwater is an important resource to protect from future pollution sources.

- From 1979 to 2005, total water use in Barron County has increased from just less than 9.6 million gallons per day to about 19.4 million gallons per day.
- The increase in total water use over this period is due primarily to increases in irrigation and industrial use. Commercial usage decreased by a half.



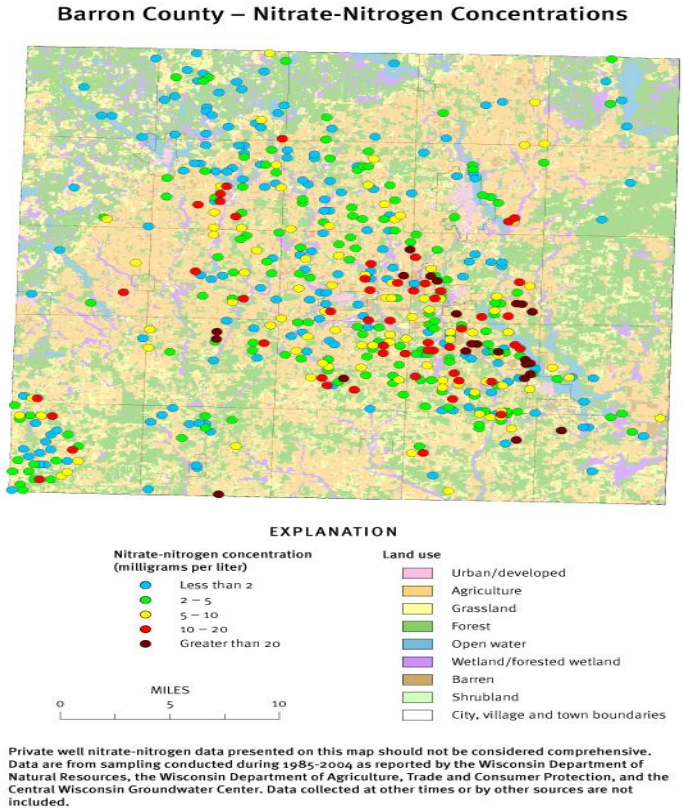
Water-use data from U.S. Geological Survey *Water Use in Wisconsin* reports for calendar years 1979, 1985, 1990, 1995, 2000 and 2005.
figure created for the "Protecting Wisconsin's Groundwater Through Comprehensive Planning" web site, 2007, *http://wi.water.usgs.gov/gwcomp/*

In 2005, aerial photo interpretation showed 100 center pivot irrigation units in the county; 91 used groundwater, 9 use wastewater from municipal sources and cheese processing. 2008 showed an increase of 31 units, all using groundwater. 2010 showed an increase of 9 units, again all using groundwater. There are currently 140 center pivot irrigation units in Barron County. They are constructed on the outwash plains as these soils have limited water holding capacity and have been identified in our GIS. We suspect that this trend will slow as there are few large un-irrigated fields remaining in glacial outwash areas where irrigation is common. The exception to this is the area in the vicinity of the Vermillion Lakes. These outwash soils have a thicker topsoil layer and have not been irrigated at this point in time. The aquifer under these outwash plains has been described as having the capacity to withstand large withdrawals of water without decline (1975 UWEX irrigation study). It is in these areas that we are most concerned with potential for groundwater pollution from over use of nutrients, farm chemicals and earthen manure storage facilities no longer in use.

Barron County is blessed with a large quantity of high quality groundwater. Many of our aquifers are shallow and constantly recharged. However, this makes them more susceptible to contamination. If measures are not taken to keep the quality of our water in good condition, future water supplies could be threatened.

NITRATES

Of the 722 water samples collected during the 1983 groundwater study, 10% exceeded the health limit for nitrate nitrogen. By 2007, this figure had risen to 15%. A direct correlation can be measured between the incidence of groundwater contamination and land use by people. Potential sources of groundwater pollution include failing septic systems, improper land application of animal wastes, fertilizer and pesticides, poorly constructed or improperly abandoned wells, malfunctioning manure storage facilities and landfills with inadequate liners.



Well samples collected in Barron County from 1990-2006 show 85% of 590 private wells met the health-based drinking water limit for nitrate-nitrogen. Of the 590 samples that have been collected in the county, 300 samples (51%) contained between 2 and 10 mg/L (milligrams per liter, or parts per million) nitrate-nitrogen, and serve as indicators that land use has likely affected groundwater quality. An additional 86 samples (15%) exceeded the health-based drinking water limit of 10 mg/L nitrate-nitrogen. As shown in the map, the samples where nitrate-nitrogen levels were elevated are located in the east central part of the county on the outwash plain.

WOODLANDS

Woodlands are one of the major natural resources of Barron County, and the county is steeped in forest history. The pioneers logged the forests for lumber and to make way for farming and cities; approximately 30% of the county is forested with the re-growth of these lands in a variety of forest types. Today, forest-related industries and businesses remain an important part of the local economy. The county's generally fertile soils support high value hardwood stands. Major forest types in the county include northern hardwoods, oak, and aspen-birch. Good forest management can sustain the full range of economic, ecological, and social benefits that our forests provide.

In Barron County, 86% of forest acreage is privately owned, 13% by state or county government and 1% by forest industries. About 1/3 of the county's private woodland owners have participated in various Wisconsin forest tax and management programs in the past.

Barron County has approximately 159,000 acres of woodlands; 36,000 acres of private lands are in the State Managed Forest Law program which requires a management plan. There is also 16,000 acres of County Forest land. They provide timber for various industries in Barron County and northwestern Wisconsin. They also provide energy for the heating systems for the Barron School and Rice Lake school districts. Runoff from these areas is much less than from cultivated and urbanized areas. This is in addition to providing wildlife habitat and recreation opportunities that characterize our way of life. There have been losses due to residential development, and fragmentation of remaining areas which hamper many of the benefits listed above.

There have been approximately 1000 acres of trees planted under the USDA CRP program in the last 10 years and many other areas have been planted. The SWCD annually sells approximately 35,000 trees and shrubs to county residents and the WDNR has sold 5,802,633 trees for planting in Barron County since 1985. This was done as part of replanting logged sites and on less productive or steeply sloping cropland. While conducting the cropland soil erosion transect survey in 1998, forested parcels, pastured and unpastured, were noted. According to this survey, approximately 26% of the forests in the agriculture areas of the county are pastured. This hampers natural regeneration of trees and potentially increases the runoff.

Several exotic invasive species threaten area woodlands; these include common and glossy buckthorn and various bush honeysuckles. They spread rapidly once established, displacing native species and creating monocultures if left unchecked. Eradication efforts include pulling, cutting, spraying and burning. These practices must be continued annually/semi-annually to be successful. Buckthorn and honeysuckle have spread throughout the county and the eradication efforts necessary are beyond the scope of SWCD; we will continue to provide information and education to area residents. However, controlling one forestry threat is within our grasp. Office staff has located what is believed to be the only garlic mustard stand in the county. For successive years, spraying and pulling have been used to reduce this patch and will be continued yearly. This area, in section 12 of Prairie Lake Township, and its surroundings will be monitored closely to ensure this species does not get a foothold locally.

WILDLIFE

Barron County has a diversity of habitats and, accordingly, a rich complement and abundance of wildlife. It is on the Tension Zone, which is a climatic and habitat delineation within the state of Wisconsin where north meets south. Simply put, it is where the southern farmland meets the northern forest. In the southern part of the county, wildlife includes species found in or around agricultural fields and fragmented woodlots, such as ring-necked pheasants, wild turkeys, cottontail rabbits, and gray and fox squirrels. In the northern part of the county, wildlife includes the eastern timber wolf, bobcat, and fisher, which are species more typical of the northwoods. Barron County has two big game species, the white-tailed deer and black bear.

Along with this, Barron County has an abundance of wetlands, such as lakes, rivers, streams, ponds, and marshes and an expected abundance of waterfowl and other wetland dependent wildlife. The recently reintroduced and endangered trumpeter swan is occasionally seen on wetlands in the county. There has been some nesting on Sweeney Pond southwest of Barron and on a county forest flowage in Bear Lake Township. Update

Ospreys are fish eating birds of prey that have increased dramatically, from 7 occupied nesting territories in 1999 to 13 in 2005. This is in large part to the placement of artificial nest platforms, which have been extremely successful. The City of Rice Lake itself has 3 nesting pairs on platforms and another 2 pairs within about 1 mile of city limits. Utility companies such as Rice Lake Utilities, Excel Energy, and Barron Electric have been extremely generous in the donation and placement of power poles with platforms for osprey nesting habitat.

Wildlife is a function of habitat. In regard to forest habitats, Barron County is approximately 30% forested. This consists mainly of fragmented forest patches interspersed with agricultural land, wetland and residential areas. Habitat generalists that do well in small forest patches are very much favored by this arrangement. Wildlife that needs more extensive forests finds the best habitat in the public forests in the eastern and northern part of the county.

Large blocks of grassland are one of the scarcest habitats in Barron County. The main blocks of grassland sufficient to meet the needs of grassland utilizing wildlife are found on Wildlife Management Areas scattered across the county or on conservation reserve program (CRP) fields. Like the fragmented forest habitat, habitat generalists that can exist on small fragments of grassland found outside these public and CRP areas are doing very well.

Wetlands contain some of the richest and most diverse wildlife species components in the county, as well as some of the most obscure. These are also areas where some of the species of concern are most impacted by development. Studies have shown that current lot sizes along lakes, rivers, streams, and marshes are too small to adequately protect these critical areas where amphibians and reptiles live and breed, where fish spawn, and which furbearers and birds utilize to meet their life requirements. These studies have stated it is important to take steps to protect these critical areas for the benefit of wildlife and people.
Kevin Morgan, Wildlife Biologist

THREATENED AND ENDANGERED SPECIES

Species of Special Concern Found In Barron County

Plants

Wild lupine	host plant to karner blue butterfly (endangered)
Dragon wormweed	special concern
Assiniboine sedge	special concern
Robbins spikerush	special concern
Torrey's bulrush	special concern
Spotted pondweed	endangered
Squashberry	endangered
Canada gooseberry	threatened

Amphibians

Bullfrog	special concern
Blandings turtle	threatened
Wood turtle	threatened

Fish

Least darter	special concern
Ozark minnow	threatened
Weed shiner	special concern
Redfin shiner	threatened
Pugnose shiner	threatened
Greater redhorse	threatened

Birds

Bald eagle	special concern (Federally)
Red shouldered hawk	threatened
Osprey	threatened
Yellow rail	special concern
Le conte's sparrow	special concern
Trumpeter swan	endangered

Insects

Skillet clubtail dragonfly	special concern
Pygmy snaketail dragonfly	special concern
Green faced clubtail dragonfly	special concern
Karner Blue butterfly	endangered

Natural Areas: the following are ecologically unique communities

Northern sedge meadow	Northern mesic forest
Northern dry mesic forest	Northern wet forest

The WDNR Endangered Resources Bureau has provided Barron County with the inventory of where threatened, endangered and species of special concern exist in the county. Staff will use the data to determine if a project we are involved with is in these areas and work to ensure they will not be impacted.

WORK PLAN

RESOURCE CONCERNS

Goals
Objectives
Action Items

The work plan section of the LWRMP identifies the resources concerns in Barron County, the goals to maintain or improve them, and the objectives and action items necessary to accomplish these goals. It also indentifies key partners and funding sources for each action item and lists evaluation tools where appropriate.

We have identified soil erosion and depletion as our priority resource concern; thus reducing soil loss on cropland is a primary goal. Through conservation planning, no-till planting and cover crop promotion and BMP installation, among others, staff will assist farmers in achieving soil loss rates at or below T, (tolerable soil loss). It is our long-term goal to attain soil loss rates of sustainable levels on County cropland.

Improving surface water quality is also of great concern, and it will benefit from the protection of cropland soils. We will continue to assist farmers in writing their own nutrient management plans, utilizing SEG and NMFE monies. The future of managing both point and non-point sources of water pollution in Barron County will be driven by the fact that the Tainter Lake in Dunn County has been designated as an impaired water body on the U.S. EPA 303(d) list. Because of this designation, a total maximum daily load (TMDL) is being developed by the Wisconsin DNR for the waters draining into the lake, including the Red Cedar and Hay River watersheds. By reducing sediment from farm fields and enforcing the state prohibitions for nutrient management, animal waste, the water quality of the impaired waters of the county should improve, and all the waters of the basin.

Protecting farmland from conversion to non-agricultural uses, groundwater, local resources, woodlands and wildlife are the remaining resource concerns, which are detailed in the following charts. A variety of actions will be utilized including assisting/supporting other agencies in their endeavors, installing lakeshore buffers, continuing the tree program, expanding our educational programs for youth and adults and maintaining our efforts to control invasive species. Integrating the Working Lands Initiative changes will also be a high priority for County staff.

RESOURCE CONCERN: SOIL EROSION & DEPLETION

GOAL: CONTROL SOIL EROSION ON CROPLAND

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Reduce soil loss to T and below on all cropland	Through conservation planning and the installation of BMP's, reduce soil erosion to tolerable levels, and below when possible.	SWCD, NRCS	SWRM Staff & Support, SWRM Cost Share	Acres planned BMP's installed GIS Tracking
	Administer the Farmland Preservation Program, conducting status reviews and assisting participants in maintaining compliance.	SWCD	SWRM S & S	Status reviews, 25% of participants annually
	Promote no-till and cover crops through County Conservation Program and Cumberland Nutrient Trading Program	SWCD, City of Cumberland	Barron County City of Cumberland	Acres funded Soil Transect Survey
	Implement State Performance Standards, conducting conservation walk-overs with landowners to determine compliance.	SWCD	SWRM, S&S, SWRM C/S	# of walk-overs Compliance issues settled
	Sponsor periodic conservation tillage workshops.	SWCD, NRCS, UW-EX	SWRM S &S, Barron County	New farmers enrolled in programs
	Discourage farmers from planting snap beans on highly erodible land and encourage soil conservation methods on snap bean fields.	SWCD	Barron County	
	Utilize demonstration sites.	SWCD, UW-EX	Barron County	

GOAL: CONTROL SOIL EROSION ON CROPLAND cont.

