

**Blue Earth County
Soil & Water Conservation District**

**Comprehensive Plan
2022 - 2026**



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Regular Monthly Board of Supervisors Meeting
Ag Service Center – Conference Room
(1st Thursday after 1st Monday of every Month) – 4:00 p.m.

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District 1
District 2
District 3
District 4
District 5

Term:

12/2024
12/2024
12/2024
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INTRODUCTION

Purpose of the Comprehensive Plan

The Blue Earth County Soil and Water Conservation District (SWCD) has developed this Comprehensive Plan to serve as a planning tool to guide programs and activities over the next five years. Supervisors and staff of the SWCD will use this document in the promotion and implementation of soil and water conservation programs within Blue Earth County as laid out in this plan.

The focus of this Plan is to outline concepts of where and how the SWCD will deliver education, technical assistance and cost share opportunities to landowners of Blue Earth County for the betterment of our natural resources.

Mission Statement

Conserve, maintain and enhance the quality of soil and water through educational, technical, and financial assistance.

Organization History

The SWCD is a governmental sub-division of the State of Minnesota. It was organized in accordance with the provisions, powers, and restrictions as set forth in Minnesota Statutes, Chapter 40. Soil and Water Conservation Districts were formed in response to the conservation movement of the later 1930's and early 1940's and were one of the first legislative attempts to protect our soil and water resources.

A long-time extension planning committee started work on building a program in November of 1957. A subcommittee of the group action committee, dealing with soils and conservation, started their deliberations in early 1958. Their final recommendations included the recommendation that educational work be conducted on the organization of a Soil Conservation District. This recommendation was accepted by the long-time planning committee and was printed in the publication resulting from committee action.

In November of 1958 a committee of 50 interested farmers was formed to assist with the educational and organizational work toward forming a district. Educational meetings were held and the public hearing conducted by the State Committee on February 18, 1959. The referendum was held on March 17, 1959 with a highly favorable vote. The election of supervisors took place on May 5, 1959.

The first meeting of the Board was held on May 27, 1959 at the County Extension Office.

In the early years, the SWCD's primary goal was to work with local farmers to establish practices to conserve soil and increase production on their land. Today, the SWCD works in partnership with federal, state and local governments to conserve and manage land and water resources across Blue Earth County.

Authorization and Jurisdiction

Minnesota Statutes Chapter 103C establishes soil and water conservation districts as political subdivisions of the state of Minnesota with certain powers and duties. The powers of the SWCD are granted under Minnesota Statutes 103C.331

The function of SWCD's is to assist landowners in protecting soil and water resources. Minnesota currently has 90 SWCD's, each of which is governed by a Board of five elected supervisors. The locally

elected Board is responsible for setting program policies for the SWCD staff to carry out when implementing conservation programs.

The County boundary makes up the boundary for the SWCD. Blue Earth County is made up of 23 townships. Those townships are divided up into 5 supervisor elected districts. **Figure 1** shows the townships that each elected supervisor represents.

District Policies

A variety of policies have been adopted by the SWCD Board to guide district programs. These policies are fluid documents that may be changed with the approval of the District Board. The SWCD also follows the policies of the government agencies that oversee its programs and operations. For example, the Board of Water and Soil Resources Grants Administration Manual. The policies guide the elected Board and staff to implement conservation programs to the best of their ability. Policy examples include the Operational Policy Handbook, Supervisor's Handbook, Personnel Policy and Cost Share Policy. Copies of these policies can be obtained by contacting the district office.

District Accomplishments

During the implementation of the previous comprehensive plan (2017 – 2021), the Blue Earth SWCD has been active in providing educational, technical, and financial assistance to the landowners of Blue Earth County. Some of the highlights from the past 5 year plan include a \$374,500 Clean Water Fund grant to reduce toxic algae blooms in Crystal Lake, a LeSueur Watershed accelerated implementation grant to target projects in 5 sub-watersheds that were the highest loading of sediment from fields sources, a CREP sign up that lead to the enrollment of 14 permanent easements totaling 685 acres, and the kick off of the SWCD native grass seeding and management program that assists absentee and elderly landowners through the contract completion process of installing native grasses to meet contract obligations. A complete list of accomplishments for the past 5 years is listed in **Appendix A**.

RESOURCE INVENTORY

Soil Survey

Blue Earth County has a total land area of 481,920 acres. The USDA Soil Survey for Blue Earth County was published in 1978. It includes a general soil map of the County for general land use planning and 14 broad soil associations, **Figure 2**. The broad association is a summary of detailed inventory of 65 different soil descriptions. Included in the description are the essential soil characteristics for management of crops, pasture and hay, establishment of windbreaks and environmental plantings, suitability for wildlife habitat, use for recreation, and engineering and soil properties.

The soils in the County are considered young. The process of soil formation began about 12,000 years ago as the glaciers receded. Most of the soil material deposited by the glaciers consisted of reworked drift carried by earlier glaciers.

Most of the County is covered by an unconsolidated mantle of glacial drift and lacustrine sediments. This mantle generally ranges from a depth of about 90 to 140 feet in the southeastern portion of the County, to more than 200 feet deep in the northwest part of the County. There are also areas of the County with shallow soils and exposed bedrock.

Recent alluvium is found along streams. The thickness varies. These sediments are saturated with water, but the texture retards the water yield. Many terraces of late glacial gravel and buried glacial gravel beds are important local sources of drinking water.

Two types of vegetation, forest and prairie, have strongly influenced the formation of soils in Blue Earth County. The Le Sueur River forms a general boundary between the Big Woods and the prairie region. There were small strips of Big Woods along the river in the County from the south and west. The Blue Earth River and the glacial lake plain generally form the southern and western boundary of the oak openings. The remainder of the County was in tall prairie grasses, with lesser areas consisting of wet prairies and brush land.

The last glaciation period left the County with unique topography, soils and river systems. The major rivers winding their way across the County are deeply eroded tributaries which have resulted in the creation of many valley and ravine systems with steep and complex slopes.

Erodible Land

Highly erodible land (HEL) comprises 4 percent (about 19,300 ac) of the total land area in the County. Much of this land is located along steep bluffs and adjacent to rivers and streams. Potentially highly erodible land makes up another 3.6 percent (about 17,300 ac). Of the HEL, about 3,800 acres is designated as cropland, which represents 20 percent of the HEL in the county. Almost all of the 3.6 percent listed as potentially highly erodible land is designated as cropland. Cropland includes established CRP and other established conservation practices that are not considered permanent. **Figure 3**

Wind Erosion

The greatest single area with wind erodible soils is found in the area with coarse textured soils south of Lake Crystal to the Watonwan River. To a lesser extent, fine textured soils are also prone to wind erosion. Wind erosion is significant during the months of the year when the soil is unprotected by vegetation, crop, crop residue or snow cover and exposed to wind and rain. Drifts of eroded soil collect in and along ditches and fence lines across the landscape. This is commonly observed in the area south of Lake Crystal. **Figure 4**

Soil Texture

Coarse textured soils are found mainly in an area south and west of Lake Crystal to the Watonwan River. Other notable deposits of coarse soils are found near wetlands and Morgan Creek north of Armstrong Lake, along the Blue Earth River south of Vernon Center, along the lower reaches of the Le Sueur, Maple, and Cobb River, and in areas just north of the City of Mankato. Another area with coarse soil deposits is along the north shore of the drained Jackson Lake east of Amboy. Muck soils are found in historic wetlands and shallow lakes throughout the county. Fine soils are found mainly in the southern half of the county, with the largest consolidated areas being in the Le Sueur River watershed near Good Thunder and Mapleton. **Figure 5**

For more information on Blue Earth County soils, and to make maps and queries of particular areas of interest, visit the NRCS web soil survey website at <http://websoilsurvey.nrcs.usda.gov/app>.

High Priority Problem Areas

Priority areas in Blue Earth County are as varied as the watersheds, land uses, and soils that are found in the county. The following areas described below are of the highest priority in Blue Earth County.

High Priority Erosion Problems – Any area where erosion from wind or water is occurring equal to or in excess of the soil loss tolerance tons/acre/year or is occurring on any area that exhibits active gully erosion, is identified as a priority in the local county water plan or a one watershed one plan. **Figures 3, 4, & 5**

High Priority Water Quality Problems – Any area where sediment, nutrients, chemicals, or other pollutants discharge to a DNR designated public water or to any high priority water as identified in the local county water plan, a one watershed one plan, or discharge to groundwater where the pollutant delivery rate to the water source is in amounts that will impair the quality or usefulness of the water resource. It is important to restore degraded water bodies while also protecting our best water quality areas before they become impaired. **Figures 6 & 7**

RESOURCE ASSESSMENT

Assessment of High Priority Problems

Various studies have been done by the SWCD, cooperating agencies, and other local partners in an effort to assess high priority problem areas in Blue Earth County. The SWCD uses the two definitions described under High Priority Problem Areas when completing and reviewing assessment reports to determine specific areas of high priority in Blue Earth County.

In preparing this comprehensive plan the SWCD used the USDA Soil Survey data compiled in 1977 to help analyze soil erosion issues **Figures 2, 3, 4, & 5**. While soil erosion from field sources is on the decline, we still have problem areas in the county that we will continue to target for improvement as well as maintain the current level of erosion treatment.

