

# Polk County

## Land and Water Resource Management Plan 2009



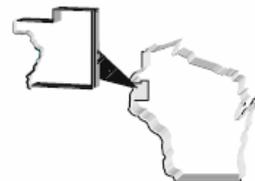
*Luck Elementary School Second Grade. 2008 Winners of the Battery Recycling Contest  
Earth Day Celebration*

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Randy Herman	Lake Resident
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Dave Hraychuck	Conservation Congress, Wisconsin Wildlife Federation
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# POLK COUNTY LAND AND WATER RESOURCE MANAGEMENT PLAN 2009

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## Executive Summary

*LWRD Mission: To preserve, protect, and enhance our natural resources.*



### Executive Summary

The Polk County Land and Water Resources Management Plan describes the strategy the Land and Water Resources Department (LWRD) will employ from 2010 –2019 to addresses agriculture and non-agriculture runoff management, stormwater discharge, shoreline management, soil conservation, invasive species and other environmental degradation that affects the natural resources of Polk County.

The goals and objectives identified in the Plan were determined by a citizen advisory committee of Polk County residents. These citizens gave their diverse opinions on current environmental concerns through a series of three meetings and offered a number of objectives for the Land and Water Resources Department and their partners to execute. The main concerns of the citizen advisory committee were organized into three goals, which will be addressed over the next five years in order to protect the natural resources of Polk County for the citizens. These goals are:

Goal 1. Protect the water quality of our groundwater, lakes, streams, rivers, creeks, and associated ecosystems.

Goal 2. Protect shorelines, undeveloped riparian land, wetlands, grasslands, forests, farmland, and agricultural resources to perpetuate the benefits they provide: habitat and associated native wildlife communities, clean water, clean air, carbon sequestration, aesthetic beauty, and recreational opportunities.

Goal 3. Support and develop the human resources in Polk County that manage our natural resources – both LWRD and volunteer management groups.

A public hearing was held August 24, 2009, to summarize the resource assessment and outline the strategy to Polk County residents. The Plan will be brought to the December 15, 2009, meeting for County Board of Supervisors' approval.

This plan specifies how the LWRD will implement NR 151 (Runoff Management). It involves identifying critical sites, offering cost-share and other programs, identifying

BMPs, monitoring and evaluating projects for compliance, conducting enforcement activities, tracking progress, and providing information and education. Also listed in the Land and Water Resource Management Plan is the plan development process, related management plans and ordinances, performance standards and prohibitions (Chapter 1); the Goals, Objectives and Activities of the Land and Water Resources Department (Chapter 2); NR 151 Implementation and Information and Education Strategies (Chapter 3); Monitoring and Evaluation (Chapter 4); the Two Year Work Plan (Chapter 5); a Resource Assessment (Appendix A); and the LWRD 2008 Annual Report (Appendix B).

Polk County is generally rural with a 2000 population of 41,319. Incorporated areas contain 36% of the population. Population is highest in the southwestern portion of the county where residential development is influenced by the county's proximity to Minneapolis and St. Paul, Minnesota and the surrounding metropolitan area. Recent trends (extrapolated from the number of sanitary permits issued) show development has slowed in Polk County since 2005 likely due to the economic hardships.

Polk County has an abundance of surface water resources with more than four hundred lakes distributed throughout the county. Homes and cottages ring most large lakes, and the shores of many smaller lakes and rivers are targets for the next round of residential development. Some lakes have been experiencing cultural eutrophication as a result. Groundwater is the source of almost all of the drinking water in the county. The quality of groundwater in Polk County is generally good although localized studies in Milltown and Eureka Townships have shown elevated nitrate concentrations above drinking water standards.

With the increased mobility of residents and visitors alike, recreational equipment, land and brush equipment, and other modes of transport have brought many invasive species into Polk County. Aquatic and terrestrial non-native, invasive species have been found in Polk County. The LWRD has been working with citizens to identify and manage infestations of curly leaf pondweed, Eurasian water milfoil, Japanese knotweed, and others. The monoculture that begins to form alters the integrity of the habitat, aesthetic beauty, recreational opportunities, property values, and quality of life in Polk County.

The number of farms has been decreasing for decades in Polk County. According to the Wisconsin Department of Revenue, the total number of acres taken out of agriculture between 1989 and 2007 was 117,815 (a 35% change in land use). In recent years, there has been a general decline in acres under hay production and an increase in acres planted to row crops. This more intensive land use leads to an increase in soil erosion. The 2007 transect survey determined the percentage of fields having soil loss less than "T" has declined by approximately 20% from 1999.

Polk County has local shoreland protection, zoning, subdivision, animal waste, and non-metallic mining ordinances. Enforcing these rules and assisting other agencies

with programs are part of our ongoing activities. Other activities to implement the NR 151 Standards include information and education strategies, write nutrient management plans, provide technical assistance to landowners and lakeshore owners, perform lake studies, collaborate with other agencies, working on a rivers classification system, set up demonstration sites of proper BMPs, control invasive species, and revise ordinances to offer better protection of resources.

The LWRM Plan identifies a need for 33,280 staffing hours in 2010 and 2011. A conservation practice budget of \$1,095,000 for these same two years is outlined in Chapter 5.

## **Chapter 1. Introduction**

As the political climate shifts with each passing election and turn of the economic roller coaster, so does the emphasis of natural resource protection. As progress and new developments are made in public education and technology, it seems a new surprise lurks just around the next corner. We gathered a committee of volunteers to talk about what faces us next in natural resource protection and discuss their concerns for Polk County in the near future. Their thoughts helped develop this Land and Water Management Plan. These volunteers had a broad background and variety of experiences, but we especially had a high representation of lake residents who were compelled to assist. The Citizen Advisory Committee developed a number of concerns, strategies, and activities that they would like to see the Land and Water Resources Department carry out for the next 5-10 years or until their goals are met. The Citizen Advisory Committee's biggest concern was that there would not be a unit left to care for the resources if they do not make their priorities known.

This plan reviews the natural resources in Polk County and the rules protecting them, offers a summary of the development and current land use practices, provides natural resource protection objectives and an implementation plan to meet them, and includes a two-year staffing plan for the Land and Water Resources Department. The activities are in-line with the County goals and mission, and Polk County will do their best to accomplish these goals to uphold the quality of life in Polk County for today's citizens and future generations.

These goals, objectives, and activities developed by the citizens (listed in Chapter 2) will guide the LWRD from 2010 through 2019. This plan includes a two-year implementation strategy, breakdown of staff time, and a preliminary budget, which may need to be adjusted to follow political will. Various private, local, state, and federal sources will be sought to fund department initiatives.

The principles guiding the integrity of this plan include using sound science, partnering to achieve maximum benefit, and communicating with Polk County residents. Scientific data and information will be the foundation for decision-making and planning, recognizing that differences exist between individual water bodies. Proper resource management will consider these differences to draw conclusions and recommend appropriate actions.

The Land and Water Resources Department will partner with local, state, and federal agencies and organizations to conserve our soil and water resources, reduce soil erosion, prevent nonpoint source pollution, enhance water quality, and control invasive species. The LWRD will enforce ordinances under its jurisdiction as well as assist those agencies with primary responsibility for enforcement of other rules. Enforcement of county ordinances depends on the involvement with other county departments. The LWRD will also assist other agencies with implementation of financial assistance programs.

Education and outreach activities have taken a new path from the traditional passing out of brochures and giving presentations. Social marketing research has found that a person's level of awareness about an issue is not the deciding factor in if they chose to participate in an activity or not. Conservation activities have had to become more innovative and persuasive to get the audience to change their behavior. Not only have we had to reach our target audience, but we've had to have convincing messages and a reason or example why a person should care. Communication with a variety of audiences and involvement is necessary for responsible stewardship. Communication is key to ensure an accepted plan and buy-in from local residents.

## Plan Requirements

The statutory requirements of this plan are administered by the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP). A County Land and Water Resource Management (LWRM) Planning Program was created through amendments to Chapter 92.10 of the Wisconsin Statutes in Wisconsin Act 27 (the 1997-1999 Biennial Budget Bill). The goal of the amendment was to create a planning process that would be locally led, flexible, and watershed-based with efficient leverage of economic resources. The first plans were approved in 1998. These plans are meant to guide the direction of the county government in assessing their resource conditions and needs, deciding how to best meet water quality goals and conservation objectives, and measuring progress towards meeting those goals. To be approved, the LWRM plan shall meet the requirements of Chapter ATCP 50, Wisconsin Administrative Code, also described in Chapter 92 of the State Statutes.

Essential components include:

- Plan development and public participation
- Assessment of water quality and soil erosion conditions
- Identification of applicable nonpoint source and soil erosion performance standards and prohibitions
- Water quality objectives derived in consultation with DNR
- Conservation practices needed to address key water quality and soil erosion problems
- A plan to identify priority producers and livestock operations in the county
- Best management practices to achieve water quality objectives
- Use of state and local regulations to implement the county plan
- Encouragement of voluntary implementation of conservation practices through county strategies
- Definition of compliance procedures that will apply if the county takes action against a landowner for failure to implement conservation practices
- A multi-year description of planned activities, including priorities and budget
- A system to monitor the progress of activities described in the plan
- Information and education related to soil and water resource management strategies for the public

- Coordination of activities described in the plan with programs of other local, state, and federal agencies
- Notification of affected landowners and land users of the committee findings about key problems and needed conservation practices
- A public hearing and request of county board approval.

After a plan is developed, landowners and land users must be notified by the Land Conservation Committee and provide an opportunity for individuals to comment. A public hearing must be held to notify the public of the LWRM plan contents. The LWRM plans are reviewed by The Land and Water Conservation Board and approved by the Department of Agriculture, Trade, and Consumer Protection. Implementation is then imminent for funding.

## Plan Development Process

The development of this plan was a four-step process. The LWRD facilitated a Citizen's Advisory Committee (CAC) in January of 2009 to elicit local leadership and obtain input. They presented soil and water conditions, described current workload and natural resource threats, provided past LWRM plans, and gave a list of additional resource references. They then posed questions to the Citizens regarding their concerns. These comments were then joined to come up with top concerns of a broad heading. They became the goals of the LWRM plan. Subsequent meetings unveiled objectives and activities for the LWRD to perform.

Secondly, LWRD staff participated in listing environmental priorities and conservation practices to include in the plan. The staff developed an implementation strategy and organized the LWRM plan into years. Previous plans were consulted for strategies and fresh ideas were also included. Here are the concerns that Land and Water Resources Department staff identified, listed in ranking order:

- Cropland nutrient management
- Aquatic invasive species
- Soil erosion from cropland
- Stormwater from lake lots
- Terrestrial invasive species
- Lake management plans, aquatic plant management plans
- Soil erosion from construction sites
- Stormwater from subdivisions
- Manure runoff from feedlots
- Abandoned wells
- Abandoned manure pits
- Soil erosion from mine sites

The third step was to enlist the help and input of colleagues who also work to protect Polk County's natural resources. We solicited comments on the draft plan

from colleagues of several agencies including the Polk County Zoning Department, DNR, NRCS, UW Extension, FSA, and the St. Croix Tribe. The comments we received are included in Appendix H. Our colleagues reviewed goals, offered services and advised where joint efforts can be combined.

The last step was to keep the LCC abreast of the plan development. The LCC was invited to attend the CAC meetings and public information meetings. The Director of LWRD informed the LCC of LWRD's progress and submitted the draft for approval.

## Public Comment and Plan Approval

A Public Hearing was held Monday August 24, 2009, in the County Boardroom, Balsam Lake, Wisconsin. A copy of the newspaper notice is shown in Appendix I. The comments offered additional information about programs and resources, included statutory language, and requested additional information or work plans, which has been included in the final plan. The Land and Water Resources Management Plan will be brought to the Polk County Board of Supervisors for approval at the December 15, 2009 meeting.

## Related Plans

The Land and Water Management Plan is meant to protect the natural resources of Polk County through the activities of the LWRD. However, other departments and initiatives also strive to meet that goal. Listed below are other plans with which the LWRD cooperates or administers. These plans and ordinances are tools that will help meet and fund new standards.

### Basin water quality management plans

The Department of Natural Resources updated the St. Croix Basin Plan in 2002 for the Wisconsin portion of the watershed. Goals include maintaining and improving water and air quality; maintaining diverse, rich shoreland habitat; preserving large contiguous blocks of forestland, grassland, prairie, and wetlands; working with the agricultural community to minimize nonpoint runoff; working with cities, villages, towns and counties to help stem urban sprawl; and providing education and technical assistance to enhance voluntary conservation. The challenge is to meet the demand for access to rivers, lakes, and forests while protecting the character of these resources. The Land Legacy Study identifies critical habitats to preserve. However, land acquisition is not and should not be the primary avenue for resource protection. Public awareness of resource conditions, issues and threats, and active involvement in creative solutions to address these issues is the best way to attain sustainable resource management. Through encouraging individual action, public involvement, and strong partnerships, resource quality will be maintained for future generations. The county will rely upon recommendations established by the DNR

and basin partners in the plan to assist in establishing priorities for implementing the land and water resources plan.

<http://www.dnr.state.wi.us/org/gmu/stcroix/index.htm>

### St. Croix River Basin

The St. Croix River, to which most of Polk County drains, has been designated a wild and scenic river by an act of Congress in 1968. This water-based national park includes 252 miles of flowing water, beginning in Wisconsin and reaching the Wisconsin-Minnesota border. The National Park Service manages a portion of the land within the boundaries as well as Wisconsin and Minnesota state parks, forests, wildlife management areas, county forests, national forests, tribal land, and private land. Minnesota has designated the entire St. Croix as well as its Kettle River tributary as Outstanding Resource Value Waters. Wisconsin has designated portions of the St. Croix as an Exceptional Resource water and the remainder as an Outstanding Resource Water. Nutrient impact threats were identified by water resource managers in 1997 as the top issues impacting water quality in the St. Croix River. A Water Resources Management Plan was completed in February of 1997 to serve as a management tool to guide the decision making over the long term. These reports affirm the importance of phosphorus management, urban stormwater runoff and water quality monitoring as the principal issues and challenges facing water quality managers in the basin. The St. Croix National Scenic Riverway exists to preserve, protect, restore, enhance, and interpret the riverway's exceptional natural and cultural resources for the enjoyment of present and future generations. The Riverway contains more than 60 state and federally listed endangered and threatened species and is refuge to biologically diverse habitats and aquatic environments. This relatively unspoiled condition is unusual for a major river which lies within a major metropolitan area. The Lower St. Croix has elevated nutrients and is experiencing intensifying recreational and developmental pressure.

<http://www.pca.state.mn.us/water/basins/stcroix/>

### Smart Growth

Smart Growth has been slow to develop in Polk County. Smart Growth is a state mandated guide for local leaders to make land use decisions and facilitates communication between jurisdictions. To date, the City of St. Croix Falls, Village of Frederic, and Town of Milltown have adopted Smart Growth plans. Twenty-five municipalities have joined together for a multi-jurisdictional grant through the State Department of Administration to develop individual plans. The Comprehensive Planning Grant was awarded in July of 2007. More information about local comprehensive plans can be found at

<http://www.co.polk.wi.us/landinfo/PlanningCompGrant.asp>

Updates on Smart Growth can be obtained from the Department of Administration's website at

<http://www.doa.state.wi.us/category.asp?linkcatid=743&linkid=128&locid=9>

### Priority watershed plans

Priority watershed plans have been completed for the Balsam Branch Watershed, Horse Creek Watershed, and the Osceola Creek Watershed. Priority watershed planning provided a funding mechanism in the 1980s to begin implementing water quality and habitat improvement activities in these watersheds. Specific objectives in these watersheds are as follows:

#### *Balsam Branch Watershed*

The goal of the plan is to protect, maintain, and enhance the aquatic ecosystem of the watershed through:

- Nutrient reduction
- Sedimentation and erosion reduction
- Runoff rate reduction
- Restoration and protection of aquatic habitat including wetlands
- In-lake nutrient management
- Groundwater protection

#### *Horse Creek Watershed*

- Reduce sediments delivered to Horse Creek in the Horse Creek subwatershed
- Protect, improve, or maintain lakes in regard to phosphorus levels
- Restore wetlands
- Identify and properly abandon unused wells in the watershed to protect groundwater
- Develop nutrient and pesticide management plans for farms in the watershed
- Reduce construction site erosion

#### *Osceola Creek Watershed*

- Protect groundwater quality in the watershed
- Reduce sediment and other pollutants carried in Osceola Creek to the St. Croix River
- Improve aquatic habitat in Osceola Creek to enhance the trout fishery
- Preserve the natural character and scenic beauty of Osceola Creek and its watershed
- Protect the watershed's wetlands from the impacts of sediment loading

Through the Priority Watershed Planning program, the Department of Natural Resources ranked watersheds for nonpoint source problems to identify high priority areas under the state's Nonpoint Source Pollution Abatement Program. Today the DNR uses these watershed and waterbody rankings to direct funding decisions in the Runoff Management Grant Program and identify specific work tasks needed in the watershed.

<http://dnr.wi.gov/org/water/wm/glwsp/npsrank/>

### Comprehensive Land Use Plan

The Polk County Comprehensive Land Use Plan was adopted in 2002. The comprehensive plan includes an analysis of population, economy, housing, transportation, recreation, and land use trends and reports physical features of Polk County. The purpose of the land use plan is to provide general guidelines to achieve the desired future development of the county and direction for development decisions and implementation of the goals and objectives identified in the plan. The lakes classification system was also completed and provides restriction on development according to lake features. Planning areas are recommended in the land use plan. Polk County is currently updating their Comprehensive Land Use Plan. Go to <http://www.co.polk.wi.us/landinfo/PlanningCompPlan.asp> to view the 2003 Comprehensive Land Use Plan and a draft of the 2009 Plan.

### Lake Management Plans

Several lake associations and districts have completed lake management plans. These plans generally guide water quality, identify critical habitat, and categorize local problems affecting the lake. The Land and Water Resources Department has participated in the development of several lake management plans. They also give LWRD and the lake organization a chance to work with local landowners to make improvements for the benefit of water quality. The plans are listed in Appendix G.

### Aquatic Plant Management Plans

Since the development of NR 109 in 2001, the Department of Natural Resources has adapted the way they manage aquatic resources. Polk County is a lake-rich community, and the further onset of aquatic invasive species has involved LWRD in the management of aquatic plant resources. Several lake districts and associations have completed aquatic plant management plans. The plans are also listed in Appendix G.

### Forestry Plan

Approximately 38% of Polk County is forested. The County Forest Comprehensive Land Use Plan seeks to use sustainable forest management practices to protect these resources for present and future ecological and socioeconomic needs. Management must balance local needs with broader concerns through integration of forestry, wildlife, fisheries, endangered resources, water quality, soil, and recreational

recommendations and practices, providing a variety of products and amenities. The County Forest Comprehensive Land Use Plan is valid from 2006 - 2020.

<http://www.co.polk.wi.us/forestry-landuse/land-use-plan.asp>

### Recreation Plan

Outdoor recreation is an important part of the quality of life we enjoy in Polk County. Often times this occurs near waters or natural scenic areas. The Polk County Outdoor Recreation Plan guides the recreation programs of the county. The Parks and Recreation Department has the specific goal for preservation and protection of the county's open space and water resources. The Polk County Outdoor Recreation Plan is applicable from 2009 – 2013.

<http://www.co.polk.wi.us/parks/OutdoorRecreationPlan.asp>

### Polk County Farmland Preservation Plan

The Polk County Farmland Preservation Plan was adopted in 1980 and updated in 2004. Property tax relief is provided to farm owners who participate in the program. The county currently has 12,200 acres enrolled in farmland preservation agreements. Over the past ten years, more than sixty percent of the landowners have not renewed their contracts. As the Farmland Preservation Program draws to a close in the state, LWRD will be participating with the Working Lands Initiative to update an agricultural preservation plan and other state enterprises.

### Impaired Waters

Cedar Lake, which lies in both Polk and St. Croix Counties, is listed on the 303 (d) list for impairment due to excessive nutrients. The DNR has created a TMDL plan for Cedar Lake. A Total Maximum Daily Load (TMDL) is a plan to reduce the amount of specific pollutants reaching an impaired lake or stream to the extent that water quality standards will be met. EPA gives final approval of all TMDLs.

The Upper Willow River Watershed, originating in Polk County, drains to the Lower Willow River Watershed. The Lower Willow is an impaired watershed with Lake St. Croix on the Impaired Waters list (303(d)) and care should be taken to reduce phosphorus inputs to these waters.

<http://dnr.wi.gov/org/water/wm/wqs/303d/index.html>

## **Related Ordinances**

### Shoreland Protection Zoning Ordinance

The shoreland ordinance was last updated in 2008 with regard to transient lodging and height restrictions within the setback area. The Shoreland Protection Zoning Ordinance puts into place impervious standards, a phosphorus fertilizer ban for shoreland property, a lakes classification system, and setback standards. The

ordinance can be viewed at <http://www.co.polk.wi.us/landinfo/ordinances.asp> The Shoreland Protection Zoning Ordinance may need to be updated for compliance with the new NR115 rules as the updates pass through the Legislature and as the Comprehensive Land Use Plan is completed. However, Polk County's shoreland zoning rules have been more restrictive than state standards up to this point.

### Comprehensive Land Use Zoning

Comprehensive zoning is in place in 17 of the 24 towns within Polk County. Three other townships have their own zoning ordinances and the remainder have only shoreland zoning. Presently, the County is working on a comprehensive plan that will address rewriting the Comprehensive Zoning Ordinance.

### Subdivision Ordinance

The Subdivision Ordinance, adopted in 1996 and updated in 2005, requires a recorded certified survey map for any parcel less than 19 acres. The ordinance requires most new plats to incorporate stormwater management practices with no net increase in runoff from the development. Any erosion and sediment control measures shall be installed before land disturbing activities commence.

<http://co.polk.wi.us/landinfo/PDFs/subdivisionordinance.pdf>

### Polk County Lower St. Croix Scenic Riverway Ordinance.

Regulates the development along the Lower St. Croix Scenic Riverway, a National and State designation, to protect the Riverway from extreme development. A minimum lot size for riparian properties of 60,000 square feet is required, minimum lot width of 250 feet, a 200 foot setback from the OHWM of the river, and a height limitation of 25 feet. The legal boundary of Lower St. Croix Scenic Riverway is described within the Ordinance.

### Illegal Transport of Aquatic Plants and Invasive Animals Ordinance

Adopted in 2008, this ordinance prohibits the transport of aquatic plants and invasive animals on public roadways except in closed containers in Polk County and carries a forfeiture of \$250 plus court costs.

### Animal Waste

The Polk County Manure and Water Quality Management Ordinance was revised to incorporate the Animal Waste Advisory Committee prohibitions in January of 2000. A policy manual, developed by the Land and Water Resources Department and approved by the Land Conservation Committee, establishes minimum standards and specifications of animal waste storage facilities, feedlots, degraded pastures, and active livestock operations greater than 300 animal units for livestock producers regulated by the ordinance. The inventory of livestock producers was updated in 1999 to identify operations that are within shoreland corridors. Due to the changing economy, there are fewer producers in Polk County. We periodically update the inventory and identify operations in order to meet compliance with the ordinance.

<http://www.co.polk.wi.us/landwater/MANUR21A.htm>

### Nonmetallic Mining Reclamation Ordinance

The Nonmetallic Mining Reclamation Ordinance was adopted by the Polk County Board of Supervisors in June of 2001 and revised in 2008. The Land and Water Resources Department is the permitting agency for the county. The ordinance requires that all non-metallic mining operations have a permit to operate within Polk County. The permits require reclamation plans and stormwater management. They also require a bond be placed for reclamation in the event of closure.

<http://www.co.polk.wi.us/landwater/Mining.htm>

### Storm Water Management and Erosion Control Ordinance

The Storm Water Management and Erosion Control Ordinance became effective in 2006. This ordinance is intended to meet the current construction site erosion control and post-construction storm water management regulatory requirements of Subchapter III of both NR 151 and NR 216 Wis. Admin. Code on non-agriculture sites. Provisions have been incorporated to coordinate the storm water permit requirements of this ordinance with other county and town zoning and land division regulations.

### Stormwater Discharge Permits, NR 216, Wisconsin Administrative Code

Under subchapter III of NR 216, Wis. Adm. Code, a notice of intent shall be filed with the DNR by any landowner who disturbs one or more acres of land. This disturbance can create a point source discharge of storm water from the construction site to waters of the state and is therefore regulated by DNR. Agriculture is exempt from this requirement for activities such as planting, growing, cultivating and harvesting of crops for human or livestock consumption and pasturing or yarding of livestock as well as sod farms and tree nurseries. Agriculture is not exempt from the requirement to submit a notice of intent for one or more acres of land disturbance for the construction of structures such as barns, manure storage facilities or barnyard runoff control systems. (See s. NR 216.42(2), Wis. Adm. Code.) Furthermore, construction of an agricultural building or facility must follow an erosion and sediment control plan consistent with s. NR 216.46, Wis. Adm. Code and including meeting the performance standards of s. NR 151.11, Wis. Adm. Code.

An agricultural building or facility is not required to meet the post-construction performance standards of NR 151.12, Wis. Admin. Code. (07/31/08 MAL)

## **Chapter 2. Goals, Objectives, and Activities**

The Citizen Advisory Committee met to identify a number of concerns and potential solutions for the natural resources in Polk County. The threats to our natural resources identified were invasive species (both terrestrial and aquatic), development

and a lack of planning, agricultural pollution, urban runoff pollution, more intense use of resources, loss of programs to protect the natural resources, decreased funding of local efforts, aging septic systems (private and municipal), climate change, and a nescient, untrained public. These threats were seen as overall goals that Land and Water Resources Department needs to address through a number of defined objectives. The goals were organized into three categories:

1. Water quality
2. Land quality
3. Human resources.

Each goal was refined into specific objectives to include in the LWRD work plan. The action items include multi-faceted education, monitoring and identification of problems areas, developing plans, working with other natural resource managers, making contact with the public, revising ordinances, and administering ordinances.