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Reduce soil loss to T and below on all cropland, cont.	Develop sample cropland rental agreements with a conservation requirement section.	SWCD, UW-EX	Barron County	

GOAL: ENHANCE AND PROTECT SOIL QUALITY

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Protect and improve soil health	Through conservation planning, using appropriate crop rotations to maximize soil nutrients.	SWCD, NRCS	SWRM Staff & Support	Acres planned
	Assist farmers with nutrient management planning, utilizing SEG and NMFE programs.	SWCD, NRCS, UW-EX	SWRM C/S, UW-EX	Acres planned GIS Tracking
	Promote no-till and cover crop use through County Conservation Program and Cumberland Nutrient Trading Program.	SWCD, City of Cumberland	Barron County, City of Cumberland	Acres funded

RESOURCE CONCERN: NON-POINT POLLUTION OF SURFACE WATER

GOAL: PROTECT AND IMPROVE WATER QUALITY

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Reduce sedimentation of wetlands, streams, rivers and lakes by soil erosion.	Reduce soil erosion on cropland through installation of conservation practices.	SWCD, NRCS	SWRM S & S, SWRM C/S	
	Continue to support CRP and CREP programs.	SWCD, NRCS, FSA	Barron County	Acres installed
	Explore buffer possibilities with landowners using the GIS layer developed through previous inventories.	SWCD, Land Information	Barron County CREP	GIS, Acres installed
	Continue to implement NR 135, evaluating reclamation plans, monitoring mining operations and certifying reclamations	SWCD, Zoning	Barron County	
Reduce runoff of animal waste into surface waters.	Assist farmers, with nutrient management planning, utilizing SEG and NMFE funding.	SWCD, NRCS, UW-EX	SWRM C/S, UW-EX	Acres planned
	Address prohibitions and performance standards.	SWCD	SWCD S & S, SWRM C/S	GIS tracking
	Work with beef operations on pasture and feeding area management techniques to reduce runoff.	SWCD	SWCD S & S, SWRM C/S	
Reduce phosphorous runoff from urban areas and lakeshores.	Publish lakeshore newsletter online to reach maximum residents.	SWCD	Barron County	
	Continue educational activities such as storm sewer stenciling with area students and the 6th Grade Tour.	SWCD, DNR	Barron County	
	Provide technical assistance to lake groups.			

RESOURCE CONCERN: LOSS OF PRODUCTIVE FARMLAND

GOAL: REDUCE NON-AG USE OF PRODUCTIVE FARMLAND

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Protect productive ag land, permanently when possible.	Integrate Working Lands Initiative changes to Farmland Preservation Program locally.	SWCD, Zoning	SWRM S & S, Barron County	
	Update Barron Farmland Preservation Plan, due in 2013.	SWCD, Zoning	SWRM S & S, Barron County	
	As part of implementing FPP update, assist landowners interested in: • forming Ag Enterprise Areas (AEA). • acquiring Purchase of Agricultural Conservation Easements (PACE).	SWCD, Zoning	SWRM S & S, Barron County	

RESOURCE CONCERN: QUALITY/QUANTITY OF GROUNDWATER

GOAL: PROTECT GROUNDWATER QUALITY

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Prevent contaminants from entering groundwater.	Assist farmers, with nutrient management planning, utilizing SEG and NMFE funding.	SWCD, NRCS, UW-EX	SWRM C/S, NRCS, UW-EX	Acres planned
	Continue to fund well decommissioning for idle wells.	SWCD	SWRM S & S, SWRM C/S	Idle wells decommissioned
	Continue to hold agricultural and household clean sweep projects to collect hazardous materials.	SWCD, Emergency Management	Barron County State funds	
	Continue to fund idle manure storage facility closure, targeting earthen facilities in glacial outwash soils.	SWCD	SWRM C/S	# of facilities closed

GOAL: PROTECT GROUNDWATER QUANTITY

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Prevent inefficient crop irrigation.	Provide technical and staff support for NRCS EQIP irrigation management practices.	NRCS, SWCD	Federal funding, Barron County	

RESOURCE CONCERN: LOCAL RESOURCE/HABITAT PROTECTION

GOAL: PRESERVE AND RESTORE LAKESHORE HABITAT

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Protect shoreline areas.	Publish SWCD Lakeshore Newsletter online, emphasizing the use of native species.	SWCD	Barron County	# of website visitors
	Work with Zoning on mitigation concerns.	SWCD, Zoning	Barron County	
	Continue rain garden education efforts.	SWCD	Barron County	
Restore degraded lakeshores.	Provide technical assistance for lakeshore buffer installation, and funding when available.	SWCD	SWRM C/S, DNR, Lake Grants	

GOAL: PROTECT AND ENHANCE LOCAL RESOURCES

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Protect historical and archaeological resources, and threatened and endangered species and their habitats.	Prior to BMP installation, check location with State databases.	SWCD	Barron County	
	Work with Zoning to create a system for checking areas of all new construction.	SWCD, Zoning	Barron County	
Control invasive species infestations.	Continue program of cutting and spraying purple loosestrife, Japanese knotweed, garlic mustard and other exotic invasive species.	SWCD	Barron County	
	Apply for AIS grants to obtain needed financial assistance for herbicides.	SWCD, DNR	State	Grants awarded.

GOAL: PROTECT AND ENHANCE LOCAL RESOURCES continued

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Control invasive species infestations, cont.	Continue raising and distributing Galerucella beetles to combat purple loosestrife.	SWCD	Barron County	
	Continue providing financial assistance to lake groups using chemical treatments for AIS such as Eurasian water milfoil.	SWCD, Lake Associations	Barron County	
	Continue to support the Clean Boats, Clean Waters Program.	SWCD, UW-EX	Barron County, UW-EX	
	Facilitate Silver Lake Boat Landing Attendants in cooperation with the lake Association.	SWCD, Silver Lake Assn.	Silver Lake Association	
	Develop and distribute Japanese knotweed and buckthorn information to residents.	SWCD	Barron County	
	Provide cost-sharing and technical assistance for wetland restoration.	NRCS	SWRM S & S, SWRM C/S	
	Distribute buckthorn identification and eradication information at annual tree sale.	SWCD	Barron County	
	Inform nurseries of ornamental invasives and request they discontinue their sale.	SWCD	Barron County	
Restore and enhance wetlands	Provide assistance to NRCS, DNR and USFWS for wetland restoration.	SWCD, NRCS, USFWS, DNR	Barron County State & Federal	
	Reduce soil erosion on cropland through installation of conservation practices.	SWCD, NRCS	SWRM S & S, SWRM C/S	

GOAL: PROTECT AND ENHANCE LOCAL RESOURCES continued

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Improve education efforts to protect local resources.	Update County website providing links for proper recycling of and/or drop off sites for hazardous materials.	SWCD, Waste to Energy Dept.	County	
	Research and provide information on recycling farm-related items, such as silage bags and herbicide containers.	SWCD	County	
	Update poster and speaking contests, creating more interest by making school presentations involving the yearly NACD theme.	SWCD	County	# of participants
	Utilize the Tree Program, etc., to create or enhance Earth Day celebrations in local schools.	SWCD	Self-funding	
	Provide Self-help Lake Monitoring information and instructions to lake groups.	SWCD, Lake groups	County	

RESOURCE CONCERN: PROTECT FORESTED AREAS & WILDLIFE HABITAT

GOAL: MAINTAIN OR INCREASE FORESTED ACRES

OBJECTIVE	ACTION / PROGRESS	KEY PARTNERS	FUNDING	EVALUATION TOOLS
Promote tree planting.	Continue selling native trees and shrub transplants to residents.	SWCD	Self-funding	# of trees sold annually
	Promote DNR tree seedling sale and provide clerical assistance.	SWCD, DNR	Barron County	# of trees sold annually
	Provide low cost tree planters and brush hog to facilitate large plantings.	SWCD	Barron County	# of seedlings planted
Educate residents on the importance of forestry habitat.	Encourage maintenance and development of wildlife corridors.	SWCD	Barron County	
	Discourage pasturing of woodlots.	SWCD	Barron County	
	Offer wildlife walkovers to landowners to provide a comprehensive plan for maintaining forest health and attracting wildlife.	SWCD	Barron County	# of walkovers
	Continue the forestry component of the 6th Grade Tour.	SWCD, DNR	Barron County	# of participants
	Offer information on the DNR Managed Forest Law program.	SWCD, DNR	State	
	Support the Barron County Woodland Owners Association, offering information on their demonstration sites.	SWCD, BCWOA	Barron County	
	Investigate holding dual workshops, offering forestry session with more traditional farming session for landowners operating a variety of lands.	SWCD, BCWOA, DNR	Barron County	

IMPLEMENTATION STRATEGY

The Barron County Soil and Water Conservation (SWCD) will take the lead role in the implementation of NR 151, working in cooperation with the WDNR with the technical assistance of NRCS. Regulatory and enforcement activities described under this section will be completed utilizing the following; NR 151, ATCP 50 and the Barron County Animal Waste Management Ordinance.

PRIORITY FARM DESIGNATION

A farm in Barron County will be given priority status if one or more items from each of the categories below pertain to that farm.

- Sites with known State Prohibitions – Sites have been evaluated from field surveys and aerial photo interpretation.
- FPP participants needing assistance to maintain program eligibility

Location of Farm – the sites above will be given precedence if found in the following areas:

- Located within the watershed of a 303(d) designated waterbody
  - Lake Desair Watershed
  - Direct watershed of the Red Cedar River
  - Chetek Chain of Lakes
- Located on glacial outwash soils

A future method of prioritizing cropland sites is the Phosphorus Risk Index, which assesses the potential of a cropped or grazed field to contribute P to the nearest stream or lake under long-term, average weather conditions in the SNAP-Plus program and ranks them accordingly.

NR 151 AGRICULTURAL PERFORMANCE STANDARDS

Wisconsin's rules to control polluted runoff from farms, as well as other sources, went into effect October 1, 2002. The State legislature passed the rules to help protect Wisconsin's lakes, streams and groundwater. WDNR Administrative Rule NR 151 sets performance standards and prohibitions for farms. It also set urban performance standards to control construction site erosion, manage runoff from streets and roads and manage fertilizer use on large turf areas. DATCP Administrative Rule ATCP 50 identifies conservation practices that farmers must follow to meet performance standards in NR 151. ATCP 50 also sets out the requirements for nutrient management plans.

The SWCD has long been recognized as the primary tool to bring these water quality performance standards into the field. The Soil and Water Conservation Departments will have the primary responsibility for the implementation of the agricultural runoff standards. NR 151 lays the foundation for minimal expectations in regards to land use and management practices within the agricultural landscape.

For farmers who grow agricultural crops:

- Must meet tolerable soil loss ("T") on all cropped fields. Accomplished with crop rotations, residue management, contour farming and cover crops. (NR 151.02)
- Follow a nutrient management plan meeting NRCS 590 standards, designed to limit entry of nutrients into state waters (groundwater and surface water). (NR 151.07)

For farmers who raise, feed or house livestock (NR 151.08)**:**

- Prevent direct runoff from feedlots or stored manure into state waters.
- Limit livestock access to state waters to avoid high concentrations of animals and maintain adequate or self-sustaining sod cover along waterways.

For farmers who have or plan to build, a manure storage structure:

- Maintain structures to prevent overflow. (NR 151.08)
- Repair or upgrade any failing or leaking structures that pose an imminent health threat or that violate groundwater standards. (NR 151.08)
- Close idle manure storage structures according to NRCS standards. (NR 151.08)
- Meet technical standards for newly constructed or substantially altered structures. (NR 151.05)

For farmers with Land in a Water Quality Management Area *(300 feet from a stream, 1000 feet from a lake, or in areas susceptible to groundwater contamination)*:

- Do not stack manure in unconfined piles. (NR151.08
- Divert clean water away from feedlots, manure storage areas and barnyards located within this area. (NR151.06)

Additional State Standards in 2011 – The DNR has revised the NR151 performance standards for controlling agricultural runoff pollution. The following provisions have been added:

Phosphorus Risk Index

For all croplands, pastures, and winter grazing areas, the PI establish a maximum allowable P Index of 6 averaged across an accounting period of up to 8 years. They also include a P Index limit of 12 for any individual year. Use of the P Index allows growers to evaluate the relative risk of surface water pollution resulting from different management practices on a particular field in each year of their planned crop rotation.

Process Wastewater Handling

On non-permitted livestock operations, standard will regulate significant discharges of milk house waste or feed leachate to State waters.

Tillage Setback

A minimum tillage setback of five feet is required, and can be increased to a distance of up to 20 feet on a case-by-case basis if justified. The standard does not apply to grassed waterways installed as conservation practices.

Financial Considerations

Many farmers voluntarily install conservation practices on their farms to help prevent soil erosion and to improve water quality. Cost share dollars will still find priority with landowners looking to voluntarily implement BMPs to correct prohibition violations on their lands. Barron County will continue to offer voluntary cost sharing to others as program funds are available. The agricultural performance standards and prohibitions found in NR 151 require 70% cost sharing be offered to change an existing cropland practice or livestock facility to bring them into compliance with the new standards. The opportunity exists for an increase to 90% cost sharing if economic hardship is proven.

Farmers who have established new facilities since 2002 may be eligible for cost sharing, but cost sharing is not required for compliance. Those farms covered under a WPDES permit are not eligible for state cost sharing to meet performance standards and prohibitions required under their permits.

Information and Education

The SWCD will distribute information and educational material from various sources such as WDNR, DATCP and SWCD to affected landowners. We will use direct mailings, workshops, newsletters, news media and on site visits as our avenue for information distribution.
Our educational materials will be designed to accomplish the following:

- Educate landowners about Wisconsin's agricultural performance standards and prohibitions, County ordinances, applicable conservation practices and funding opportunities.
- Promote voluntary implementation of conservation practices necessary to meet standards and prohibitions.
- Inform landowners of requirements and compliance procedures and the role the LWCD will have within those procedures.
- Make landowners aware of expectations for compliance and consequences for non-compliance.