The SWCD also looked at reports and studies to determine areas where a water body is being impaired due to a pollutant delivery rate exceeding the allowed rate for that water body. The MPCA impaired waters list, **Figure 7** and the assessments that went into compiling that list were reviewed. A Watershed Restoration and Protection Strategy was completed for the LeSueur River watershed and we used that to help identify erosion from field sources and nutrient loading sources for Nitrates and Phosphorus, **Figure 8**. The SWCD also uses many reports completed by partners such as Natural Resource Conservation Service, Board of Water and Soil Resources, Blue Earth County Environmental Services, Blue Earth County Drainage Authority, the Watonwan One Watershed One Plan, and the landowners of Blue Earth County.

After reviewing all of the reports above and comments from landowners the SWCD established a Priority Area map **Figure 9** to be the focus of the next five-year comprehensive plan. The areas on this map will be the main focus and target areas of conservation efforts over the next five years.

Conservation Measures Needed

The following concerns have been identified as a high priority focus along with the conservation measures needed to help treat the concern.

Nitrogen – Reducing nitrogen loss in the agricultural setting will involve utilizing the Minnesota Nutrient Reduction Strategy, Minnesota Nitrogen Fertilizer Management Plan, Nitrogen in Minnesota Surface Waters, MPCA Watershed Restoration and Protection Strategies, University of Minnesota Nitrogen Best Management Practices for Nitrogen, NRCS Field Office Technical Guide, and other nitrogen recommendation reports and guidelines as needed.

Example BMPs to reduce nitrogen loss:

- Converting fall application to spring application
- Multiple applications and timing methods in coarse textured and high nitrogen soils
- Nutrient management based on soil samples and best-known guidance
- Woodchip bioreactors
- Vegetated buffers
- Wetlands
- Controlled drainage

Phosphorus – Reducing phosphorus loss from agricultural land sources is mainly addressed through erosion and water storage BMPs suggested by the Minnesota Nutrient Reduction Strategy, MPCA Watershed Restoration and Protection Strategies, NRCS Field Office Technical Guide, and other innovative designs as needed.

Example BMPs to reduce phosphorus loss:

- Nutrient management based on soil samples and best-known guidance
- Application and timing methods in coarse textured soils
- Strip/Ridge/No-Till
- Cover crops
- Vegetated buffers
- Erosion BMPs (Water and Sediment Control Basins, Terraces, Waterways, etc.)
- Wetlands
- Iron Sand Filters/Tanks
- Storage treatment ponds
- Two stage ditches
- Alternative tile inlets

Sediment – Sediment and phosphorus tend to be directly correlated since phosphorus is typically transported while attached to soil particles. BMPs to treat these issues are discussed in detail in the MPCA Sediment Reduction Strategy for Minnesota River Basin, Minnesota Nutrient Reduction Strategy, MPCA Watershed Restoration and Protection Strategies, NRCS Field Office Technical Guide, and other innovative designs as needed.

Example BMPs to reduce Sediment loss:

- Strip/Ridge/No-Till
- Cover Crops
- Vegetated Buffers

- Erosion BMPs (Water and Sediment Control Basins, Terraces, Waterways, etc.)
- Storage Treatment Ponds
- Two stage ditches

Soil Health – NRCS explains soil health as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. This definition speaks to the importance of managing soils so they are sustainable for future generations. Managing for soil health is one of the easiest and most effective ways for farmers to increase crop productivity and profitability while improving the environment.

It is important to note that not all practices are applicable to all crop systems. Some operations will benefit from just one soil health practice while others may require additional practices for maximum benefit. But these core practices form the basics of a Soil Health Management System and can help you optimize your inputs, protect against drought, and increase production all while improving water quality.

NRCS resources and practice standards will be used as guiding principles in implementing soil health practices along with other agencies and university research.

Example of Soil Health Practices:

- Conservation Crop Rotation
- Cover Crops
- No Till
- Mulch Tillage
- Mulching
- Nutrient Management
- Pest Management

The further development and promotion of soil health programs are needed so that producers in our area can understand the impacts of these strategies as well as benefits to their farm and water quality. If soil health practices were to be implemented on a large scale, the results on water quality could be very significant. Having the soil covered at all times would have a huge impact on the amount of sediment eroding off farm fields. Soil health practices also help build a healthy soil rich in organic matter. Soils rich in organic matter have a higher water holding capacity than those soils with low organic matter. The ability to hold more water on the landscape for a longer period of time is key to slowing the flow and reducing peak hydrographs in streams.

Effectiveness of Past Efforts

Over the past 5 years the SWCD has provided educational, technical, and financial assistance with success as reflected in the past accomplishments report, **Appendix A**. Along with our various partners, we have collaborated with land occupiers under a voluntary delivery system to address high priority areas of concern and install conservation practices as needed. Without the efforts of the SWCD, our partners, and land occupiers the amount of degradation and impairments to our surface waters would have increased substantially over the past five years.

Strengths of the past efforts under a voluntary delivery system include the ability to provide technical and financial services to land occupiers at little to no cost to the land occupier. The SWCD has established itself as a trusted go to location for landowners with conservation questions, which is a big strength of the

SWCD. On the flip side a weakness of that is that the SWCD is often overwhelmed with requests for a broad range of projects.

Weaknesses of past efforts include the increased amount of State mandated administrative processes needed for both the SWCD to obtain State funding and for the land occupiers to obtain assistance. When targeting high priority projects in key locations, a challenge lies in the land occupier's willingness to install conservation practices in those key locations on the landscape.

Commodity prices tend to have an influence on conservation programs that take land out of production. Higher prices tend to lead to lower enrollment acres while lower prices tend to lead to higher enrollment acres.

OBJECTIVES, STRATEGIES, AND ACTIONS

Objective #1 – Reduce soil erosion as defined in the high priority problems section of this plan.

Background – SWCDs were formed in the late 1930s and 1940s to protect soil and water quality. The primary focus at that time was soil erosion. Today we still have areas in Blue Earth County where soils erode at high rates due to slope, wind, rain, and farming practices. Erosion from field sources can be treated with BMPs offered by the SWCD along with cost share assistance. By continuing to target high priority erosion from field sources we can further reduce sediment loading to the Minnesota River, a river with a high sediment loading rate.

Actions Planned:

1. Target lands listed as highly erodible or high priority erosion areas for treatment BMPs.
 - a. Conduct one on one landowner outreach on identified parcels.
 - b. Install 2 erosion control projects per year.
2. Complete assessments to prioritize projects based on cost/benefit ratios.
 - a. Use Stream Power Index (SPI) to help identify problem areas.
 - b. Use Soil Survey Data to help locate problem areas.
 - c. Utilize other agency reports that help identify problem areas.
3. Be responsive to high water or flood events when they occur.
 - a. Complete damage assessment reports after flood events.
 - b. Provide technical assistance advice to landowners.
 - c. Apply for special funds if available to help landowners repair damage.
4. Promote and install native grass plantings in highly erodible areas.
 - a. Conduct one on one landowner outreach on identified parcels.
 - b. Use RIM and CRP as a payment option to offset crop production payments.
 - c. Enroll 5 sensitive areas into native grass plantings each year.
5. Be responsive to landowner requests to review erosion problems.
6. Apply for grants to help accelerate the implementation process.

Objective #2 – Work in the LeSueur River Watershed high priority areas: Madison Lake, JD22, CD83, CD26 and CD86 as defined in the LeSueur River WRAPS report to reduce Sediment from field sources, Phosphorus and Nitrogen.

Background – A Watershed Restoration and Protection Strategies report was completed for the LeSueur River Watershed. Pollutant sources and reduction goals were listed for the whole watershed in the report. The SWCD reviewed the report and identified watersheds that were the highest loading of Sediment from field sources, Phosphorus and Nitrogen. Two sub-watersheds met those criteria for all 3 pollutants and were targeted by the SWCD. The SWCD used targeting tools such as PTM App and ACPF to identify potential sites where BMPs were needed to reduce sediment from field sources below 300 lbs/ac for each sub-watershed.

Actions Planned:

1. Continue monitoring the watershed with grab samples to verify problem areas and help document watershed progress.
2. Do civic engagement with citizens of the watershed to help understand problems and promote solutions.
 - a. Participate in local community events with displays or booths.
 - b. Work with local lake associations and conservation clubs.
3. Conduct landowner outreach on the identified BMPs for each sub-watershed prioritized in order of their cost-benefit to water quality ratio.
 - a. Contact the owners of all 21 projects identified in the CD86 sub-watershed and work on getting as many of those installed as possible.
 - b. Contact the owners of the 89 projects identified in the CD83/Madison Lake sub-watershed and work on getting a combination of those installed to meet pollution reduction goals.
 - c. Work with the Blue Earth County Ditch Authority on ditches where sediment reductions are common goals of the Ditch Authority and the SWCD.

Objective #3 – Work in the two sub-watersheds of the Watonwan River Watershed: Perch Creek and Lower Watonwan River, by implementing BMP's and helping to reduce the amount of sediment entering these systems.

Background – The Watonwan River 1W1P has been finalized and we're ready to work with producers in this area by implementing BMP's and restoring areas back to their natural state. The 1W1P program is a statewide effort which combines local entities into one combined planning effort to address resource issues considered most important during the planning process. There are a wide variety of actions included in this objective and the following actions will show how we will achieve that.