**Goal 1. Protect the water quality of our groundwater, lakes, streams, rivers, creeks, and associated ecosystems.**

Objective 1A. Prevent, control or eliminate aquatic invasive species to protect the integrity of our surface water resources.

1. Educate water users, lake groups, and special parties (fishing groups) of the impact, spread, and peril of AIS
2. Monitor water bodies for the presence/absence or extent of invasion
3. Create a plan for invasive species management
4. Use volunteers and interns whenever possible
5. Employ strategies to keep native ecosystems intact
6. Work with other agencies to coordinate programs and provide information

Objective 1B. Limit the amount of non-point phosphorus reaching our waterbodies to prevent degradation from agricultural land uses.

1. Implement NR 151 Runoff Management Standards
2. Provide education on proper erosion control and nutrient management standards (ATCP 50) to agricultural producers
3. Continue administration of the Manure and Water Quality Management Ordinance
4. Collaborate with state efforts to achieve the 20% reduction in total phosphorus loading to the St. Croix Basin
5. Encourage use of cover crops and ground cover through collaboration of federal or state programs
6. Enlist the Working Lands Initiative to modernize the farmland preservation program and work to identify priority farm areas
7. Ensure proper abandonment of wells and manure pits by assisting landowner with locating, properly filling, and sealing unused wells in all watersheds

8. Identify and work to improve areas needing specific water quality protection from agricultural runoff

Objective 1C. Limit amount of non point runoff from urban stormwater runoff to prevent anthropogenic eutrophication.

1. Educate policymakers, municipal officials, and townships on the impacts of urban runoff
2. Provide technical assistance for urban runoff planning and upgrading stormwater infrastructure
3. Assist comprehensive planning and local development efforts to accommodate conservation and resource protection
4. Contact local hardware stores to ensure compliance with statewide phosphorus fertilizer rules
5. Enforce Stormwater and Erosion Control Ordinance
6. Review Subdivision Ordinance applications for stormwater and erosion control plans and follow-up with site visits
7. Assist DNR with NR 115 and Polk County Land Information Department with the Polk County Shoreland Protection Zoning Ordinance
8. Promote Wellhead Protection through other agencies to preserve quality of drinking water
9. Identify and work to improve areas needing specific water quality protection from urban stormwater runoff

Objective 1D. Monitor water quality to ascertain condition and alleviate problems before they impact the resource or human health.

1. Inventory and perform water quality studies of chemical, physical, and biological features to ascertain condition of local water bodies
2. Post information on website for landowners to make use of
3. Provide broad education to the public
4. Evaluate previously installed practices on shorelines and farmland to determine the impact of educational efforts, shoreland restorations, and technical applications

**Goal 2. Protect shorelines, undeveloped riparian land, wetlands and aquatic plant communities, grasslands, forests, upland plant communities, farmland, and agricultural resources to perpetuate the benefits they provide: habitat and associated native wildlife communities, clean water, clean air, carbon sequestration, aesthetic beauty, and recreational opportunities.**

Objective 2A. Develop a county rivers classification system to moderate the amount of development on sensitive riparian areas and limit phosphorus input.

1. Develop a stream order GIS layer

2. Incorporate into the Polk County Shoreland Protection Zoning Ordinance

Objective 2B. Prevent, control or eliminate terrestrial invasive species.

1. Work with Townships and Highway Department to develop BMPs for mowing and seeding strategies
2. Provide education to farmers, land owners, and land managers to make the public aware of invasive species, their impact, and their means of spread
3. Support and encourage groups to remove terrestrial invasive species whenever possible
4. Encourage landscapers to offer eradication services and alert LWRD of any infestations of new species
5. Employ strategies to keep native ecosystems intact
6. Work with other agencies to coordinate programs and provide information

Objective 2C. Encourage and work with local, Federal and State agencies to promote land conservation programs and natural area preservation.

1. Support the Working Lands Initiative to develop a foundation for protecting the economics and vitality of local working lands.
2. Continue administration of Non-metallic Mining Reclamation Ordinance
3. Continue implementation of county cost-share programs, tree sales, Adopt-A-Stream, and other programs to strengthen stewardship by use of incentives
4. Continue technical assistance to Zoning for NR115 and Shoreland Protection Zoning Ordinance

**Goal 3. Support and develop the human resources in Polk County that manage our natural resources – both LWRD and volunteer management groups.**

Objective 3A. Educate public to instill an appreciation of natural resources.

1. Visit schools and accompany field trips when requested to strengthen youth stewardship
2. Make public aware of impacts that increased disturbance can have on natural resources
3. Use media and website to distribute information
4. Work with realtors, new property owners, and building inspectors to instill the value of quality natural resources and provide full disclosure of shoreland rules
5. Expand natural resource education through innovative approaches and offer incentives whenever possible
6. Continue to offer technical assistance to private landowners countywide

Objective 3B. Provide support for volunteers and residents who are properly managing natural resources by both technical and financial means whenever possible.

1. Encourage lake groups to educate newcomers of local regulations
2. Provide workshops and demonstrations
3. Promote state and federal programs for water quality protection, citizen monitoring, and wildlife habitat
4. Facilitate meetings and idea exchange between citizens and agencies
5. Develop checklists whenever possible to make the process of resource protection and obtaining a permit easier for public

Objective 3C. Protect the economic base that supports the County by re-investing in natural resource conservation.

1. Educate officials and administrators of natural resource protection values to incorporate into local Smart Growth plans
2. Collaborate with other county departments to review goals and objectives of comprehensive plans and ordinances and develop a plan for appropriate use of the county's natural resources. Implement conservation measures on county property
3. Provide outreach and technical review for Townships and contractors to protect our financial base
4. Review fee schedules of current permit programs
5. Act as clearing house for information
6. Join forces with other agencies and entities on projects whenever possible
7. Stay current with the technological advances of the bioenergy industry in order to track changes in land use, support community projects, and encourage wise use and conservation of our resources
8. Foster advocacy for LWRD

### **Chapter 3. Performance Standards and Prohibitions**

Performance standards and prohibitions are an important concept in the county plans. Chapter 281 of the Wisconsin State Statutes, Water and Sewage, lays the foundation for a comprehensive, quality management program for the enhancement and protection of all waters of the state, ground and surface, public and private. Through Wisconsin Act 27, the Legislature amended the statutes to allow county Land Conservation Committees to develop and adopt standards and specifications for management practices to control erosion, sedimentation, and nonpoint source water pollution. The Performance Standards and Prohibitions outlined in ch. 281.16(3a) are a set of procedures used to protect water resources from the various agricultural sources of pollution. The statutes require DNR and DATCP to further develop performance standards for agricultural and non-agricultural nonpoint pollution sources and identify conservation practices to meet the standards. Wisconsin Administration Code NR 151 addresses Runoff Management from agriculture and non-agriculture sources.

Polk County has accepted responsibility for implementing runoff management standards. DATCP expects that counties will integrate the NR 151 rules into land and water resource management plans. The following standards, and any county developed standards, address the Animal Waste Advisory Committee Prohibitions. The prohibitions were incorporated into the Polk County Manure and Water Quality Management Ordinance in the year 2000. The prohibitions of Chapter 281, NR 151, and the Polk County Manure and Water Quality Management Ordinance are:

1. No overflow of manure storage structures
2. No unconfined manure stacking (piling) within the Water Quality Management Areas <sup>1</sup>
3. No direct runoff from feedlots or stored manure to waters of the state
4. No unlimited livestock access to waters of the state where high concentrations of animals prevent adequate sod cover maintenance

The agricultural standards are:

<b>NR151 Agricultural Performance Standards</b>	
<p><i>For farmers who grow agricultural crops:</i></p> <ul style="list-style-type: none"> <li>• Meet "T" on cropped fields</li> <li>• Starting in 2005 for high priority areas such as impaired or exceptional waters, and 2008 for all other areas, follow a nutrient management plan designed to limit entry of nutrients into waters of the state</li> </ul>	<p><i>For farmers who have or plan to build a manure storage structure:</i></p> <ul style="list-style-type: none"> <li>• Maintain a structure to prevent overflow, leakage, and structural failure</li> <li>• Repair or upgrade a failing or leaking structure that poses an imminent health threat or violates groundwater standards</li> <li>• Close a structure according to accepted standards</li> <li>• Meet technical standards for a newly constructed or substantially-altered structure</li> </ul>

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<sup>1</sup>Water Quality Management Areas are defined as the area within 300 feet of the OHWM of a stream or 1000 feet of a lake, pond, or flowage, or a site that is susceptible to groundwater contamination. They are equivalent to the Shoreland Corridor as used in this plan.

<p><i>For farmers who raise, feed, or house livestock:</i></p> <ul style="list-style-type: none"> <li>• No direct runoff from feedlots or stored manure into state waters</li> <li>• No unlimited livestock access to waters of the state where high concentrations of animals prevent the maintenance of adequate or self sustaining sod cover</li> <li>• Starting in 2005 for high priority areas, and 2008 for all other areas, follow a nutrient management plan when applying or contracting to apply manure to limit entry of nutrients into waters of the state.</li> </ul>	<p><i>For farmers with land in a water quality management area (defined as 300 feet from a stream, or 1,000 feet from a lake or areas susceptible to groundwater contamination)</i></p> <ul style="list-style-type: none"> <li>• Do not stack manure in unconfined piles</li> <li>• Divert clean water away from feedlots, manure storage areas, and barnyards located within this area</li> </ul>
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Pollution from non-point sources that are not agriculture will be abated if the following performance standards are met:

<b>NR151 Non-Agricultural Performance Standards</b>
Construction Sites greater than 1 acre must control 80% of sediment load from sites
Stormwater management plans (>1 acre after 10/1/04) Total Suspended Solids Peak Discharge Rate Infiltration Buffers around water
Developed urban areas (>1000 persons/square mile) Public education Yard waste management Nutrient management Reduction of suspended solids

## **NR 151 Implementation and Considerations**

The Polk County Land and Water Resources Department (LWRD) will work together with the Department of Natural Resources (DNR) and other agencies to implementation of each component of the strategy outlined below. Completion of each task will be dependent upon receiving adequate funds. Every effort will be made to secure necessary funds, and a good faith effort will be made to accomplish each component.

### **1. *Conduct information and education activities***

The LWRD will distribute information and educational material prepared by the DNR, USDA, DATCP, NRCS, and LWRD to relevant landowners. The information may be distributed via news media, newsletters, public information meetings, and one-on-one contacts.

The educational materials will be designed to meet the following objectives:

- Educate landowners about Wisconsin's agricultural performance standards and prohibitions, county ordinances, applicable conservation practices, and cost share grant opportunities;
- Promote implementation of conservation practices necessary to meet performance standards and prohibitions;
- Inform landowners of compliance procedures and agency roles to be used statewide and locally;
- Make landowners aware of expectations for compliance and consequences for non-compliance;
- Reach landowners with small numbers of livestock on low acreage (LWRD developed).

## ***2. Systematically select and evaluate parcels for compliance with standards and prohibitions***

### **a. Records Inventory**

Because of privacy limitations of federal files, the Polk County LWRD will not complete a comprehensive records inventory of USDA program files. LWRD will work with landowners to obtain farm information and create nutrient management plans. When permission is granted, farmers' files will be reviewed to obtain parcel data. File information will be used to supplement map, GIS evaluation, and drive-by inventory results.

Some landowner files are available for county-administered programs. There are approximately 85 files for landowners participating in the Farmland Preservation Program. Additional landowner files are available from assessments in the Balsam Branch (573), Osceola Creek (61), and Horse Creek (299) Priority Watersheds. These files represent a portion of the 1659 farms, according to USDA National Agricultural Statistics Survey, 2002 (most recent figures).

The total cropland acres for Polk County are 206,111 (34% of county) with 80,667 acres of highly erodible, 96,328 acres non-highly erodible and 29,117 acres undetermined. Livestock operations include 269 dairy, 305 beef (63 include both beef and dairy), 96 sheep, 3 turkey, 15 hog, and 111 horse farms.

There are 4 WPDES farms (3 - dairy, 1- turkey) and estimated 32 livestock operations that are regulated by the existing Polk County Manure and Water Quality Management Ordinance. The ordinance requires all livestock operations over 300

animal units to have a county certificate and a manure management plan covering all acres to which manure is applied. The ordinance also requires any livestock operations of 300 animal units active in Polk County to be regulated by the same rules (i.e. a livestock producer from adjoining county spreading in Polk County).

There may be opportunity to supplement limited file information through requests for information from landowners. Landowners may be willing to voluntarily release information in Federal files or consultant-prepared nutrient management plans, especially if the information supports their compliance with agricultural performance standards and lowers the likelihood of an on-site visit.

### **b. Map Inventory**

The Polk County Land and Water Resource Department uses ArcView 9 as a major data base tool to identify compliance, track progress, and meet reporting requirements.

Digital ortho photos from 2006 will be used as the base map. Water Quality Management Areas, defined as 300 feet from a river or stream or 1000 feet from a lake, pond or flowage, have been delineated from US Geological Survey (USGS) 7.5-minute quadrangle topographic maps. From this, a Shoreline Zoning Map was developed by the Polk County Land Information Department. This delineation has been adopted by the Polk County Land Information Department as the county standard. Digital land units from the USDA-Farm Services Agency were used to identify field boundaries and tracts. Soils data from the USDA-NRCS Soil Survey Geographic (SSURGO) Database and NRCS Technical Guide were used to develop soils layers where potential runoff and groundwater problems may exist. Using the combined data, layers can be developed to identify "potential problem areas" within the Water Quality Management Area. Agricultural fields and livestock operations within this area would be defined as high priority. With the development of parcel maps and a geo-code base map by the Polk County Land Information Department, owners and operators can be easily identified. Follow-up site visits can be used to determine compliance issues with state agricultural non-point performance standards.

Additional layers may be added to the GIS system to tie agricultural and non-agricultural goals together, recognizing that planning decisions may differ between individual water bodies. A GIS system can also be used as a database which tracks conservation plans, nutrient management plans, installed BMP's, cost-share agreements, and county permits. This system will assist staff and landowners in monitoring progress towards the goals of the LWRM Plan. Monitoring and modeling information will be used to direct staffing efforts to accomplish implementation of the work plan and evaluate plan success.

Inventory information is also available from review of critical sites in the Balsam Branch, Osceola Creek and Horse Creek Priority Watershed. Of these, only one

livestock facility was identified as not meeting agricultural performance standards during on-site reviews. At this site there is a barnyard that drains towards Osceola Creek, but the operation has since gone out of business.

Identified farms for detailed on-site review have been selected from the initial inventory list using the priority list and procedure below. Additional priority producers and livestock operations for on-site review may be identified through complaints or staff observations.

### **c. On-site Farm Visits**

The following criteria will be used to select identified farms for on-site visits:

- 1) Occurrence in a Water Quality Management Area
- 2) Livestock facilities identified by GIS evaluation that have potential evidence of performance standards violations
- 3) Livestock producers without nutrient management plans (590).
- 4) Land drains directly to a lake or stream.
- 5) Proximity and slope to a lake or stream (closer and greater slope = higher priority)
- 6) Crop producers without nutrient management plans
- 7) Fields exceeding "T" Value
- 8) WPDES farms.
- 9) County Manure and Water Quality Management Ordinance Permits and Certificates of Compliance.
- 10) Notice of Discharge (NR243) farms.

### **3. Procedure for records, map, GIS inventory review**

- a. Develop a list of crop farms and livestock farms in Polk County.
- b. Based on GIS evaluation and available map and file information, identify priority level of farm using criteria in list above. Update farm list in priority order.
- c. From parcel records, evaluate which standards and prohibitions are likely to apply.
- d. If possible, determine which landowners are already meeting standards and prohibitions as a result of:
  - 1) Installed or implemented BMPs under an existing state or federal cost share agreement; and/or
  - 2) Maintaining compliance with state or county animal waste regulations (e.g. NR 243, WPDES, etc.).

*Note: It is expected that most landowners identified as priorities above will require on-site visits.*

### **4. Onsite evaluations procedure**

- A. Compile list of identified farm parcels for on-site evaluations.

- B. Contact owners and schedule site evaluations.
- C. Determine and document the extent of current compliance with each of the performance standards and prohibitions. Where non-compliant, determine costs and eligibility for cost sharing.

*Note: Cost share requirements are based upon whether or not the evaluated cropland or livestock facility is new or existing and whether or not corrective measures entail eligible costs. See NR 151.09(4)(b-c) and 151.095(5)(b-c).*

## **5. Document and report compliance status**

### **A. NR151 status report**

Following completion of records review and on-site evaluation, prepare and issue NR 151 status report, developed by DNR and completed by the LWRD, to owners of the evaluated parcels. This report will convey the following information at a minimum:

- Current status of compliance of individual parcels with each of the performance standards and prohibitions.
- Corrective measure options and rough cost estimates to comply with each of the performance 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. *(If public funds are used, applicable technical standards must be met.)*
- 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 county.
- (Optional) A copy of performance standards and prohibitions and technical design standards.

*Note: A cover letter signed by the LWRD describing the ramifications and assumptions related to the status report will be attached.*

### **B. Maintain public records**

Keep and maintain evaluation and compliance information as public record.

*Note: The primary objective of this step is to ensure subsequent owners are made aware of (and have access to) NR 151 information pertinent to their property. The method for maintaining these records and for ensuring relevant information is conveyed to subsequent owners will be discussed with the Polk County Corporation Counsel and follow Polk County Public Records policy.*

**6. Offer or arrange for technical assistance. Make cost sharing available as needed to install or implement BMPs.**

A. Voluntary course (Cooperative)

1. Receive request for cost-share and/or technical assistance from landowner.

*Note: Landowners will be prompted to voluntarily apply for cost sharing based on information provided in a NR 151 Compliance Status Report.*

2. Confirm cost-share grant eligibility and availability of cost-share and technical assistance.
3. Develop and issue cost-share agreement listing BMPs to be installed or implemented, estimated costs, project schedule, and notification requirements under NR 151.09(5-6) and/or 151.095(6-7).

B. 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), and a copy sent to the DNR.

- If eligible costs are involved, this notification shall include an offer of cost sharing throughout the compliance period.
- If no eligible costs are involved, the notification will not include an offer of cost sharing.

*Note: The notification referenced above will be designed by the LWRD with consultation from the DNR and contain:*

- a) A description of the performance standard or prohibition being addressed;*
- b) The compliance status determination made in accordance with NR 151;*
- c) The determination of which best management practices or other corrective measures are needed and which, if any, are eligible for cost sharing;*
- d) The determination that cost sharing is available, including a written offer of cost sharing when appropriate;*
- e) An offer to provide or coordinate the provision of technical assistance;*
- f) A compliance period for meeting the performance standard or prohibition;*
- g) An explanation of the possible consequences if the owner or operator fails to comply with provisions of the notice; and*
- h) An explanation of state appeals procedures.*

## **7. Administer funding and technical assistance**

### **A. Execute cost share agreement**

If cost sharing is involved, finalize and execute cost-share agreement including schedule for installing/implementing BMPs. A list of eligible practices is maintained by the Natural Resources Conservation Service. Cost share rates vary by practice and include eligibility requirements. A complete list with payment schedule can be found at

<ftp://ftp-fc.sc.egov.usda.gov/WI/eqip/2009/cookbook09.pdf>

### **B. Provide technical services and oversight to projects**

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

*Note: Polk County LWRD does not provide engineering and design assistance to Waste Storage projects (NRCS 313) and other more difficult design projects. Engineering design will be the landowner's expense.*

### **C. Re-evaluate parcel**

After corrective measures are applied, conduct an evaluation to determine if parcel is now in compliance with relevant performance standard(s) or prohibition(s).

- If site is compliant, update NR 151 Status Report and issue "Letter of NR151 Compliance."

*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. Such a determination is significant because once a site has been determined to be in compliance, it is now the responsibility of the landowner to stay in compliance. No more public cost share money will be used to regain compliance unless noncompliance was a result of forces beyond landowner control. This letter would also include an appeals process if a landowner wishes to contest the findings. When and where counties are not operating under a local ordinance, the issuance of a letter of NR 151 compliance would likely be a joint effort with the DNR in order to establish the standing that it merits.*

- If not compliant, seek non-regulatory remedies or initiate enforcement action.

*Note: Follow-up measures at this stage will differ depending on the circumstances, including whether or not failure to comply is the fault of the landowner. If it is not the*

*fault of the landowner, then non-regulatory remedies will likely be sufficient. If there is an intentional breach of contract, then enforcement action may be necessary.*

## **8. Conduct enforcement activities**

### **A. Notify DNR of enforcement action needed**

If a landowner refuses to respond appropriately to a notice, or is in breach of a cost share contract, the LWRD will notify the DNR in writing of the refusal. If local ordinances incorporating standards are to be enforced locally, another notice will be used, pursuant to NR 151.09(5) or (6), or 151.095(6) or (7).

*Note: Enforcement begins at this point in the process. It will be pursued in circumstances where: (1) a breach of contractual agreement including failure to install, implement, or maintain BMPs according to the provisions of the agreement occurs OR the landowner has failed to comply with a notice issued, AND (2) non-regulatory attempts to resolve the situation have failed.*

*Note: Polk County may choose to take enforcement action where appropriate based upon authority and procedures under the Polk County Manure and Water Quality Management Ordinance.*

### **B. Schedule enforcement conference**

If landowner is found to be out of compliance, the LWRD will inform the DNR of the enforcement conference.

### **C. Participate in enforcement conference**

The LWRD will conduct an enforcement conference.

### **D. Initiate enforcement action**

Refer cases to County Corporation Counsel and/or DNR for enforcement.

## **9. Monitor compliance**

### **A. Conduct periodic evaluations to verify ongoing compliance**

Landowners will be asked to complete a self-certification form annually and return it to the LWRD. The LWRD will also complete spot checks on 5-10 percent of sites on an annual basis.

### **B. Respond to public complaints alleging noncompliance**

LWRD will respond to complaints by investigating allegations with file review, telephone confirmation, and/or an on-site visit. If the review demonstrates significant violation of the agricultural performance standards, staff will proceed with the strategy for compliance. This process will begin with documentation (Step 3), proceed to technical assistance as needed (Step 4), administering funding as needed (Step 5), then to enforcement actions (Step 6) if necessary.

### **C. Noncompliance**

Noncompliance that threatens public health and safety will be immediately referred for enforcement action through appropriate county and state entities.

### **D. Access to Information**

Ensure new owners are made aware of (and have access to) NR 151 compliance information that may pertain to the property they have just acquired. This may be accomplished through a query of the county tax parcel database.

## **10. Track and report program activities and progress**

- A.** Maintain and convey a record of annual site evaluations showing their location and compliance status.
- B.** Maintain a record of estimated costs of corrective measures for each evaluated parcel.
- C.** Maintain and convey a record showing parcels where public cost sharing has been applied to implement standards and prohibitions, the amount and source of those funds, and the landowner share.
- D.** Maintain and convey a record and location of parcels receiving notification and violation letters.
- E.** Maintain and convey a record of the annual cost of technical and administrative assistance needed to administer agricultural performance standards and prohibitions, as established in NR151.

*Note: The LWRD will provide the above information to the Department of Agriculture, Trade, and Consumer Protection in an annual report.*

## **Information and Education Strategies**

The residents of Polk County include various audiences and focus groups. Different activities will target different groups, and the appropriate people may be categorized in several groups. These include:

- Agricultural producers (livestock and crop) and crop consultants
- FFA and 4-H groups
- School and camp groups
- Local government staff and elected officials
- Landscapers, realtors, developers, and contractors

- Riparian owners and homebuyers
- Lake and river groups
- Public utilities (highway and transportation workers)
- Outdoor recreation groups
- Pet owners
- Users of lawn fertilizers

The goal of Polk County LWRD's Information and Education effort is to protect water quality and aquatic resources through the education of residents, urging them to change their behaviors and act as good stewards of the land and water. The effort will be ongoing. The messages LWRD will try to relay are:

- Native ecosystems are the best defense against pollution and invasive species.
- Nutrient and Pest Management (NPM) planning helps farmers effectively manage crop inputs and outputs.
- How and why to implement BMPs.
- Current Shoreland Zoning benefits all by protecting surface water.
- Wetlands and shoreland vegetation provide water quality benefits by filtering sediments, nutrients, and pesticides from water. They attenuate flooding and should be left in tact.
- Loss of soil costs money. Residue management, tillage practices, erosion control, and responsible construction (buildings and roads) reduce the loss of soil from fields, yards, and bare areas.
- Unplanned development and fragmentation of land degrades wildlife habitat and other natural resources.
- The amount of impervious space in a watershed is directly related to a decline in the water quality of receiving waterbodies.
- Unplanned development increases the cost of public services to taxpayers.
- Land use planning tools, such as conservation easements, green space development, cluster developing, rain gardens, swales and infiltration areas, and others, exist for responsible zoning and planning.
- County ordinances govern the placement of animal wastes near waterbodies.
- Untreated runoff from barnyards and manure spreading can negatively impact streams, lakes, and groundwater by supplying excess nutrients and bacteria.
- Proper handling of animal waste can be a valuable soil amendment and excellent source of nutrients, saving money and protecting water quality.
- Sediment is the number one pollutant to many of our surface waters, from the combined effects of common daily actions that rain and snowmelt rinse from our streets, yards, and farm fields.
- Sediment from construction sites flow to and damage water resources. Construction site erosion can be abated by timely building and installation of erosion control practices.
- Vegetation kept in place reduces erosion by anchoring soil with the root system.
- Municipalities can adopt stormwater/erosion control and subdivision ordinances.

