Long Prairie River, Comprehensive Watershed Management Plan

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Acronyms and Abbreviations

1W1P	One Watershed, One Plan
ACUB	Army Compatible Use Buffer
AIS	Aquatic Invasive Species
ALASD	Alexandria Lake Area Sanitary District
BMP	Best Management Practice
BWSR	Board of Water and Soil Resources
CEC	Contaminants of Emerging Concern
CLC	Central Lakes Center
CMIC	Central Minnesota Irrigators
CRP	Conservation Reserve Program
CSP	Conservation Stewardship Program
DCLA	Douglas County Lakes Association
DNR	Minnesota Department of Natural Resources
DO	Dissolved Oxygen
DWSMA	Drinking Water Supply Management Area
EQIP	Environmental Quality Incentives Program
FSA	Farm Service Agency
HEI	Houston Engineering, Inc.
HSPF	Hydrologic Simulation Program – Fortran
HUC	Hydrologic Unit Code
LGU	Local Government Unit
LPCWMP	Long Prairie Comprehensive Watershed Management Plan
LPR	Long Prairie River
LSP	Landscape Stewardship Plan
MAWQCP	Minnesota Agriculture Water Quality Certification Program
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MGLP	Midwest Glacial Lakes Partnership
MnDOT	Minnesota Department of Transportation
MOA	Memorandum of Agreement
MPARS	Minnesota DNR Permitting and Regulatory System
MPCA	Minnesota Pollution Control Agency
MRWA	Minnesota Rural Water Association
MSDC	Minnesota State Demographic Center
NLCD	National Land Cover Dataset

NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PC	Policy Committee
PFAS	Perfluoroalkyl Substances
PFC	Perfluorochemicals
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanoic Sulfonic Acid
RAQ	Risk Adjacency Quality
SCORE	Select Committee on Recycling and the Environment
SFIA	Sustainable Forest Incentive Act
SSTS	Subsurface Sewage Treatment Systems
SWAG	Surface Water Assessment Grant
SWCD	Soil and Water Conservation District
TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TP	Total Phosphorus
TSS	Total Suspended Solids
USDA	United States Department of Agriculture
USEPA	Unites States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
W:L	Watershed to Lake Ratio
WCA	Wetland Conservation Act
WCTSA	West Central Technical Service Area
WHAF	Watershed Health Assessment Framework
WMA	Wildlife Management Areas
WPLMN	Watershed Pollutant Load Monitoring Network
WRAPS	Watershed Restoration and Protection Strategy
WRP	Wetland Reserve Program

Definitions

The following definitions were developed to establish a common language for communicating information:

Best Management Practice (BMP): BMPs describe ways to manage your land and activities to mitigate pollution of surface and groundwater near you.

Drinking Water Supply Management Area (DWSMA): A DWSMA is an area most important to the drinking water source for a public water supplier such as a city. DWSMA boundaries establish a protection area through an extensive evaluation that determines the contribution area of a public water supply well, aquifer vulnerability and provide an opportunity to prioritize specific geographic areas for drinking water protection purposes.

Enhance (management approach): The "Enhance" approach applies to lakes and streams that have a significant amount of land conversion and/or disturbance in their drainage area but are not currently impaired.

General Development Lake: Generally large, deep lakes with high levels and mixes of existing development. These lakes often are extensively used for recreation and, except for the very large lakes, are heavily developed around the shore. Second and third tiers of development are fairly common. These lakes also typically have the highest property values.

HSPF (Hydrological Simulation Program – FORTRAN): A model for simulation of watershed hydrology and water quality for pollutants. This model was run for the Long Prairie River Watershed during the 2017 Watershed Restoration and Protection Strategy (WRAPS).

Impairment: Waterbodies are listed as impaired if they do not meet the state water quality standard for designated uses including aquatic life, aquatic recreation, and aquatic consumption.

Index of Biological Integrity (IBI): A way of measuring the biological community (fish and aquatic macroinvertebrates) in the water body. The index is a scale of 0 to 100 with 0 being the lowest quality and 100 being the highest quality.

Judicial Ditch: A ditch that crosses county lines.