Actions Planned:

1. Target high priority areas in the Watonwan River Watershed outlined in the 1W1P.
 - a. Lower Watonwan River
2. Implement BMP's throughout the Watonwan River Watershed based on their importance created from the ranking sheet from the 1W1P.
 - a. Water and Sediment Control Basins
 - b. Grassed Waterways
 - c. Cover Crops

- d. Well Decommissioning
 - e. Wetland Restorations
 - f. Grade Stabilizations
3. Focus our efforts on tier 1 priority issues in these watersheds.
 - a. Reduce nitrates and contaminants in groundwater.
 - b. Work with our local Drainage Authority to implement conservation practices on drainage systems.
 - c. Reduce bacteria levels in rivers and streams.
 - d. Restoring the functionality of wetlands.
 4. Focus our efforts on tier 2 priority issues in these watersheds.
 - a. Reducing TSS and DO levels in rivers and streams.
 - b. Protecting, enhancing, and restoring wetlands to provide nutrient treatment functions and recreational opportunities.
 - c. Focus on protecting our groundwater quality.

Objective #4 – Increase the use of Soil Health Management plans throughout the county.

Background – NRCS explains soil health as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. This definition speaks to the importance of managing soils so they are sustainable for future generations. Managing for soil health is one of the easiest and most effective ways for farmers to increase crop productivity and profitability while improving water quality.

Actions Planned:

1. Promote soil health practices in high priority erosion areas.
 - a. Conduct one on one landowner outreach on identified parcels.
 - b. Work with landowners to implement 3 soil health projects per year.
 - c. Provide cost share assistance to landowner when available.
2. Promote & educate area producers and the general public on why soil health is important.
 - a. Have a field day at one of our local producers' fields.
 - b. Incorporate soil health education into school/ag/college classrooms.
 - c. Encourage early adopters of soil health in our county to discuss more openly with our producers the importance of implementing these types of practices.
 - d. Run ads in local newspapers and radio
3. Conduct in field soil health tests on parcels that already implement the BMP's of soil health.
 - a. Using our soil health buckets to conduct onsite analysis of individual parcels.
 - b. Record information from tests and use that to help promote benefits of soil health.

Objective #5 – Increase habitat and plant diversity in areas where it will have multiple benefits including erosion control, water quality filtering, wetland establishment, and general habitat improvement for wildlife and pollinators.

Background – Habitat establishment has been a complimentary practice for water quality and has multiple benefits. The BWSR, DNR, FSA, and NRCS all have initiatives and easement programs that have goals of soil erosion and water quality improvements through habitat development or reestablishment. In 2016 the Minnesota Governor established a legislative requirement for 50-foot buffers on all public water

courses and 16.5-foot buffers on all public drainage ditches. This buffer legislation is a perfect example of habitat and water quality working together on the landscape. For many years SWCDs have provided conservation tree sales to combat the effects of wind erosion while at the same time offering wildlife habitat.

Actions Planned:

1. Promote and target wetland and prairie land restorations in our objective areas and other high priority locations through easement programs.
 - a. Sign up 20 Reinvest In Minnesota easements.
 - b. Assist FSA in signing up 30 Conservation Reserve Program contracts.
 - c. Assist NRCS with 5 Wetland Reserve Easement Program contracts.
2. Help landowners follow buffer legislation requirements.
 - a. Conduct buffer site inspections/reviews as needed.
 - b. Offer seeding services or seeding options to landowners needing buffers.
 - c. Complete verification of buffer seedings and alternative practices.
3. Provide a seeding and seed sales service for landowners.
 - a. Offer seeding establishment services of native grasses to ensure proper establishment of native grasses and forbs in easements and buffer areas.
 - b. Provide seed sales that meet the specifications of conservation programs.
 - c. Offer maintenance services including spraying and mowing to help landowners establish native grasses and forbs.
4. Provide affordable conservation tree sales and prairie seed for landowners wanting to enhance or replace shelterbelts, provide habitat, or address erosion issues.

Objective #6 – Assess and develop BMP strategies to reverse the declining water quality in Ballantyne Lake before the lake is listed for impairments.

Background – Ballantyne Lake is the only lake in Blue Earth County that has not been listed for water quality impairments. Recently the lake health has begun to decline. Ballantyne Lake is fed by two other lakes: Duck Lake and Lake Gilfillin. The total watershed of all three lakes is 2,724 acres. Users of the lake and lake shore residents have expressed concerns regarding a water control structure project on Gilfillin Lake and other land use changes that have occurred prior to and during the lake’s water quality decline. Ballantyne Lake is in the Middle Minnesota Watershed which has been the focus of a Watershed Restoration and Protection Strategies (WRAPS) report. The SWCD plans to utilize the WRAPS report as a guide to help reverse the water quality degradation before the lake is listed for impairments.

Actions Planned:

1. Begin monitoring the watershed with grab samples to verify problem areas and help document watershed progress.
2. Do civic engagement with citizens of the watershed to help understand problems and promote solutions.
 - a. Conduct one on one landowner interviews of at least 30 citizens.
 - b. Participate in local community events with displays or booths.
 - c. Work with local lake associations and conservation clubs.
3. Use existing targeting tools to help identify potential sites for BMPs.
 - a. Prioritize, Targeted, and Measurable Application (PTM App)
 - b. Agricultural Conservation Planning Framework toolbox (ACPF)

- c. Stream Power Index (SPI)
- d. Nutrient removal calculators
- 4. Identify and prioritize BMPs in order of their cost-benefit to water quality ratio.
 - a. A goal number of projects has yet to be established but the initial primary focus will be in the upper part of the watershed.
 - b. The small watershed will likely involve BMPs in the farmland and near lake development areas.
- 5. Once projects are identified conduct one on one field meetings with landowners.
- 6. Once the upland treatment of water has been addressed and monitored to prove significant reductions in pollutants, then we will start to assess in lake treatments if necessary.

IMPLEMENTATION

Workload Analysis

The SWCD currently employs 4 Full Time Equivalent (FTEs) including a District Manager, Administrative Assistant, Conservation Specialist, and a Conservation Technician. Workloads often overlap between programs, and staff are trained in multiple fields to be able to help cover when workloads are high in a certain area.

Each objective lists estimated workload based on staff years over the 5-year life of this plan.

Reduce High Priority Soil Erosion – 4.5 staff years

LeSueur River Watershed High Priority Areas – 5.5 staff years

Watowan River Watershed High Priority Areas – 5.5 staff years

Increase the use of Soil Health Management Plans – 3.0 staff years

Increase Habitat in Multiple Benefit Areas – 4.0 staff years

Ballantyne Lake BMP Protection – 2.5 staff years

Based on the above estimates, approximately 25 staff years, or 5 FTEs annually, are needed to implement all the activities listed. The SWCD plans to address the workload shortage by partnering with other agencies and applying for technical assistance funds when available.

Budget Forecast

A 5-year budget forecast is included in **Appendix B**. The budget forecast is based on the assumption that all current funding is maintained with a slight annual increase and all current partnerships continue to be utilized into the future.

Over the next 5 years the SWCD will work with Blue Earth County to ensure the County funding to the SWCD adequately supports its conservation efforts and addresses the needs of its citizens. We will also seek grant opportunities and other agency funds that fit into the SWCDs goals and mission.

Adjustments Needed in District Authorities and/or Programs

An adequate funding source for the SWCD outside of competitive grants is needed to meet the objectives of this plan. The SWCD is constantly adapting to changes in the landscape that effect the programs we offer and the amount of staff time needed to deliver them. One example of an unforeseen change was the

creation of the buffer law. The buffer law created an increased demand on some of our existing conservation programs while also taking staff time away from existing workplan objectives.

In order for the SWCDs to have an effective way to plan for future project and program expenses, they need to have a stable source of funding. Having taxing authority would allow the SWCD to be able to develop a long-term plan that identifies projects and provides a way to fund them. Without taxing authority, the SWCD is only able to plan for and complete the work that other taxing agencies are willing to pay the SWCD to do.

APPENDIX A Past Accomplishments

	<i>Project Type</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>5-Year Total</i>
Cost-Share Projects	Grassed Waterway		1			4	5
	WASCOB	2	11	2			15
	Grade Stabilization	4	4	3			11
	Well Decommissioning		3	6			9
	Cover Crops (Ac)		545.5	561.5	100	1,412	2,619
	Alternative Side Inlets		2		5	54	61
	Other Practices	2	3	1	1		7
Reinvest in Minnesota	New Easements		4	3	4	3	14
	Acres Enrolled		193.5	181.1	80.6	229.7	684.9
	Closed Easements	9	1		7		17
	Acres Enrolled	118.6	16.8		374.7		510.1
	Wetland Restoration Sites	3	2		5	2	12
	Wetland Restoration Acres	83.9	52.2		118.2	65.6	319.9
	Native Grasses Planted Sites	7	6	3	8	9	33
	Native Grass Acres	150	106	9.4	257.4	297.7	820.5
Tree Planting Sites	1				1	2	
Tree Planting Acres	4.4				8.1	12.5	

<i>Annual Programs</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>5-Year Total</i>
Tree Program - Trees Sold	10,015	9,175	8,625	8,600	7,900	44,315
Seeding Program – Acres Seeded	71.84	215.46	419.72	109.77	179.49	996.28
Seeding Program – Sites Seeded	18	15	12	9	7	61
Ag BMP Loans - Number of Loans	6	3	2	3	18	32
Ag BMP Loans – Total (\$)	\$204,854	\$312,728	\$158,240	\$182,254	\$230,041	\$1,088,117