- Being able to recognize invasive species may prevent their spread and future introduction.
- Eradication and monitoring efforts of invasive species should be stepped up to preserve our native communities.
- Our tourism industry and tax base relies on the health of our water resources.

There are many methods to reach the audience and deliver a message. The most successful way to convey a message is through multiple media. Several iterations are necessary for effective comprehension and action. The strategies we will use include:

- Create demonstration sites with education and interpretation signs.
- Design and distribute brochures on pertinent information.
- Update and train professionals who offer services to landowners of new laws or practices to be good stewards.
- Conduct workshops, demonstrations, and presentations.
- Attend lake association meetings, town meetings and industry-specific events.
- Act as a liaison to other departments and agencies.
- Provide technical assistance and review services to homeowners and projects.
- Post signs to alert citizens of ordinances.
- Offer tours to highlight conservation areas and projects.
- Assist with restorations.
- Offer cost-share and financial assistance opportunities (promote other programs as well).
- Contact citizens individually.
- Recognize good stewardship.
- Participate in conservation and agricultural events with displays, question and answer, presentations, etc.
- Provide information to the general public through news articles, newsletters, radio announcements, public displays, posters, videos, contests, county fair, etc.
- Maintain the department's website to include updates of information, events, current research.
- Educate children and suggest they bring the message home to parents.
- Work with Polk County Sheriff's Department and lake volunteers to increase awareness of the Illegal Transport of Aquatic Plants and Invasive Animals Ordinance.

## **Chapter 4. Monitoring and Evaluation**

This chapter addresses both water quality monitoring and evaluation of progress toward meeting the goals of the land and water resources plan. Although they are interrelated, each has a distinct function.

## Water Quality Monitoring

A partial list of efforts underway to monitor water resources is included below. Unfortunately this information is held by several agencies and departments and is not compiled in one location. The Department of Natural Resources has made great strides in the Surface Water Integrated Monitoring System (SWIMS).

### Existing Monitoring Efforts

<u>Program</u>	<u>Resource</u>	<u>Responsible Entity</u>
Self Help Lakes Monitoring	Lakes	DNR, Lake Organizations
Lakes Planning Grant Studies	Lakes	DNR, Lake Organizations
Water Quality Appraisals	Lakes/Streams	DNR
Sensitive Area Identification	Lakes	DNR
Aquatic Plant Surveys	Lakes	Lake Organizations, DNR
Macroinvertebrate Data	Lakes, Streams	DNR
Sediment Chemistry	Lakes	DNR
Aquatic Invasive Species Survey	Lakes, Streams	DNR, Lake Organizations
Nitrate Testing	Groundwater	County Health Dept./LWRD
Beach Sampling	Public Swim Areas	County Health Dept.

### Nonpoint Source Inventories

Nonpoint source inventories track changes in land use or land management practices that affect water quality. Several methods are currently used by resource agencies to track these changes.

<u>Inventory Method</u>	<u>Unit of Measurement</u>	<u>Responsible Entity</u>
Transect Survey	Cropland	LWRD
National Resource Inventory	Land Use	NRCS
LandSat Photos	Land Cover	DNR
CRP Acres	Cropland	FSA
Sediment Delivery	Cropland	LWRD-Watersheds
Phosphorus	Barnyards	LWRD-Watersheds
TMDL Modeling	Watersheds	DNR

### Plan Evaluation

Plan evaluation assesses whether the objectives of the plan are being accomplished. The Land and Water Resources Department prepares a progress report annually, listing our activities completed in the past year to meet our department's objectives. This progress report (in Appendix B) will be used in yearly planning sessions to develop a work plan for the next two calendar years.

Measures of success and/or evaluation methods are relatively straightforward for most of the objectives. However, evaluating the success of the information and education objectives poses special challenges. Without an extensive investment of time and money, it is difficult to measure the effectiveness of an educational technique. A separate evaluation report will be prepared for the information and education strategy and measures of success each year. Measures of success will vary by activity. Most activities are geared toward meeting objectives in a few general categories:

- Promoting the availability of financial and technical assistance;
- Teaching management techniques;
- Increasing understanding about the importance of protecting natural resources; and
- Convincing people to change behaviors to protect natural resources.

Compliance with NR 151 standards will be tracked through random spot-checking, annual self-certification, and responding to public complaints. Compliance will be reported on a GIS system by location and kept by landowner in LWRD files. NR 151 projects will be recorded by location, corrective measures, standard or prohibition attended to, and Noticed parcels.

## Chapter 5. Two Year Work Plan

The following goals are listed according to their priority ranking. Polk County LWRD will work to achieve each goal, objective, and action. However successful completion is subject to landowner participation, public participation, adequate staffing, and anticipated funding requests.

### LWRD STAFFING PLAN 2010-2011

<b>INDEX TO "KEY PARTNERS"</b>	
<b>1</b>	<b>Department of Agriculture, Trade &amp; Consumer Protection (DATCP)</b>
<b>2</b>	<b>Department of Natural Resources (DNR)</b>
<b>3</b>	<b>Natural Resources Conservation Service (NRCS)</b>
4	University of Wisconsin – Extension Office (UWEX)
5	Private Consultants
6	U.S. Fish and Wildlife Service (USFWS)
<b>7</b>	<b>Lake Groups / District Associations</b>
8	Volunteers / Citizen Groups
<b>9</b>	<b>Zoning Department</b>
10	Land Information Department
11	Parks Department
12	Highway Department
13	Polk County Sheriffs Department
14	Local Government
15	National Park Service (NPS)
16	Non-profits
17	State Universities and Museums (WI, MN)
18	Citizen Advisory Committees (CAC)
19	Farm Service Agency (FSA)
20	St. Croix Tribe
<b>Lead partners are identified in bold.</b>	

**GOAL 1. PROTECT THE WATER QUALITY OF OUR GROUNDWATER, LAKES, STREAMS, RIVERS, CREEKS, AND ASSOCIATED ECOSYSTEMS.**

**Objective 1A. Prevent, control, or eliminate aquatic invasive species.**

ACTIVITY	ACTIONS / PROGRESS TRACKING	KEY PARTNERS	LWRD STAFFING HOURS	COST-SHARE DOLLARS	BENCHMARK
Educate, monitor, create a management plan, protect native ecosystems, collaborate with agencies and volunteers	1. Monitor and provide technical assistance to groups or individuals needing support with AIS management.	2,5,7,8,17	1500		12 Groups
	2. Work with DNR, UW-Extension, NRCS, and others to educate landowners about curly leaf pondweed, Eurasian milfoil, purple loosestrife, rusty crayfish, New Zealand mudsnail, common carp, Japanese knotweed, and others.	2,3,4,5,6,7,14,15,16,19,20	1400		Attend 6 agency mtgs & 12 Twnshp mtgs
	3. Provide training opportunities, support CBCW, assist lake organizations with management plans	2,4,6,7,14	400		2 training opportunities, 4 lake mgmt plans
	4. Work with Polk County Sheriffs Department to enforce local Illegal to Transport ordinance and state laws.	2,7,8, 13	40		Attend 1 Sheriff Dept staff mtg
	5. Continue Shoreline Protection in accordance with NR115 and County Shoreland Zoning Habitat Protection ordinance and work with individual landowners, lake associations and districts to protect lake shoreland	2, 9,4,7,8	1500		30 site visits

**Objective 1B. Limit the amount of non-point phosphorus reaching our waterbodies from agricultural land uses. Implement NR151 Runoff Management Standards.**

ACTIVITY	ACTIONS / PROGRESS TRACKING	KEY PARTNERS	LWRD STAFFING HOURS	COST-SHARE DOLLARS	BENCHMARK	
Follow Agricultural Performance Standards and Prohibitions and encourage BMPs	1. Annually conduct transect survey to identify farms with problems and needed BMPs.	1, 3	240	\$12,000 SEG \$10,000 Farmer Written NMP	Visit 900 points	
	2. Notify owners of non-compliant operations/fields	1,3,5	200		Notify all landowners	
	3. Continue to write and review NPM plans and monitor compliance on existing 17,000 acres.	1,3,5	1600		Write 6, review 15 plans for NRCS	
	4. Encourage conservation tillage on fields that are greater than "T".	1,2,3,7	200		2400 acres	
	5. Promote the use of BMPs and conservation initiatives through cost share programs, Working Lands Initiative, and technical assistance to bring into compliance.	1,2,3,6,7,14,16,19	1000		\$40,000 DATCP	20 practices (see Appx. J)
	6. Provide training workshops on nutrient management standards and erosion control for agricultural producers.	1,2,3,5	150		TRM grants	2 workshops
Conservation program implementation related to other state and federal programs.	1. Continue administration of Manure Ordinance.	2,16	700	Fee oriented	Respond to all complaints and permit apps for Manure Ord. Respond to all apps and con't admin of 63 currently permitted operations.	
	2. Continue administration of Non-Metallic Mining Reclamation Ordinance.	1,2,9,16	1600			
	3. Assist Federal and State agencies in the implementation of their programs (EQIP, continuous CRP, FIP, WRP, WHIP and others).	1,2,3,6,9,15,16,19	300			
	4. Collaborate with state efforts to achieve the 20% reduction in total phosphorus loading to St. Croix Basin	1,2,4,7,8	300		Attend 6 TMDL mtgs on Lower Lake St. Croix	

**Objective 1C. Limit the amount of non point runoff from urban stormwater runoff to prevent anthropogenic eutrophication.**

ACTIVITY	ACTIONS / PROGRESS TRACKING	KEY PARTNERS	LWRD STAFFING HOURS	COST-SHARE DOLLARS	BENCHMARK
Follow Non-Agricultural Performance Standards and encourage BMPs.	1. Administer the countywide erosion control and stormwater management ordinance.	1,2,5,7,9,10,12	1200	Fee oriented	Review all permit apps Continue to review all permit apps for subdivision plans 2 Townships
	2. Continue to review subdivision plans.	9	700		
	3. Encourage possibility of a countywide well-head protection program.	1,2,10,14	400		
	4. Implement NPM plans on appropriate county-owned property; work with local government and landowners to establish NPM plans on public-owned property >5 acres.	11,12,14	100		
					1 plan on county land, 1 local-gov landowner to establish plan

**Objective 1D. Monitor water quality to ascertain condition and alleviate problems before they impact the resource or human health.**

ACTIVITY	ACTIONS / PROGRESS TRACKING	KEY PARTNERS	LWRD STAFFING HOURS	COST-SHARE DOLLARS	BENCHMARK
Monitor water quality	1. Continue to apply for state grants to monitor and study area lakes and rivers.	2,5,7,8,14,17	1400	Lake planning grants	Submit 4 grant applications Assist 12 partners with requests
	2. Assist County Departments, Townships, Villages, Cities, Lake Associations-Districts, non-profits, hunting and fishing groups with water quality protection.	2,14,16,7,8,11,12	1600		
	3. Provide I&E. See detailed I&E Strategies.	1,2,3,4,6,7,14,17	600		
					Provide weblinks, have brochures available

**GOAL 2. Protect shorelines, undeveloped riparian land, wetlands, and aquatic plant communities, grasslands, forests, upland plant communities, farmland, and agricultural resources.**

**Objective 2A. Develop a county rivers classification system to moderate the amount of development on sensitive riparian areas**

ACTIVITY	ACTIONS / PROGRESS TRACKING	KEY PARTNERS	LWRD STAFFING HOURS	COST-SHARE DOLLARS	BENCHMARK
Preliminary Assessment	1. Work with other departments/agencies to compile data.  2. Complete/incorporate a rivers classification system into revised Shoreland Protection Zoning Ordinance.	2,3,6,7,9,10,11,14,19	200		Develop framework for assessment and begin evaluation in 1 Township

**Objective 2B. Prevent, control, or eliminate terrestrial invasive species.**

ACTIVITY	ACTIONS / PROGRESS TRACKING	KEY PARTNERS	LWRD STAFFING HOURS	COST-SHARE DOLLARS	BENCHMARK
Manage terrestrial invasive species.	1. Conduct eradication training to landscapers, public, townships, cities, villages, and construction/highway crews.	2,3,4,5,6,9,7,15,16,17,20	300		Conduct 4 training sessions to city and village crews
	2. Provide technical assistance to landowners, groups, and other county departments.	7,8,9,11,12,16	200		Assist 12 contacts

**Objective 2C. Encourage and work with local, Federal and State agencies to promote land conservation programs and natural area preservation.**

ACTIVITY	ACTIONS / PROGRESS TRACKING	KEY PARTNERS	LWRD STAFFING HOURS	COST-SHARE DOLLARS	BENCHMARK
	1. SAFE CRP 2. Continuous CRP 3. WRP, WHIP, EQIP and other	1,2,3,5,6,7,8, 14,16	300	\$80,000 EQIP	Assist NRCS with 4 projects

**GOAL 3. SUPPORT AND DEVELOP THE HUMAN RESOURCES IN POLK COUNTY THAT MANAGE OUR NATURAL RESOURCES**

**Objective 3A. Educate the public to instill an appreciation of natural resources.**

ACTIVITY	ACTIONS / PROGRESS TRACKING	KEY PARTNERS	LWRD STAFFING HOURS	COST-SHARE DOLLARS	BENCHMARK
Publicize and invent innovative approaches to work with public.	1. Work with Parks Department, Forestry Department, and Tourist Information Center to improve recreation opportunities for all county citizens and visitors	All - 10,11,13,14	100		Develop 2 trail system plans
	2. Provide GIS website and resources to assist residents with outdoor recreation information	10	50	Coop grants	Update 1 data layer
	3. Administer or assist with contests to promote soil conservation, youth awareness, and natural resource education.	1,2,3,4,8,16	150	Education/ Tree acct	6 contests
	4. Offer annual conservation tours	8,16	200		2 tours

	5. Give school talks and lead school field trips	1,2,3,4,8,15,16	300		Give 6 talks, lead 6 field trips
	6. Continue implementation of county cost-share, tree sales, Adopt-A-Stream, general education and related programs.	4, 7, 8	500		2 annual tree sales, 1 Adopt A Stream training, Earth Day and other opportunities as they arise.

**Objective 3B. Provide support for volunteers and residents who are properly managing natural resources by both technical and financial means whenever possible.**

ACTIVITY	ACTIONS / PROGRESS TRACKING	KEY PARTNERS	LWRD STAFFING HOURS	COST-SHARE DOLLARS	BENCHMARK
Shoreland Management	1. Continue technical assistance to private landowners.	1,2,4,5,6,7,8,16,19	600		20 private assists
	2. Continue landscaper/contractor training bi-annually.	1,2,4,5,9	200		1 training
	3. Continue to set up demonstration project.	1,2,4,5,7,8,11,19	200		1 site
	4. Develop a policy to establish/maintain riparian vegetation on appropriate county-owned property and collaborate with townships, villages and cities to establish a similar policy.	2,4,11,14	100		Develop policy in one municipality

**Objective 3C. Protect the economic base that supports the County by re-investing in natural resource conservation.**

ACTIVITY	ACTIONS / PROGRESS TRACKING	KEY PARTNERS	LWRD STAFFING HOURS	COST-SHARE DOLLARS	BENCHMARK
Increase Awareness of Shoreland Regulations	1. Advertise the slow-no-wake rule, phosphorus-free fertilizer rule, and promote minimum 35 foot buffer and 30 foot viewing corridor 2. Work with PCALR to publish and distribute information to lake associations and citizens.	2,7,8,9,14,17  2,4,7,8,9,16	200  200		Advertise new rules on the website Attend 6 mtgs

**Total Goals & Objectives hours** 20,930  
**Administration hours (incl. hol/vac/sick, contract hrs, etc)** 12,350

**Total LWRD staffing hours: 33,280**

The above activities will be implemented by the LWRD over the next two years and beyond. The Work Plan will be re-evaluated in 2010. Cost share dollars are currently received from EQIP, SWRM, CRP, SEG funding, TRM grants, private sources, and county funding.

**Total LWRD staffing cost:**  
\$1,095,000

**Cost Share Dollars**  
\$142,000

## Appendix A. Resource Assessment

Polk County is located in Northwestern Wisconsin. It is bordered by Burnett County to the North, Barron County to the East, St. Croix County to the South, and the St. Croix River and the State of Minnesota to the West.

### Topography and soils<sup>2</sup>

The topography of Polk County is moderately rolling, becoming increasingly more rugged in the western portion of the county, particularly in the St. Croix River valley. Surface features were formed or modified by glaciation. Pitted glacial outwash covers much of the county resulting in many lakes, wetlands, and areas of uneven topography. A series of glacial end moraines traverse the county from southwest to northeast. The area between the moraines is quite level and much of the county's best agricultural land is found here. A band of trap rock (an intrusive igneous rock) is exposed at several points between Dresser and the Clam Falls area. Exposed dolomite limestone is found in the southwest part of the county. Local relief is over 600 feet ranging from 680 feet above mean sea level at the St. Croix River on the county's western extreme to over 1,400 feet in the north-central and eastern areas.

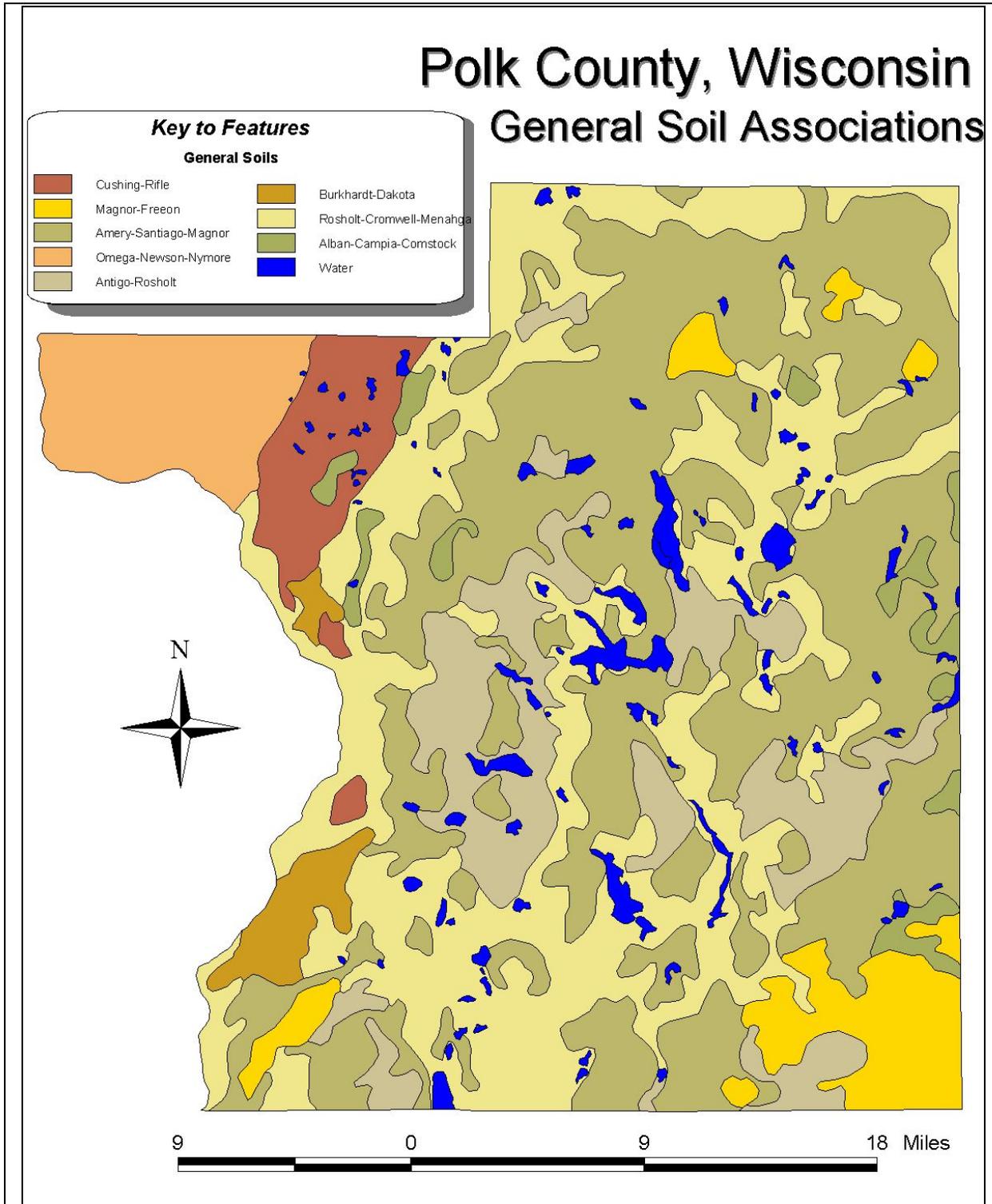
The soils of Polk County were formed principally from glacial and alluvial deposits under northern hardwood and conifer forest cover. Prairie and savanna vegetation in portions of the southwest affected the soil formation in those areas. Irregular topography and many depressions account for much of the local variability in soils.

General soil associations are illustrated in Figure 1. Each association contains several major and minor soils in a variable pattern. The soils within an association differ in properties such as drainage, wetness, slope, and depth to bedrock. These characteristics affect the suitability of the land for agriculture and development. General soils information is useful for policy and planning purposes, but not for site-specific applications. For more information on soils refer to the Polk County Soil Survey. <http://websoilsurvey.nrcs.usda.gov/app/>

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<sup>2</sup> West Central Regional Planning Commission. Polk County Comprehensive Plan. 2003.

Figure 1. General Soil Associations



## **Description of General Soil Associations**

### **1. Cushing-Rifle Association**

Undulating to very hilly, well and moderately well drained, loamy and nearly level very poorly drained organic soils on till plains.

### **2. Magnor-Freeon Association**

Nearly level and gently sloping, somewhat poorly and moderately well drained silty soils on till plains.

### **3. Amery-Santiago-Magnor Association**

Nearly level to very hilly, well and somewhat poorly drained loamy and silty soils on till plains.

### **4. Omega-Newson-Nymore Association**

Nearly level to hilly, somewhat excessively and poorly to very poorly drained sandy soils on outwash plains.

### **5. Antigo-Rosholt Association**

Nearly level to sloping well-drained silty and loamy soils on outwash plains

### **6. Burkhardt-Dakota Association**

Nearly level to sloping, well and somewhat excessively drained loamy soils on outwash plains.

### **7. Rosholt-Cromwell-Menahga Association**

Nearly level to very hilly, well and somewhat excessively drained loamy and sandy soils on pitted outwash plains.

### **8. Alban-Campia-Comstock Association**

Nearly level to moderately steep, well to somewhat poorly drained loamy and silty soils on glacial lake plains.

## **Groundwater<sup>3</sup>**

The principal sources of drinking water supplies in Polk County are the sand and gravel aquifer and the sandstone aquifer. The sand and gravel aquifer consists of unconsolidated sand and gravel in glacial drift and alluvium. These relatively shallow deposits occur throughout the county. Areas underlain by basaltic rocks do not have the sandstone aquifer available, so the more shallow sand and gravel aquifer is extremely important. Depth to groundwater and permeability of the surficial deposits affect the susceptibility of this aquifer. Where groundwater is shallow and surficial deposits are coarse, groundwater is susceptible to contamination from surface activities.

<sup>3</sup> West Central Regional Planning Commission. Polk County Comprehensive Plan. 2003, and USGS Protecting Wisconsin's Groundwater through Comprehensive Planning. May 2007 data.  
<http://wi.water.usgs.gov/gwcomp/find/polk/index.html>

The sandstone aquifer generally yields enough water for domestic use. The sandstone aquifer includes all sedimentary bedrock younger than Precambrian age. Precambrian rocks generally have low permeability and mark the lower limit of groundwater movement. The sandstone aquifer covers the southeastern half of the county and a portion of northwestern Polk County. Due to the abundance of water and depth of sandstone, the aquifer is typically used for wells that require large amounts of water, such as municipal and industrial water supplies. Depth to the sandstone bedrock and permeability of the surficial deposits determine the susceptibility of this aquifer. Where the sandstone is close to the surface and overlaid by coarse sediments or soils, groundwater contamination is more likely to occur.

Groundwater is the source of almost all of the drinking water in the county. Groundwater use has doubled from 1979 to 2005 to about 10.9 million gallons per day. This increase in total water use is attributed to increases in domestic, aquaculture, and public use and losses usage. The quality of groundwater in Polk County is generally good. Contamination of groundwater by human activity can be a severe problem because contaminants generally travel unnoticed, are difficult to remove, and may persist for decades. Water percolating through the soil can pick up human-made pollutants and transport them to the groundwater. Contaminants may also enter the groundwater through unused wells that are not properly sealed. Groundwater contamination comes from a variety of sources including leaking

underground petroleum pipes and tanks; use and storage of road salt; improper use, disposal, and storage of hazardous materials; and mismanagement of fertilizers, pesticides, and animal waste.

According to data by USGS, 91% of 783 private well samples collected in Polk County from 1990-2006 were below the drinking water health-limit for nitrate-nitrogen.