Lakes Benefit: Cost Ratio: The Lakes Benefit: Cost Assessment was based on the Phosphorus Sensitivity Index, lake area, and catchment disturbance. These lakes represent those that will likely give the greatest return on investment for restoration, enhancement, and protection activities. The simple calculation used is based on and tracked a peer-reviewed cost:benefit analysis (Radomski & Carlson, 2018).

Lakes of Biological Significance: Lakes of biological significance are ranked by the DNR as Outstanding, High, or Moderate, based on the presence of high-quality aquatic plants, fish, birds, or amphibians. Outstanding Lakes of Biological Significance had to have one of the following criteria: 1) high aquatic plant richness, high floristic quality, and a population of an endangered or threatened plant species; 2) important wild rice lakes; 3) exceptional fishery for selected game fish or an outstanding nongame fish community; 4) one or more of the following: endangered or threatened colonial waterbird nesting area, presence of several endangered, threatened, or special concern lake bird species, or six or more lake bird species of Greatest Conservation Need.

Natural Environment Lake: Generally small, often shallow lakes with limited capacities for assimilating the impacts of development and recreational use. They often have adjacent lands with substantial constraints for development such as high water tables, exposed bedrock, and unsuitable soils. These

lakes, particularly in rural areas, usually do not have much existing development or recreational use. These lakes also typically have the lowest property values.

Nitrogen Infiltration Risk Assessment: An analysis conducted by Houston Engineering that identifies where there is most risk of nitrogen infiltration to groundwater based on sandy soils, shallow groundwater, and land uses on the land surface (Appendix C).

Phosphorus Sensitivity: The lake's sensitivity to phosphorus as determined by the DNR. Sensitivity means that added phosphorus would affect the clarity in these lakes the most (Radomski & Carlson, 2018).

Protect (management approach): A minor or subwatershed where the natural resources are generally in good condition, risks to natural resources are low, and the management focus is to maintain and increase protection levels with strategies such as private forest stewardship and conservation easements.

Protected: Protected land uses include public lands, public waters, wetlands on private lands, buffers required through the buffer law, easements, other conservation lands, Sustainable Forest Incentive Act (SFIA).

Recreational Development Lake: Generally medium-sized lakes. They often are characterized by moderate levels of recreational use and existing development. Development consists mainly of seasonal and year-round residences and recreationally-oriented commercial uses.

Restore (management approach): For purposes of this plan, the "Restore" management approach for lakes and streams means that the water body is on the Impaired Waters List for nutrients, *E.coli*, or sediment.

Storage: This plan talks about water storage and carbon storage. Water storage describes retaining water on the land's surface in basins or in the soil to reduce runoff. Carbon storage describes the carbon in trees and soil.

TMDL (Total Maximum Daily Load): The amount of a particular pollutant that a body of water can handle without violating state water quality standards.

Watershed: A land area that channels rainfall and snowmelt to creeks, streams, and rivers, and eventually to outflow points such as reservoirs, bays, and the ocean.

WRAPS: (Watershed Restoration and Protection Strategy): A watershed approach to restoring and protecting Minnesota's rivers, lakes, and wetlands implemented by the Minnesota Pollution Control Agency on a 10-year cycle (https://www.pca.state.mn.us/water/watershed-approach-restoring-and-protecting-water-quality).

Vision Statement

Uniting the people of the Long Prairie Watershed in balancing agriculture, recreation, tourism, and timber with the protection of the environment for the future.

Guiding Principles:

- Resource professionals, local partners, and concerned citizens will be appointed to form collaborative leadership committees that are informed, punctual, and organized while working effectively across county boundaries within the watershed.
- Communication, financial accountability, and environmental efforts will be priorities while respecting the individual roles and positions of citizens, local government, and agencies.
- Projects and practices will be well-researched, science-based, targeted, fiscally and realistically obtainable, measurable, and presented in a meaningful format.
- Communication efforts will be inclusive and effective. This may require additional outreach efforts to provoke watershedwide interest, spread knowledge of plan objectives, and obtain valuable feedback that will be incorporated into the plan in an understandable way.
- All feedback on concerns, problems, risks, and opportunities is to be heard and respectfully acknowledged to best represent priorities based on the knowledge of the people and agencies who hold common interest.
- The role of the collaborative efforts will be elevated to ensure projects and practices are adopted in areas prioritized by the plan and to ease economic limitations that commonly slow or impede these efforts.
- The plan, through these combined efforts, will produce a conscientious culture of environmental stewardship.
- The projects completed will have a sustainable benefit to the watershed's environment, economy, and future generations.