<i>Special Grants</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>Amount (\$)</i>
2014 CWF/GBERBA Le Sueur Tech	x					\$134,000.00
2014 CWF/GBERBA Ravine/Gully	x					\$378,673.00
LCCMR So MN Lakes Restoration	x					\$46,000.00
2016 BWSR/Pheasants Forever	x					\$45,000.00
2012 MNDOT Ravine Grant	x	x				\$385,800.00
2014 CWF SCTSA GIS Coordinator	x	x	x			\$250,000.00
2014 Southern MN Flood Relief P1	x	x	x			\$150,000.00
2014 Southern MN Flood Relief P2	x	x	x			\$82,969.00
2014 Southern MN Flood Relief P3B	x	x	x			\$62,500.00
2015 319 Conservation Drainage	x	x	x	x		\$145,600.00
2016 CWF Crystal Lake	x	x	x	x		\$374,500.00
2017 BWSR/Pheasants Forever		x				\$58,500.00
2017 CWF LeSueur AIG		x	x	x	x	\$60,000.00
2017 CWF Multipurpose Drainage		x	x	x	x	\$301,200.00
2017 319 TMDL Implementation		x	x	x	x	\$400,000.00
2019 BWSR/Pheasants Forever				x		\$29,250.00
2019 CWF Lake Washington				x	x	\$310,250.00

TOTAL \$3,214,242.00

APPENDIX B
BUDGET FORECAST

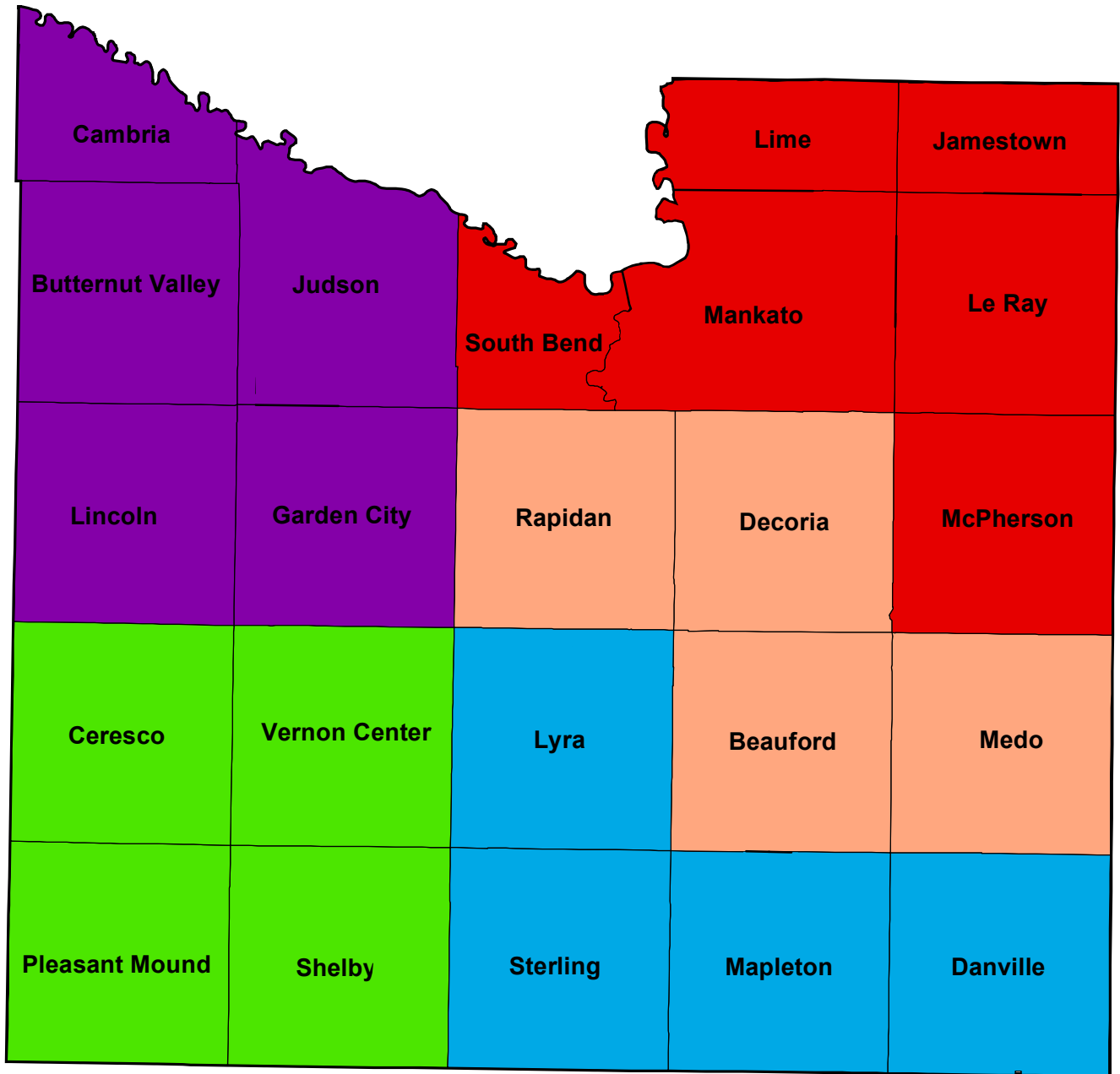
REVENUES	2022	2023	2024	2025	2026
Intergovernmental					
County	\$110,000.00	\$112,000.00	\$114,000.00	\$116,000.00	\$118,000.00
State	\$260,000.00	\$262,000.00	\$264,000.00	\$266,000.00	\$268,000.00
Subtotal	\$370,000.00	\$374,000.00	\$378,000.00	\$382,000.00	\$386,000.00
Charges for Services	\$65,000.00	\$67,000.00	\$69,000.00	\$71,000.00	\$73,000.00
Misc Revenues	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00
Subtotal	\$66,000.00	\$68,000.00	\$70,000.00	\$72,000.00	\$74,000.00
Total Revenues	\$436,000.00	\$442,000.00	\$448,000.00	\$454,000.00	\$460,000.00

EXPENDITURES	2022	2023	2024	2025	2026
District Operations					
Personnel Services	\$279,000.00	\$287,000.00	\$295,000.00	\$303,000.00	\$312,000.00
Other Services & Charges	\$93,000.00	\$94,000.00	\$95,000.00	\$96,000.00	\$97,000.00
Supplies	\$4,000.00	\$4,000.00	\$4,000.00	\$4,000.00	\$4,000.00
Capital Outlay	\$11,000.00	\$8,000.00	\$5,000.00	\$5,000.00	\$5,000.00
Subtotal	\$387,000.00	\$393,000.00	\$399,000.00	\$408,000.00	\$418,000.00
Project Expense					
District	\$35,000.00	\$35,000.00	\$35,000.00	\$35,000.00	\$35,000.00
State	\$14,000.00	\$14,000.00	\$14,000.00	\$14,000.00	\$14,000.00
Subtotal	\$49,000.00	\$49,000.00	\$49,000.00	\$49,000.00	\$49,000.00
Total Expenses	\$436,000.00	\$442,000.00	\$448,000.00	\$457,000.00	\$467,000.00

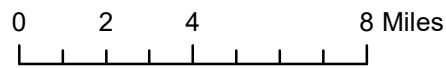
Excess	\$0.00	\$0.00	\$0.00	-\$3,000.00	-\$7,000.00
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Figure 1