Evaluation and Compliance Status:

The Barron County Land Information System and our Geographical Information System (GIS) will be the foundation for this process. We are building a GIS layer that will associate levels of compliance for all provisions found in NR 151. Our current database includes current Manure Storage Facilities, suspected Prohibition Violation sites and BMPs installed in the last 2 years. We are developing a procedure to track conservation plans and Nutrient Management Plans in the GIS as well.

Along with the creation of a NR 151 compliance layer, the GIS system will be used to begin and continue the process of investigating and searching out non-compliant parcels within Barron County. Using the combined data, layers can be developed to identify "potential problem areas" within the Water Quality Management Areas. The process of using the various data layers available to us through our GIS system and access to parcel mapping information and addressing

information will allow us to create mailing lists to target these areas through I/E and on site visits.

This system will assist staff and the LCC in monitoring progress towards the goals of our LWRMP. Monitoring and modeling information will be used to direct staffing efforts to accomplish implementation of the work plan and evaluate plan success.

On Site Farm Visits:

It is our goal that all identified priority farms will be visited by the end of 2012 for evaluation with NR 151 compliance. Farms with feedlot runoff issues will be modeled using NRCS BERT and ranked accordingly. The number, frequency, and location of the onsite farm visits will strongly hinge on the current and future level of staff funding and cost sharing resources that will be available to the SWCD and potentially affected landowners.

When found non-compliant, corrective measures are determined along with eligibility for cost sharing. During subsequent visits, cost estimates and timelines for achieving compliance will be discussed.

Documentation and NR 151 status report:

Following each site evaluation, staff will prepare and issue an NR 151 status report to owners of the evaluated parcels. The status report will include the following information:

- Current status of parcel compliance with each of the performance standards and prohibitions.
- Corrective measure options and rough cost estimates to comply with each of the standards and prohibitions for which a parcel is not in compliance.
- Status of eligibility for public cost sharing.
- Grant funding sources and technical assistance available from Federal, State and Local government and third party service providers.
- An explanation of conditions that apply if public cost share funds are used.
- A timeline for completing corrective measures, if necessary.
- Signature lines indicating landowner agreement or disagreement with report findings.
- Process and procedures to contest evaluation results to LCC.
- (Optional) A copy of performance standards and prohibitions and technical design standards.

Maintaining Public Records and Landowner Notification:

The compliance information will remain public record. In an effort to ensure that subsequent landowners are made aware of NR 151 compliance on their property, we will continue to work on a long-term notification process. This will include the development of capabilities to join our GIS data layers to the County's land records system. This would allow the SWCD to be notified through the land records system when a parcel joined to an NR 151 compliance issue would change ownership. Discussion with the Land Information and Register of Deeds offices has begun and we hope to be able to utilize this process within the next couple of years.

Technical Assistance and Cost Sharing To Install BMP's:

Voluntary Participation (Cooperative):

- Receive request for cost-share and/or technical assistance from landowner
- Confirm cost-share grant eligibility and availability of cost-share and technical assistance.
- Develop and issue cost-share contract listing BMP's to be installed or implemented, estimated costs, project schedule and notification requirements.

Non-voluntary component (Non-Cooperative):

In the event that a landowner chooses not to install corrective measures either with or without cost sharing, the landowner will be issued notification per NR 151.09(5-6) and/or 151.095(6-7). The notification will include the following information:

- If eligible costs are involved, this notification shall include an offer of cost sharing.
- If no eligible costs are involved, then notification will explain justification why cost sharing does not apply.
- A description of the performance standard and prohibition being addressed.
- The compliance status determination of which best management practice or other corrective measures are needed.
- An offer to provide or coordinate technical assistance.
- A compliance period for meeting the performance standard or prohibition.
- An explanation of possible consequences if the owner or operator fails to comply with provisions of the notice.
- An explanation of local appeals procedures.
- If cost sharing is involved, the SWCD will draft a program-specific cost share agreement including a schedule for installing or implementing BMP's.

The SWCD will provide technical assistance and oversight for all conservation practices as staff time allows with the exception of liquid Manure Storage Facilities due to their complexity.

These technical services include:

- Provide conservation plan assistance.
- Provide engineering design assistance.
- Review engineering designs provided by other parties.
- Provide construction oversight.
- Evaluate and certify installation of conservation practices.

Note: *The SWCD will not provide direct NPM 590 Plan Development. We will provide assistance in leading Farmer written nutrient management plan classes. We will continue providing conservation planning, identifying critical spreading areas and other information. Landowners will be directed to work with Certified Crop Consultants or self-certification programs for nutrient management plan development.*

Funding Sources

A variety of sources will be used to fund projects on priority farms; these include:

- DATCP State funds including SEG monies
- DNR TRM Grants
- State funded Nutrient Management Farmer Education funds
- Utilizing Federal EQIP monies
- County funding for cultural practices not covered by State funding
- Local nutrient trading programs
- Lake group contributions to fund projects in their watersheds

All projects will be evaluated to determine the optimum source or combination of sources to accomplish our conservation goals.

Re-evaluate Parcel for Compliance:

After corrective measures are applied, the parcel will be reevaluated for compliance with relevant performance standard(s) or prohibition(s). If site is compliant, the NR 151 Status Report will be updated and a Letter of NR 151 Compliance will be issued.

Note: *A letter of NR 151 compliance serves as official notification that the site has been determined to now be in compliance with applicable performance standards and prohibitions. This letter would also include an appeals process if a landowner wishes to contest the findings.*

If still not in compliance, seek non-regulatory remedies or initiate enforcement action.

Enforcement Action:

For the manure storage portions of the prohibitions, SWCD will utilize the Barron County Manure Storage Ordinance and the procedures outlined in it for enforcement. For FPP participants, financial sanctions will be used to enforce all standards and prohibitions. If these efforts are unsuccessful in achieving compliance and the landowner refuses to respond appropriately to the official Notice of Non-Compliance or is in breach of a cost share contract, the SWCD will prepare and issue a Notice of NR 151 Violation letter. The case will then be referred to the WDNR.

Note: *Enforcement begins with this letter. It will be pursued in circumstances where:*
(1) A breach of contractual agreement has occurred including failure to install, implement or maintain BMP's, and
(2) Non-regulatory attempts to resolve the situation have failed.

Process for Appeal of Non-Compliance Decision:

Landowners wishing to appeal a notice of NR 151 Non-Compliance may do so to the Barron County LCC in writing within 30 days. The Land Conservation Committee shall hear and consider the appeal at their next scheduled meeting, and not more than 45 days from when the appeal was received.

Ongoing Evaluations to verify Ongoing Compliance:

The SWCD will develop a long-term plan to balance workload relating to servicing new NR 151 noncompliant issues and spot-checking existing on-going compliance issues. It is likely that a combination of spot-checking, self-certification forms, aerial photo interpretation and other in-field evaluation tools will be used to maintain a long-term monitoring plan to assure ongoing compliance.

Livestock Siting & CAFOs

As the dairy industry continues its progression towards fewer, larger farms two state programs come into play. Livestock Siting deals with farms expanding beyond 500 animal units in areas covered by Exclusive Agricultural Zoning and the Wisconsin Pollution Discharge Elimination System (WPDES) covers farms larger than 1000 animal units. These are referred to as CAFOs, (concentrated animal feeding operation). There are currently four dairy farms and one heifer raising facility with permits under this rule in Barron County. SWCD assists these farms with all conservation issues except design and installation of waste storage facilities, which are completed by private engineers or NRCS personnel, when available. This is due to the complexity of these systems and the limited staff time available. See Appendix D for livestock siting details.

Landowners are informed if one or more acres of land are disturbed to construct structures such as barns, manure storage facilities or barnyard runoff control systems, they must file a notice of intent with the WDNR per NR 216.42 (2) of the WIS. Adm. Code. For buildings or facilities, they must follow an erosion and sediment control plan consistent with s. NR 216.46 and meet the performance standards of s. NR 151.11, Wis. Adm. Code.

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

MANURE STORAGE CONCERNS

Barron County has had a long history with manure storage facilities. The first was constructed in 1971 and a total of 326 have been built since. Many are earthen facilities that could not be constructed today to meet the NRCS standards due to the increased clay liner requirements. All are identified in the County GIS

Current Inventory

- 65 properly closed
- 197 actively being used
- 62 idle: not had additional manure added for one year and are unlikely to be used due to lack of land or livestock facilities on site

- 10 temporarily idle: not currently in use but adequate livestock facilities and land exist to allow for future use
- 1 malfunctioning: operating without a proper liner in place

In 1984, Barron County was one of the first in the state to adopt a manure storage ordinance. In 1991 it was amended to require that all new facilities were built with a liquid tight liner, which at the time meant concrete. High Density Poly Ethylene became available in the early 1990's and it is used as an alternative to concrete in some situations.

Landowners are required to obtain a permit from Barron County to construct a manure storage facility regardless of size. They need a design from a licensed PE or an individual with job approval from NRCS and a current nutrient management plan meeting NRCS 590 standard.

Due to the increased complexity in manure storage facilities, in particular the transfer systems, Barron County will no longer provide designs for landowners. The exception being above ground concrete structures with 4' tall walls, without a transfer system. This work is lower priority than dealing with prohibition sites and abandonment of manure storage facilities.

Proper abandonment of idle facilities is required within two years of inactivity. This has been a priority and will continue to be. Groundwater contamination potential is greatest in areas of glacial outwash soils, currently 12 idle facilities fall into this category. They are a priority in our work plan. A permit is required to abandon a manure storage facility.

All facilities are inspected at 20 years of age and again at 35.

WISCONSIN MANURE PROHIBITIONS

As part of NR 151, all producers must comply with four manure management with four manure management prohibition:

- No manure storage facility overflow (1)
- No unconfined manure piles in water quality management areas (2)
- No direct runoff from a feedlot or stored manure into waters of the state (3)
- No unlimited livestock access to waters of the state in a location where high concentrations of animals prevent maintenance of adequate sod or self-sustaining vegetative cover (4)

Through past inventories, manure prohibitions were noted and have been documented on the GIS layer.

Prohibition	2000	2006	2010
1	0	0	0
2	4	1	3
3	31	12	49
4	57	28	7

Since enactment of the first Land & Water Resource Management Plan in 2000, many existing violations have been corrected through conservation work or attrition. Further sites have been identified through field visits and aerial photo interpretation. See Appendix C.

WATER QUALITY OBJECTIVES

The water quality objectives of this plan will be the improvements that result from our efforts to reduce the sediment and phosphorous loading to the streams of the county by increasing the level of soil conservation and management of nutrient applications on all cropland within the county.

Cropland has been shown to be responsible for over 60% of the phosphorous in the Red Cedar Basin. It is for this reason that soil conservation measures must be implemented to address sheet and rill, and gully erosion.

A lake response model for Tainter Lake at the outlet of the Red Cedar Basin has shown that a 55% reduction in phosphorous loading will result in an increase in water clarity from 2.5 to 5 feet and a 50 percent decrease in the algal bloom frequency.

The phosphorous content of the soil particles in the Red Cedar Basin have been shown by the WDNR to be 2 to 5 times that of other basins in the state. This will allow a 40% reduction in sediment to result in a 50% reduction in phosphorous from cropland.

Barnyard runoff has been shown to contribute 8% of the phosphorous to the streams. This problem will be addressed through the enforcement of the prohibition of direct runoff from feedlots.

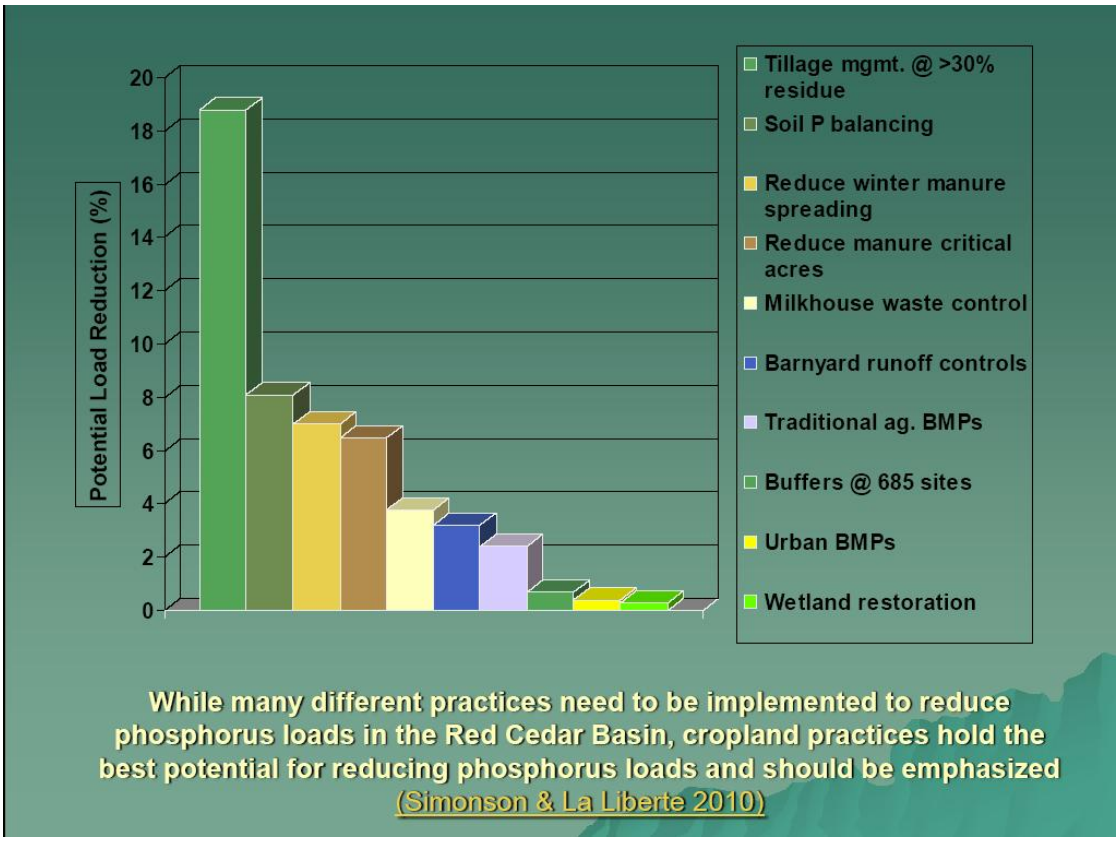
The WDNR is working on the total maximum daily load (TMDL) for the Red Cedar Basin. This will set goals for the reduction of phosphorus of point and non-point sources. The TMDL will specify how WDNR regulatory programs will deal with point sources while local conservation departments will deal with non-point sources. However, point sources only contribute 7% of the total phosphorus in the basin. Because cropland contributes 60% of the total phosphorus, widespread adoption of cropland best management practices is important and reductions needed to eliminate impairments will likely require cropland to go beyond minimum statewide expectations.