**Figure 2.**  
Polk County Well Data

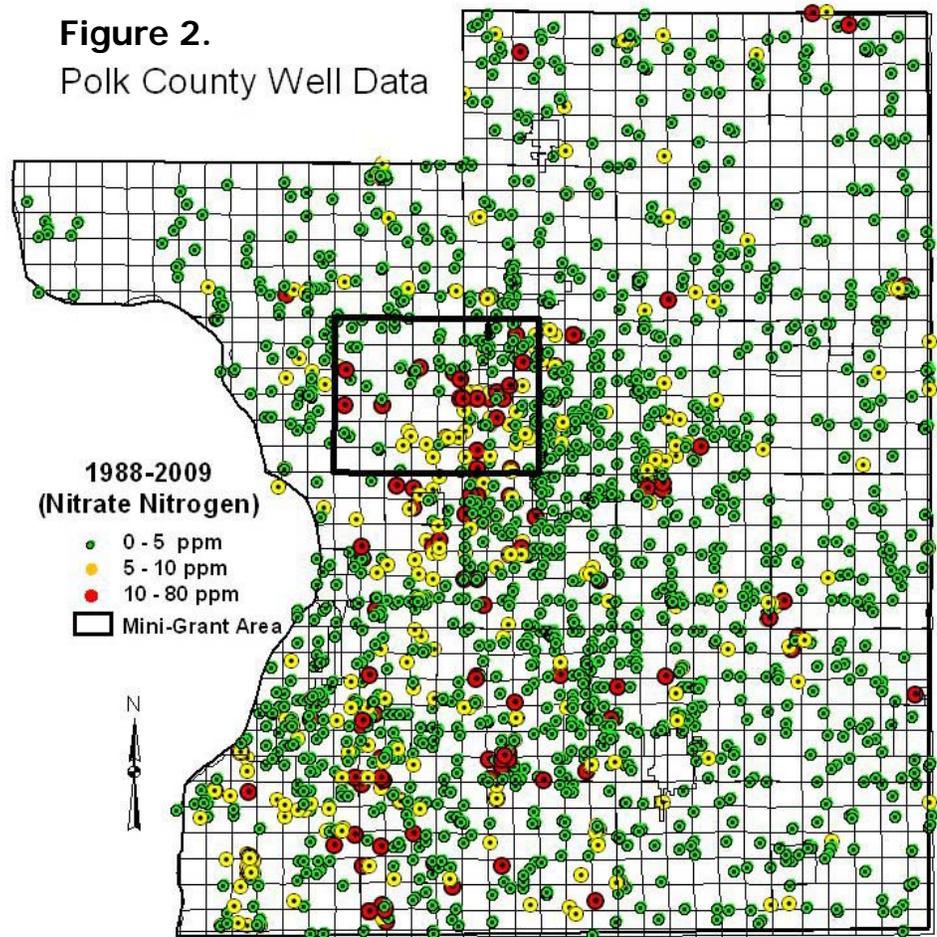
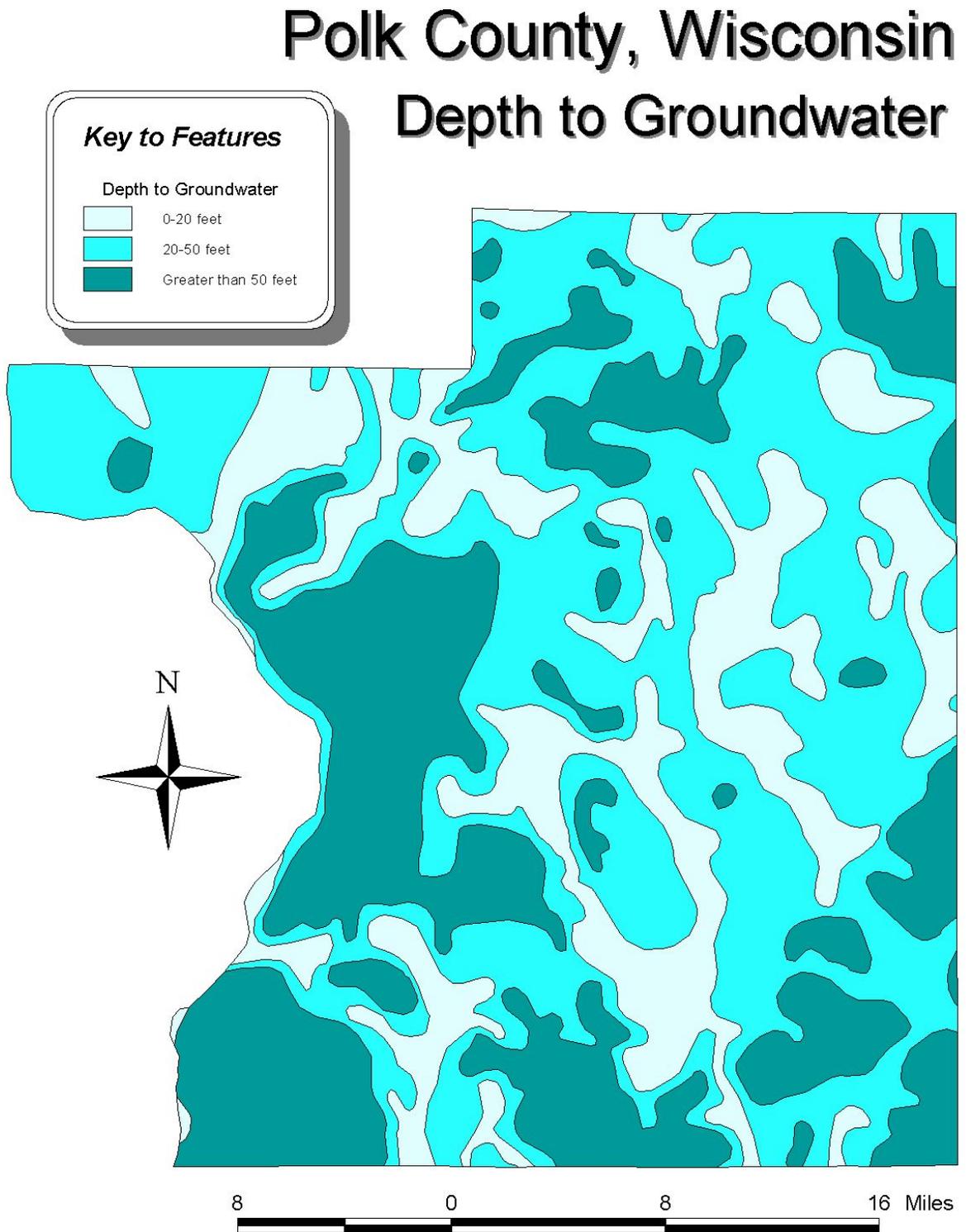


Figure 2 shows well testing data gathered from the Department of Natural Resources, Department of Agriculture, Trade, & Consumer Protection, Wisconsin Geological and Natural History Survey, and the Polk County Health Department. Approximately 3400 samples were collected from 1900 wells from 1988 to 2009. Data was entered into a GIS data base to show possible hot spots of nitrate. It is apparent from the county-wide data and previous state-wide research that bedrock plays an important role in the potential of contamination of our groundwater. However, the well depth, location, and land use adjacent to the well may affect the vulnerability of nitrate contamination. High nitrate results in the wells seem to be in sandstone along the transition of basalt and the sandstone. As a follow-up, the well depth, groundwater flow and land use around these high testing wells should be explored in more detail.

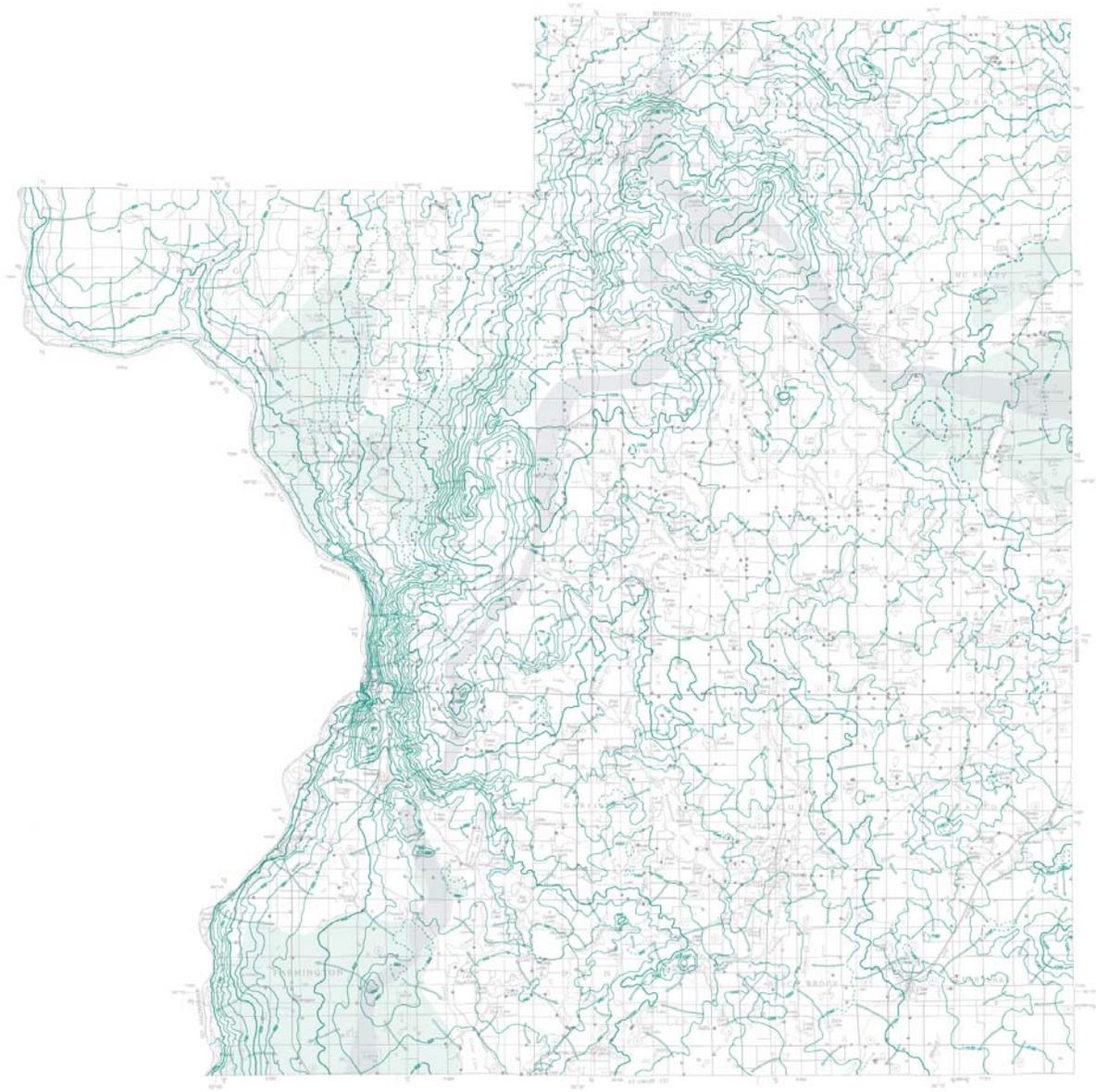
94% of 18 private well samples met the health standard for arsenic. A 2002 study estimates that 25% of private drinking water wells in the northwest region contains a detectable level of an herbicide or herbicide metabolite.

Polk County has 57 open-status sites that have contaminated groundwater and/or soil -- 29 Leaking Underground Storage Tank (LUST) sites, 27 Environmental Repair (ERP) sites and 1 spill site. There are 4 concentrated animal feeding operations in Polk County. Figure 3 illustrates the depth to groundwater in the county.

Figure 3. Depth to Groundwater



**Figure 4. Groundwater Contours in Polk County, Wisconsin (20 Foot Intervals)**



## Surface Water

Polk County has an abundance of surface water resources with more than four hundred lakes distributed throughout the county. Homes and cottages ring most large lakes, and the shores of many smaller lakes are targets for residential development. The St. Croix River flows along the county's western border receiving water from most of Polk County; some of this water by way of the Trade River, Osceola Creek, and the Apple River. Wetlands dot the surface of the landscape. Although many of these wetlands were drained in the past century, government and private efforts are underway to restore them.

The lakes, rivers, and wetlands of the county are impacted by upland land use practices in the watersheds that drain to them. Most of the pollutants that enter water resources are carried in runoff from many diffuse, or nonpoint sources. The major pollutants of concern are sediment (carried from areas with bare soil such as crop fields and construction sites) and phosphorus (both attached to soil particles and dissolved in water from fertilizers and animal waste).

The appearance and structure of shorelines has changed drastically with development. As homes and cottages are built, many landowners clear vegetation and destroy habitat both on the shoreline and in the water. Fish lose cover, shade, and food as aquatic insects that dwell on plants decrease. Amphibians such as frogs lose important habitat as well. Shoreline birds no longer have places to nest or find cover and food. The protective ring of vegetation both on shore and in the lake that once served to intercept and filter runoff is no longer present.

## Watershed rankings

Thirteen watersheds are contained completely or partially within Polk County as shown in Figure 4. These watersheds are all part of the St. Croix Basin, with the exception of the Hay River and the South Fork of the Hay River which drain southeast and are part of the Chippewa Basin. Polk County watersheds were ranked based on eight criteria as part of the 1986 *Polk County Watershed Assessment for Water Quality and Nonpoint Source Control*. The 1986 rankings were reevaluated as part of the 1999 planning process. The results are shown in Table 1.

The water in the high ranked watersheds (Balsam Branch, Lower Apple, Horse Creek, Beaver Brook, and Willow River) combined with the Upper Apple Watershed ultimately flow to Lake St. Croix in St. Croix County. Lake St. Croix is becoming impaired, and measures will need to be taken in Polk County to address nonpoint source pollution flowing to Lake St. Croix.

Department of Natural Resource watershed rankings finalized in February of 1998 in a *Nonpoint Source Watershed and Lake List* also are shown in Table 1. The list was developed to assist the Wisconsin Land and Water Conservation Board in identifying

priority watershed and priority lake projects. The Land and Water Board accepted the rankings in July of 1998. Although no current plans exist to designate additional watershed projects, the rankings are used by the DNR for prioritizing county projects.

**Figure 5. Watersheds of Polk County, Wisconsin**

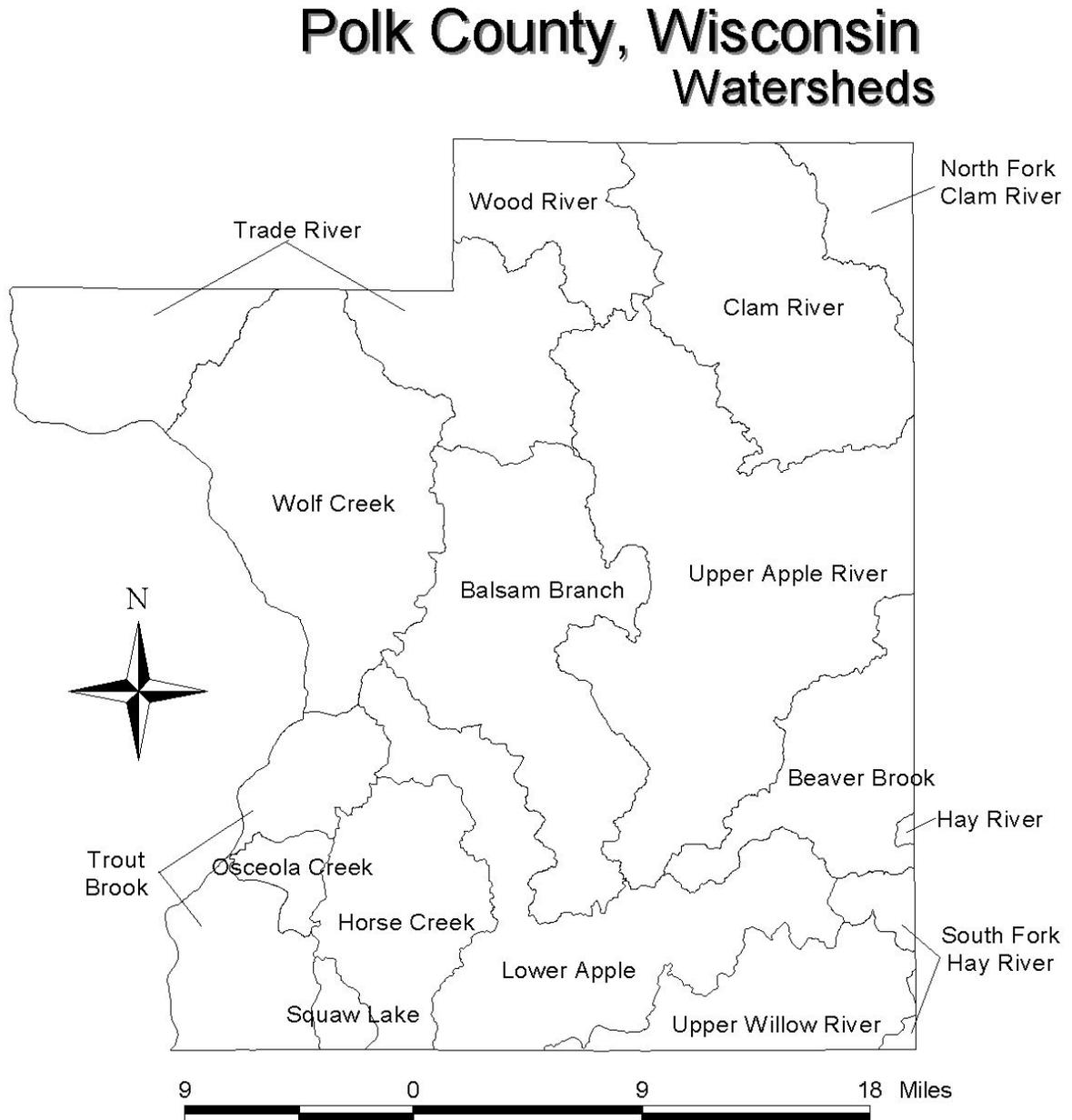


Table 1. Polk County Watershed Rankings

<b>Watershed</b>	<b>County Ranking</b>	<b>DNR Ranking</b>	<b>Water Quality Projects/Comments</b>
North Fork Clam River	Low	Not Ranked	
Clam River	Low	Not Ranked	
Wood River	Low	Low	Wood River Priority Watershed Project <sup>4</sup>
Trade River	Moderate	Medium	Project Completed 1989 <sup>5</sup>
Wolf Creek (Cushing)	Low	Not Ranked	
Balsam Branch	High	High	Balsam Branch Priority Watershed Project ended 2006
Upper Apple River	Moderate	Medium	
Beaver Brook	Moderate	High	
Lower Apple- Bull Brook	Moderate	High	
Lower Apple - Horse Creek	High	High	Horse Creek Priority Watershed Project Running through 2009
Osceola Creek (Small scale project - part of Trout Brook Watershed)	Moderate	High	Osceola Creek Small Scale Priority Watershed Project ended 2007
Willow River	Low	High	Willow River Priority Watershed Project completed by Barron County in 1987

<sup>4</sup>This project was administered by Burnett County. Water from agricultural lands in Polk County flow to Burnett County lakes in this watershed.

<sup>5</sup>This project was solely to construct barnyards within the shoreland corridor.

## Water Classifications

Outstanding and exceptional resource waters are protected through Department of Natural Resources (DNR) regulations. These waters may not be lowered in quality due to DNR permitted activities, such as wastewater treatment plants. Outstanding Resource Waters (ORWs) include rivers with excellent water quality; and lakes with excellent water quality, deep water that stratifies, and extreme sensitivity to phosphorus loading. Exceptional Resource Waters (ERWs) provide valuable fisheries, hydrogeologically or geologically unique features, outstanding recreational opportunities, unique environmental settings, and are not significantly impacted by human activities. In Polk County the following Outstanding Resource Waters are designated: the St. Croix River on the county's western border, the Clam River, McKenzie Creek, Sand Creek and tributaries, and Pipe Lake. There are no designated Exceptional Resource Waters in Polk County.

Impaired waters, also known as 303(d) listed waters, were compiled in a draft list by the Department of Natural Resources in February of 1998. The Impaired Waters List is submitted every two years to the United States Environmental Protection Agency (USEPA) as required under Section 303(d) of the federal Clean Water Act. The most recent 2008 Impaired Waters List identifies surface waters that do not meet water quality standards expressed in Chapters NR 102-105 of the Wisconsin Administrative Code. The list will be used as the basis for establishing strategies to improve water bodies using total maximum daily loads. Cedar Lake is listed as an implementation priority because of non-point source impacts of total phosphorus. Ward Lake is listed as a low priority for mercury by atmospheric deposition. Deer Lake has been delisted for atmospheric deposition of mercury. The St. Croix River is listed ofr contaminated soil by PCBs (low priority). Lake St. Croix, which receives water from most Polk County watershed, is proposed for listing due to total phosphorus.

## Land cover

The land cover in each watershed was grouped using data from the WISCLAND LandSat classification as shown in Figure 4. For the purposes of this plan, land was classed into the following categories: barren, forage, forest, grassland/shrubs, open water, row crops, urban, and wetland. The complete classification for each watershed is reported in Appendix A of the 1999 plan. Table 2 below reports only agricultural and urban land classes by percentage of total acreage. The classification does not include any portions of watersheds outside of Polk County.

The scale of the data limits the accuracy of the classification. Data is expected to be accurate for five-acre units. Some "urban" land uses such as lakeshore residential are likely to be under represented by this classification because of small lot size and tree canopies over residential lots.

Figure 6. Land Cover

# Polk County, Wisconsin Land Classification

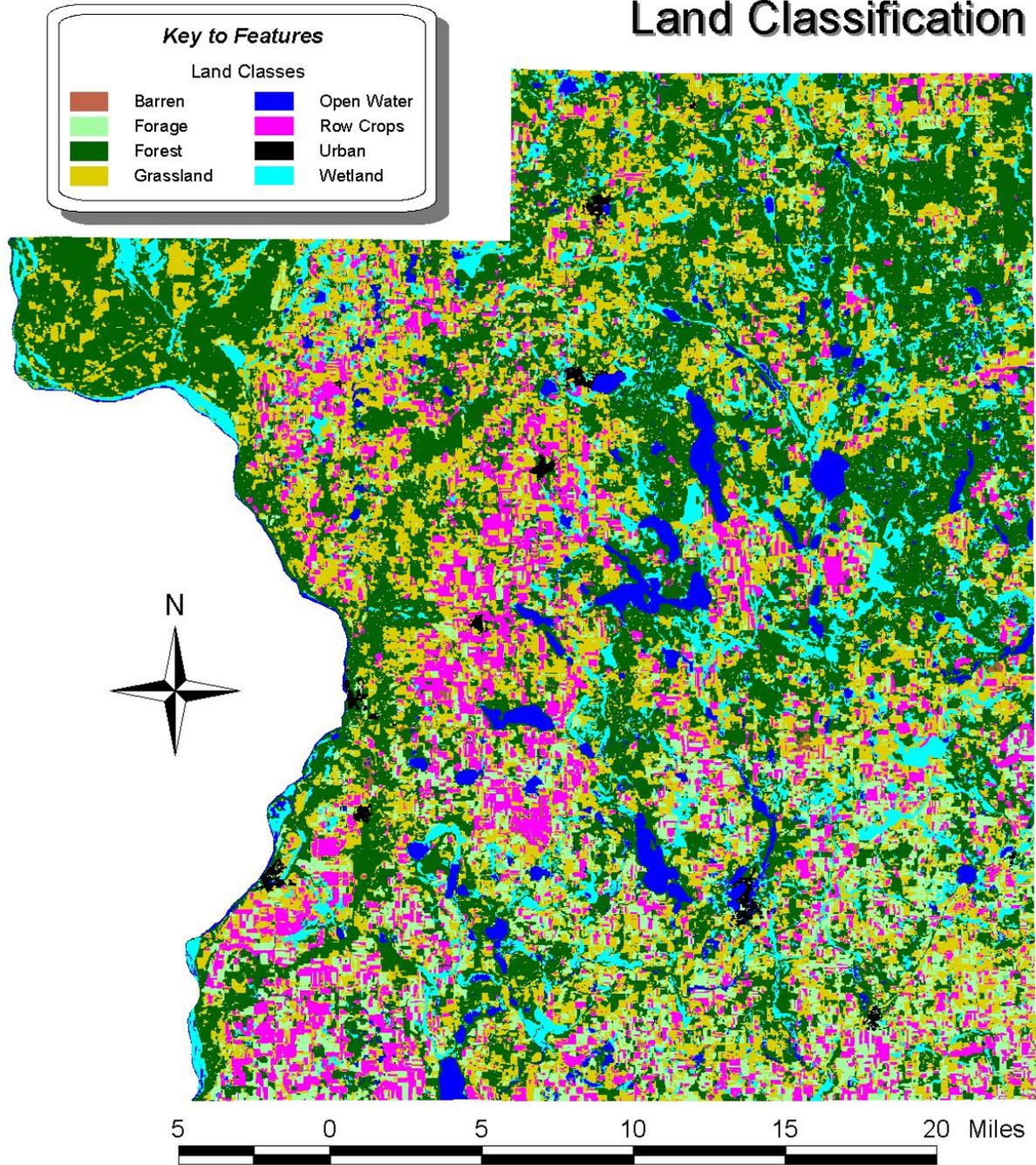


Table 2. Agricultural and Urban Land Classification for Watersheds<sup>6</sup>

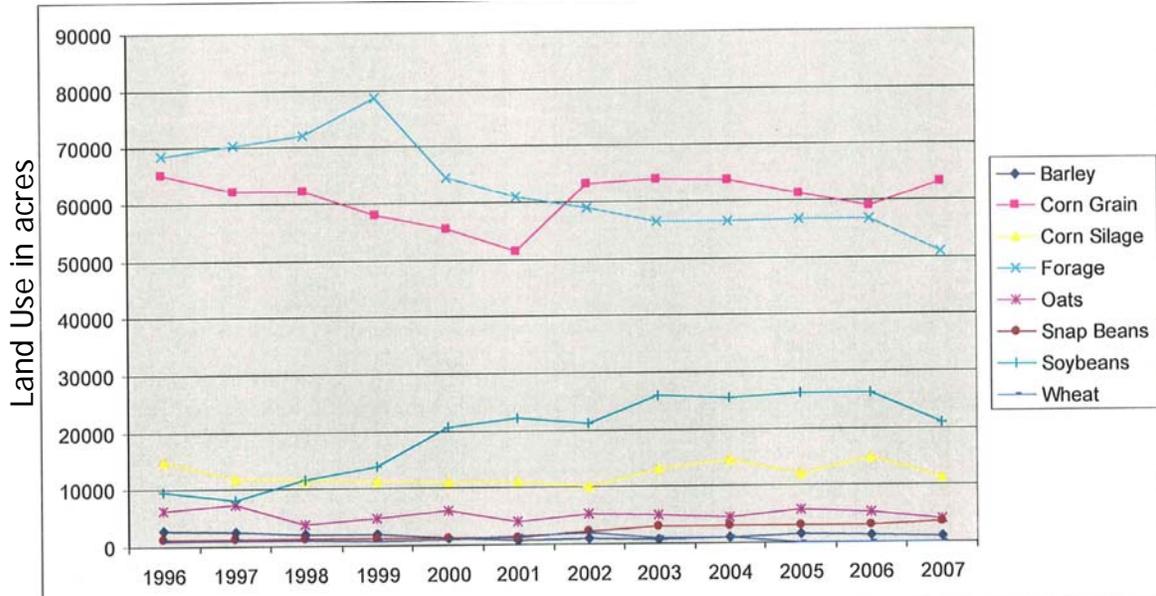
<b>Watershed</b>	<b>Total Acres</b>	<b>Percent Ag. Land</b>	<b>Percent Urban</b>
Squaw Lake	3959	64	0.0
Upper Willow River	26,798	47.1	0.7
Trout Brook	35,892	36.6	0.8
Lower Apple River	61,172	35.6	0.4
Horse Creek	30,373	33.6	0.0
South Fork Hay River	5443	32.3	0.0
Hay River	475	30.5	3.0
Beaver Brook	31,325	28.6	0.2
Osceola Creek	5957	28.5	4.4
Balsam Branch	66,560	25.3	0.6
Upper Apple River	111,943	13.5	0.2
Trade River (East)	32,585	12.7	1.6
North Fork Clam River	13,107	11	0.0
Clam River	61,330	8.0	0.0
Wood River	24,286	6.7	0.8
Trade River (West)	27,734	0.1	0.0