SWCD Supervisor Districts



- District 1
- District 2
- District 3
- District 4
- District 5

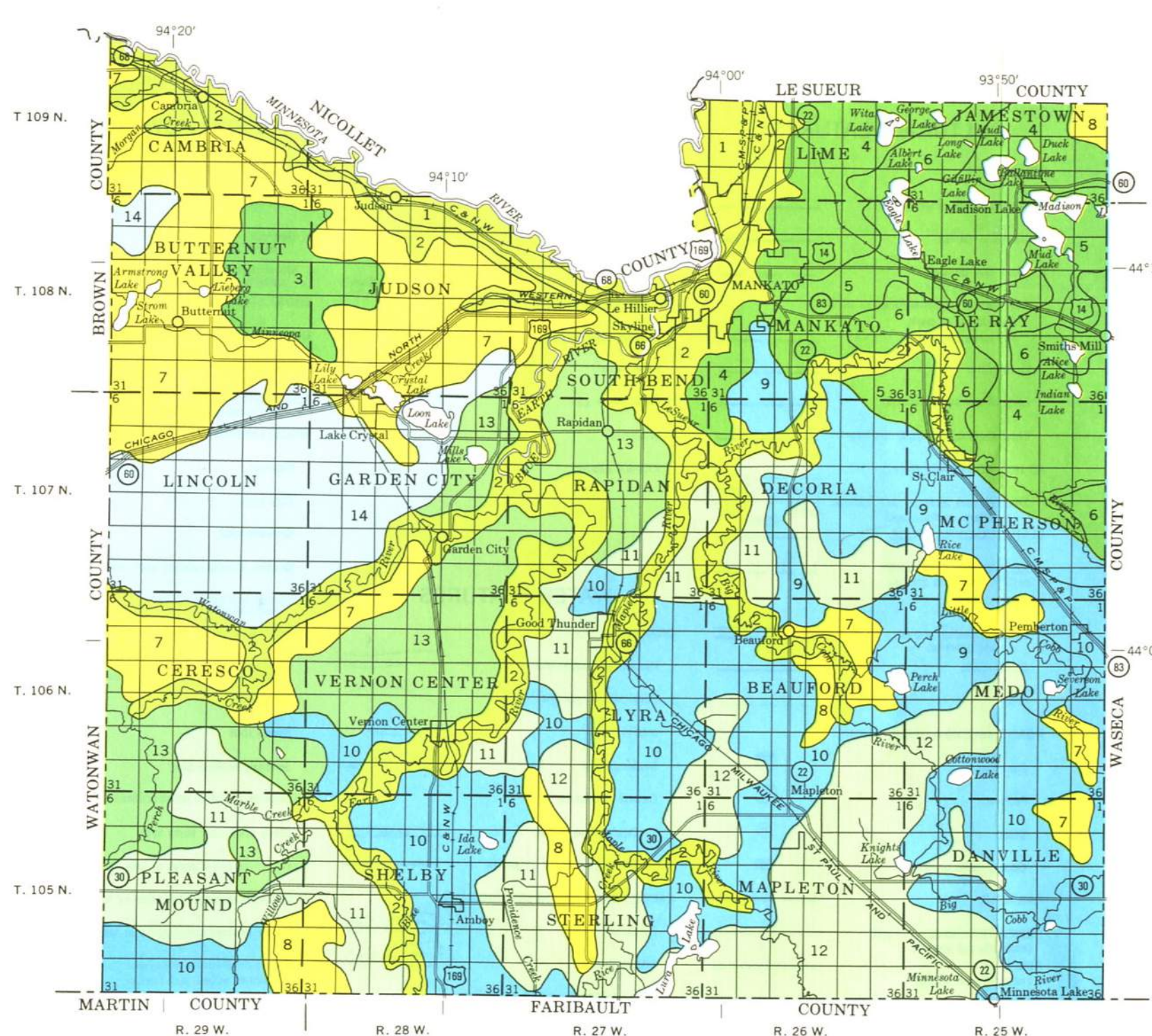


Projection: UTM NAD83 Zone 15



This map shows the various townships in Blue Earth County and the respective district they lie in.

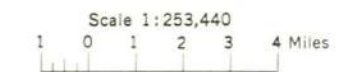
Prepared By: Blue Earth County SWCD
Source: Blue Earth County SWCD



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
MINNESOTA AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

BLUE EARTH COUNTY, MINNESOTA



SOIL ASSOCIATIONS

- ALLUVIAL TERRACES AND STEEP LAND ADJACENT TO RIVERS**
- 1** Alluvial land-Copaston-Chaska: Nearly level and gently undulating, poorly drained to well drained soils formed in medium textured alluvium stratified with moderately coarse and coarse textured material; some are underlain by limestone bedrock
 - 2** Storden-Comfrey-Lomax: Nearly level to very steep, well drained and poorly drained soils formed in moderately coarse to moderately fine textured alluvium and medium textured glacial till
- LOW, NEARLY CIRCULAR HILLS HAVING NEARLY LEVEL TO GENTLY UNDULATING TOPS AND SMOOTH SIDES**
- 3** Nicollet-Webster-Clarion: Nearly level and gently undulating, moderately well drained, poorly drained, and well drained soils formed in medium textured and moderately fine textured glacial till
 - 4** Cordova-Lester-Caron: Nearly level and moderately steep, very poorly drained, poorly drained, and well drained soils formed in medium textured and moderately fine textured glacial till and organic material
 - 5** Minnetonka-Kilkenny-Caron: Nearly level and moderately steep, very poorly drained, poorly drained, and well drained soils formed in moderately fine and fine textured material over glacial till or in organic material
 - 6** Kilkenny-Minnetonka-Lerdal: Nearly level to moderately steep, poorly drained, somewhat poorly drained, and well drained soils formed in moderately fine and fine textured material over glacial till
- GENTLY UNDULATING TO STEEP, IRREGULARLY SLOPING GROUND AND END MORAINES**
- 7** Webster-Nicollet-Canisteo: Nearly level and gently undulating, poorly drained and moderately well drained soils formed in medium textured and moderately fine textured glacial till
 - 8** Clarion-Storden-Esterville: Rolling to steep, well drained and somewhat excessively drained soils formed in medium textured glacial till and moderately coarse textured glacial outwash
- CLAYEY MANTLED GROUND MORAINE**
- 9** Minnetonka-Shorewood-Lura: Nearly level and gently sloping, very poorly drained, poorly drained, and moderately well drained soils formed under timber and grasses in moderately fine and fine textured lacustrine material and the underlying glacial till
 - 10** Marna-Guckeen-Lura: Nearly level and gently undulating, very poorly drained, poorly drained, and moderately well drained soils formed under prairie grasses in moderately fine and fine textured lacustrine material and the underlying glacial till
- CLAYEY LAKE PLAIN**
- 11** Waldorf-Collinwood-Lura: Nearly level, very poorly drained, poorly drained, and moderately well drained soils formed in moderately fine and fine textured lacustrine material underlain in some areas by stratified, medium textured material
 - 12** Beauford-Lura-Shorewood: Nearly level, very poorly drained, poorly drained, and moderately well drained soils formed in fine textured lacustrine material
- SILTY LAKE PLAIN**
- 13** Madelia-Kingston-Spicer: Nearly level and gently sloping, poorly drained and moderately well drained soils formed in moderately fine textured and medium textured lacustrine material
- DELTA SEDIMENTS ON GROUND MORAINE**
- 14** Darfur-Dassel-Fieldon: Nearly level, very poorly drained and poorly drained soils formed in moderately coarse textured and medium textured, stratified delta sediments

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

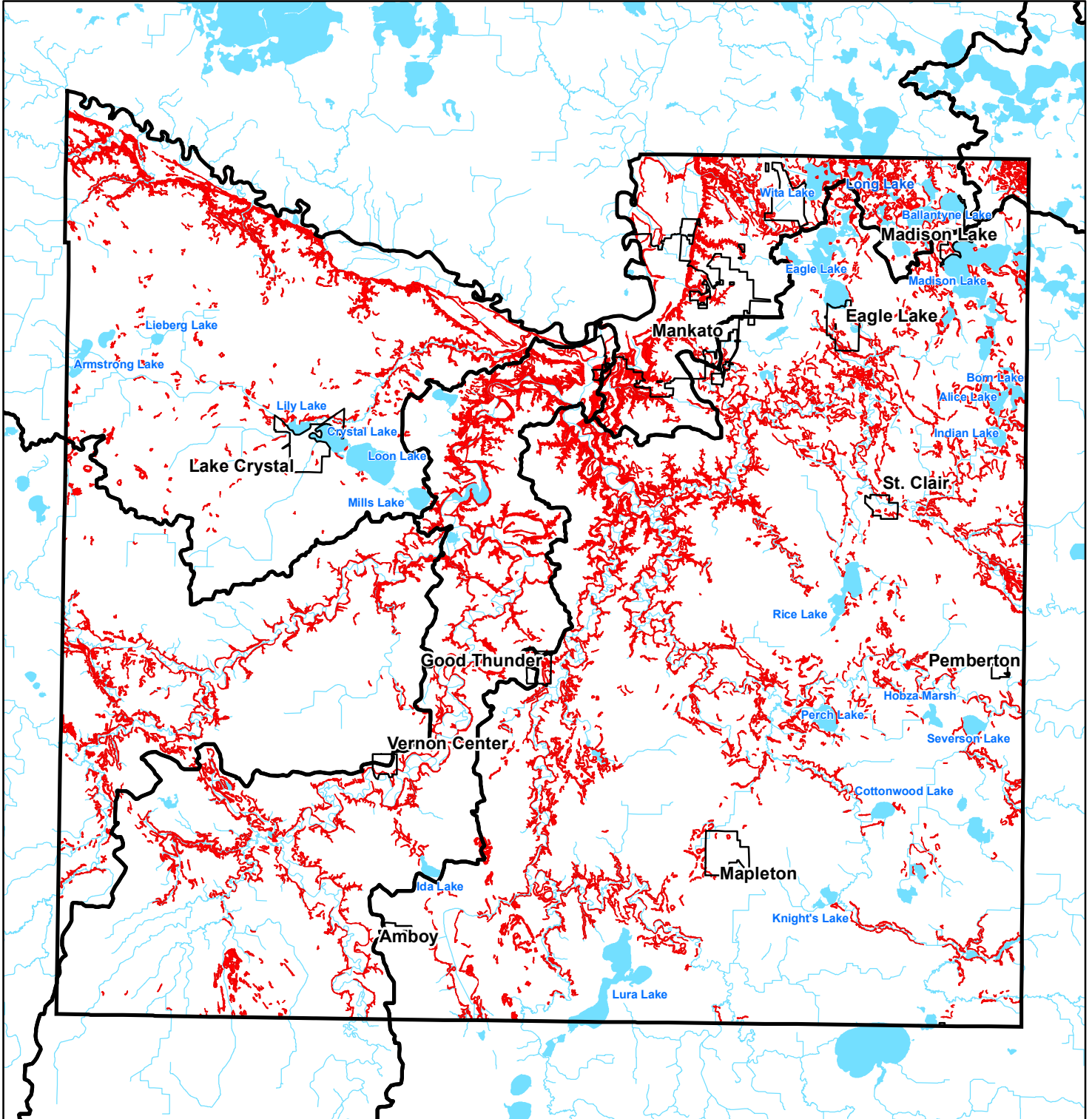
Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