Section 1. Executive Summary

Executive Summary

Introduction

The Long Prairie River Watershed, located in central Minnesota, is rich with lakes, streams, forests, and farmland. With very few water quality impairments, the majority of these resources are in good condition, and this plan is geared towards protection. Protection of these resources is evident in the watershed Vision Statement:

Uniting the people of the Long Prairie Watershed in balancing agriculture, recreation, tourism, and timber with the protection of the environment for the future.

THE LONG PRAIRIE RIVER

SOMETIMES A LIFE MOVES LIKE THIS,
SEEN IN ITS FULL COURSE.
LIKE THIS OUR RIVER,
SEEN FROM ABOVE.

COMES OUT OF OTHER LIFE.
BENDS AS NEEDED.
(NEVER STRAIGHT AND NEAT,
POINT TO POINT, LIKE A ROAD,
AS IF DESTINATION
WAS WHAT IT WAS FOR)
BUT EVERY BEND, EVERY MEANDER A
PART OF THE WHOLE,
TAKING IN THE FLOW, GIVING IT AWAY
GOING WHERE IT NEEDS TO GO.
- EDITH RYLANDER

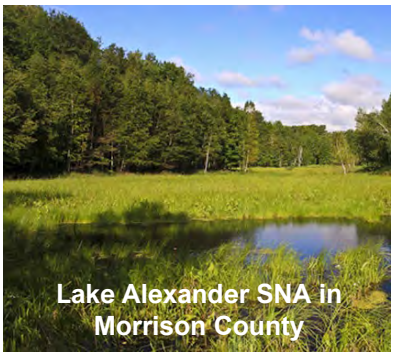
The Long Prairie River Comprehensive Watershed Management Plan (LPCWMP) was developed in 2021-2022 through the One Watershed, One Plan program administered by the Board of Water and Soil Resources (BWSR), Minnesota Statutes §103B.801. The purpose of the plan is to guide the watershed managers (local counties and soil and water conservation districts) as they work to protect and restore the watershed's resources for the enjoyment of future generations and for maintaining a healthy local economy.

Implementation of the LPCWMP is voluntary, and outreach and incentives will be used to assist with voluntary implementation on private lands. A strong emphasis has been placed on outreach, as teaching others about conservation is an effective way to protect the watershed together.

Throughout the planning process, the Long Prairie Watershed Collaboration partners stressed the importance of this plan being easy to understand. This characteristic was kept in mind throughout plan development with the use of infographics and a simple layout. In addition, to keep the plan concise, the majority of the supporting data for the plan has been placed in the Appendices (Section 9).


Lake Carlos in Douglas County


Farmland in Todd County


Lake Alexander SNA in Morrison County

Plan Area

The plan area spans portions of five counties in order of percentage in the watershed: Todd, Douglas, Morrison, Otter Tail, and Wadena (Figures 1.1 and 1.2). Major towns in the watershed (population over 500) include Alexandria, Browerville, Clarissa, Eagle Bend, Long Prairie, and Motley.

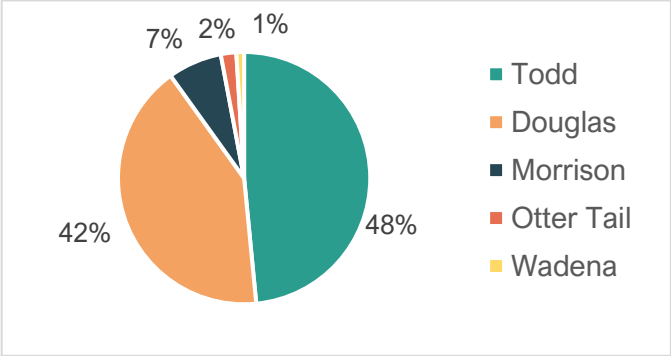


Figure 1.1. Percentages of counties in the plan area.