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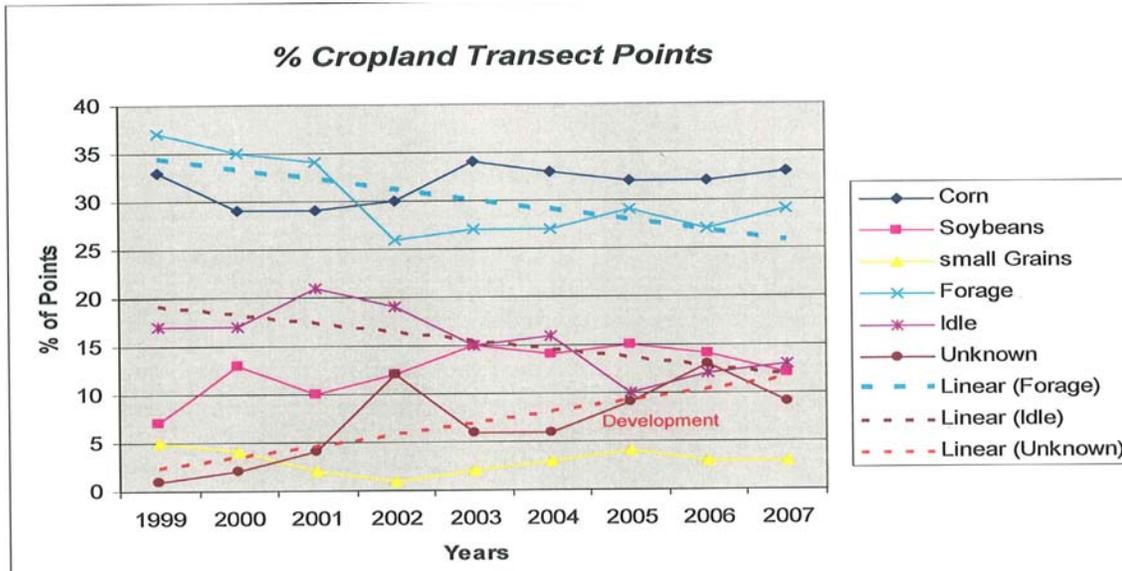
<sup>6</sup>Based on WISCLAND classification of LandSat photos taken in 1992 and 1993.

## Agricultural and Cropland Trends

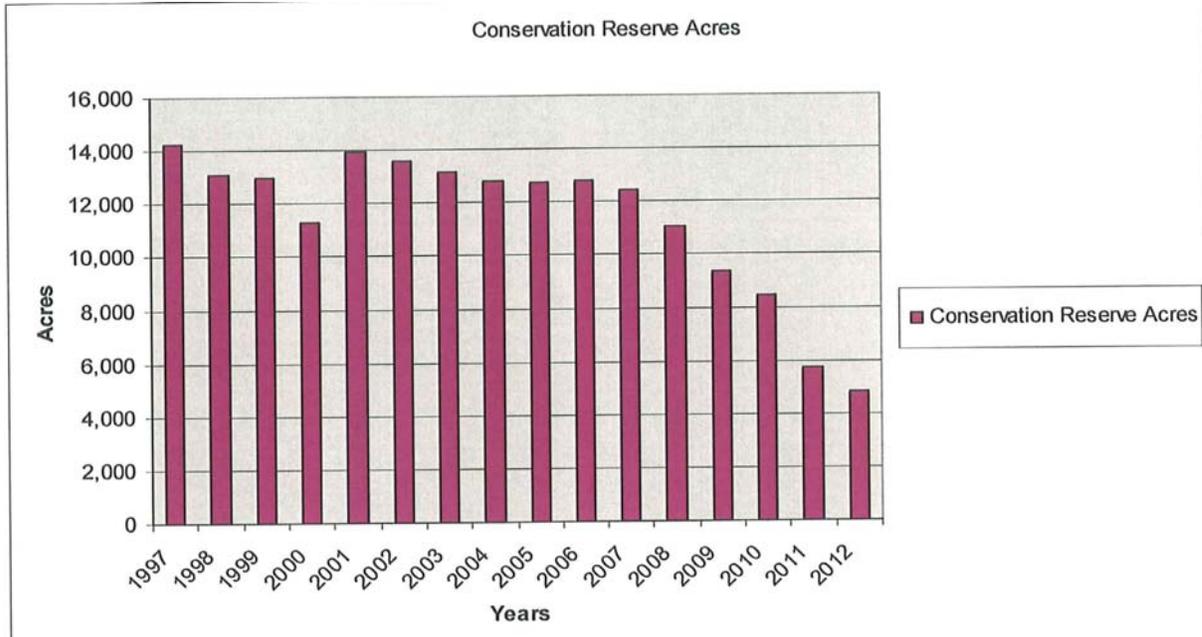
Polk County has approximately 206,111 cropland acres (34% of county). Of this cropland, approximately 37% is planted to corn (6% is corn silage), 25% to forage crops, 11% to soybeans, and the remaining is in small grains, specialty crops or sits idle (USDA NASS).



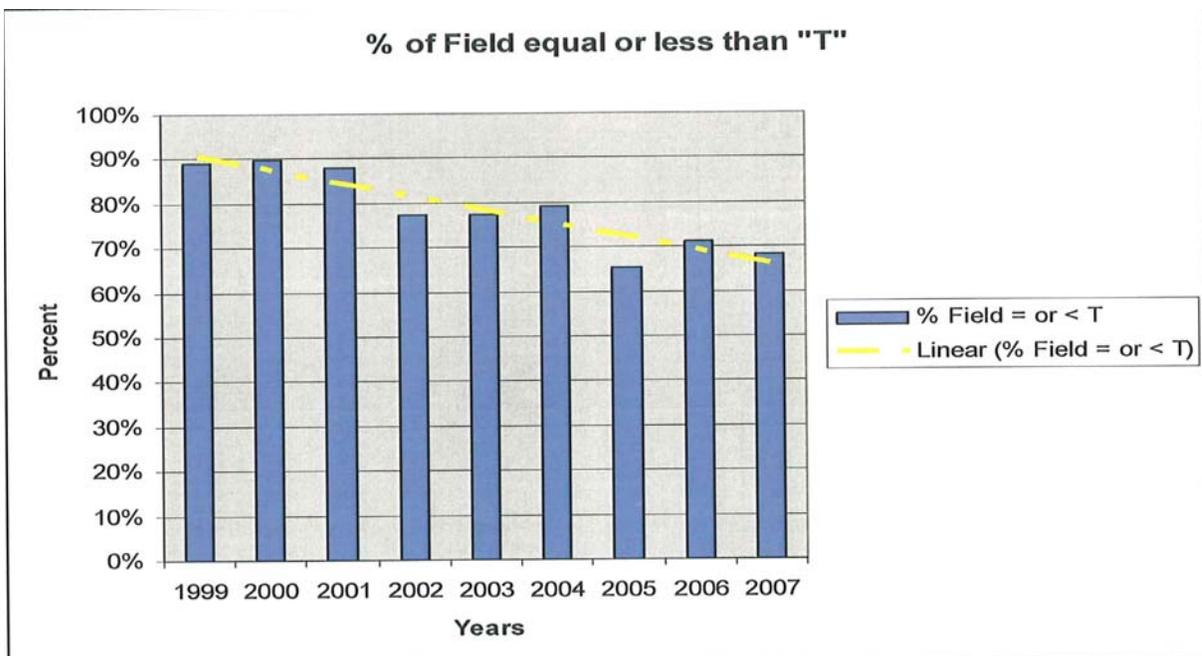
The county Cropland Transect Survey of crops, management practices, and land use has been conducted annually according to stand methods since 1999. There are approximately 900 random points that are inventoried throughout the county. The data monitors trends in land use, crops, management practices, and soil loss over time.

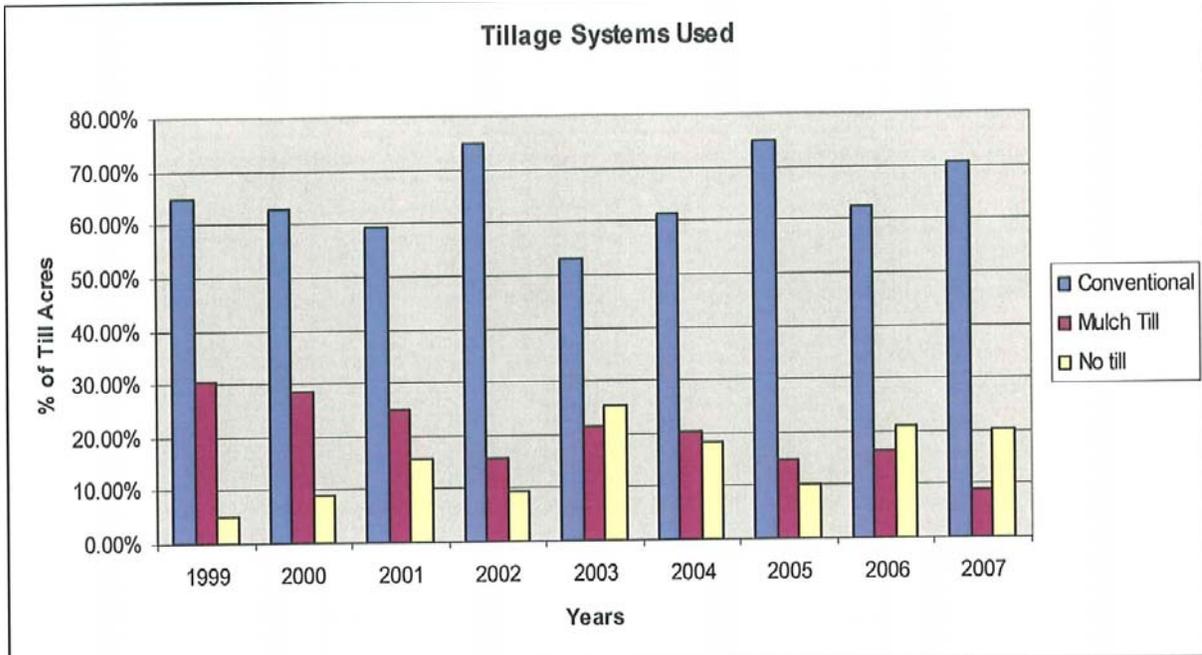


The Conservation Reserve Program is a federal program that pays producers to protect environmentally sensitive areas like land adjacent to streams, lakes, and wetlands. Producers must sign a contract for a minimum of 10 years. These projections are based on non-renewal of contracts ending soon in CRP.

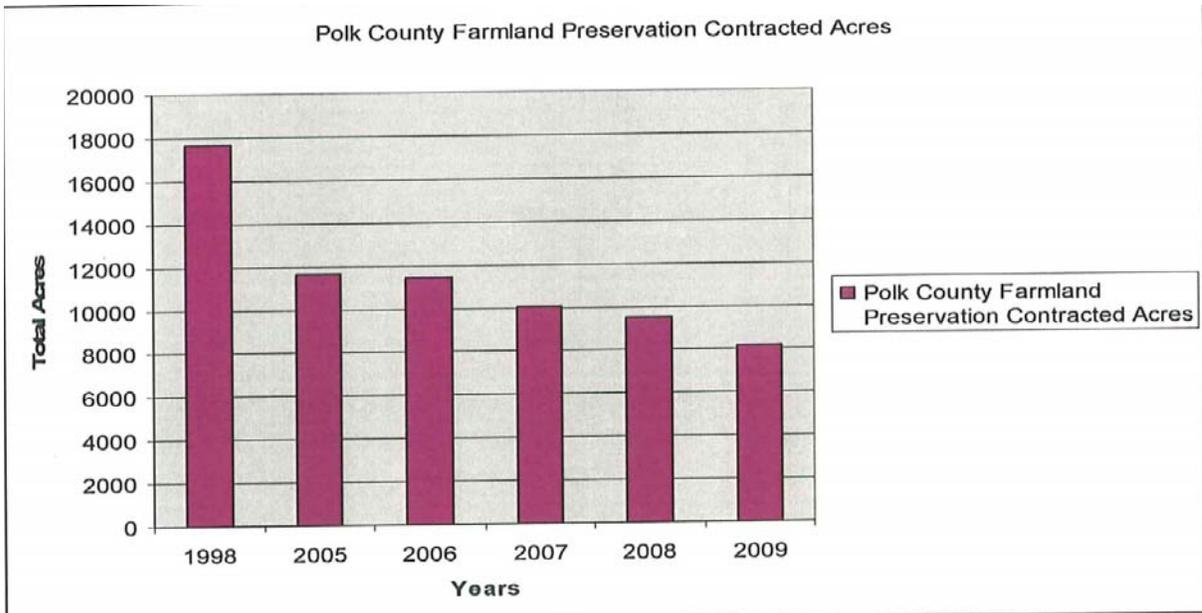


During the time of this survey, the percent of fields with soil loss less than "T" has declined. "T" is the tolerable limit of soil loss. Fields above "T" are not operating at a sustainable rate because the fertile, farmable soil is washing away.





Conventional tillage has varied slightly year to year, but remains fairly steady. No-till has been increasing over the last ten years, but has not kept up with the more intense cropping rotations for cash grain farming. This indicates more sediment will be reaching our waterways and impairing water quality of our rivers and lakes.



The Polk County Farmland Preservation Plan was adopted in 1980 and updated in 2004. Property tax relief is provided to farmland owners who participate in the program. The county currently has 9,474 acres enrolled in farmland preservation agreements. Over the past ten years, more than sixty percent of the landowners have not renewed their contracts.

## Development trends

The county is generally rural with a 2000 population of 41,319. Incorporated areas contain 36% of the population. The two largest communities are Amery (2000 population 2845) and Osceola (2000 population 2421). Residential development is influenced by the county's proximity to metropolitan Minneapolis and St. Paul, Minnesota. Commuting to jobs in the Twin Cities is common. In the village of Osceola, for example, over 30 percent of the work force commutes to jobs in nearby Minnesota.<sup>7</sup> Minnesota residents own many of the lakeshore homes in the county.

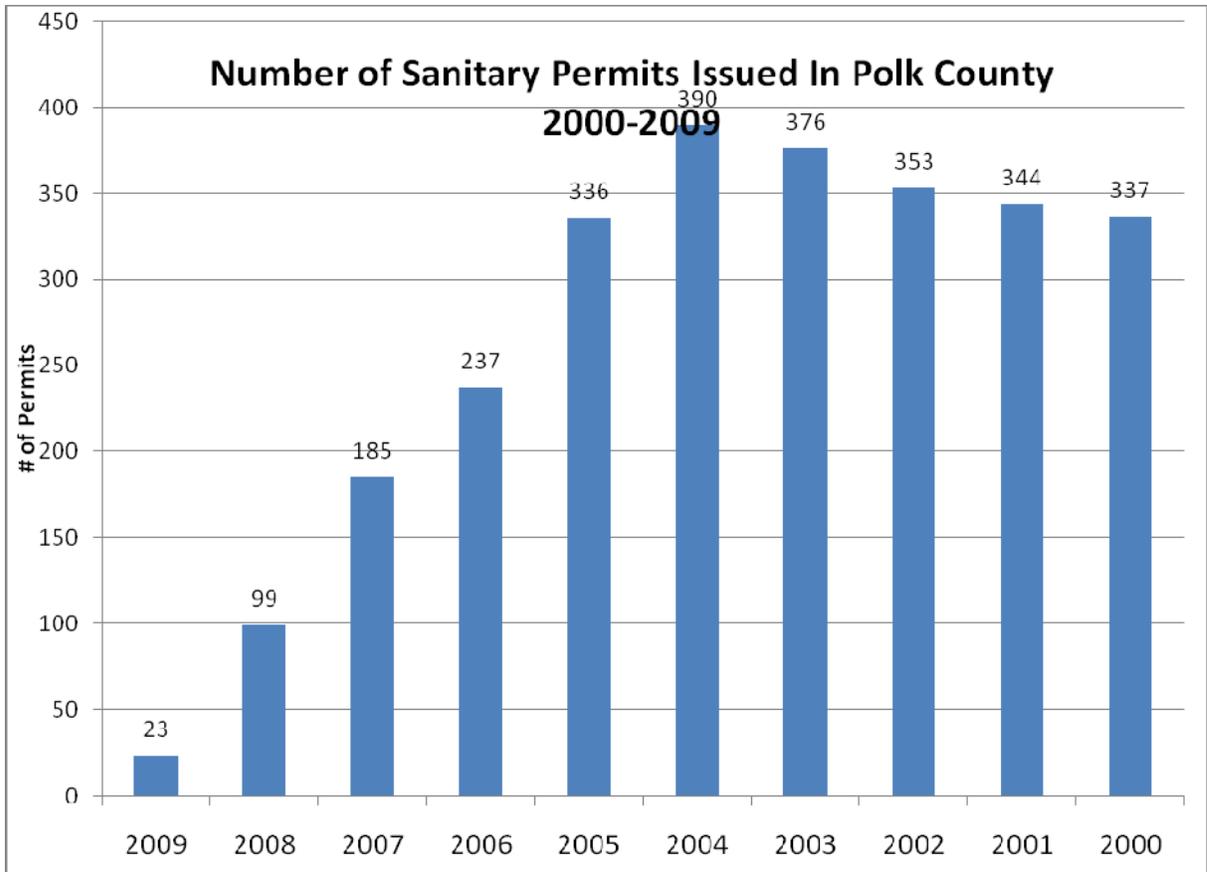
Population and growth rates are generally highest in the southwestern portion of the county as illustrated in Figures 8 and 9. Watersheds in this area include Trout Brook, Osceola Creek, Horse Creek, Squaw Lake, and the Lower Apple River.

Most recent population growth has occurred in the unincorporated areas of Polk County. In the 1970s, the unincorporated areas accounted for 69 percent of the county's population growth. During the 1980s, only 51 percent of the growth occurred in the unincorporated areas. In the 1990s, 61 percent of the population growth was in unincorporated areas.

While population growth shows increases only in permanent residents, sanitary permits indicate where new construction in any unsewered area of the county occurs. Sanitary permits issued over the last ten-year period (2000-2009) shows a reverse in trends from the previous Land and Water Management Plan. In 2003, the townships of Balsam Lake, Georgetown, and Apple River had more than 120 permits issued (areas of prime waterfront development on Bone, Balsam, Round, Deer, Loveless, and Long Lakes.) In 2009, only 23 permits had been issued in the county in a 6-month period. Only 99 permits were used in the year 2008. The recent economic fallout of our country slowed development almost to a standstill. This may bode well for water quality.

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<sup>7</sup>1990 U.S. Census as referenced in the Village of Osceola Comprehensive Land Use Plan. Northwest Regional Planning Commission. 1995.



The notion of living near water lures development along lakes, streams, and wetlands. Increased residential development negatively affects county water resources. When homes are built near water, the buffer of vegetation is frequently removed or greatly altered, which removed protective cover. Wetlands may be filled to build roads, driveways, and establish lawns.

Although residential development may actually result in less sediment and nutrient delivery to water per acre than continued agricultural land use, there are other consequences. Much of the land converted to residential land in Polk County is forested rather than agricultural land. This conversion results in increased delivery of pollutants to water. In addition, during home and road construction, when the protective cover of vegetation is removed, there are dramatic increases in the rates of soil loss and resulting sedimentation of water resources. Poor road construction can lead to ongoing erosion problems. Increased quantities and rates of runoff result from densely developed residential areas because of the increase in impervious surfaces. This increased runoff (and decreased infiltration) can increase sediment delivery, increase erosion along streambanks, increase nutrient loadings, and cause flooding on adjacent property.

Figure 7. 2000 Population by Township

# Polk County, Wisconsin 2000 Population

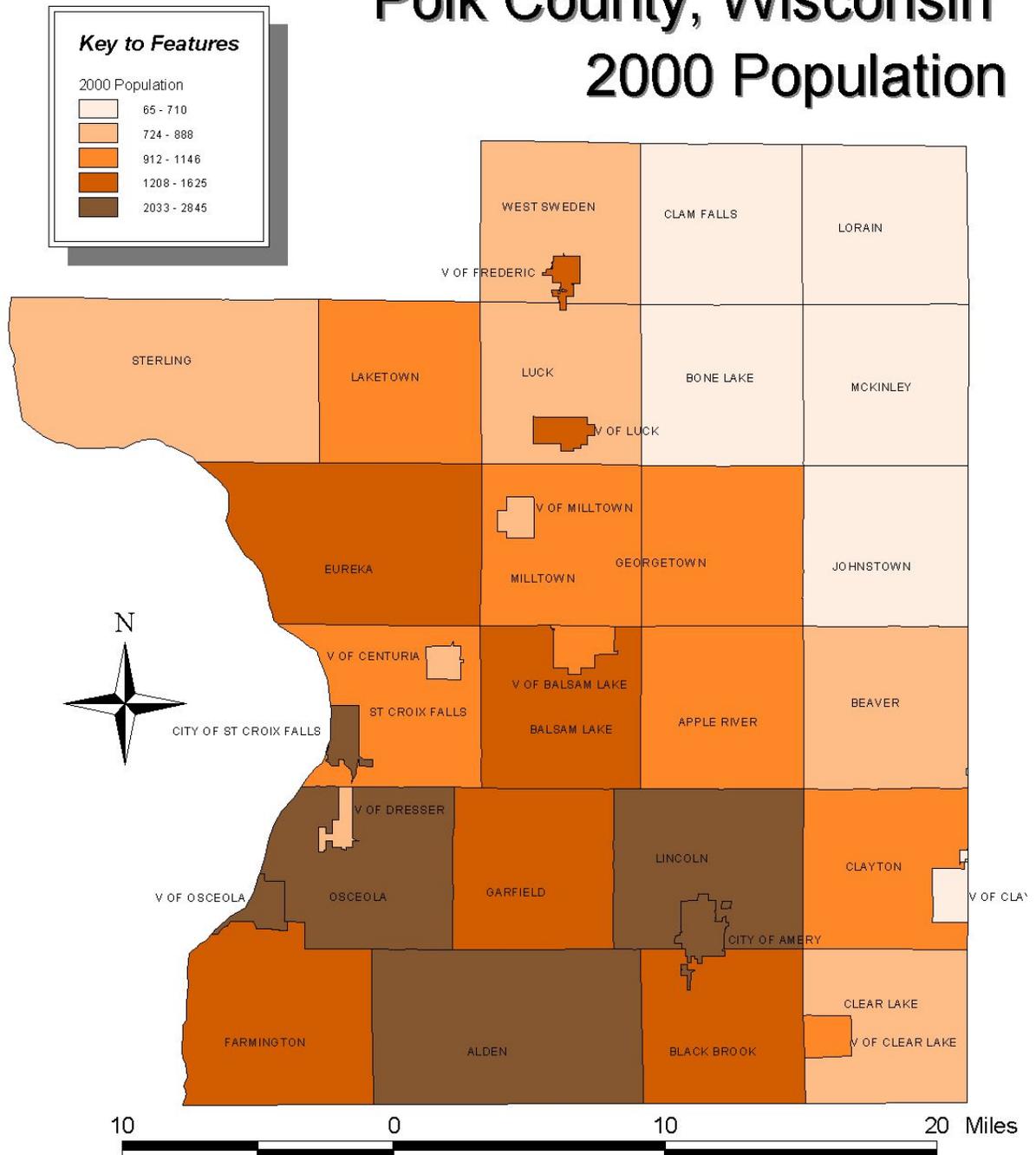
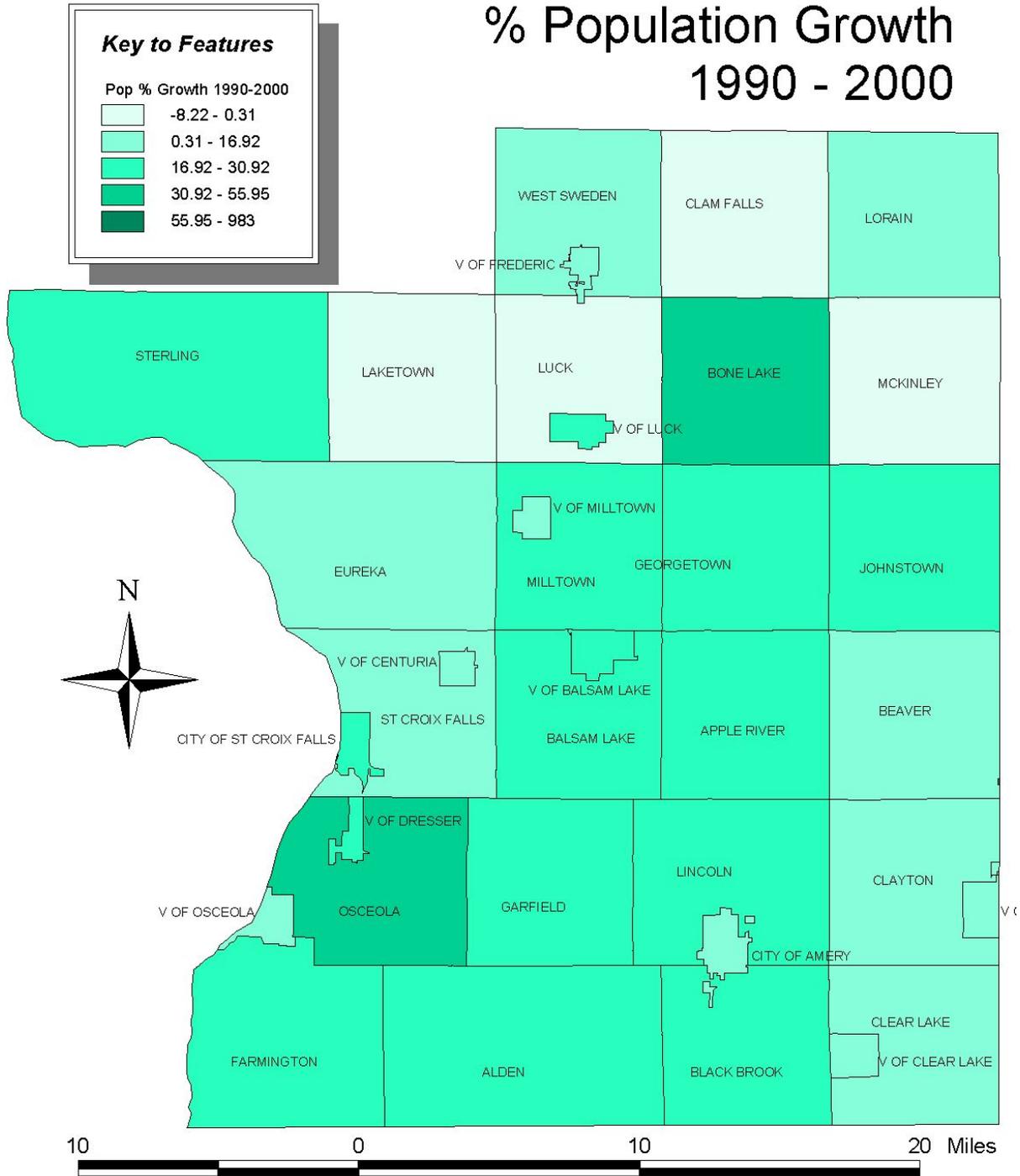