Figure 2

Compiled 1977

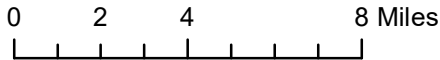
Figure 3

Erodible Land Classification of Soils



Legend

- Major Watersheds
- Slope Greater Than Or Equal To 6%



Projection: UTM NAD83 Zone 15



BLUE EARTH



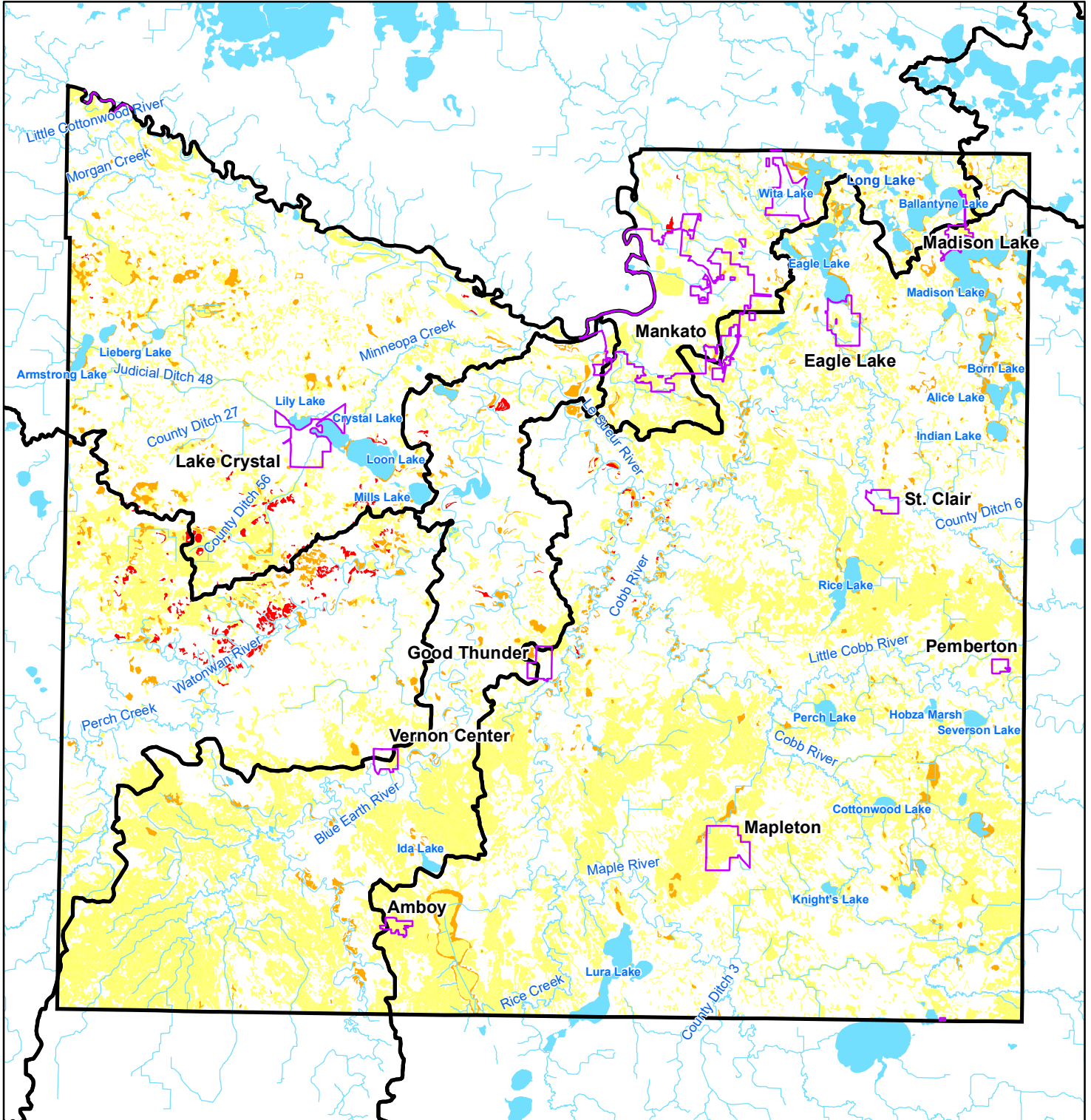
SOIL & WATER

This map shows where soils in Blue Earth County are considered highly erodible land based on slope percentage. They are considered highly erodible by having a slope greater than or equal to 6%.

Prepared By: Blue Earth County SWCD
Source: NRCS SSURGO Soils

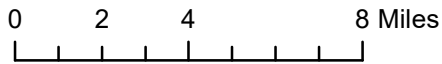
Figure 4

Wind Erodibility Groups



Legend

- Very Slightly Erodible -
Crops can be easily grown
- Slightly Erodible -
Crops can be grown if measures to control soil erosion are used
- Very Highly Erodible -
Crops can be grown if intensive measures to control soil erosion are used
- Extremely Erodible -
Generally not suitable for crops



Projection: UTM NAD83 Zone 15

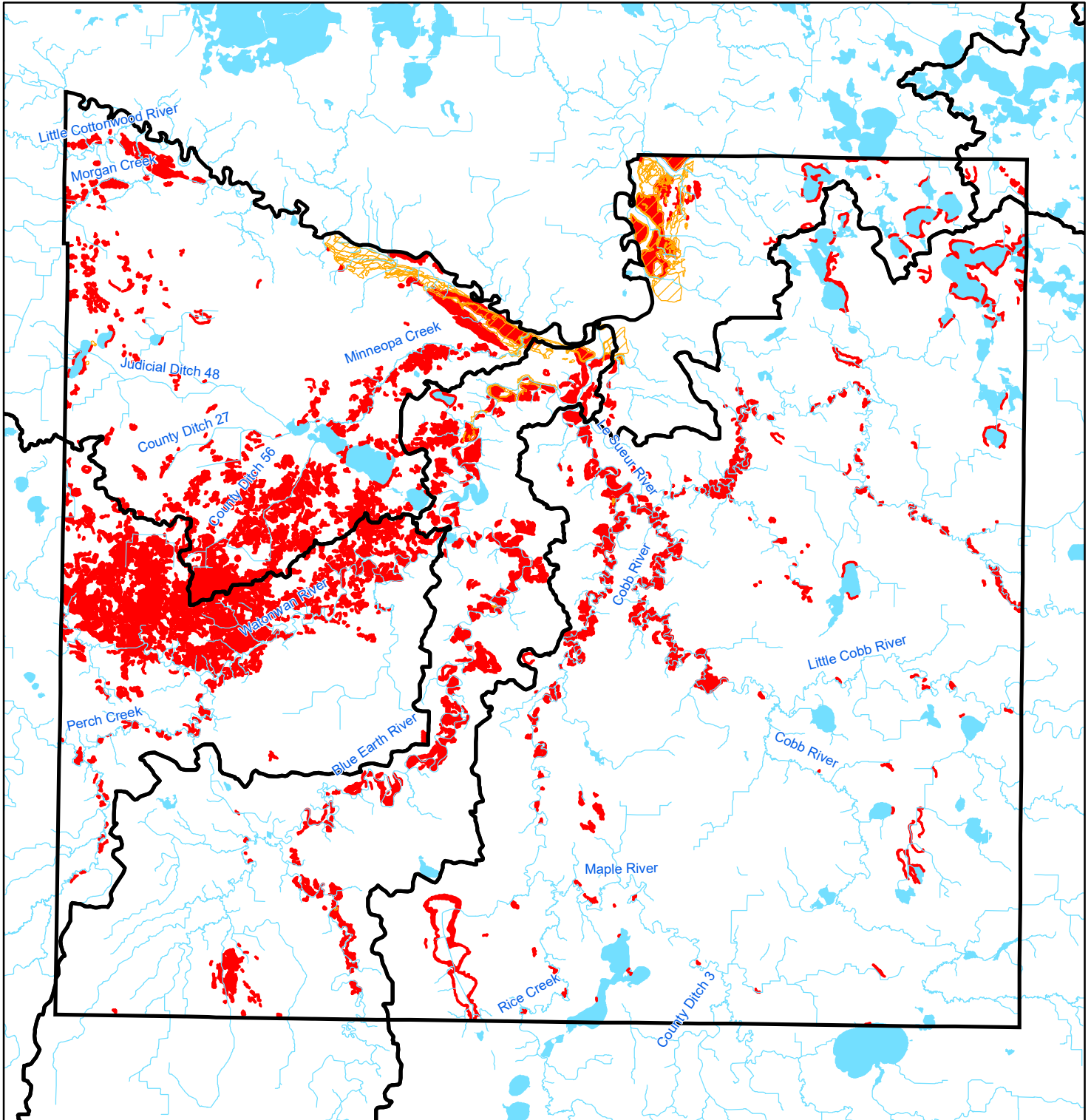


This map shows wind erodibility groups in Blue Earth County ranked according to how erodible they are.