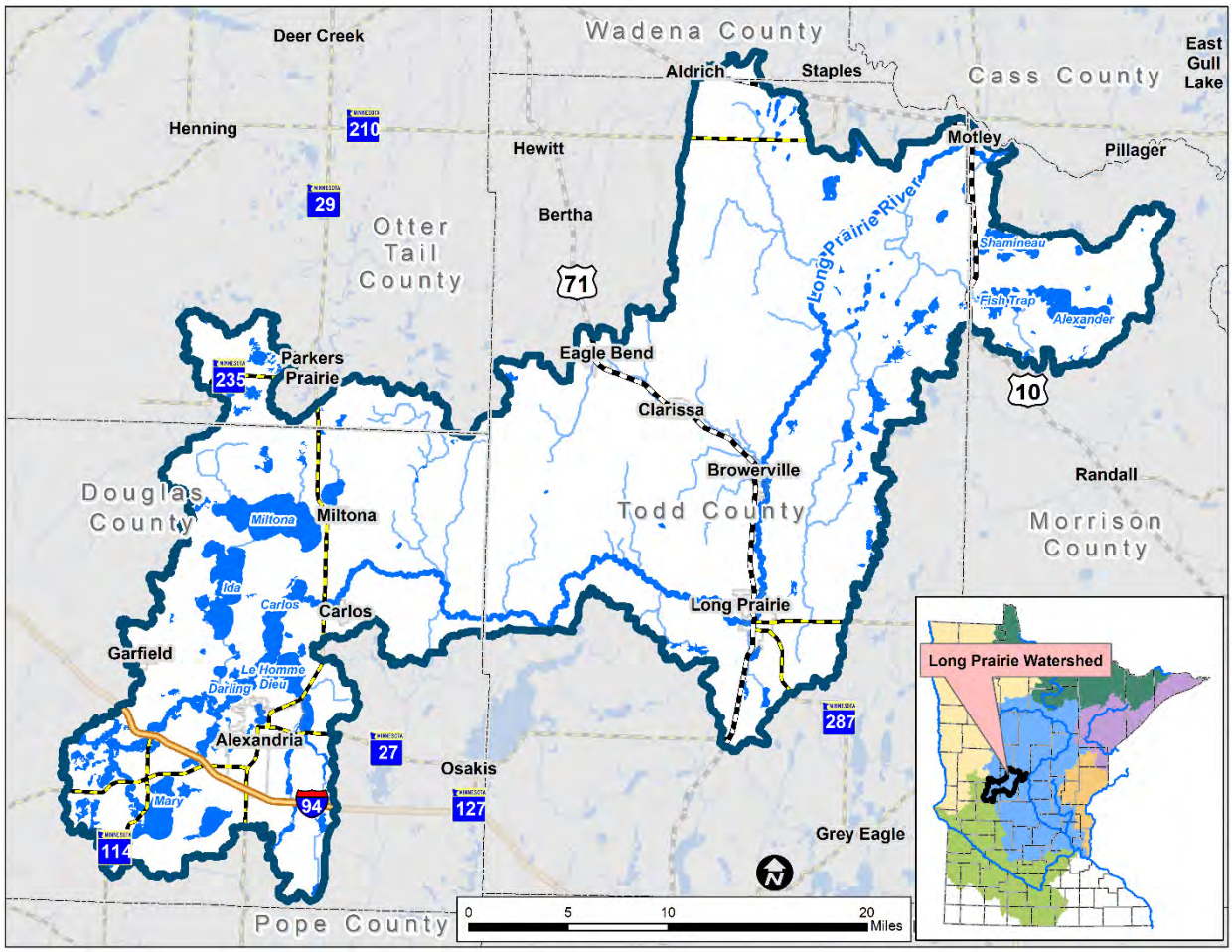


Figure 1.2. Long Prairie River Watershed plan area.

Purpose, Roles, and Responsibilities

The purpose of the One Watershed, One Plan process is to align local water planning along major watershed boundaries, not just local jurisdictions. The LPCWMP planning effort began with a Memorandum of Agreement (MOA) between Douglas County, Douglas Soil and Water Conservation District (SWCD), Todd County, Todd SWCD, West Otter Tail SWCD, Morrison County, and Morrison SWCD (Appendix H). Wadena SWCD and Otter Tail County participated in the Advisory Committee as well.