Figure 8. Population Change 1990 – 2000

# Polk County, Wisconsin

## % Population Growth 1990 - 2000



## Surface Water

Polk County has an abundance of surface water resources with 437 lakes, 365 mile of streams and approximately 21,000 acres of wetland distributed throughout the county. Recreational opportunities include 36 segments of trout streams (90 miles, 26 miles are Class I), 62 public landings for boat access, approximately 30 carry-in access sites, 5 county parks, 3 state forests, 2 state parks, 3 state trails, 12 state wildlife areas, 7 state natural areas, 1 national scenic riverway, several town and municipal parks, 2 private land trusts, and 17,149 acres of County Forest.

### *Threats:*

- The lakes, rivers, and wetlands of the county are impacted by land use practices in the watersheds that drain to them. Sediment and phosphorus continue to be the main sources of pollution. Atmospheric deposition of mercury also affects the quality of our surface water resources.
- Accelerated eutrophication affects the fisheries of our lakes. Blue green algae blooms have become more frequent, which pose threats to human and pet health, food quality for fisheries, aesthetics and water clarity problems, recreational use, and economic value for riparian properties.
- Loss of shoreland vegetation and wetlands to protect our water resources. Some of the losses of benefits include:
  - Filtering pollutants, nutrients, and sediments
  - Storage of runoff from heavy rains and snow melt to reduce flood damage
  - Essential habitat for fish, mussels, waterfowl, and a variety of other animals. 90% of endangered animals utilize the shoreline in some stage of their life.
  - Buffering from waves and currents
  - Privacy for lake user and riparian owner
  - Natural scenic beauty that attracts tourists and enhances our quality of life
- Loss of native aquatic vegetation – however, lake management plans are being updated locally, and aquatic plant management plans are required before control permits are issued. Native vegetation utilizes nutrients in lakes that would otherwise be available to algae. The loss of shoreland vegetation exacerbates the loss of aquatic vegetation.
- Development – construction site erosion is a large contributor of sediment in our lakes and streams. The Uniform Dwelling Code is responsible for regulation of erosion from single family dwellings. Disturbances of ½ acre in the shoreland zone or 1 acre and above may require a storm water management and erosion control permit. All major lakes in Polk County have ring development along the shoreline. The shoreland buffer is the last interception of sediment and nutrients to the lake.

- Development – impervious areas like rooftops, driveways, sidewalks, and compacted yards from heavy equipment increase the volume of stormwater runoff and limit the amount of groundwater infiltration taking place. Urban landscaping often accompanies development in place of native shoreland vegetation. 20% of all housing units in Polk County are seasonal use only.
- Aquatic Invasive Species – 29 waterbodies are identified as having invasive species. Humans are the fastest conveyance method for invasive species to reach new waters. Invasive species affect recreation, water quality, human and ecosystem health. Lake organizations and volunteers have been an asset to prevent, monitor, and control invasive species.
- User conflicts on water – passive versus active recreation
- 4 Confined Animal Feeding Operations, 13 Municipal Discharges into water resources, 5 Industrial Discharge sites

## **Appendix B. Progress Tracking Report –2008 Annual Report**

**POLK COUNTY  
LAND & WATER RESOURCES DEPARTMENT  
2008 ANNUAL REPORT**



Manure storage facilities – construction projects in Farmington and Laketown



Lakeshore – construction site issues



Stormwater runoff – retention pond overflow



Nutrient Management Training - provided by LWRD



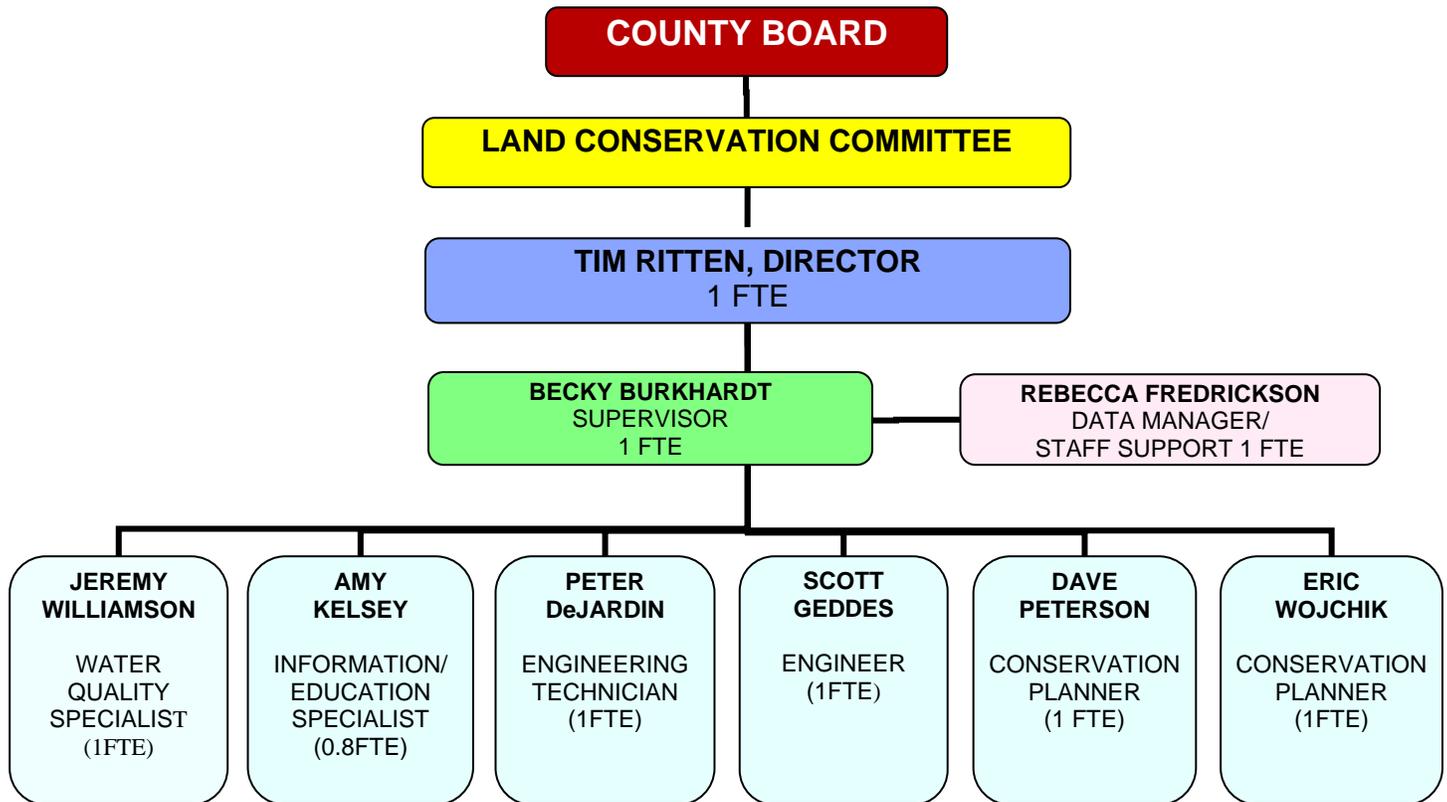
DD Kennedy – LWRD Environmental Education Day

## Mission Statement :



To preserve, protect and enhance  
our natural resources

**POLK COUNTY  
LAND & WATER RESOURCES DEPARTMENT  
2008**



**LAND & WATER RESOURCES STAFF**

Tim Ritten – Director  
 Becky Burkhardt – Supervisor  
 Peter DeJardin – Engineering Technician  
 Scott Geddes – Engineer  
 Dave Peterson – Conservation Planner  
 Eric Wojchik – Conservation Planner  
 Amy Kelsey – Information Education Coordinator  
 Jeremy Williamson – Water Quality Specialist  
 Rebecca Fredrickson – Data Manager

**LAND & WATER RESOURCES  
GOVERNING COMMITTEE**

Larry Jepsen, Chairman  
 Diane Stoneking, Vice Chair  
 Ted Johnson, FSA Representative  
 Kathryn Kienholz, Secretary  
 Dean Johansen

**POLK COUNTY LAND & WATER RESOURCES DEPARTMENT**  
**2008 ACCOMPLISHMENT REPORT**

**---SURFACE WATER PROTECTION---**

Stormwater and Erosion Control Ordinance:

- Reviewed, permitted and construction checked 15 miscellaneous construction projects
- Reviewed, permitted and construction checked 4 subdivisions
- Reviewed 2 permits still pending
- Reviewed 4 projects found not to need a permit or permit not granted
- Construction checked 6 permit sites from last year
- Reviewed 2 water runoff complaints
- Reviewed 2 construction site complaints
- Conducted a Workshop for Landscapers

Nonmetallic Mining Reclamation Ordinance:

- Measured 64 nonmetallic mines for compliance
- Collected bonding and permit fees for 65 nonmetallic mines
- Processed reports, notices, payments, etc. per NR135
- Reviewed and approved 3 new Nonmetallic Mining Reclamation Plans
- Reviewed 1 new mine reclamation permit application not yet approved
- Conducted a Public Informational Hearing on 1 NMM Reclamation Permit
- Conducted a Contested Case Hearing on 1 NMM Reclamation Permit

Farmland Preservation Program:

- 32 self certification status reviews
- 11 conservation plan reviews
- 5 conservation plans updated
- Exclusive Ag. Zoning finalized in the Town of Alden

County-wide conservation practices using various cost-share funding sources:

- 4 farm conservation plans
- 1 rock chute gully erosion control structure

Towns and Municipality Projects:

- Town of Black Brook boat ramp parking lot on King Lake
- Fairgrounds construction check for stormwater runoff controls
- 14 Town and Village meetings for terrestrial invasive species, stormwater
- Assisted City of Amery - Stormwater Plan and Ordinance
- Assisted City of Amery - Aquatic Invasive Species Ordinance
- 3 Town erosion control/culvert replacement plan assistance
- 3 dam inspections, misc. stormwater issues review for Burnett County

Animal Waste Ordinance:

- 1 overgrazing in shoreland zone issue addressed

Lake Organizations and lake/lakeshore related projects:

- County-wide Monitoring Grant for aquatic invasive species

- Big Butternut Lake Grant application
- Big Round Lake plant monitoring
- Big Blake Lake plant monitoring
- Lotus Lake water quality study and lake plan
- Horse Lake water quality study and lake plan
- Wild Goose water quality study and lake plan
- Ward Lake water quality study and lake plan
- Pipe Lake Grant modeling and site checks
- Technical assistance - Bone Lake Lake Management Committee
- Technical assistance - Bone Lake Aquatic Plant Management Committee
- Technical assistance - Pipe Lake District
- Lake modeling for Wapogasset Lake
- Shallow Lake Paleolimnology study
- Clean Boats Clean Waters program: Balsam, Bone, Church Pine, Half Moon, Wapogasset Lakes
- Technical assistance to 50 BOA and Zoning projects
- 7 plan reviews that required mitigation
- 12 shoreline restorations
- 10 rain gardens
- Assisted Willow River Watershed TMDL project

#### Educational:

- Several presentations to 4<sup>th</sup> grade and 5<sup>th</sup> grade students at D.D. Kennedy
- Bone Lake aquatic plant identification training
- Amery Elementary students aquatic insects presentation
- Amery City Council – 2 presentations
- Lake Magnor – 4 presentations
- Invertebrates presentation at Dresser, St. Croix Falls libraries
- NW Wis. Land Trust Bioblitz pond ecosystem presentation
- St. Croix River Research Rendezvous presentation
- Attendance at various meetings, open houses, etc.
- Arbor Day presentations at all Polk County schools
- Coordinate Tri-County Soil Judging contest participants from Polk County and assistance to the host county. 2008 marked the 34th annual contest, with 100 students participating
- Shoreline Guidebook
- Children's Shoreline Guidebook
- Polk County Sportsman's Show – Aquatic Invasive Species education
- Polk County Lakes and Rivers Assoc. meetings
- Governor's Fishing Opener AIS display at Garfield Park
- Conservation Tillage Workshop – 30 farmers attended

#### Miscellaneous:

- County tree sales program, approximately 35,000 trees sold
- Transect survey
- 16 Highway Department Driveway Permit reviews
- Turf Management Plans at 2 local schools
- 1 shoreland construction site runoff complaint
- Filed reports to DNR for Priority Watershed Projects

## ---SURFACE AND GROUND WATER PROTECTION---

County-wide conservation practices using various cost-share funding sources:

- comprehensive nutrient management plans (CNMP's) on 3 farms
- nutrient management plans (NMP's) on 5 farms
- 11 producers trained nutrient management classroom snap+ program

Other Conservation Practices:

- 1 nutrient management plan reviewed
- Wrote grant for 11 nutrient management plans
- Assisted with 2 comprehensive nutrient management plans

Animal Waste Ordinance:

- 3 manure spreading issues addressed

Educational:

- Earth Day at the Recycling Center (approximately 600 students, 3 separate exhibits with presentations)
- Conservation Day presentation to 1-5<sup>th</sup> grade, 2-4<sup>th</sup> grades, 1-3<sup>rd</sup> grade
- Newspaper articles, press releases
- Polk Burnett Leadership Academy presentation
- Clear Lake Smithsonian Display presentation (172 students)
- Radio interviews on various LWRD programs
- Polk County Fair environmental tent with many displays
- Conservation Poster Contest – subject “Water is Life”, 135 students participated

Miscellaneous:

- Filed accomplishment reports to DATCP and County for previous year
- Submitted work plans to DATCP and County for coming year
- Submitted Targeted Resource Management Grant application to DNR and Segregated Funds Grant application to DATCP
- Revised Department policies and procedures, and develop forms, etc.
- Addressed many and various requests for information

## ---GROUND WATER PROTECTION---

County-wide conservation practices using various cost-share funding sources:

- 4 well abandonments
- 1 manure pit closure

Animal Waste Ordinance:

- 2 Manure Storage Permits issued
- 1 manure stacking issue addressed
- 1 manure spill complaint addressed

Miscellaneous:

- Mini grant for nitrate testing of private wells

## **THE 2008 TREE PROGRAM**

The Land & Water Resources Department filled 310 orders, totaling 35,000 trees sold in 2008. This program is always well received by the public. The money from tree sales supports the educational programs that the Department sponsors, such as the Conservation Poster Contest, Conservation Speaking Contest, Tri-County Soil Judging Contest, Polk County Fair and Arbor Day trees. In 2008, 700 Polk County 6<sup>th</sup> graders were given an Arbor Day presentation and pine seedling to plant.

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## 2008 Financial Statement

### Polk County Land & Water Resources Department

<b>EXPENSES</b>	<b>2008</b>	<b>2007</b>
Salaries	398,496.98	341,810.24
Fringe Benefits	143,339.55	123,021.04
Transportation	8,324.71	7,117.46
Professional Services	444.00	2,677.05
Cost-Sharing(County, State, Federal)	130,816.04	292,758.03
Postage	1,327.78	1,361.69
Operating Expenses	48,729.93	28,646.41
<b>Total Expenses</b>	<b>731,478.99</b>	<b>797,391.92</b>
<b>REVENUES</b>		
Cost-Sharing	130,816.04	267,193.81
State Aid	224,501.04	248,550.73
Manure Inspection Fees	600.00	200.00
Non-Metallic Mining Permit Fees	21,190.00	15,440.00
Tree Planting	20,958.99	43,044.27
LWRD Conservation Materials	4,006.26	4,164.72
Cons. Fees Other Counties	34,764.88	32,791.93
LWRD Contracted Services	2,848.29	4,721.59
Interest Non-Point Grants	0.00	377.63
LWRD Zoning Services	0.00	0.00
LWRD Revenue from Townships	0.00	3,098.34
Shoreline Project Fees	650.00	450.00
Storm Water/Erosion Control Ord.	4,360.00	7,920.00
County Cost-Share	15,203.62	17,122.00
County Allocation	410,250.00	357,275.00
<b>Total Revenues</b>	<b>870,149.12</b>	<b>1,002,350.02</b>

# Department: Land and Water Resources

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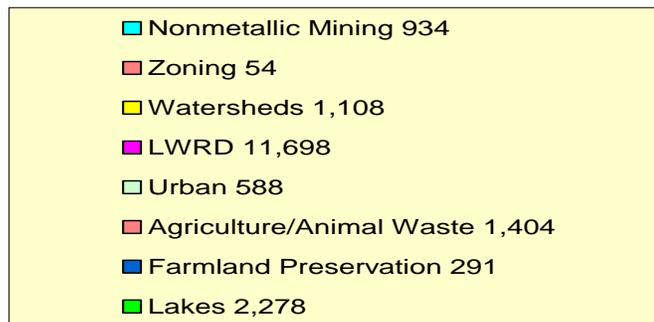
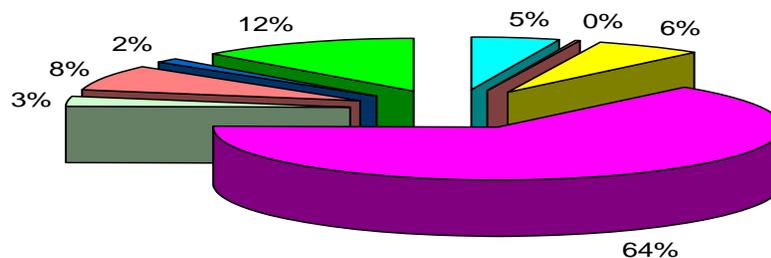
Polk County  
 MONTHLY SUMMARY WITH BUDGET