Proposed DNR TMDL Goals

- Basin-wide 45% P load reduction (from 1990 levels)
- Point sources will be given credit for previous reductions (30,000 pounds P)

- Nonpoint sources will be given credit for previous reductions (17,000 pounds P)
- Nonpoint sources will need to reduce annual P load by about 160,000 pounds to reach the proposed 45% reduction goal

When the DNR establishes the TMDL, our plan will be updated to reflect additional goals.



Considerable work has been done in area of reducing phosphorus discharges from point sources in the Red Cedar Watershed, (listed below). The reductions in from these sources and barnyard runoff highlight soil erosion of cropland as the greatest contributor of phosphorus to the system. It is also the category that has the greatest potential for reductions.

FACILTY	1990 PHOSPHORUS	2010 PHOSPHORUS	FACILTY	1990 PHOSPHORUS	2010 PHOSPHORUS
Almena WWTP	992	991	Turtle Lake WWTP	8952	1584
Cumberland WWTP	12,591	1472	Dallas WWTP	n/a	329
Crystal Lk. San. Dist.	2141	156	Jennie O Turkey Store	1693	1089
Prairie Farm WWTP	194	311			
Saputo Cheese	176	0	Rice Lake WWTP	11,384	2240
Chetek WWTP	1997	251	**TOTALS:**	**40,120**	**8,423**

NUTRIENT MANAGEMENT PLANNING

One way to improve water quality is to reduce the loss of nutrients applied to farm fields through closer management. A certified nutrient management plan (meeting NRCS 590 standards) based on current soil tests and crop needs, will outline how much and what type of nutrients to apply to each field. Spreading restriction maps included with the plan will address setbacks from critical areas such as grassed waterways, surface water, and well locations as well as winter spreading restrictions.

Assisting farmers in writing and following an approved nutrient management plan will continue to be a focus of SWCD. The staff Conservation Planner is required to attain CCA certification for this purpose. SEG and UWEX NMFE funds will be utilized and farmers will also be encouraged to sign up for NRCS EQIP funding when available. SWCD, NRCS and UWEX staff coordinate to offer group phosphorus and nitrogen classes; then farmers meet individually with a staff member to assist in writing their 590 plan. Staff is available to help with yearly updates by appointment. Farmers also have the option of hiring a consultant to complete a plan. Annual checklists will continue to be required and kept on file; copies will be forwarded to the appropriate DATCP staff.

Since 2002, all new manure storage facilities are required to follow a 590 plan; SWCD will contact these facility owners to request checklists annually.

OTHER RESOURCE CONCERNS

The numerous goals and action items for the following resource concerns are detailed in the spreadsheets on pages 23 to 28; most require no further explanation. Below is additional Information on prioritization and implementation.

Loss of Productive Farmland:

The removal of productive farmland as the result of development has a lasting effect on farming in Barron County. The reclassification of farmland from an Exclusive Agricultural District, and development in general, results in the fragmentation of large agricultural areas. The SWCD will encourage the use of additional tools and incentives provided through the Working Lands Initiative (WLI) and recent revisions to Chapter 91, Farmland Preservation Program, in protecting our productive farmland. By January 1, 2014, the Barron County Farmland Preservation Plan must be updated to reflect the revisions to Chapter 91.

Quality/Quantity of Groundwater

When funds are limited, idle wells and manure storage facilities in outwash soils will be given priority status due to greater potential for contamination.

We will assist NRCS in irrigation management work to more efficiently use this resource.

We will continue to implement the reclamation plan sections of NR 135, which deals with non-metallic mining, to ensure the land is restored properly.

Local Resource/Habitat Protection

We will encourage lakeshore residents to naturalize the shoreline on their property and provide funding when available for the establishment of vegetative buffer zones. Riprap projects will not be funded.

Vegetative Buffer Criteria
Eligible sites will be those with greater than 90% of the area within 35' of the OHWM in a lawn that will naturalize enough of the area to meet the following definition from the Barron County Land Use Ordinance:

- VEGETATIVE BUFFER ZONE. An area of undisturbed or restored native vegetation that provides natural shoreline features and functions for fish and wildlife habitat, water quality protection, and natural scenic beauty, that includes the area 35 feet inland from the ordinary high-water mark.

SWCD will continue education and control efforts of aquatic invasive species.

Protect Forested Areas & Wildlife Habitat

We will continue to discourage the pasturing of woodlots, encourage tree planting on marginal cropland, especially areas with high runoff potential and along water bodies. We will continue our monitoring and eradication efforts on terrestrial invasive species.

CONSERVATION PRACTICES & COST SHARING

PRACTICE	COST SHARE RATE	FUNDING SOURCE	ANNUAL OUTCOMES
No-till	$15.00/acre	County, Nutrient Trading Programs, Lake Grants	2000 acres
Cover Crop	$18.50/acre	County, Nutrient Trading Programs, Lake Grants	300 acres
Nutrient Management Planning	Varies per program	State SEG Funds, UWEX NMFE Grants, NRCS	5110 acres
Grass Waterway	70%	SWRM Cost Share, NRCS	5
AWSF Closure	70%	SWRM Cost Share, NRCS	5
Well Decommissioning	70%	SWRM Cost Share, NRCS	5
Diversion	70%	SWRM Cost Share, NRCS	2
Streambank/Shoreline Fencing	70%	SWRM Cost Share, Lake Grants, NRCS	2
Wetland Restoration	70%	SWRM Cost Share, NRCS	1
Critical Area Stabilization	70%	SWRM Cost Share, NRCS	1
Headland Planting	$95.00/acre	SWRM Cost Share, NRCS	10
Barnyard Runoff System	70%	SWRM Cost Share, NRCS	As needed
Lakeshore Restoration	70%	SWRM Cost Share, Lake Grants	2

Practices may be added at the discretion of the SWCD Department Head; annual outcomes are dependent on State funding and, to some degree, the economy.

Funding

For 2011, SWCD has the following funding options:

- $60,931 in bonding funds
- $3500 in SEG funds
- $15,000 NMFE grant
- NRCS EQIP funding
- Two local lake groups, having obtained lake protection grants, have requested assistance in installing BMP's in their respective watersheds.
- The City of Cumberland Nutrient Trading Program continues to fund approximately 800 acres of no-till (plus soil tests), contributing $14,000 - $16,000 annually.
- In 2010, two projects were completed with the assistance of two lake groups, who contributed the grant recipient's share of the costs. These opportunities, while very site-specific, will continue to be explored.

GENERAL INFORMATION AND EDUCATION STRATEGY

Newsletters

Publish an annual newsletter for farmers and other rural landowners of Barron County. This newsletter will address a variety of issues, including soil erosion and conservation, water quality, groundwater, conservation programs, etc. Funds will be requested from the Barron County Board of Supervisors for this newsletter.

The annual Barron County Lakeshore Resident Newsletter will be published online.

Wisconsin Envirothon

Sponsor an annual Land Judging Contest for area school districts. This would involve the High School FFA Chapters and other interested youth organizations.

SWCD Web Page

In conjunction with the Barron County Web Page, the Soil & Water Conservation Department will have a section of the web page. The web page will include personnel, services offered, and a schedule of upcoming events.

Continue the following annual education programs:

Poster Contest
Speaking Contest
Conservation Camp
Sixth Grade Conservation Tour
High School Senior Scholarship
High School Environmental Days and Storm Sewer Stenciling
Earth Day Celebration

The Poster and Speaking Contests will be upgraded, using video presentations of annual themes to increase interest. We will assist schools to enhance Earth Day Celebrations.

No-till Packets

As protecting our soil resources is our first priority, no-till is an important component of the plan; it also has the added benefit of helping to keep phosphorus out of our waters. Success with no-till requires an adjustment in management techniques and those new to it can get discouraged by low yields. Those interested are given a No-till Packet to get them started. This information is designed to guide those who are inexperienced through the learning curve quickly and prevent common missteps that can affect productivity. It offers information on proper soil temperature, soil compaction and weed control strategies among other topics.

STAFFING

POSITION	SALARY & BENEFITS	STATE %	STATE FUNDED	COUNTY FUNDED
County Conservationist/Technician	$74,821	100%	$74,821	$0.00
Conservation Planner	$74,183	70%	$51,928	$22,255
Conservation Specialist I	$66,960	50%	$5288*	$61,672
Secretary	$42,098	50%	$0.00*	$42,098
TOTAL	**$258,062**		**$132,037**	**$126,025**

The Soil & Water Conservation Department has a staff of four: County Conservationist-Technician, Conservation Planner, Conservation Specialist I and Secretary. For 2011, the department salary and benefits will total $258,062 and our State staffing allocation is $132, 037. Using the formula of 100%-first position, 70%-second position and 50% for all others, the allocation does not meet statutory requirements but results in a $49,241 shortfall. Amounts are based on 2011 figures; the staffing allocation of $132,037 does not meet statutory requirements.*

In late 2009, Barron County consolidated several departments into the Land Services Department under the direction of the Director of Land Services/Zoning Administrator. The duties of County Conservationist and County Technician were combined into one position. We are now in the same department as the GIS specialist, which is a benefit.

Coordination with Other Agencies

The County has partnered with many agencies over the years in our conservation efforts. These include:

USDA-NRCS
USDA-FSA
Zoning Administration
UW-Extension
Department of Natural Resources
Lake Districts & Associations

- The SWCD and NRCS, co-located for many years, have shared the workload generated by our respective conservation programs. This coordination benefits both agencies and enables us to provide quality assistance to landowners.

- FSA provides necessary assistance to both organizations.

- SWCD works with FSA on CREP projects and benefits from their association with NRCS.

- The SWCD works closely with Zoning on the development and conversion of agriculture lands and lakeshore issues. As both agencies are now part of the larger Land Services Department, we anticipate more shared duties in the future.

- The SWCD works with personnel from UW Extension on a regular basis and shares an oversight committee. UW Extension will provide agronomy assistance for the nutrient management planning as well as other issues relating to crop production, manure management, conservation education, etc.

- The SWCD and DNR coordinate on stormwater issues, lake protection grants, CAFOs and other issues. The Barron County SWCD and the Forestry Department of the DNR, located in Barron, together own 3 tree planters and a brush mower.

- The SWCD works with lake districts and associations on a variety of issues including grant projects, invasive species education and eradication, lakeshore rehabilitation and lake group structure.

PLAN MONITORING AND EVALUATION

Each goal and action item in the work plan will be evaluated for effectiveness in addressing the resource issue. Evaluation methods may vary based on the specific action but most are straightforward, i.e. number of acres or practices installed. Examples of evaluation methods that may be used include: completion of the action item, written survey/evaluation by participants, funding acquisition, etc. Monitoring of action impacts on the resource can be completed by a variety of methods including but not limited to:

Annual Soil Transect Surveys
Lakes Self Help Monitoring Program
Natural Resource Inventory (USDA)
GIS Tracking
Accomplishment Reports
Annual FPP Self Certification

GIS tracking of projects will be used evaluate program effectiveness as well as compliance with State standards. Information layers will include:

- State prohibition violation sites
- Acres of nutrient management planning
- Active, temporarily idle, idle and closed manure storage facilities
- Grassed waterways, decommissioned wells, critical areas stabilized, wetland restorations
- Acres of no-till funded, annually
- Buffers, possible sites and installations
- FPP parcel identification

An annual evaluation of the Barron County Land & Water Resource Management Plan will be completed by the Land Conservation Committee. This plan is intended to be a working document and will be updated on a regular basis. Annual accomplishment reports will be sent to DATCP detailing completed projects.

Ordinances

Barron County currently has a manure storage facility ordinance, an illegal transport of aquatic plants and invasive animals ordinance, and an ordinance for implementing NR 135, the Non-Metallic Mining Law. All are available on the Barron County website. These ordinances will be used as tools to achieve our objectives for the county's resource concerns and assist in enforcing manure prohibitions.

CONCLUSION

The Barron County Land and Water Resource Management Plan will provide an integrated approach to soil and water conservation of our local resources. We have looked at the resources in Barron County, identified the highest priority areas and identified the primary sources of non-point pollution.

In the past thirty years, there have been six watershed based water quality projects in Barron County. They include the *Staples Lake Lake Management Project;* the *Upper Pine Creek Farmer's Fund Project;* three priority watershed projects: the *Hay River,* the *Yellow River* and the *South Fork Hay River*; and the *Lake Desair Watershed Project*. In these six watershed projects, while there were some efforts made to install soil conservation measures, the projects focused on keeping animal wastes out of our streams and lakes. These projects were successful and did improve water quality. Recently the WDNR has added many stream segments in the county as supporting a trout fishery where formerly they did not.

However it has been shown in numerous studies that the principle non-point pollutants from agricultural watersheds are sediment and phosphorous from soil erosion of cropland. Our primary goal must be soil conservation; if not, we are ignoring the latest research in soil and water conservation.

While the public wants us to control soil erosion for the sole purpose of water quality, we must rise above that goal and control soil erosion for the purpose of preserving our soil for generations to come. We have proven many times that water quality can be improved, and the water resource can be rehabilitated. However, soil, once it is eroded away, cannot be recovered, rehabilitated, rebuilt or in any way renewed.