Prepared By: Blue Earth County
Source: NRCS SSURGO Soils

Figure 5

Sensitive Soils Due to Coarse Texture or Shallow Bedrock



Legend

- Major Watersheds
- Soil with Shallow Bedrock
- Coarse Textured Soil

0 2 4 8 Miles
Projection: UTM NAD83 Zone 15

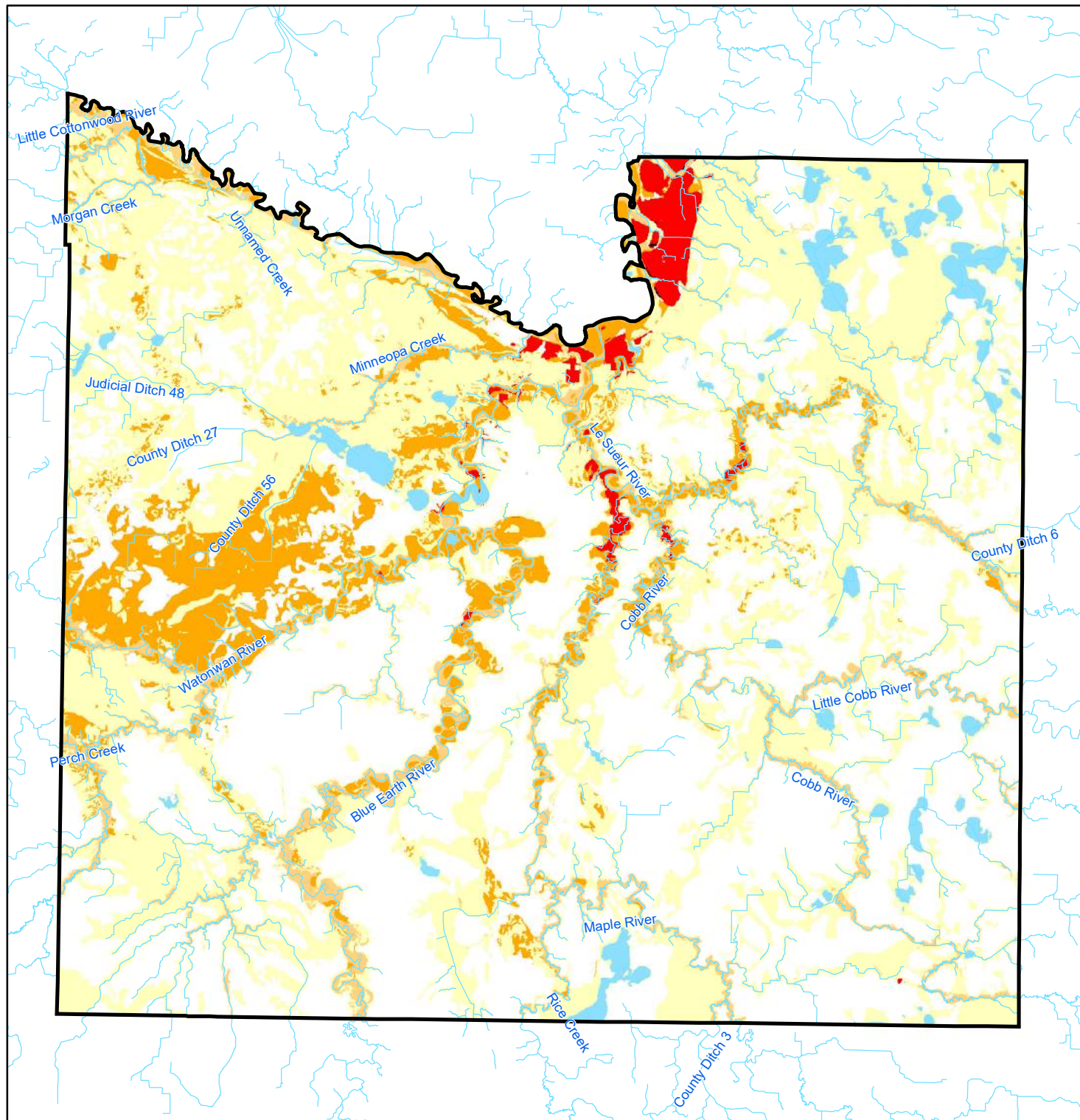


This map shows sensitive soils due to coarse texture or shallow bedrock. Shallow bedrock is defined as bedrock being within 40" of the surface. Coarse textured soils are defined as coarse textured soils within 36" of the surface.

Prepared By: Blue Earth County SWCD
Source: NRCS SSURGO Soils

Figure 6

Pollution Sensitivity of Near-Surface Materials



Pollution Sensitivity: Estimated vertical travel time through near-surface materials

- High: Hours to a week
- Moderate: A week to weeks
- Low: Weeks to months
- Very Low: Months to a year
- Karst
- Water
- Bedrock

0 2 4 8 Miles
 Projection: UTM NAD83 Zone 15

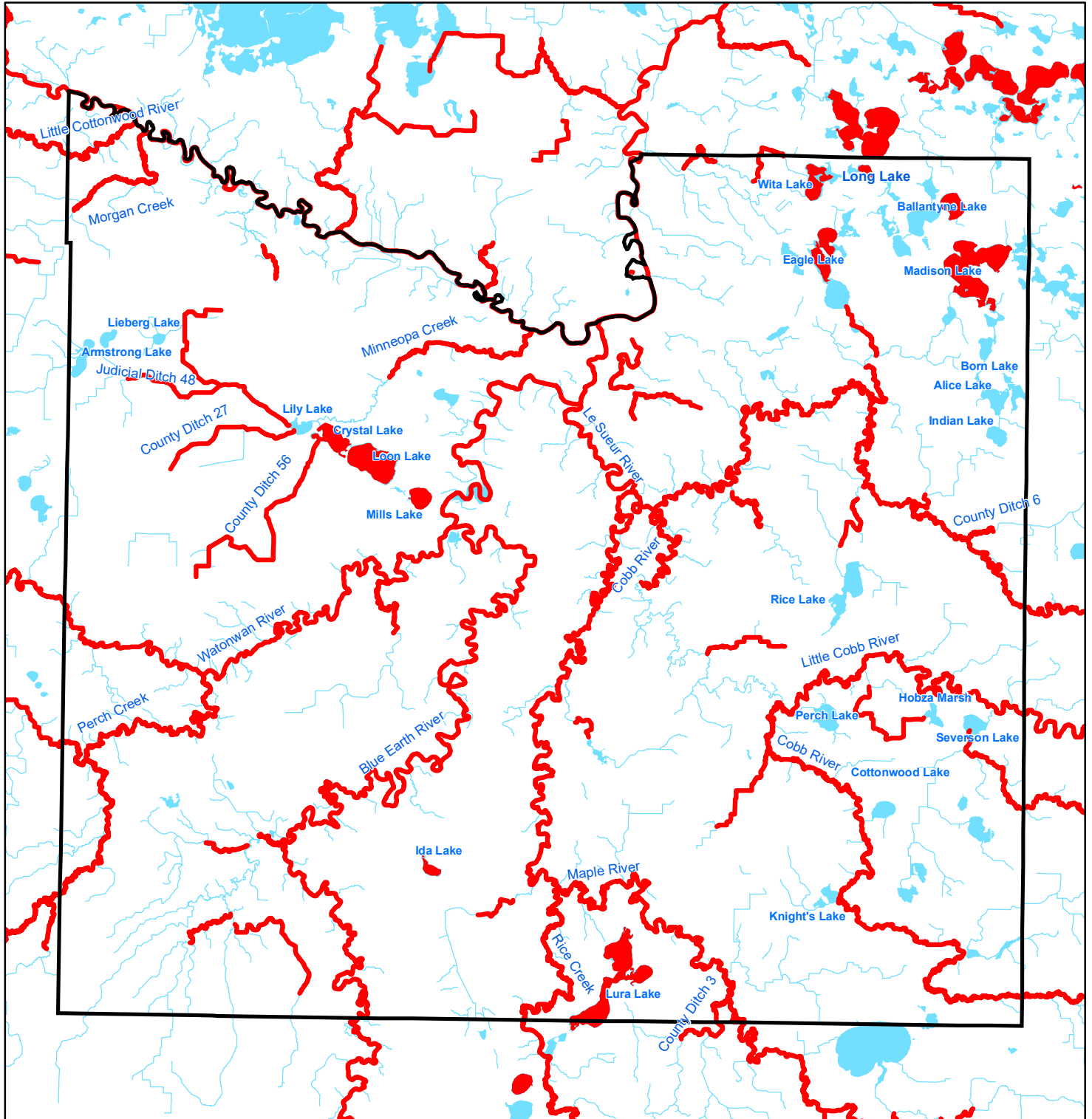


This map shows the pollution sensitivity of soils by the vertical travel time through near-surface materials. They are ranked from high to very low.

Prepared By: Blue Earth County SWCD
Source: Minnesota Hydrogeology Atlas

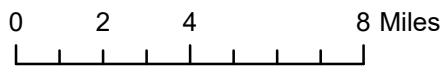
Figure 7

Impaired Waters Draft 2020



Legend

- Impaired Streams
- Impaired Lakes



Projection: UTM NAD83 Zone 15



This map shows the 2020 draft of impaired waters in Blue Earth County.