GLINTRA.L02 Page 1

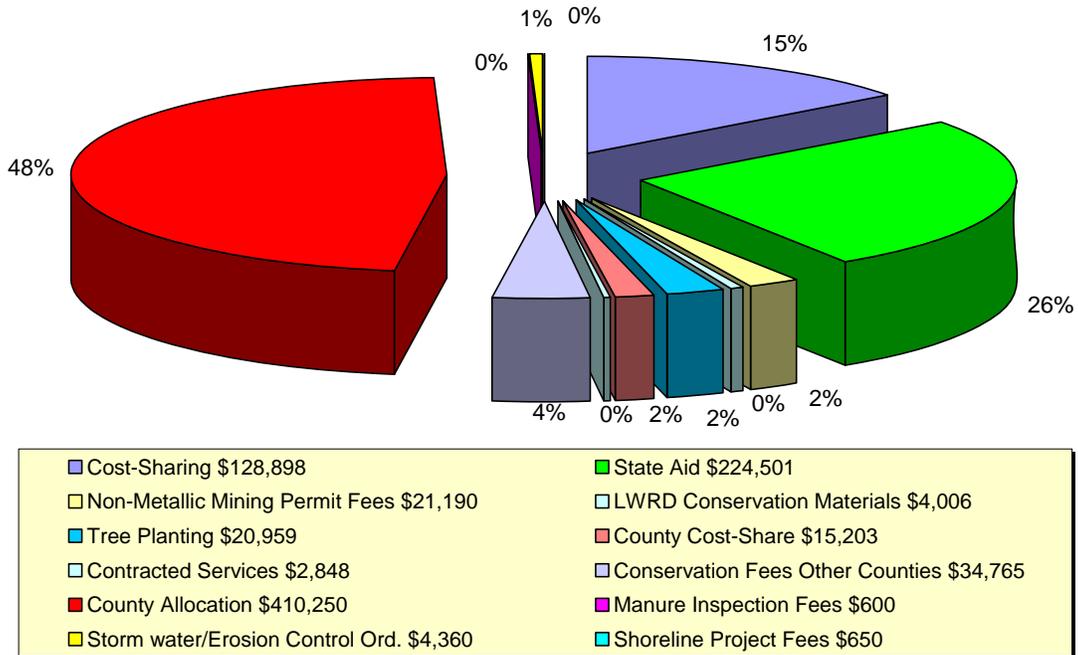
Description	Period to date Actual	Year to Date Actual	Year to Date Budget	% of Budg	Budget Variance
41110 000 000 00 101 22 GENERAL PROPERTY TAX	.00	410,250.00	410,250.00	100.00	.00
43579 000 000 00 101 22 ST.AID LAND/WATER MGMT (56158)	54,577.90	58,424.40	58,424.40	100.00	.00
43580 000 000 00 101 22 ST.AID LAND/WATER RESOURCE	.00	132,820.00	131,950.00	100.66	(870.00)
43583 000 000 00 101 22 ST.AID WILDLIFE DAMAGE(56130)	19,069.76	40,346.74	40,346.74	100.00	.00
43597 000 000 00 101 22 NON PT SOURCE-HORSE Cr (56154)	46,182.96	70,473.26	70,473.26	100.00	.00
43691 000 000 00 101 22 ST.AID LAKES PLANNING GRANT	.00	51,334.30	20,000.00	256.67	(31,334.30)
44356 000 000 00 101 22 MANURE PIT INSPECT.FEE	.00	600.00	.00	.00	(600.00)
44357 000 000 00 101 22 NONMETALLIC MINING PERMIT FEE	.00	21,190.00	14,000.00	151.36	(7,190.00)
46812 000 000 00 101 22 TREE PLANTING (56112)	.00	20,958.99	20,958.99	100.00	.00
46813 000 000 00 101 22 LWRD CONSERVATION MTL S (56143)	.00	4,006.26	4,006.26	100.00	.00
46814 000 000 00 101 22 L/W SHORELINE PROJECT FEES	.00	650.00	5,000.00	13.00	4,350.00
47380 000 000 00 101 22 CONS. FEES OTHER COUNTIES	11,457.19	34,764.88	35,000.00	99.33	235.12
47382 000 000 00 101 22 LWRD REVENUE FROM TOWNSHIPS	.00	.00	4,000.00	.00	4,000.00
47435 000 000 00 101 22 LAND/WATER CONTRACTED SERVICES	.00	2,848.29	3,000.00	94.94	151.71
47481 000 000 00 101 22 LWRD ZONING SERVICES	.00	.00	1,000.00	.00	1,000.00
48509 000 000 00 101 22 STORM WATER/EROSION CONTROL OR	.00	4,360.00	5,000.00	87.20	640.00
49999 999 000 00 101 22 CARRY OVER BALANCES	.00	.00	62,829.70	.00	62,829.70
56112 242 000 00 101 22 MACHINERY & EQUIP REPAIR	.00	105.88	.00	.00	(105.88)
56112 256 000 00 101 22 PURCHASED TRANSPORTATION	.00	1,666.30	.00	.00	(1,666.30)
56112 326 000 00 101 22 ADVERTISING	.00	142.20	.00	.00	(142.20)
56112 343 000 00 101 22 GROCERIES	.00	381.19	.00	.00	(381.19)
56112 348 000 00 101 22 EDUCATIONAL SUPPLIES	83.33	1,817.19	.00	.00	(1,817.19)
56112 396 000 00 101 22 TREES	.00	18,276.87	.00	.00	(18,276.87)
56112 733 000 00 101 22 PRIZES & AWARDS	.00	60.00	.00	.00	(60.00)
56112 998 000 00 101 22 REVENUE APPROPRIATION	.00	.00	20,958.99	.00	20,958.99
56112 999 000 00 101 22 TREES MATL/SUPL CARRY OVER BAL	.00	.00	25,755.64	.00	25,755.64
56112 TREES-MATL/SUPL. N/L (46812)	83.33	22,449.63	46,714.63	48.1%	24,265.00
56130 213 000 00 101 22 ACCOUNTING & AUDIT	400.00	400.00	.00	.00	(400.00)
56130 219 000 00 101 22 OTHER PROFESSIONAL SERVICES	5,802.88	25,261.66	.00	.00	(25,261.66)
56130 326 000 00 101 22 ADVERTISING	96.40	96.40	.00	.00	(96.40)
56130 332 000 00 101 22 MILEAGE EMP AUTO ALLOWANCE	233.42	6,211.17	.00	.00	(6,211.17)
56130 341 000 00 101 22 AGRICULTURE SUPPLIES	8,344.21	8,377.51	.00	.00	(8,377.51)
56130 998 000 00 101 22 REVENUE APPROPRIATION	.00	.00	40,346.74	.00	40,346.74
56130 WILDLIFE DAMAG PROJ N/L(43583)	14,876.91	40,346.74	40,346.74	100.0%	0.00
56141 001 000 00 101 22 DEPT. HEAD / ADMINISTRATOR	3,077.36	60,139.04	61,150.00	98.35	1,010.96
56141 007 000 00 101 22 SUPERVISOR	2,388.88	47,614.26	47,400.00	100.45	(214.26)
56141 009 000 00 101 22 PARA-PROFESSIONAL/TECHNICAL	14,441.02	257,311.85	282,000.00	91.25	24,688.15
56141 011 000 00 101 22 CLERICAL	1,653.60	33,431.83	33,100.00	101.00	(331.83)
56141 151 000 00 101 22 SOCIAL SECURITY	1,586.87	29,050.78	32,375.00	89.73	3,324.22
56141 152 000 00 101 22 RETIREMENT (EMPLOYERS SH)	2,242.35	42,201.55	44,600.00	94.62	2,398.45
56141 153 000 00 101 22 RETIRE BUY OUT(EMPLOYER SHARE)	409.64	7,572.09	8,050.00	94.06	477.91
56141 154 000 00 101 22 HEALTH INSURANCE	(29.28)	62,044.26	70,425.00	88.10	8,380.74
56141 155 000 00 101 22 LIFE INSURANCE	.00	1,336.41	1,200.00	111.37	(136.41)
56141 160 000 00 101 22 DISABILITY	61.17	1,134.46	1,200.00	94.54	65.54
56141 161 000 00 101 22 FLEX COMP FEES	10.00	112.00	200.00	56.00	88.00
56141 213 000 00 101 22 ACCOUNTING & AUDIT	.00	.00	600.00	.00	600.00
56141 219 000 00 101 22 OTHER PROFESSIONAL SERV	.00	444.00	6,000.00	7.40	5,556.00
56141 225 000 00 101 22 TELEPHONE	.00	1,158.06	2,000.00	57.90	841.94
56141 241 000 00 101 22 MOTOR VEHICLES	.00	4,355.02	5,000.00	87.10	644.98
56141 242 000 00 101 22 MACHINERY & EQUIP. REPAIR	.00	574.85	500.00	114.97	(74.85)
56141 311 000 00 101 22 POSTAGE & BOX RENT	.00	1,327.78	1,350.00	98.35	22.22
56141 312 000 00 101 22 OFFICE PAPER & FORMS	44.44	429.77	450.00	95.50	20.23
56141 313 000 00 101 22 COPIES	.00	1,066.00	1,200.00	88.83	134.00
56141 314 000 00 101 22 SMALL OFFICE ITEMS	94.98	2,686.73	3,000.00	89.56	313.27
56141 315 000 00 101 22 DEVELOPING	.00	.00	50.00	.00	50.00
56141 316 000 00 101 22 BULLETINS/PUBLICATIONS	.00	45.35	50.00	90.70	4.65
56141 322 000 00 101 22 SUBSCRIPTIONS PERIODICALS	.00	.00	50.00	.00	50.00
56141 324 000 00 101 22 MEMBERSHIP DUES	.00	1,245.00	1,500.00	83.00	255.00
56141 325 000 00 101 22 REGISTRATION FEES	.00	2,405.00	3,300.00	72.88	895.00
56141 326 000 00 101 22 ADVERTISING	.00	2,587.32	400.00	646.83	(2,187.32)
56141 332 000 00 101 22 MILEAGE EMP AUTO ALLOWANCE	.00	.00	150.00	.00	150.00

56141	335	000	00	101	22	MEALS	1.14	372.38	500.00	74.48	127.62
56141	336	000	00	101	22	LODGING	155.40	1,462.50	1,500.00	97.50	37.50
56141	341	000	00	101	22	AGRICULTURE SUPPLIES	54.41	27,054.83	7,500.00	360.73	(19,554.83)
56141	343	000	00	101	22	GROCERIES	.00	53.18	250.00	21.27	196.82
56141	351	000	00	101	22	FUEL	140.84	3,969.69	4,000.00	99.24	30.31
56141	533	000	00	101	22	RENT OR LEASE EQUIP	.00	.00	300.00	.00	300.00
56141	813	000	00	101	22	OFFICE EQUIPMENT	.00	152.19	1,000.00	15.22	847.81
56141	816	000	00	101	22	BOOKS, FILM, RECORDINGS, ETC	.00	136.17	100.00	136.17	(36.17)
56141	832	000	00	101	22	COMPUTER SOFTWARE	.00	2,300.60	2,500.00	92.02	199.40
56141	834	000	00	101	22	COMPUTER REPAIR/REPLACEMENT	.00	4,250.00	4,250.00	100.00	.00
56141	LAND & WATER RESOURCES						26,332.82	600,024.95	629,200.00	95.4%	29,175.05
56143	242	000	00	101	22	MACHINERY & EQUIP REPAIR	.00	204.00	.00	.00	(204.00)
56143	341	000	00	101	22	AGRICULTURE SUPPLIES	.00	1,989.84	.00	.00	(1,989.84)
56143	998	000	00	101	22	REV APPROV CONSERV MATLS N/L	.00	.00	4,006.26	.00	4,006.26
56143	999	000	00	101	22	CARRY OVER BALANCE	.00	.00	4,774.43	.00	4,774.43
56143	CONSERVATION MTL N/L (46813)						0.00	2,193.84	8,780.69	25.0%	6,586.85
56151	999	000	00	101	22	B. BR NPS C/O BAL N/L (43594)	.00	.00	3,251.46	.00	3,251.46
56152	999	000	00	101	22	OSC. CR. N. P. S. CARRY OVER BAL.	.00	.00	5,727.17	.00	5,727.17
56154	219	000	00	101	22	NPS HORSE CR OTHER PROF SERVIC	.00	70,473.26	.00	.00	(70,473.26)
56154	998	000	00	101	22	NON PT SOURCE HORSE CREEK	.00	.00	70,473.26	.00	70,473.26
56154	NON PT SOURCE HORSE N/L 43597						0.00	70,473.26	70,473.26	100.0%	0.00
56157	219	000	00	101	22	OTHER PROF. SERV.	.00	1,918.38	.00	.00	(1,918.38)
56157	999	000	00	101	22	WATER COST SH C/O BAL N/L	.00	.00	17,122.00	.00	17,122.00
56157	WATER RESOURCE COST SH. N/L						0.00	1,918.38	17,122.00	11.2%	15,203.62
56158	219	000	00	101	22	OTHER PROFESSIONAL SERVICES	(7,056.00)	58,424.40	.00	.00	(58,424.40)
56158	998	000	00	101	22	REVENUE APPROP. LAND/WATER MGMT	.00	.00	58,424.40	.00	58,424.40
56158	999	000	00	101	22	LAND/WATER MGMT CARRY O/BALANC	.00	.00	6,199.00	.00	6,199.00
56158	LAND/WATER MGMT N/L (43579)						(7,056.00)	58,424.40	64,623.40	90.4%	6,199.00

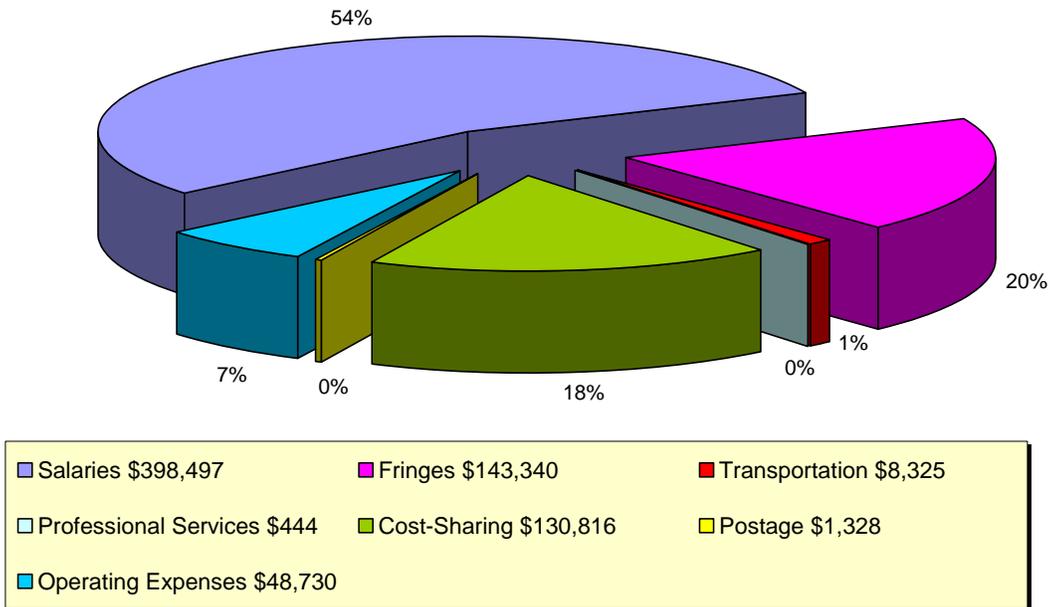
## 2008 LWRD TIME REPORTING



## 2008 LWRD REVENUES



## 2008 LWRD EXPENSES



## Appendix C. Collective Response to Questions Posed to the Citizen Advisory Committee

1. What resources do you want to protect in Polk County? (can be specific or broad)

- ❖ Protect economic base
- ❖ Groundwater
- ❖ Open spaces
- ❖ Native vegetation, ecosystems, water, and land
- ❖ Surface water
- ❖ Land and Water Dept. resources (funding and staff)
- ❖ Wildlife
- ❖ Forests, prairies
- ❖ Fisheries
- ❖ Clean air
- ❖ Recreational opportunities
- ❖ Agriculture
- ❖ Forestry
- ❖ Aesthetic beauty
- ❖ Shorelines
- ❖ Creeks, streams, rivers, and undeveloped riparian land
- ❖ Recreational opportunities
- ❖ Lakes
- ❖ Groundwater
- ❖ Quality farm land
- ❖ Water quality and biological integrity
- ❖ Buffering by vegetation, wetlands, and grasslands, forests
- ❖ Human resources – LWRD and management groups
- ❖ Set of values inherent in volunteers and residents
- ❖ Contiguous forest areas (diverse and in tact)
- ❖ Farms and green space

2. What *threats* to our resources face Polk County in the next 5 years?

- ❖ Abandoned property (loss of financial base, manure pits, wells)
- ❖ Aquatic invasive species
- ❖ Terrestrial invasive species
- ❖ Chronic wasting disease
- ❖ Decrease funding
- ❖ Population changes
- ❖ Poor development planning
- ❖ Increased runoff
- ❖ Aging septic systems (private and municipal)
- ❖ Poor farming practices
- ❖ Abandoned wells
- ❖ Abuse/overharvest/disregard of natural resources
- ❖ Loss of public access
- ❖ Ignorance
- ❖ Climate change
- ❖ Development
- ❖ Phosphorus
- ❖ Invasive species
- ❖ Runoff
- ❖ Stormwater
- ❖ Uneducated public
- ❖ Overuse
- ❖ Conversion of biomass into fuels – more intense use of resources
- ❖ End of CRP program (which means loss of water quality protection and wildlife habitat)

3. How do we address these threats?

- ❖ Education in schools and public
- ❖ Use of media to educate
- ❖ Educate realtors, new property owners
- ❖ Tie LWRD budget into Lake District/Town/taxing entity monies
- ❖ Take advantage of new technology
- ❖ Coordinate more with other departments
- ❖ Use checklists to help the public
- ❖ Use volunteers and interns
- ❖ Enforcement
- ❖ Educate policymakers
- ❖ Prioritize LWRD resources (staff time, etc.)
- ❖ Good development planning
- ❖ Increase relationships with stakeholders (include lake associations, sportsmen's clubs, lake districts, farm organizations, and businesses, sporting goods stores, tribes)
- ❖ Take advantage of continuing education for LWRD staff
- ❖ Review fee structure
- ❖ Classification of rivers and streams
- ❖ Improvements in infrastructure (municipalities)
- ❖ Education and technical assistance for individuals (raise the bar)
- ❖ Joint empowerment of jurisdictions
- ❖ Common environment to communicate on three levels (improved website, agency meetings, public access to information)
- ❖ Invite players with DNR, county and citizens to meet or talk (host activities like farm bureau)
- ❖ Website resources, workshops, brochures
- ❖ Advertise website or information
- ❖ Outreach at meetings
- ❖ Interagency teamwork for specific projects
- ❖ Economic incentives or disincentives

**Appendix D. Goals and Objectives of the Land Information Department** *(Taken from the 2009 Polk County Comprehensive Planning Process)*

The development of the Polk County Comprehensive Plan is in progress. Polk County citizens, local government officials, and county staff have been meeting to discuss elements of the Comprehensive Plan. This list prioritizes the discussion of Agriculture, natural resources, and cultural resources in Polk County.

# Agricultural, Natural, and Cultural Resources Notes

## Common themes of township plans:

- preservation of rural character
  - preservation/wise use of agricultural land/avoiding fragmentation
  - Groundwater protection
  - surface water protection
  - preserve large tracts of private & public forest lands;
  - educate the general public, elected officials, everyone involved on these issues
- 

## **Cultural Resources**

### Goal:

1. Preserve & enhance cultural heritage resources, including historical places, sites and landscapes

### Objectives:

1. ID historical sites and develop a preservation priority list
2. Minimize potential impacts on cultural resources when evaluating proposals
3. Encourage new development to stay within the aesthetic qualities of the community (architectural, geologic, environmental)
4. Provide educational opportunities to preserve and promote links to the past
5. Encouragement of creative arts

### Policies:

1. Inform property owners of any historical aspect of their property and inform them of possible local and national incentives for preserving or rehabilitating their property.
  2. Ensure any human burial sites are identified and preserved, particularly identified but unmarked Native American burial mounds
  3. Support and fund local historical societies
  4. Require developers to report any archeological findings. – will research federal/state law to find out if laws already exist requiring developers
  5. Work to develop a clearing house for historic resources
- 

## **Agricultural Resources**

### Goals:

1. Promote the agricultural industry as a respectable, viable, and diverse farm economy
2. Protect, promote, and preserve the remaining agricultural resources within the county

### Objectives:

1. Protect agricultural lands and soil
2. Encourage or possibly require farming techniques that improve or do not harm water resources
3. Promote sustainable use of utilizing fertilizers/manure/pesticides in a manner that improves/maintains agricultural productivity but does not negatively affect water quality
4. Promote locally grown sustainable agriculture and the local purchase of the above
5. Maintain a broad base of agriculture
  - a. Old (cows, corn, beans)

- b. New(local produce, organic, Community Supported Agriculture)
- 6. Avoid fragmentation of farmland
- 7. Maintain Agricultural infrastructure
- 8. Educational efforts on informing new residents about Right-to-Farm and/or the rural nature of Polk Co.

**Policies**

- 1. Maintain and further utilize/distribute the Rural Living Guide
  - 2. Encourage stores to carry locally grown and produce items
- 

**Natural Resources**

**Goals:**

- 1. Recognize the environment as an integrated system of land, water, and air resources.
- 2. Minimize the potential impacts on natural resources, environmental corridors water resources, and wildlife habitats when evaluating potential residence, communities, industrial/mining, and intensive agricultural uses

**Objectives:**

- 1. Maintain high quality and the quantity of surface water & groundwater
- 2. Encourage the use of conservations practices and management in wildlife habitat
- 3. Maintain good air quality
- 4. Preserve large tracks of forest lands and open spaces
- 5. Promote the continuing education of our government officials on sustainable use of natural resources.
- 6. Maintain the quality of Polk County's public recreational facilities
- 7. Protect natural resources from mining activities
- 8. Aquatic Invasive Species prevention & mitigation

**Policies:**

- 1. Establish policies that protect ecosystems
- 2. Encourage the development of regulations that protect Polk Co's natural resources, esp. water
- 3. Promote use of voluntary conservation easements
- 4. Encourage the use of conservation practices in the management of forest lands.
- 5. Support, improve, and enforce the existing shoreland ordinance
- 6. Encourage vegetated buffers along waterways
- 7. Encourage the development of additional parks & recreation opportunities
- 8. Ensure that all impacts to the environment are considered before mines are approved
- 9. Encourage utilization of Environmental Impact Studies to evaluate impacts of mining
- 10. Establish baseline data or compile existing data so we know where we are at presently
- 11. Improve cropland nutrient management planning
- 12. Control cropland soil erosion
- 13. Promote proper closure of abandoned manure pits, abandoned wells, abandoned septic and holding tanks
- 14. Control stormwater runoff

## Issues

- WATER is the group's biggest priority
- maintain natural water flow, watersheds, groundwater aquifers, study impacts of development on the watershed
- Impact of quality, quantity, & rate of runoff by large-scale development
- evaluate the actual need for non-metallic resources before mining operations are approved

Groundwater Study is broad, computer based modeling, w/small # of sample points & things tested but a good starting point;

- Need a LOT better handle on groundwater issues
- More data needed (what's tested & # of sites tested)
- L&W conducted a groundwater/well test ~ 15 yrs ago
- L&W has nitrate mini-grant to study nitrates in groundwater in Eureka & Milltown 90 tests

## **Appendix E. Glossary of Commonly Used Terms**

### **303(d) WATERS**

A list submitted to the U.S. Environmental Protection Agency which identifies waters that do not meet water quality standards for specific substances or the designated use. This list is required under the Clean Water Act and determined by the DNR.

### **ALGAE:**

A group of microscopic, photosynthetic water plants. Algae give off oxygen during the day as a product of photosynthesis and consume oxygen during the night as a result of respiration. Therefore, algae affect the oxygen content of water. Nutrient-enriched water increases algae growth.

### **ANIMAL WASTE MANAGEMENT:**

A group of practices including barnyard runoff management, nutrient management, and manure storage facilities designed to minimize the effects of animal manure on surface and groundwater resources.

### **BASIN WATER QUALITY MANAGEMENT PLANS:**

A plan to document water quality conditions in a drainage basin and make recommendations to protect and improve basin water quality. Each basin in Wisconsin must have a plan prepared for it, according to Section 208 of the Clean Water Act.

### **BEST MANAGEMENT PRACTICE (BMP):**

Structural or non-structural measures, practices, techniques, or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff from land surfaces.

### **BUFFER STRIPS:**

Strips of grass, shrubs, trees, and other vegetation between disturbed areas and a stream, lake, or wetland.

### **CHAPTER 92**

The portion of Wisconsin Statutes detailing the soil and water conservation, agricultural shoreland management, and animal waste management laws and polices of the State.

### **COST-EFFECTIVE:**

A level of treatment or management with the greatest incremental benefit for the money spent.

**ECOSYSTEM:**

The interacting system of a biological community and its non-living surroundings.

**ENVIRONMENTAL PROTECTION AGENCY (US EPA):**

The federal agency responsible for enforcing federal environmental regulations. The Environmental Protection Agency delegates some of its responsibilities for water, air, and solid waste pollution to state agencies.

**EROSION:**

The wearing away of land or soil by wind or water.

**EUTROPHIC:**

Refers to a nutrient-rich lake. Large amounts of algae and weeds characterize a eutrophic lake (see also "oligotrophic" and "mesotrophic").

**EUTROPHICATION:**

The process of nutrient enrichment of a lake leading to increased production of aquatic organisms. Eutrophication can be accelerated by human activity such as agriculture and improper waste disposal.

**GEOGRAPHICAL INFORMATION SYSTEM (GIS):**

A computer system used to organize data geospatially by mapping and creating layers of information that are geographically in place. Allows users to visualize data for analysis and decision making.

**GLOBAL POSITIONING SYSTEM (GPS):**

A system which uses satellites to determine the exact location of a site, which can then be downloaded onto a computer for mapping and tracking purposes.

**GROUNDWATER:**

Underground water-bearing areas generally within the boundaries of a watershed, which fill internal passageways of porous geologic formations (aquifers) with water that flows in response to gravity and pressure. Often used as the source of water for communities and industries.

**HABITAT:**

The place and environmental conditions under which a plant or animal will naturally live and grow.

**HERBICIDE:**

A type of pesticide that is specifically designed to kill plants and may be toxic to other organisms.

**IDENTIFIED FARM:**

A critical site found to be in violation of NR 151.

**MESOTROPHIC:**

Refers to a moderately fertile nutrient level of a lake between the oligotrophic and eutrophic levels (see also "eutrophic" and "oligotrophic").

**MILLIGRAMS PER LITER (mg/l):**

A measure of the concentration of substance in water. For most pollution measurements, this is the equivalent of "parts per million."

**MITIGATION:**

The effort to lessen the damages from a particular project through modifying a project, providing alternatives, compensating for losses, or replacing lost values.

**NONPOINT SOURCE POLLUTION:**

Pollution whose sources cannot be traced to a single point such as a municipal or industrial wastewater treatment plant discharge pipe. Nonpoint sources include eroding farmland and construction sites, urban streets, and barnyards.

Pollutants from these sources reach water bodies in runoff, which can best be controlled by proper land management.

**NR 151**

State Administrative code that establishes runoff pollution performance standards for non-agricultural facilities and transportation facilities and performance standards and prohibitions for agricultural facilities.

**NUTRIENT MANAGEMENT PLAN:**

A guidance document that provides fertilizer and manure spreading recommendations for crop fields based upon soil test results and crop needs. Plans are sometimes referred to as NRCS 590 plans for the Natural Resources Conservation Service Standard that guides their preparation.

**OLIGOTROPHIC:**

Refers to an unproductive and nutrient-poor lake. Such lakes typically have very clear water (see also "eutrophic" and "mesotrophic").

**PERFORMANCE STANDARDS:**

The land management activities or threshold levels necessary to reduce or eliminate negative effects on land and water resources.

**PESTICIDE:**

Any chemical agent used to control specific organisms, such as insecticides, herbicides, fungicides, etc.

**PHOSPHORUS:**

A nutrient that, when reaching lakes in excess amounts, can lead to over-fertile conditions and algae blooms.

**POINT SOURCES:**

Sources of pollution that have discrete discharges, usually from a pipe or outfall.

**POLLUTION:**

The presence of materials or energy whose nature, location, or quantity produces undesired environmental effects.

**PRIORITY FARM**

A farm identified by the county for having excessive soil erosion and/or manure runoff resulting in existing or potential water quality problems.

**PRIORITY WATERSHED:**

A drainage area selected to receive state money to help pay the cost of controlling non-point source pollution.

**PRODUCTIVITY:**

A measure of the amount of living matter which is supported by an environment over a specific period of time. Often described in terms of algae production for a lake.

**PROHIBITIONS:**

Land management activities that are not allowed by local or state regulatory processes.

**REDUCED TILLAGE:**

Planting row crops while only slightly disturbing the soil so that a protective layer of plant residue stays on the surface and erosion rates decrease.

**RIPARIAN:**

Belonging, living, or relating to the bank of a lake, river, or stream.

**RIPRAP:**

Broken rock, cobbles, or boulders placed on the bank of a stream to protect it against erosion.

**RUNOFF:**

Water from rain, snowmelt, or irrigation that flows over the ground surface and returns to streams and lakes. Runoff can collect pollutants from air or land and carry them to receiving waters.

**SEDIMENT:**

Soil particles suspended in and carried by water as a result of erosion.

**SEPTIC SYSTEM:**

Sewage treatment and disposal for homes not connected to sewer lines. The system usually includes a tank and drain field. Solids settle to the bottom of the tank. Liquid percolates through the drain field.

**STORM SEWERS:**

A system of sewers that collect and transport rain and snow runoff. In areas that have separated sewers, such storm water is not mixed with sanitary sewage.

**SUSPENDED SOLIDS (SS):**

Small particles of solid pollutants suspended in water.