The face of farming continues to change in Barron County as the dairy cows become concentrated on fewer, larger farms. Other areas are being more intensively cropped for cash grain commodities. These changes bring the potential for increased pollution, but also increased levels of management to deal with these issues. We must actively assist the land managers of the county in finding methods to protect the soil for the future.

APPENDIX A – References

PHOSPHORUS CONTRIBUTION

Studies Documenting Phosphorous Contribution from Cropland

- Prediction of Suspended Solids and Total Phosphorous Yields in the Red Cedar River Drainage System. Completed by Sanjay Syal, Red Cedar River Basin Project, 1996

  Results

Source	Phosphorous Load
Point Pollution	8%
Barnyard Runoff	8.6%
Urban	6.6%
Cropland	61.5%
Forest and Pasture	15.3%

- Another study of the Red Cedar River Watershed was conducted by the DNR, in which they referenced several reports on phosphorous (including the above study). When completed the DNR issued the report titled, Phosphorous Levels in the Red Cedar River Basin – A Source of Concern. That study indicated **66.8%** of the phosphorous came from cropland.

- Reduction of point sources, 1990 to 2010 comparison, page 35
  1990 figures: Ken Schreiber, Red Cedar River/Tainter Lake Phosphorus Assessment
  2010 figures: WDNR

SOIL LOSS

- Barron County Soil Erosion Transect Survey
  Survey Conducted - 1998 through 2005
  2008 through 2010

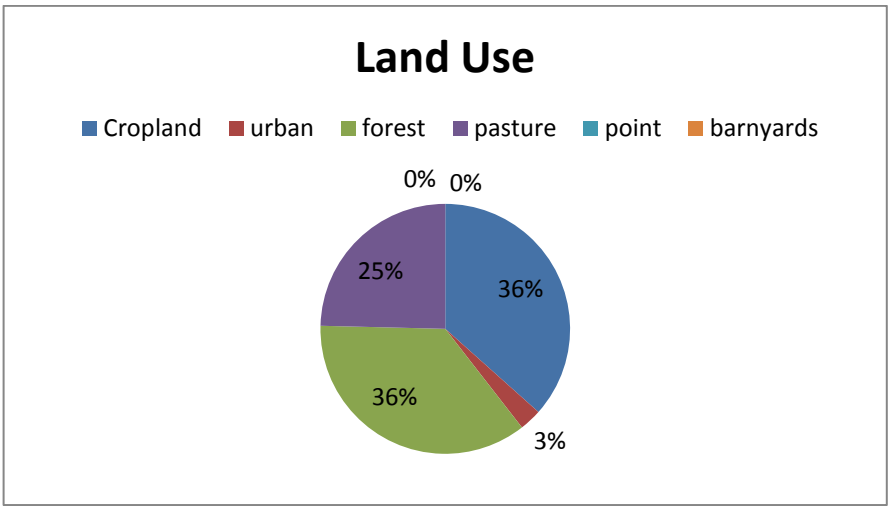
- Barron County Soil Survey - 1940
  1990

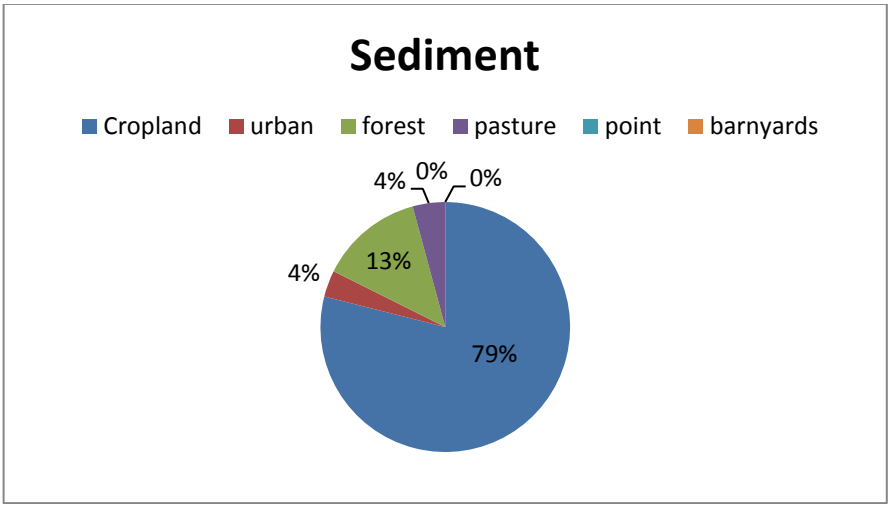
- Lower Chippewa River Basin – Water Quality Management Plan

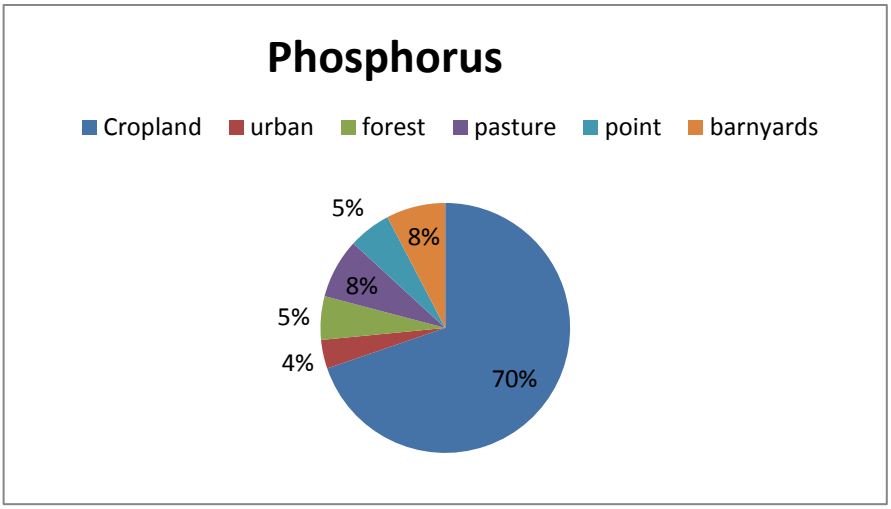
- Wisconsin Department of Natural Resources, Report to Red Cedar River Basin Project, July 1999

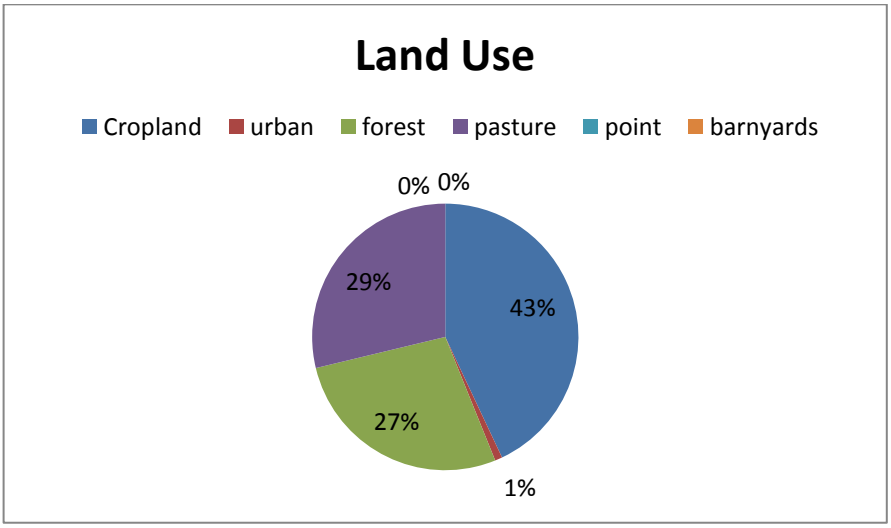
APPENDIX B – Phosphorus & Sediment Delivery