Prepared By: Blue Earth County SWCD
Source: MPCA

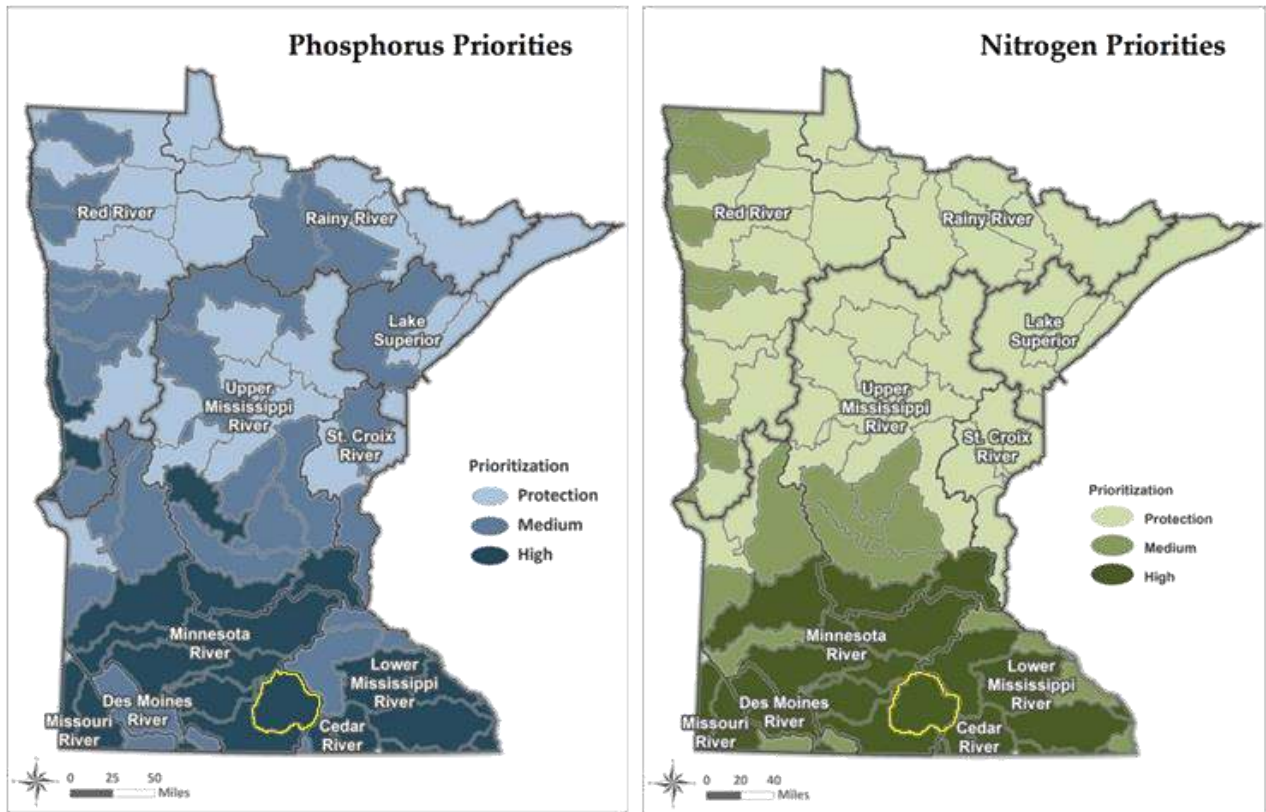


Figure 8

The LeSueur River Watershed is one of the high priority watersheds for both phosphorus and nitrogen in the State of Minnesota according to the Minnesota Nutrient Reduction Strategy.

The LeSueur River Watershed Restoration and Protection Strategies (WRAPS) Report further identifies pollutant sources and reduction goals within the LeSueur River Watershed. The WRAPS report highlights the Beauford Ditch watershed and the Madison Lake watershed area amongst the highest sources of nutrient loading to the LeSueur River.

Sediment from Field Sources
 LeSueur River WRAPS Report

Legend

Target Areas

Sediment from Field Sources

lbs/ac

- 55 - 100
- 100 - 150
- 150 - 200
- 200 - 300
- > 300

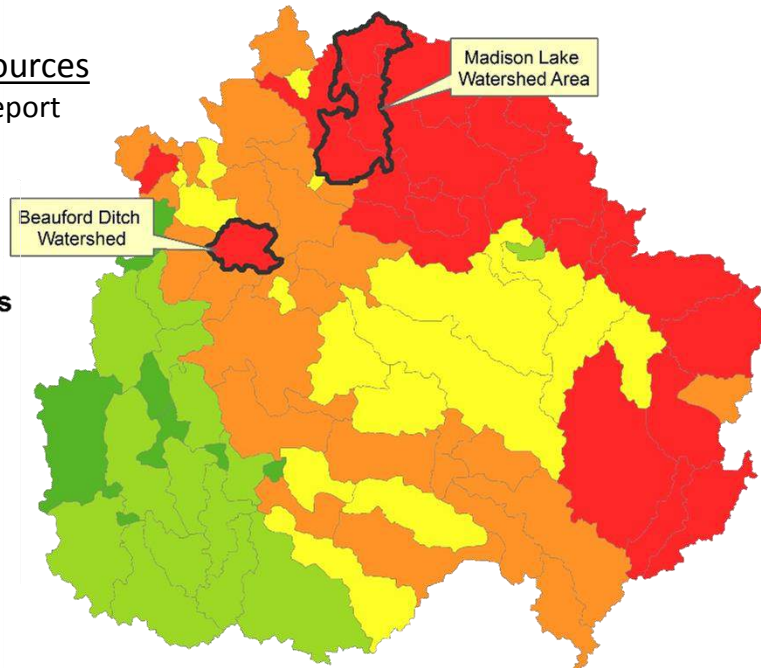
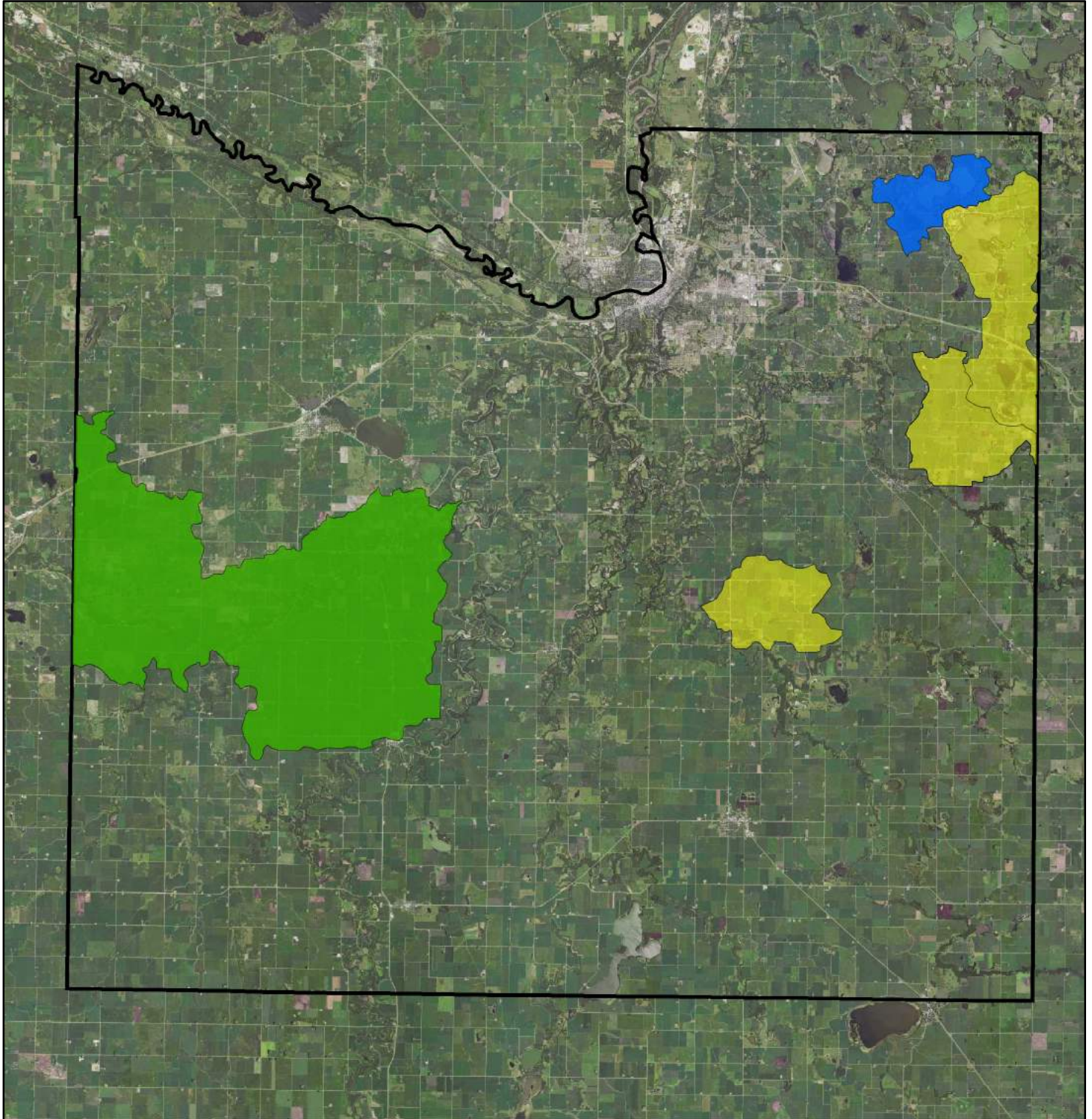





Figure 9

Priority Areas



-  Ballantyne Lake Watershed
-  LeSueur Watershed Priority Areas
-  Watonwan Watershed Priority Areas

0 2 4 8 Miles
Projection: UTM NAD83 Zone 15



This map shows the priority areas in Blue Earth County where the SWCD staff will focus conservation efforts over the next five years.

Prepared By: Blue Earth County SWCD
Source: Blue Earth County SWCD