**TOLERABLE SOIL LOSS:**

The tolerable soil loss rate in tons per acre per year, commonly referred to as "T," is the maximum average annual rate of soil erosion for each soil type that will permit a high level of crop productivity to be sustained economically and indefinitely (ATCP 50.01(16)).

**TOTAL MAXIMUM DAILY LOADS (TMDL):**

The maximum amount of a pollutant that can be discharged into a stream without causing a violation of water quality standards.

**TROPHIC STATUS:**

The level of growth or productivity of a lake as measured by phosphorus content, algae abundance, and depth of light penetration.

**TURBIDITY:**

Having suspended or stirred up particles, referring to a lack of water clarity. Turbidity is usually closely related to the amount of suspended solids (sediment or algae) in water.

**UNIFORM DWELLING CODE:**

A statewide building code for communities larger than 2,500 residents specifying requirements for electrical, heating, ventilation, fire, structural, plumbing, construction site erosion, and other construction related practices.

**UNIVERSAL SOIL LOSS EQUATION:**

An equation used to estimate the amount of soil lost annually per acre from crop fields. It takes into consideration the following factors: rainfall, slope, slope

length, soil erodibility, crop rotations, and crop practices (NRCS Agricultural Handbook 537).

**UNIVERSITY OF WISCONSIN-EXTENSION (UWEX):**

A special outreach and education branch of the state university system.

**VARIANCE:**

Government permission for a delay or exception in the application of a given law, ordinance, or regulation. Also, see water quality standard variance.

**WASTE:**

Unwanted materials left over from manufacturing processes; refuse from places of human habitation or animal habitation.

**WATER QUALITY CRITERIA:**

A measure of the physical, chemical, or biological characteristics of a waterbody necessary to produce and maintain different water uses (fish and aquatic life, swimming, etc.).

**WATER QUALITY STANDARDS:**

The legal basis and determination of the use of a water body and the water quality criteria; (physical, chemical, or biological traits of a waterbody) that must be met to make it suitable for a specified use.

**WATER QUALITY STANDARD VARIANCE:**

When natural conditions of a water body preclude meeting all conditions necessary to maintain full fish and aquatic life and swimming, a variance may be granted.

**WATERSHED:**

The land area that drains into a lake or river.

**WETLANDS:**

Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a variety of vegetative or aquatic life. Wetland vegetation requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas.

**WISCONSIN ADMINISTRATIVE CODE:**

The set of rules written and used by state agencies to implement state statutes. Administrative codes are subject to public hearing and have the force of law.

**WISCONSIN NON-POINT SOURCE WATER POLLUTION ABATEMENT GRANT PROGRAM:**

A state cost-share program established by the state Legislature in 1978 to help pay the costs of controlling non-point source pollution. Also known as the non-point source element of the Wisconsin Fund or the Priority Watershed Program.

**WISCLAND:**

Wisconsin initiative for Statewide Cooperation on Land Cover Analysis and Data. A voluntary partnership of public and private entities seeking to facilitate statewide land cover mapping, GIS data development and analysis.

## Appendix F. Commonly Used Acronyms

AIS	Aquatic Invasive Species
BMP	Best Management Practice
CAC	Citizen Advisory Committee
CREP	Conservation Reserve Enhancement Program
CRP	Federal Conservation Reserve Program
DATCP	Wisconsin Department of Agriculture, Trade, and Consumer Protection
DNR	Wisconsin Department of Natural Resources
DOT	Department of Transportation
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program (USDA)
FPP	Wisconsin's Farmland Preservation Program
FSA	Farm Service Agency (United States Department of Agriculture)
GIS	Geographic Information Systems
I&E	Information and Education
LCC	Land Conservation Committee
LCD	Land Conservation Department
LWRD	Land & Water Resources Department
LUP	Land Use Plan or Land Use Planning Committee
LWCB	Land and Water Conservation Board
NPM	Nutrient and Pest Management
NRCS	Natural Resource Conservation Service (USDA)
NRI	Natural Resource Inventory
NWRPC	Northwest Regional Planning Commission
PCALR	Polk County Association of Lakes and Rivers
SIP	Stewardship Incentive Program
"T"	Tolerable soil loss rate
TMDL	Total Maximum Daily Load
USFWS	United States Fish and Wildlife Service
USEPA	United States Environmental Protection Agency
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGS	United States Geological Survey
USLE	Universal Soil Loss Equation
UWEX	University of Wisconsin-Extension
WGNHS	Wisconsin Geological and Natural History Survey
WHIP	Wildlife Habitat Incentives Program
WPDES	Wisconsin Pollutant Discharge Elimination System (Permit System)
WRP	Wetland Reserve Program

## **Appendix G. References and Lake Management Plans**

### County or Basin Information

*Polk County Animal Waste Pollution Control Plan.* Polk County Land Conservation Committee. June 1985.

*Polk County Soil Erosion Control Plan.* Polk County Land Conservation Committee. December 1988.

*Polk County Soil Survey.* 1976.

*Polk County Watershed Assessment for Water Quality and Nonpoint Source Pollution Control.* Wisconsin Department of Natural Resources and Polk County Land Conservation Committee. May 1996.

*St. Croix Basin Water Quality Management Plan.* Department of Natural Resources. February 1994.

*Soils, Geologic, and Hydrogeologic Controls of Water Quality in Northwestern Wisconsin Lakes.* Wisconsin Geological and Natural History Survey. December 1990.

*Surface Water Resources of Polk County.* Sather, LaVerne M. and Threinen, C.W. 1961.

### Watershed Plans

*Balsam Branch Priority Watershed Project, Nonpoint Source Control Plan.* Wisconsin Department of Natural Resources, Wisconsin Department of Agriculture, Trade, and Consumer Protection and Polk County Land Conservation Department. April 1995.

*Horse Creek Priority Watershed Project, Nonpoint Source Control Plan.* Wisconsin Department of Natural Resources, Wisconsin Department of Agriculture, Trade, and Consumer Protection and Polk County Land Conservation Department. December 1999.

*Osceola Creek Priority Watershed Project, Nonpoint Source Control Plan.* Department of Natural Resources, Wisconsin Department of Agriculture, Trade, and Consumer Protection and Polk County Land Conservation Department. October 1996.

*Osceola Creek Urban Watershed Water Quality Analysis.* Barr Engineering Company. March 1996.

*St. Croix County Lakes Cluster Priority Watershed Project, Nonpoint Source Control Plan.* Wisconsin Department of Natural Resources, Wisconsin Department of Agriculture, Trade, and Consumer Protection, St. Croix County Land Conservation Department and Polk County Land Conservation Department. April 1997.

*South Fork of the Hay River Priority Watershed Project, Runoff Management Plan.* Wisconsin Department of Natural Resources, Wisconsin Department of Agriculture, Trade, and Consumer Protection, Dunn County Land Conservation Department, St. Croix County Land Conservation Department, Polk County Land Conservation Department and Barron County Land Conservation Department. 1997.

## **Planning Grants**

*Antler Lake Management Plan, Phase I: Water Quality Study of Antler Lake.* Barr Engineering Company. May 1996.

*Aquatic Macrophyte Survey for North Pipe and Pipe Lakes, Polk County, Wisconsin.* Endangered Resource Services. August 2007.

*Aquatic Plant Management Plan, Bone Lake, Polk County, Wisconsin.* Harmony Environmental. May 2008.

*Balsam Lake Long Range Plan.* Harmony Environmental. 2006.

*Big Butternut Lake, Wisconsin Lake Planning Grants, LPL-260 and LPL-289 Final Report.* Barr Engineering Company. December 1996.

*Bone Lake Management Plan, Phase I: Water Quality Study of Bone Lake, Phase II: Hydrologic and Phosphorus Budgets.* Barr Engineering Company. June 1997.

*Bone Lake Comprehensive Lake Management Plan.* Harmony Environmental. April 2009.

*Deer Lake Planning Grant Report.* Barr Engineering Company. June 1993.

*Deer Lake Planning Grant II Report.* Barr Engineering Company. January 1995.

*Half Moon Lake. Polk County Wisconsin. Wisconsin Lakes Planning Grant Report.* June 1994.

*Lake Wapogasset and Bear Trap Report, Wisconsin Lake Planning Grant Final Report.* Barr Engineering Company. June 1996.

*Lotus Lake Water Quality & Biological Assessment.* Polk County Land and Water Resources Department. 2005.

*Loveless Lake Water Quality and Biological Assessment.* Polk County Land and Water Resources Department. 2006.

*Round and Long Trade Lakes Water Quality and Watershed Assessment Report.* Polk County Land and Water Resources Department. 2007.

*Subwatershed Recommendations Report, Pipe Lakes Protection and Rehabilitation District, Polk County.* Cedar Corp. 2008.

*Watershed Analysis for Church Pine, Round and Big Lake With Recommendations for Improved Water Quality and Watershed Management.* Lim Tech Consultants. October 1987.

## **Other Information**

*WISCLAND Land Cover. (Digital Land Cover Information).* Wisconsin Department of Natural Resources. 1998. (Converted to polygon classification by Applied Data Consulting for this project.)

## Appendix H. Comments Received from Agencies

From: Goldade, Lynn Z - DNR  
Sent: Monday, September 14, 2009 10:49 AM  
To: Shell, Justin R - DATCP  
Cc: Bartilson, Kathy M - DNR  
Subject: FW: Polk draft LWRM PLAN

Justin,

Here are some groundwater program review comments for the Polk Co. plan. I don't know where you/they are in the process so I'm sending to you first. If we are in time to get to the county let me know or feel free to send them as they are below. Thank you.

From: Chern, Laura A - DNR  
Sent: Friday, September 11, 2009 9:57 AM  
To: Goldade, Lynn Z - DNR  
Subject: RE: Polk draft LWRM PLAN

Here are my comments.  
Laura

From: Shell, Justin R - DATCP  
Sent: Monday, August 17, 2009 8:30 AM  
To: Goldade, Lynn Z - DNR; 'Butler, Susan - Madison, WI'  
Cc: 'Rebecca Fredrickson'  
Subject: FW: LWM PLAN

Lynn and Susan,

Here is a draft copy of Polk County's LWRM plan. It is due to the LWCB at the December meeting. Lynn, Rebecca indicated to me in a separate email that she has forwarded a copy to Kathy Bartilson, the DNR Basin Leader for the area.

Please remember to CC me on any comments you may have.

Thanks,  
Justin

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*You have provided some good information on groundwater here. I suggest the following additions:*

### **Groundwater<sup>3</sup>**

The principal sources of drinking water supplies in Polk County are the sand and gravel aquifer and the sandstone aquifer. The sand and gravel aquifer consists of unconsolidated sand and gravel in glacial drift and alluvium. These relatively shallow deposits occur throughout the county. *Areas underlain by basaltic rocks do not have the sandstone aquifer available, so the more shallow sand and gravel aquifer is extremely important. Depth to groundwater and permeability of the surficial deposits affect the susceptibility of this aquifer. Where groundwater is shallow and surficial deposits are coarse, groundwater is susceptible to contamination from surface activities.*

The sandstone aquifer generally yields enough water for domestic use. The sandstone aquifer includes all sedimentary bedrock younger than Precambrian age. Precambrian rocks generally have low permeability and mark the lower limit of groundwater movement. The sandstone aquifer covers the southeastern half of the county and a portion of northwestern Polk County. Due to the abundance of water and depth of sandstone, the aquifer is typically used for wells that require large amounts of water, such as municipal and industrial water supplies. *Depth to the sandstone bedrock and permeability of the surficial deposits determine the susceptibility of this aquifer. Where the sandstone is close to the surface and overlaid by coarse sediments or soils, groundwater contamination is more likely to occur.*

Groundwater is the source of almost all of the drinking water in the county. The quality of groundwater in Polk County is generally good. Contamination of groundwater by human activity can be a severe problem because contaminants generally travel unnoticed, are difficult to remove, and may persist for decades. Water percolating through the soil can pick up human-made pollutants and transport them to the groundwater. Contaminants may also enter the groundwater through unused wells that are not properly sealed. Groundwater contamination comes from a variety of sources including leaking underground petroleum pipes and tanks; use and storage of road salt; improper use, disposal, and storage of hazardous materials; and mismanagement of fertilizers, pesticides, and animal waste. Figure 2 illustrates depth to groundwater in the county.

*For more information on groundwater susceptibility in Polk County I suggest the following webpage:*

<http://wi.water.usgs.gov/gwcomp/find/polk/index.html>

*Under goals I suggest locating and properly filling and sealing unused wells in all watersheds. I also suggest visiting the DNR website on wellhead protection to determine if this is something communities are interested in:*

<http://dnr.wi.gov/org/water/dwg/gw/wellhead.htm>

*Laura Chern, DNR*

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From: Pfender, John A - DNR [mailto:John.Pfender@wisconsin.gov]  
Sent: Monday, August 31, 2009 1:23 PM  
To: Rebecca Fredrickson; Shell, Justin R - DATCP  
Cc: Goldade, Lynn Z - DNR; Bartilson, Kathy M - DNR  
Subject: RE: Polk draft LWRM PLAN

I have looked over the NR 151 implementation strategy for your draft plan. It looks fine, although there are a few technical errors you should fix.

Under Section 6.B., the second bullet implies that if cost sharing was made available in the past, the cost share requirements have been met for purposes of the notice. It is important to recognize that a current offer of cost sharing must be on the table through the compliance period specified in the notice. For example, if cost sharing was offered in 2006 but no notice was issued, then if a regulatory notice is issued later (say in 2008), a new offer of cost share will have to be made. A current offer of cost share must accompany the notice. This is why it is important to make sure a notice is issued at the time cost share is available if there is any chance the farmer may not follow through. This is critical in non-voluntary situations, and may even be warranted in voluntary situations as you alluded to under Section 6.A.3.

Under both Sections 7.BC and 8.A., you indicate that a Notice of Violation can be issued for a breach of a cost share contract. This is not the case. A Notice of Violation is issued if a farmer fails to comply with the provisions of a formal

NR 151 Notice issued under NR 151.09 or NR 151.095. If a farmer violates the terms of a cost share agreement, then the provisions of the cost share agreement will be enforced. These are two separate actions taken under separate authorities.

Please contact me if you have any questions.

John Pfender

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From: Butler, Susan - Madison, WI [mailto:susan.butler@wi.usda.gov]  
Sent: Wednesday, August 26, 2009 9:51 AM  
To: 'Shell, Justin R - DATCP'; Rebecca Fredrickson  
Cc: Brihn, Kathy - Ladysmith, WI; Cook, Randall - Barron, WI  
Subject: RE: LWM PLAN

Thanks for the opportunity to review the Polk County plan. I limited my review to areas that would involve FSA.

I noted a lack of reference to federal conservation programs, specifically continuous CRP and SAFE CRP which could be programs that could greatly assist with meeting the goals of this plan. I have no other specific comments to make.

Again, thanks for letting me review this. Good luck with your plan!

Susan Butler  
Conservation Specialist

**Amy Kelsey**

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**From:** Anthony Havranek [anthonyh@stcroixtribalcenter.com]  
**Sent:** Monday, February 16, 2009 11:27 AM  
**To:** Amy Kelsey  
**Subject:** RE: Responses from our Citizen Advisory Committee brainstorming

Amy,

Potential resource concerns for the tribe would include lakes that are speared <sup>for walleye</sup> in Polk County:

- BALSAM L
- BEAR L
- BIG BLAKE L
- BIG BUTTERNUT L
- BIG ROUND L
- HALF MOON L
- INDIANHEAD FL
- MAGNOR L
- PIPE L
- WAPOGASSET L
- CEDAR L

*Bone + Deer  
musky  
speared.*

Big Round Lake and the Straight River system may be of special concern, because there is a tribal community on the lake and Big Round Lake walleye are the egg source for St. Croix's walleye culture program.

Below is also a list of waterbodies that we have complete wild rice surveys for. Most do have wild rice present, but not in harvestable amounts. White Ash Lake, the Apple River, and Little Butternut are three waterbodies that do have harvestable amounts of rice. Rice Lake in Alden Township and the Balsam branch between Highway 8 and DD Kennedy are two regulated waterbodies, but have not had surveys done:

- Apple River
- Bass
- Big Butternut
- Big Round
- Bone
- Horse
- Joel Marsh
- Little Butternut
- Lotus
- McKenzie
- Rice
- Rice Bed Creek
- Somers
- Straight
- White Ash (Upper and Lower)

From a citizen standpoint, I agree with many of the ideas that have already been generated. I would sure like to see specific protection for the St. Croix River. I am sure this would be done under the guise of zoning. How much integration is there between the county zoning board and your department? Is there the same amount with the forestry department? It seems like these two entities would be integral in protection of land and water resources. I am also wondering if the county has looked at implementing sustainable development practices in all or some development projects.

2/16/2009

These are just a few points, please let me know if you would like to discuss anything further.

Sincerely,

Anthony Havranek  
Water Resources Manager  
St. Croix Tribal Environmental Services  
24663 Angeline Avenue  
Webster, WI 54893  
Phone: (715)349-2195 ext. 5183  
Fax: (715)349-8302  
[anthonyh@stcroixtribalcenter.com](mailto:anthonyh@stcroixtribalcenter.com)

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**From:** Amy Kelsey [mailto:[amyk@co.polk.wi.us](mailto:amyk@co.polk.wi.us)]  
**Sent:** Monday, February 16, 2009 9:43 AM  
**To:** Anthony Havranek  
**Subject:** RE: Responses from our Citizen Advisory Committee brainstorming

Hi Anthony,

Sorry you won't be able to make the meetings. But I am glad we have met your concerns. If there are specific water bodies or areas of concern that the Tribe has, let me know. If it will rank better on a grant for you, I can mention it in our plan. Also, if there are actions or programs that you believe we should be implementing, we will be coming up with action items next for each resource to protect. I think you know the gammat of management tools, but if there is a particular fit for something we should be using, I'd be glad to hear about it.

Thanks for your input. Hopefully spring will arrive soon!

Amy Kelsey

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**From:** Anthony Havranek [mailto:[anthonyh@stcroixtribalcenter.com](mailto:anthonyh@stcroixtribalcenter.com)]  
**Sent:** Monday, February 16, 2009 8:48 AM  
**To:** Amy Kelsey  
**Subject:** RE: Responses from our Citizen Advisory Committee brainstorming

Amy,

Thanks for including me on the e-mails about the Citizen Advisory meetings. I will not be able to attend the next meeting on the 24<sup>th</sup> as Monday, Tuesday, and Wednesdays are not good nights for me due to daycare. I have read through the attachment and feel that my concerns have been addressed very well. I think that the group has done an excellent job to this point!

Take care and I hope to speak with you this spring about a few water resource issues.

Sincerely,

Anthony Havranek  
Water Resources Manager  
St. Croix Tribal Environmental Services  
24663 Angeline Avenue  
Webster, WI 54893  
Phone: (715)349-2195 ext. 5183  
Fax: (715)349-8302  
[anthonyh@stcroixtribalcenter.com](mailto:anthonyh@stcroixtribalcenter.com)

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**From:** Amy Kelsey [mailto:[amyk@co.polk.wi.us](mailto:amyk@co.polk.wi.us)]  
**Sent:** Friday, February 13, 2009 3:32 PM  
**To:** Amy Kelsey; Tim Ritten  
**Subject:** Responses from our Citizen Advisory Committee brainstorming

2/16/2009



State of Wisconsin  
Jim Doyle, Governor

## Department of Agriculture, Trade and Consumer Protection

Rod Nilsestuen, Secretary

August 24, 2009

**To:** Tim Ritten, Polk County Conservationist

**From:** Justin Shell—DATCP

**Subject:** Comments regarding 2010 Polk County LWRM Plan update

Tim,

Thank you for the opportunity to review your updated LWRM plan. In general, the plan is very well done and covers most of the requirements in Ch 92 and ATCP 50. I have put together a list of comments regarding required changes (indicated by **bold** type headings) and general suggestions for improvement (regular type headings). Please feel free to contact me regarding any questions you have over the comments.

### Plan Summary

All plans need to have a plan summary/executive summary no longer than six pages that describes the plan contents. It should briefly outline the resource assessment, state the resource concerns identified by your committee and outline plan goals to address those resource concerns.

### Workplan

Your plan includes a chapter for a 2-year workplan but does not actually include the workplan. The workplan should describe the activities you will undertake to achieve your goals and objectives. It should identify high priority activities and indicate benchmarks for measuring whether you have achieved a satisfactory level of success in addressing your resource concerns. The workplan should also include a budget based on anticipated levels of available funding for completing activities in the workplan. It is ok (even recommended) that you indicate your planned activities are based on the assumption of funding sources remaining level and that reduced funding from Federal, State and local sources will affect your ability to complete certain activities.

### Coordination

While it is clear from information provided throughout the plan that your department is involved in coordinating with multiple agencies at various levels of government, there is no clear section that outlines who those partners are and what their roles are in Polk County. I'm attaching an example coordination section from Walworth County's original LWRM plan. It's a very good example of a simple, yet informative listing of partners and their roles.

### NR 216 Language

DNR has asked that all plans include reference to the information in the attachment I have included on NR 216. You can do this by either cutting and pasting or writing your own language. The best place for it is probably at the end of the "Related Ordinances" section in Chapter 1.

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### Typos

I noticed a few typos that are remnants of using your original plan as a template document. Please update these.

- Page 2 Appendix B states “2003” annual report.
- Page 6, You indicate the National Park Service issued comments in January and February of 2004. I’m assuming this is from the old plan. I would either update the date or remove the statement.
- Page 41, second paragraph. The most recent 303d list was compiled in 2008, not 1998.
- Page 44, Soil loss section. You state the transect survey has been run every year since 2001, but only show data up to 2004. I talked with Sara Walling and we have data from you for several years after 2004. Please include data for all years you have run the transect application.

Please let me know if you have any questions,  
Justin  
608-224-4606

# Notices / Employment

**PUBLIC HEARING**  
**Land & Water Resources Management Plan - 2009 Draft**  
**Mon., Aug. 24, 2009, 7 p.m.**  
**Polk County Board Room**  
**100 Polk County Plaza,**  
**Balsam Lake, Wis.**  
 For additional information or to receive a copy of the draft plan, please call Land & Water Resources at 715-485-8699. 493221 51L

(Aug. 12, 19, 26, Sept. 2, 9, 16)

STATE OF WISCONSIN  
CIRCUIT COURT  
POLK COUNTY

Karen E. Minutello, as Assignee of M&I Marshall & Ilsley Bank, Successor by merger with Century Bank

Plaintiff

vs.

David J. DeHaven and Jane Doe, alias, his wife, if any, and

(July 8, 15, 22, 29, Aug. 5, 12)

STATE OF WISCONSIN  
CIRCUIT COURT  
POLK COUNTY

THE RIVERBANK,

Plaintiff,

vs.

GERALD R. WONDRA, JR.,

and

ROYAL CREDIT UNION,

Defendants.

Case No. 08 CV 422

AMENDED NOTICE OF SHERIFF'S SALE

By virtue of and pursuant to a Judgment of Foreclosure entered in the above-entitled action on November 25, 2008, I will sell at public auction at the Main Front Entrance of the Polk County Justice Center, 1005 West Main Street, in the Village of Balsam Lake, Polk County, Wisconsin, on:

Tuesday, August 25, 2009, at 10 o'clock a.m., all of the following described mortgaged premises, to-wit:

(Aug. 5, 12, 19, 26, Sept. 2, 9)

STATE OF WISCONSIN  
CIRCUIT COURT  
POLK COUNTY

THE RIVERBANK,

Plaintiff,

vs.

THOMAS C. COTTELEER,

and

VILLAGE OF DRESSER,

and

CAPITAL ONE BANK,

Defendant

Case No. 08 CV 653

NOTICE OF SHERIFF'S SALE

By virtue of and pursuant to Judgment of Foreclosure entered in the above-entitled action on March 10, 2009, I will sell at public auction at the Main Front Entrance of the Polk County Justice Center, 1005 West Main Street, in the Village of Balsam Lake, Polk County, Wisconsin, on:

Thursday, September 17, 2009, at 10:00 o'clock a.m., all of the following described

## Appendix J. Best Management Practices

Agricultural Engineers Engineering Practice Code (Tech Guide)	Best Management Practice
560	Access Road
Various	Barnyard Runoff Control System
362	Diversion
329A	Residue Management No-Till
329B	Residue Management Mulch-Till
585B	Contour Buffer Strips
330	Contour Farming
585	Stripcropping
340	Cover Crop/Green Manure
342	Critical Area Planting/Stabilization
382	Fencing/Exclusion
386	Field Border
393	Riparian Filter Strips
395	Fish Stream Improvement
490	Forest Site Prep
410	Grade Stabilization Structure
412	Grassed Waterways
561	Heavy Use Area Protection
422	Hedgerow Planting
468	Lined Waterway or Outlet
472	Use Exclusion
313	Manure Storage
Various	Milking Center Waste Control Systems
635	Waste Water Treatment Strip
484	Mulching
590	Nutrient Management
500	Obstruction Removal
595	Pest Management-Field Crops
516	Pipeline
558	Roof Runoff Management
288.58	Roofs
528A	Prescribed Grazing-Cropland
	Prescribed Grazing-Pasture
350	Sediment Basin-Nonbarnyard
	Sediment Basin-Barnyard
574	Spring Development
725	Sinkhole Treatment
580	Streambank Stabilization/Protection
606	Subsurface Drain

600	Terraces
612	Tree/Shrub Establishment
614	Watering Facility Trough/Tank
620	Underground Outlet
634	Waste Transfer System
638	Water/Sediment Control Basin
642	Well
360	Closure of Waste Impoundment
575	Animal Trails and Walkways
642	Well Abandonment
657	Wetland Restoration
380	Windbreak/Shelter Belt