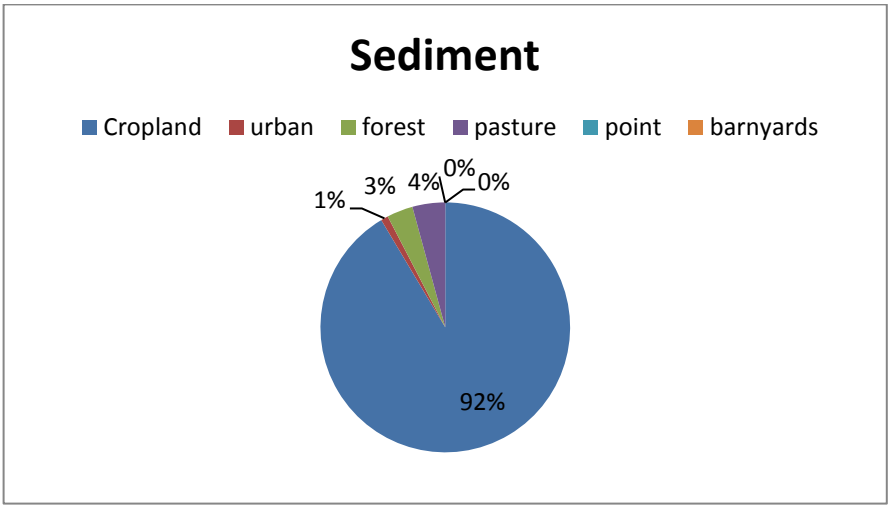
Hay River Watershed

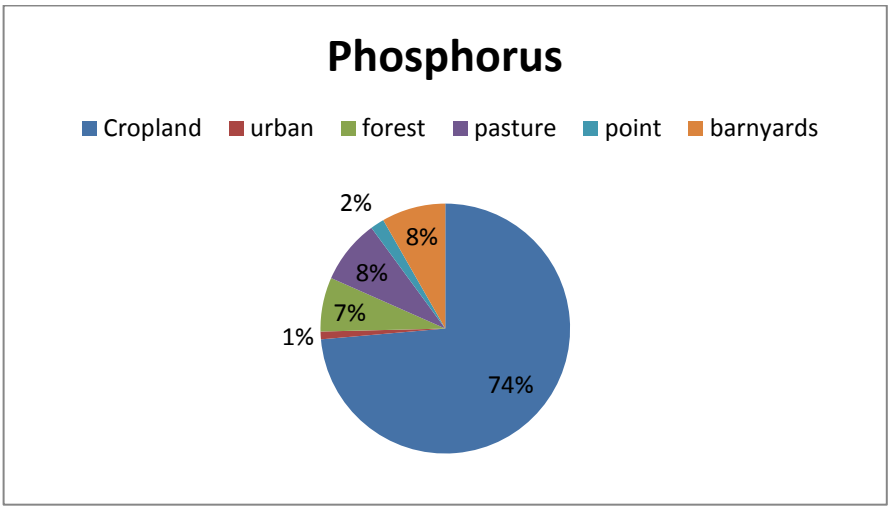




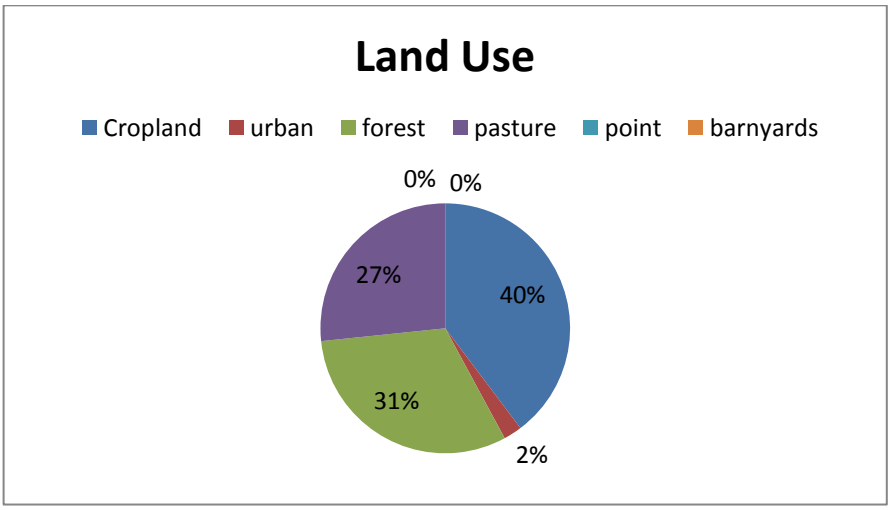


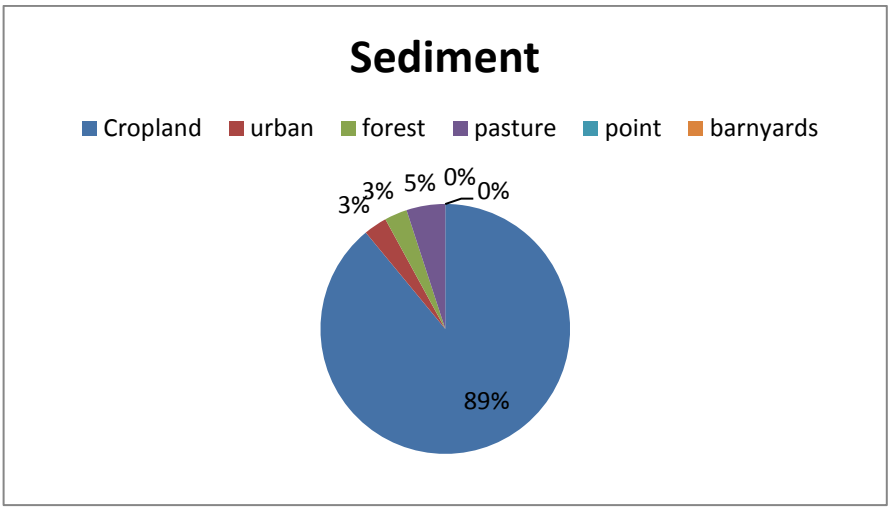

Land Use
Cropland
urban
forest
pasture
point
barnyards
0%
0%
29%
43%
27%
1%

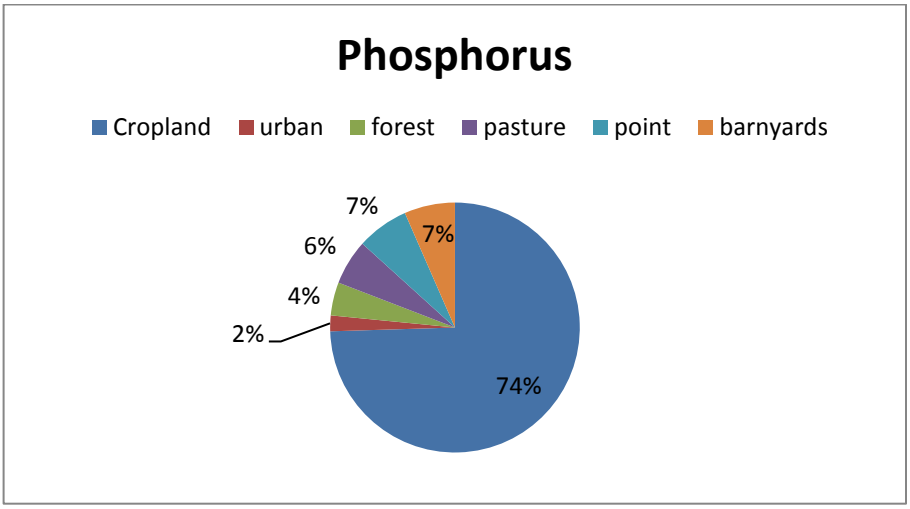

Sediment
Cropland
urban
forest
pasture
point
barnyards
1%
3%
4%
0%
0%
92%

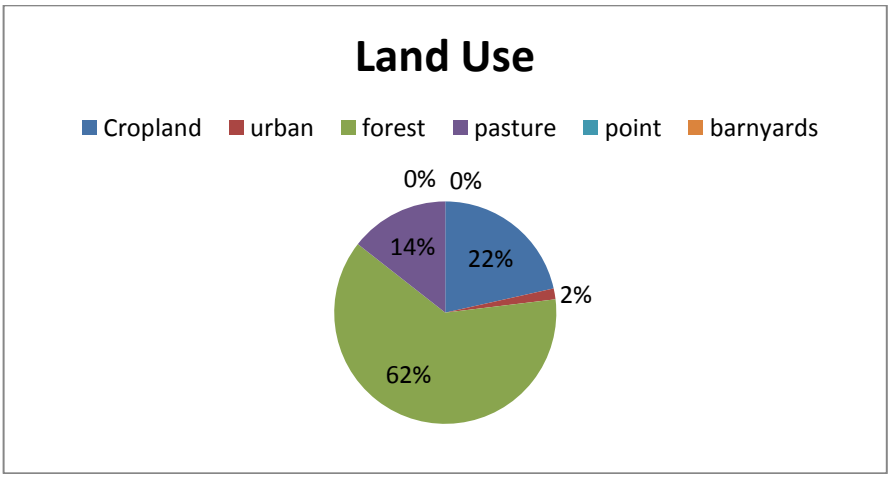

Phosphorus
Cropland
urban
forest
pasture
point
barnyards
2%
8%
8%
7%
1%
74%

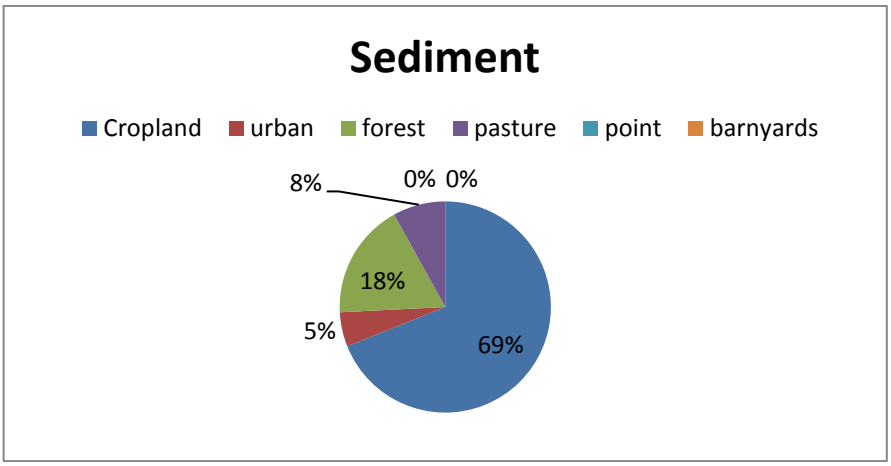
Yellow River Watershed

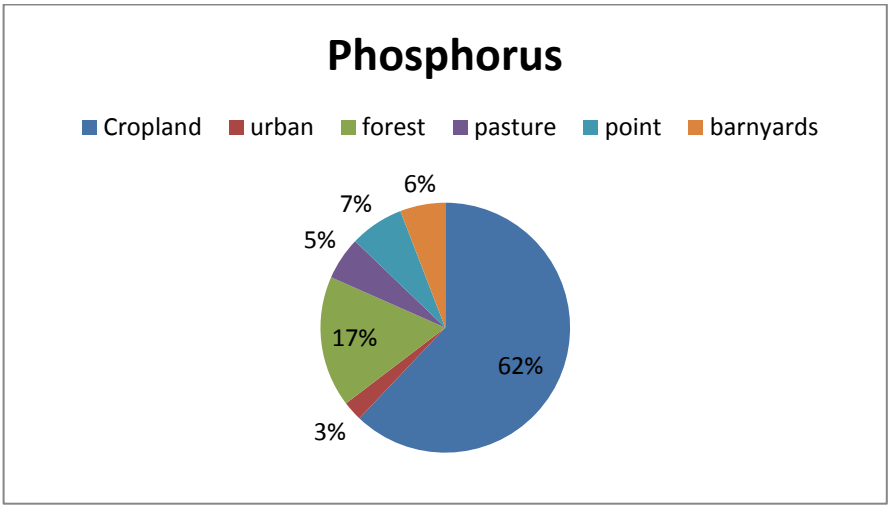






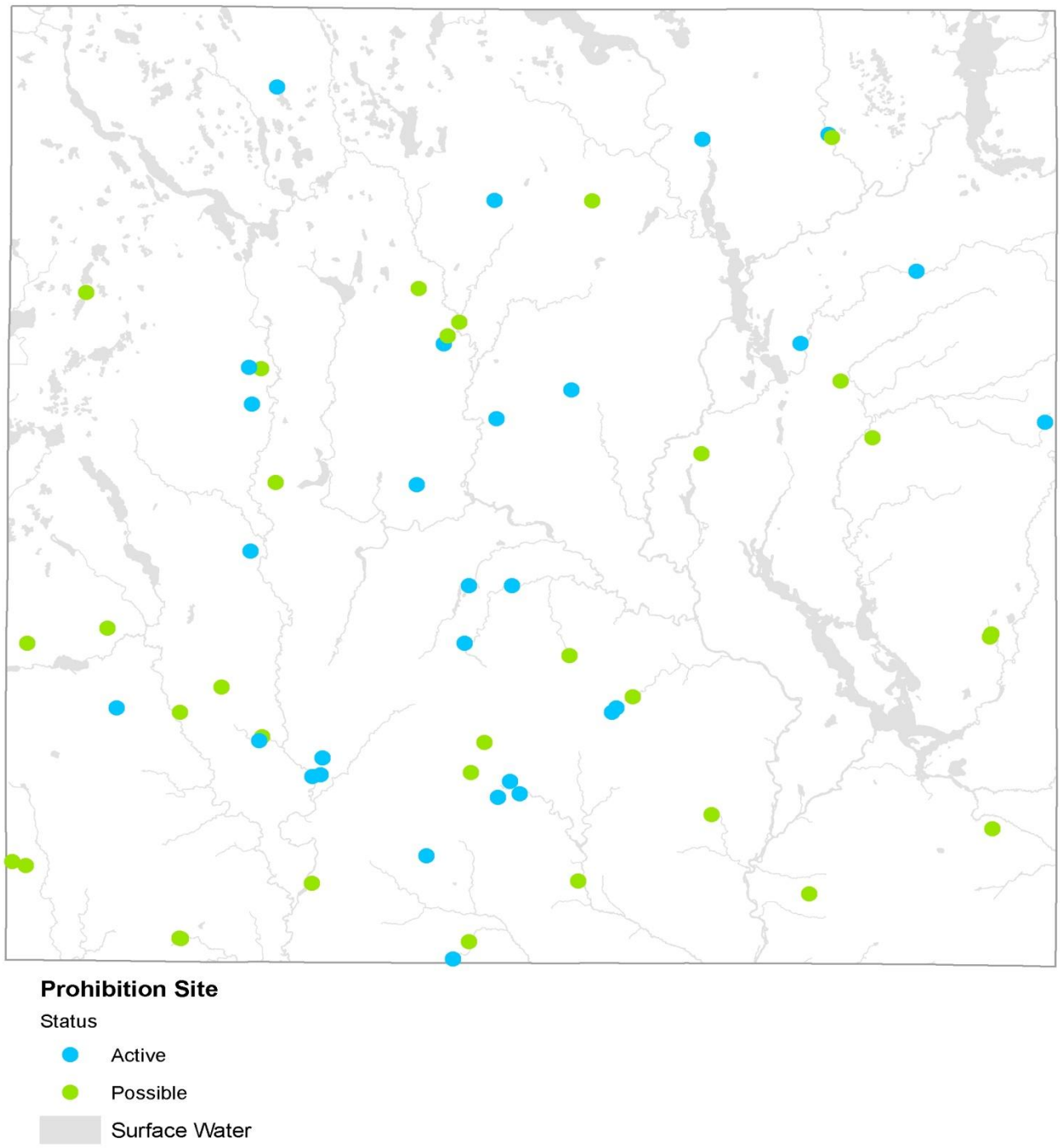




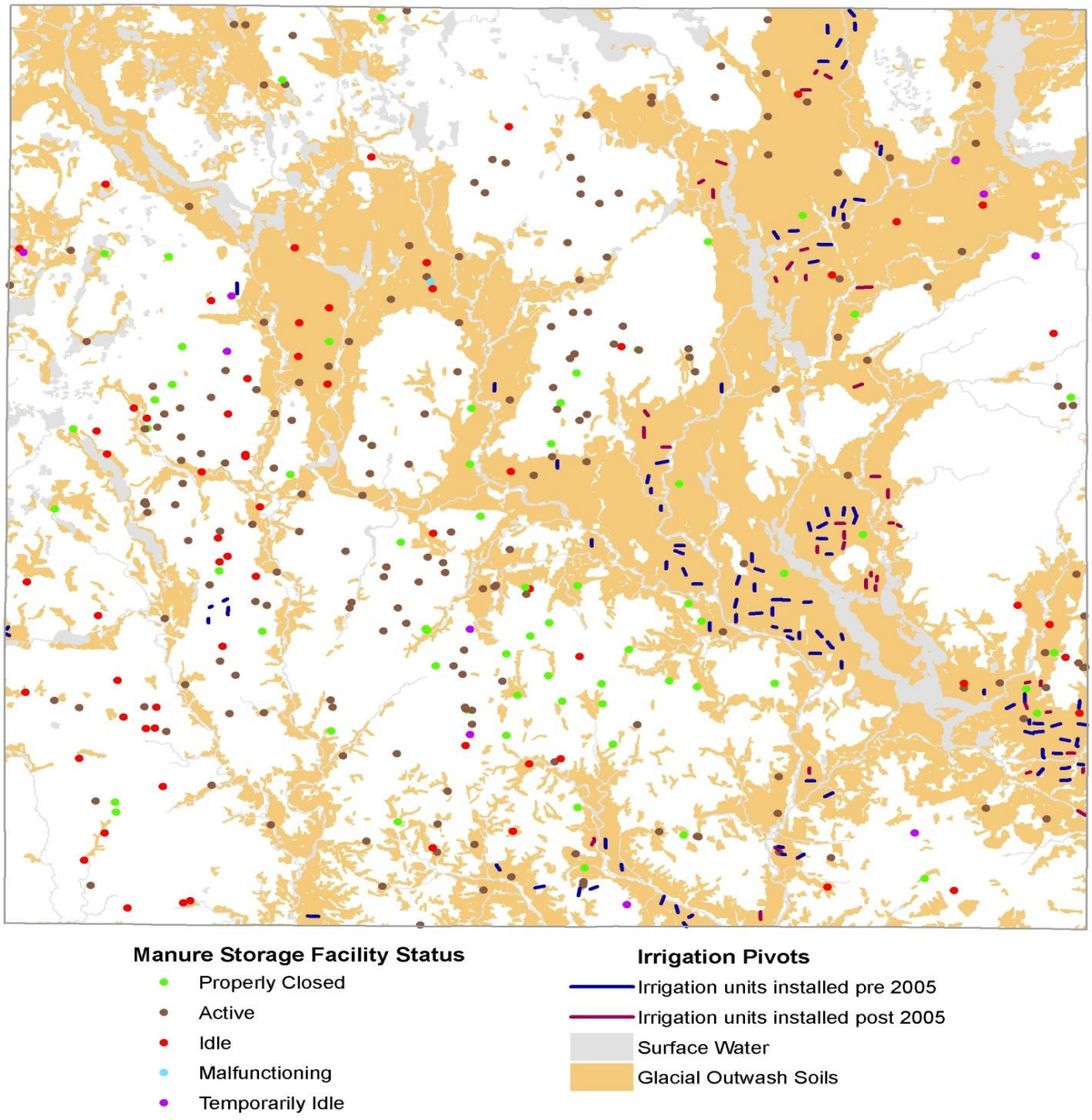


Wisconsin Department of Natural Resources, Report to Red Cedar River Basin Project, July 1999

APPENDIX C – Map of Prohibition Sites



APPENDIX D – Map of Potential Groundwater Impact Sites



APPENDIX E – Livestock Siting Law

The Livestock Facility Siting Law consists of State Statute ss. 93.90 and Administrative Rule (ATCP 51), which establish state standards and procedures local governments must use if they choose to require conditional use or other permits for siting new and expanded livestock operations. The siting statute affects local ordinances that require conditional use or other similar permits, but does not affect other ordinances such as shoreland and flood plain zoning. The statute limits the exclusion of livestock facilities from agricultural zoning districts by local units of government. It also created the Livestock Facility Siting Review Board to hear appeals concerning local permit decisions.

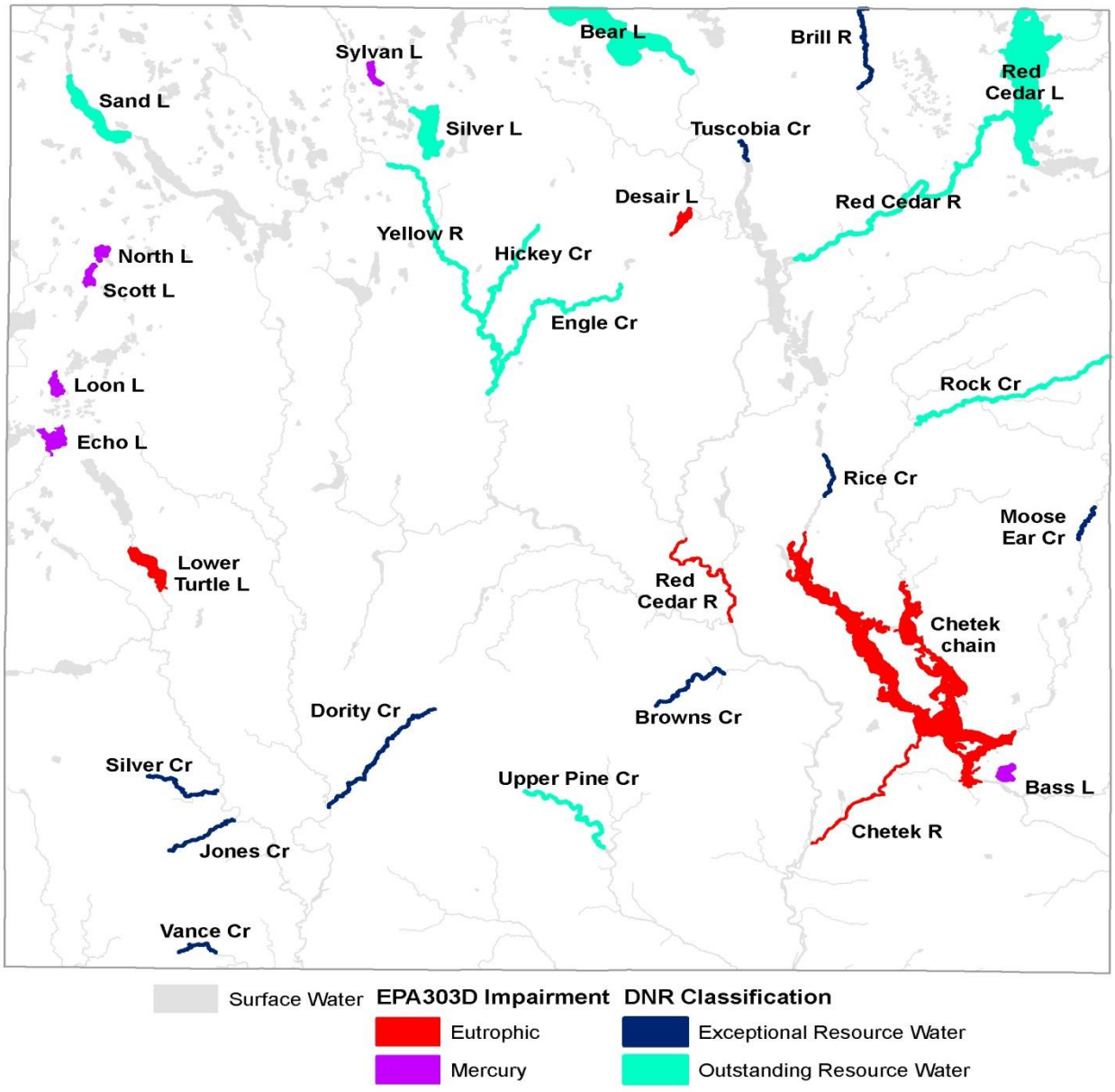
The law is implemented by Barron County in townships with Exclusive Agricultural Zoning. Maple Plain, Crystal Lake, Almena, Turtle Lake, Cumberland, Stanfold, Barron, Maple Grove, Dallas, Oak Grove, Rice Lake, Stanley, Prairie Lake and Sumner.

Provisions of the siting law can be incorporated into local ordinance at any time. ATCP 51 became effective on May 1, 2006 and existing ordinances had to be revised by November 1, 2006 to be enforceable, or to keep a permit threshold lower than 500 animal units. Barron County uses the state standards. Local governments must use the application worksheets in the rule to determine if a proposed facility meets these standards:

- Property line and road setbacks
- Management and training plans
- Odor management
- Nutrient management
- Manure storage facilities
- Runoff management

Reviews are done by Soil & Water Conservation staff utilizing the State checklist and hearings are held by the Zoning Board of Adjustment.

APPENDIX F – Surface Water Designation



Outstanding Resource Waters: provide outstanding recreational opportunities, support valuable fisheries and wildlife habitat, have good water quality, and are not significantly impacted by human activities. ORW's in Barron County are:

- Bear Lake
- Big Sand Lake
- Engle Creek
- Hickey Creek
- Silver Lake
- Red Cedar Lake
- Upper Pine Creek
- Yellow River

Exceptional Resource Waters: exhibits the same high quality resource values as outstanding waters, but may be affected by point source pollution or have the potential for future discharge from a small sewer community. The county's ERWs are:

- Brill River
- Brown Creek
- Dority Creek
- Jones Creek
- Moose Ear Creek
- Rice Creek
- Tuscobia Creek
- Vance Creek
- portions of Silver Creek

Impaired Waters

NAME	POLLUTANT	IMPAIRMENT	303 Status
Bass Lake	Mercury	Contaminated fish tissue	Listed
Lake Chetek	Total Phosphorus	Eutrophication	Listed
Chetek River	Total Phosphorus	Low DO, Eutrophication	Listed
Echo Lake	Mercury	Contaminated fish tissue	Listed
Lake Desair	Sediment, Phosphorus	Eutrophication	Listed
Loon Lake	Mercury	Contaminated fish tissue	Listed
Lower Turtle Lake	Total Phosphorus	Eutrophication	Proposed
Mud Lake	Total Phosphorus	Eutrophication	Listed
North Lake	Mercury	Contaminated fish tissue	Listed
Pokegama Lake	Total Phosphorus	Eutrophication	Listed
Prairie Lake	Total Phosphorus	Degraded habitat	Listed
Red Cedar River – portions	Total Phosphorus	Low DO	Listed
Scott Lake	Mercury	Contaminated fish tissue	Listed
Sylvan Lake	Mercury	Contaminated fish tissue	Listed
Tenmile Lake	Total Phosphorus	Eutrophication	Listed

APPENDIX G - Assessment of Streams and Rivers

In 2000, a streambank inventory was completed on the following tributaries to locate prohibition sites. Although not included then, the mainline streams and upland areas have been added for 2010.

The Red Cedar River and Its Tributaries

Located in the northern portion of the Lower Chippewa River Basin, the Red Cedar River is a major tributary to the Chippewa River. The Red Cedar River watershed, which begins in southwest Sawyer and southeast Washburn Counties, drains a portion of Rusk County, and a large area of Barron County. This river drains thousands of acres of agricultural land. The major urban area in the watershed is the City of Rice Lake.

Because of excess nutrient runoff primarily from agriculture land, there is excess aquatic plant growth in the river. Plant respiration at night causes regular nocturnal reductions in dissolved oxygen levels. Because of these impacts from non-point pollution, the Red Cedar River has been designed as an impaired water body on the EPA 303(d) list.

Within the boundaries of Barron County there are 19 tributaries that drain to the Red Cedar River.

TRIBUTARY	Overflowing AWSF		Stacking manure in floodplain		Uncontrolled runoff from feedlot/BY		Shoreline vegetation destroyed by livestock access		Cropland buffer site	
	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010
Barker Creek					1		3	1	57	57
Bear Creek									21	21
Brill River			1		3	1	2	1	20	20
Brown's Creek			1	1	2		4	1	18	18
Cranberry Creek						1			2	2
Cruikshank Creek									9	9
Little Bear Creek							2		18	18
Lower Pine Creek						3	1		35	34
Meadow Creek					1		1		3	3

The Red Cedar Tributaries cont.

TRIBUTARY	Overflowing AWSF		Stacking manure in floodplain		Uncontrolled runoff from feedlot/BY		Shoreline vegetation destroyed by livestock access		Cropland buffer site	
	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010
Pigeon Creek										
Sioux Creek						1	3		9	9
So. Fork Lower Pine Creek					1				4	4
Spring Creek-Dallas Township							1		11	11
Spring Creek – Doyle & Rice Lake Townships						1	1	1	29	29
Sucker Creek										
Tiller Creek					1	1	1		14	14
Tuscobia Creek						1	3		5	5
Upper Pine Creek – North of Dallas			1		3	4	5	1	44	44
Upper Pine Creek – South of Dallas						1	2		22	22
Desair Creek	n/a		n/a		n/a	1	n/a		n/a	n/a

The Yellow River and Its Tributaries

The watershed for the Yellow River begins in southeastern Burnett and southwestern Washburn counties. The Yellow River then flows southeast through much of Barron County and enters the Red Cedar River south of the Village of Cameron. From County Hwy B to within several miles of the City of Barron the Yellow River is a cold water stream. In some of the northern portions of the river there is excellent trout fishing. Below the City of Barron, the only urban area in this watershed, the fishery is warm water, primarily small mouth bass.

Much of the Yellow River suffers from poor water quality due primarily to agriculture runoff. The bed load of the river includes large quantities of fine sediments. A priority watershed project has been completed on the Yellow River, and though it helped significantly, more work needs to be done. Much more intensive soil conservation needs to be done along with shoreline buffers.

Within the boundaries of Barron County there are 7 perennial tributaries that drain to the Yellow River.

TRIBUTARY	Overflowing AWSF		Stacking manure in floodplain		Uncontrolled runoff from feedlot/BY		Shoreline vegetation destroyed by livestock access		Cropland buffer site	
	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010
Engle Creek					1		1		7	7
Fourmile Creek						1	4		18	18
Granite Creek					1		1		1	1
Hickey Creek					1	1	4		11	11
Johnson Creek					1	1	1		10	10
Quaderer's Creek					1	1	2		14	14
Vermillion River						2				
Yellow River	n/a		n/a		n/a	6	n/a		n/a	n/a

The Chetek River

The Chetek Chain of Lakes and Its Tributaries

The Chetek River is perhaps the shortest river in Wisconsin, beginning at the dam in the City of Chetek and flowing southwest 5 miles to the Red Cedar River. A lumber company built the dam that creates the Chetek Chain of Lakes in approximately 1885. The Chetek Chain consists of 5 lakes: Ten Mile Lake, Chetek Lake, Pokegama Lake, Mud (or Ojaski) Lake and Prairie Lake. These five lakes add up to nearly 3800 acres.

The Chetek Chain has poor to very poor water quality due to two main sources. When the dam was built, the area that became the flowage had been a large, rich wetland growing hundreds of acres of wild rice. The fertility of the wetland caused the newly formed lake to support algae blooms almost immediately. The second source is many years of historic logging, agricultural and residential runoff.

There are 8 tributary streams that flow into the Chetek Chain.

TRIBUTARY	Overflowing AWSF		Stacking manure in floodplain		Uncontrolled runoff from feedlot/BY		Shoreline vegetation destroyed by livestock access		Cropland buffer site	
	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010
Beaver Creek						1			2	2
German Creek					1				1	1
Moose Ear Creek					4	1		1	5	5
Pokegama Creek					2	2			7	7
Rice Creek							2		3	3
Rock Creek						1			3	3
Silver Creek									7	7
Ten Mile Creek					4				5	5

The Hay River and Its Tributaries

The headwaters of the Hay River are Beaver Dam Lake, located in northwestern Barron County. The Hay River begins at the outlet of Beaver Dam Lake, and flows south nearly the full length of the county. There is a dam in the village of Prairie Farm, which creates a 29-acre warmwater flowage. The Hay River is classified as a Class II trout fishery above Prairie Farm. Sediment and nutrients are the major impacts on the stream. Below Prairie Farm the water quality is somewhat better but is still in need of improvement. The fishery below the dam includes smallmouth bass, walleyes, and northern pike. Although this watershed contains small towns and villages, the City of Cumberland remains the only urban area in Barron County on the Hay River.

The cropland slopes of the Hay River Watershed are steeper than any other watershed in Barron County and the watershed is farmed quite intensively. Therefore, soil erosion and the nutrients that accompany the soil are the major non-point problem.

TRIBUTARY	Overflowing AWSF		Stacking manure in floodplain		Uncontrolled runoff from feedlot/BY		Shoreline vegetation destroyed by livestock access		Cropland buffer site	
	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010
Conners Creek						2	2		1	1
Dority Creek			1		2		2		8	8
Jones Creek							1		8	8
Lightning Creek										
Moon Creek					1	1			2	1
Silver Creek									1	1
South Forth of Hay River					1				7	7
Tainter Creek					2	1	2	1	3	3
Turtle Creek						4	2		3	1
Vance Creek						1	4		15	15
Hay River	n/a		n/a	1	n/a	6	n/a	1	n/a	n/a

NOTE: An additional possible prohibition site has been located in the Apple River Watershed; it is uncontrolled runoff from a feedlot or barnyard.

APPENDIX H – Soil Erosion Transect Survey

The soil erosion transect survey has been completed 8 years in Barron County. The following information gathered from the transect survey was used in determining priorities and goals for the Land and Water Resource Management Plan. In the periods 1998 - 2005, 2009 - 2010:

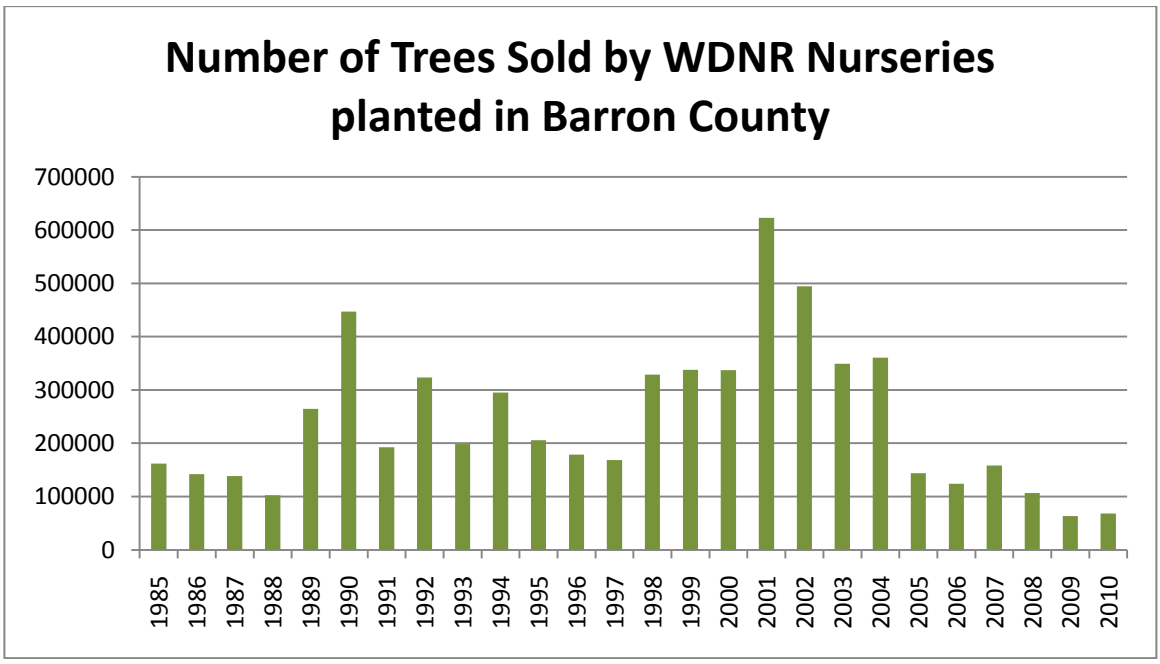
Soil Loss and Residue Cover by Crop (source soil erosion transect survey)

Year	Corn: % ac with > 30% residue	Soybeans: % ac with > 30% residue	USLE Average Soil Loss All cropland
1998	8%	5%	3.3
1999	8%	5.5%	3.0
2000	7%	14%	3.0
2001	15.5%	36.5%	3.1
2002	28%	40%	2.7
2003	19%	42%	3.1
2004	30%	55%	2.8
2005	25%	55%	3.0
2009	38%	59%	n/a
2010	18%*	59%	2.1

*Due to weather irregularities, we suspect our mulch till residue numbers were estimated low.

The Average Soil Loss numbers could not be run for 2009 as the previous year's data would be needed.

APPENDIX I– Tree Planting



In addition to the seedlings sold by WDNR, SWCD has an annual tree program, selling 35,000 or more transplants each year. These are mainly conifers although some hardwoods and a number of wildlife shrubs are also offered. All are native to Wisconsin and easy to grow.

APPENDIX J– Public Participation

Citizen Advisory Committee (CAC)
Meetings of the 7 member Citizen Advisory Committee were held on January 4 and 24, 2011; meeting minutes are available for review in the Soil & Water Conservation Department.

Public Notice
The public hearing was held at 4:00 p.m. on March 28, 2011; minutes and affidavits of publication from local papers are on file at the Soil & Water Conservation Department.

Barron County
Soil & Water Conservation Department
AGRICULTURE SERVICE CENTER
330 East LaSalle Avenue, Room 221
Barron, Wisconsin 54812
715-537-6315

Please publish this legal notice for 2 weeks and send an affidavit of publication to the address above by the hearing date of 3/28/11.

Legal Notice:
March 16, 2011

PUBLIC NOTICE is hereby given to all persons in the County of Barron, Wisconsin that a public hearing will be held on Monday, March 28, 2011 at 4:00 p.m. in room 2152 of the Government Center, 330 East LaSalle Avenue, Barron, Wisconsin, to solicit comments on the proposed 2011 Land & Water Resource Management Plan for Barron County.

A copy of the proposed plan or a summary of the plan can be obtained from the Barron County Soil & Water Conservation Department at 537-6315.

APPENDIX K – Lake Group Relationships/Grants

The SWCD will continue to assist lake groups in on various projects in their watersheds including:

- *Assist with projects for lake protection grants*
- *Coordinating lake group funding for conservation runoff projects on farms*

Below is a report on a recent watershed project.

Lake Desair Watershed Project Update
By Nicole Hodkiewicz & Rod Olson
Desair Lake Restoration, Inc.

In 2009, as part of its ongoing work to improve water quality and with the help of the Barron County Soil & Water Conservation Department, Desair Lake Restoration, Inc. (DLR) applied for and received a lake protection grant from the WDNR. The projects included are multiple areas of streambank stabilization, pubic boat landing rain garden and grass swales, upper watershed stormwater detention ponds, and a further alum treatment study.

In August of 2010, work began on the steambanks, which was determined to be the highest priority project. The first project took place, at five separate sections totaling approximately 710 feet, along the northwest tributary to the lake. Over five days the contractor removed huge stumps and graded the steep, unstable banks to a 4:1 slope, and placed geotextile fabric and four feet of fieldstone on the outside banks. Permanent reinforcement matting was laid down above the fieldstone, stapled, and covered with two inches of soil. The slopes were then seeded with native woodland edge/savanna seed mix and oats for a fall cover crop. Erosion mat was placed over the permanent matting. Several DLR members and the landowners did all the handwork including raking to prepare a seedbed, seeding, and laying permanent and erosion mating.

In September, the contractor began construction on streambank stabilization of the southeast tributary to the lake. This involved approximately 100 feet of stabilization at three separate locations. The same treatment, as at the northwest tributary, was performed. Again, several DLR members worked together to complete all the raking, seeding, and matting.

The projects have been subjected to several heavy rains and so far have been holding. The summer of 2011 will see the native seeds sprout.

This current project continues watershed work begun the 1990's; previously, gabion dams, a sediment basin and streambank work were done. SWCD values the good working relationship we have developed with this lake association.

GLOSSARY

AWAC	Animal Waste Advisory Committee - convened a number of years ago to address the problem of animal waste entering the waters of Wisconsin. The AWAC committee came up with these four AWAC prohibitions. • There shall be no overflowing of manure storage facilities; • No uncontrolled runoff from feedlots; • No stacking of manure in the floodplain or shoreline; • No grazing on the shoreline of any waters of Wisconsin to the point where it destroys the vegetation.
AWSF	Animal Waste Storage Facility - Any excavation in the soil intended for the storage or holding of manure; categorized as **active**: in use; **temporarily idle**: not currently in use but adequate livestock facilities and land exist to allow for future use; or **idle**: not had additional manure added for one year and is unlikely to be used due to lack of land or livestock facilities on site.
BERT	Barnyard Evaluation Rating Tool (BERT) Is an NRCS spreadsheet used to evaluate a concentrated feeding area for runoff potential. Feeding area, number and type of cattle, tributary area contributing and buffer areas below the site are factored to determine if it is a resource concern based on its potential delivery of Phosphorus to downstream waters.
Buffer	A buffer is an area of grass or other vegetation designed to slow runoff and catch sediment and other pollutants from feedlots and cropland before entering a body of water.
CCA	Certified Crop Advisor is a professional position for assisting farmers in all areas of agronomy, pest control and nutrient management issues. Certified Crop Advisors are trained and receive certification and licensing to practice nutrient management planning and other aspects of agronomy.
Endangered Species	The population of a species of plant or animal that is so declined that without intervention to improve the population of the species, the future of the species would be in jeopardy.
Eurasian Milfoil	Eurasian milfoil is an aquatic plant not native to North America that has invaded many lakes. When natural aquatic

	vegetation is removed Eurasian milfoil will enter the area where there is no competition and grow out of control to the point where it chokes off all forms of native vegetation, habitat and navigation in that area of the lake.
HEL	Highly Erodible Land as defined in the USDA Farm Bill, is land that is steep enough and has long enough slopes that serious soil erosion will occur if conservation practices are not maintained.
Intermittent Stream	An intermittent stream or intermittent tributary is a channel or stream that is dry much of the time, but runs with water after a rain or snow melt. For legal purposes an intermittent stream is one that is located on the topographical maps with a broken line and three dots.
NHEL	Non Highly Erodible Land as defined by the USDA Farm Bill. Non HEL land is land that is less erosive than Highly Erodible Land. However Non HEL land can still erode given the lack of conservation practices and intensive precipitation.
Nutrient Management Plan	A) Nutrient management plan to protect groundwater is a nitrogen based plan that balances the available N, from all sources, to the crop needs. B) Nutrient management plan to protect surface water is a phosphorus based plan that balances the available P, from all sources, to the crop needs. Because most P is attached to soil particles, a nutrient management plan to protect surface waters must limit the movement of soil sediment from the field.
Prohibition Violation	A prohibition violation is a livestock situation in which it violates one of the four state AWAC prohibitions. (See AWAC)
Perennial Stream	A perennial stream or perennial tributary is one in which carries water at all times.
Purple Loosestrife	Purple loosestrife is a flowering plant that grows well in shallow water areas and wetlands. Purple loosestrife is native to Europe, which was brought to this country in the late 1800s, and has no natural predators. Purple loosestrife will enter a wetland and will out compete all other vegetation eventually destroying 90% of the biodiversity of the wetland.

Phosphorous	Phosphorous is a non-metallic element found in abundance in much of the earth's rock. Because rock is parent material to soil many soils are high in phosphorous. Phosphorous is one of the three major nutrients needed for plant growth. Phosphorous is not needed in large quantities to sustain a healthy aquatic environment, however when phosphorous enters an aquatic environment, aquatic plants and algae often grow out of control to nuisance levels.
Riparian	Riparian means next to water. A riparian owner is one that lives near a lake or river.
Soil Survey	A soil survey is a comprehensive map showing the topsoil and subsoil layers. A soil survey describes each soil type, its texture, structure and other characteristics. Soil surveys are used commonly by farmers, engineers, contractors, groundwater specialists and others to locate areas of soil and subsoil that would be ideal for their purposes.
Species of Special Concern	A species whose population or habitat has been decreased enough so that continued loss of population or habitat may cause the species to become threatened.
Sustainable	Sustainable indicates a balance between inputs and outputs. In a sustainable system, the production from a renewable resource will continue indefinitely at a balance between the yield and the resources needed to create that yield. For example, it is known that soil erosion occurs with most cropping systems because the ground is disturbed and exposed. The sustainable soil loss rate would then equal the soil formation rate.
Soil Erosion	Soil erosion is the process by which water or wind can move soil particles from one place to another. When the soil is left exposed or unprotected heavy rains or strong winds can move large quantities of soil, eventually eroding away the topsoil layer and leaving the soil unproductive.
Soil Quality	Soil quality is a measurement of the health of the soil. When soils are cropped intensively and nutrients and organic matter are not replaced, or when soil erosion occurs, soil quality can suffer greatly. Removal of organic matter, compaction by machinery, loss of water holding capacity and infiltration rates, and the reduction in the population of micro

	organisms, insects and other living organisms in the soil are all indications of poor soil quality. The loss of soil quality can have as negative effect on yields as the actual loss of soil from erosion.
Sediment	Fine grains of material, often soil that is moved from one location to another. Usually by water or wind and deposited underwater or in low areas of drainage. When water moves soil, the larger particles settle out first followed by the smaller and eventually the very small particles. Sediment of fine-grained soil covers crops; fills road ditches and covers the bottom of lakes and streams, destroying habitat.
Targeted Runoff Management Project	A targeted runoff management project is a two year intensive conservation project sponsored by the DNR, designed to correct non-point pollution sources in a small watershed area.
Tolerable Soil Loss Rate	Often expressed as "T" is the amount of soil erosion that government agencies have decided we can tolerate. Tolerable soil loss rates are expressed in the number of tons of soil loss per acre per year. Tolerable soil loss rates are generally three to four times greater than the soil formation rate.
Threatened Species	When a species of plant or animal population declines, under the Endangered Species Act, the first classification is Special Concern. If this species continues to decline it would then be classified as Threatened, followed by Endangered and if the population disappeared, it would be classified as Extinct. A species that is classified as Threatened indicates its population has declined significantly and if protection is not afforded to improve the population, it will soon become endangered.
TMDL	TMDL stands for Total Maximum Daily Load. This is that amount of pollution that can safely be discharged on a daily basis to that body of water without causing negative impacts to water quality and the aquatic environment.
USLE	Universal Soil Loss Equation is an equation developed years ago to predict how water and wind will move soil. The USLE is based on a factor for rainfall, a factor for slope and length of slope, a cropping factor, which pertains to cover, and a

	conservation practice cover. These are all factored into the equation to result in a measurement of the actual soil loss occurring. That is then compared to tolerable soil loss rate.
303(d) List	The 303(d) list is a list created by the US Environmental Protection Agency along with the Wisconsin DNR. The list contains all the lakes and rivers within a given state that have been classified as impaired. Bodies of water on the 303(d) list then receive higher priority for protection and conservation work.

ACRONYMS

APHIS	Animal and Plant Health Inspection Service
BMPs	Best Management Practices
CRP	Conservation Reserve Program
DATCP	Department of Agriculture, Trade and Consumer Protection
DNR	Department of Natural Resources
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
FPP	Farmland Preservation Program
FSA	Farm Service Agency
NPM	Nutrient and Pest Management
NPS	Non-Point Source Pollution
NRCS	Natural Resources Conservation Service
"T"	Soil Loss Tolerance
USDA	United States Department of Agriculture
UWEX	University of Wisconsin-Extension