A representative from each MOA governmental unit was appointed by each county and SWCD board to serve on the Policy Committee, which is the decision-making body for this plan (Figure 1.3). Morrison SWCD was the fiscal agent for this project, and Douglas SWCD was the plan coordinator.

The plan content was shaped by the Technical Advisory Committee, which consisted of the counties and SWCDs in the watershed, State Agencies, Townships, and other local stakeholders. The Citizen Advisory Committee, made up of local stakeholders, including lake groups and agricultural producers, provided input on the plan priorities and content (Figure 1.3).

The Steering Committee guided the planning process, produced the plan content, and developed the details for implementation such as what will be tracked and by whom. The Steering Committee will be the primary implementors of the plan. The Advisory Committees are partners in plan implementation.

Figure 1.3. Committees and roles in the LPCWMP.

Community Engagement

The LPCWMP began with a public survey and kick-off meeting in March 2021. The meeting and survey were virtual, since it took place during the COVID-19 pandemic. Participants learned about the watershed and gave input on concerns (Figure 1.4). The Citizen Advisory Committee met in April and gave input on what they thought was going well in the watershed (Figure 1.5), and then prioritized issues and concerns (Appendix D). These responses guided the priority issues for the plan.

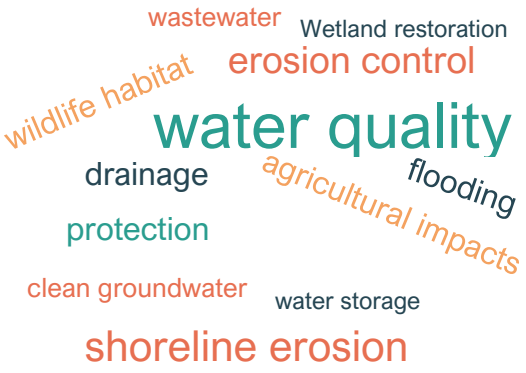


Figure 1.4. Public survey responses to "What should be the number one priority water concern for the watershed as a whole?"

Figure 1.5. Citizen Advisory Committee responses to "What is going well in the watershed?"

The Citizen Advisory Committee also met in October 2021 and February 2022 to give input on goals and actions in the plan (Appendix D). These relationships enhanced the plan understanding and local buy-in.

Priority Issues

The issues for the LPCWMP were generated and prioritized with a variety of input from the general public, the Advisory Committees, the Policy Committee, state agencies, and existing local and regional plans. The Technical Advisory Committee separated the issues into Priority A and B, as shown on the next page (Tables 1.1 and 1.2).

Priority A Issues

Priority A issues are the most important issues that will be the focus of implementation efforts in the 10-year plan. The main theme of the issue statement is shown in **bold** text.

Table 1.1. Priority A Issues and the resources affected by each issue.

Resource Affected	Issue Statement
Lakes, Streams	**Stormwater runoff** from urban areas, developed shoreland property, and roads causes contamination of lakes and streams.
Drinking water	Shallow groundwater water paired with sandy soils is **vulnerable to contamination**.
Lakes, Streams, Groundwater	Bacteria and nutrient runoff from **animal agriculture** impacts water quality.
Lakes, Streams	**Field erosion and runoff** causes nutrient and sediment loading and low dissolved oxygen in lakes and streams.
Lakes, Streams	Alterations to natural drainage such as **tiling, ditching, and culvert placement** increases the flow of water, streambank erosion, and impacts aquatic life.
Soil, Lakes, Streams, Groundwater	Degraded **soil health** can reduce agricultural productivity and water holding capacity.
Forest and Grassland	**Fragmentation and conversion of uplands (forest and grassland)** by changes in land use (development, agriculture, disturbance) impacts surface water, groundwater, and habitat quality.

Priority B Issues

Priority B issues are important and will be addressed as time and funding allows. The main theme of the issue statement is shown in **bold** text.

Table 1.2. Priority B Issues and the resources affected by each issue.

Resource Affected	Issue Statement
Lakes, Streams	**Intensification of development** on lakes and streams impacts riparian habitat, fragments upland habitat, and affects water quality.
Lakes, Streams	**Changing precipitation and temperature patterns** have increased erosion, lake and stream water levels, and overburdened existing public infrastructure.
Lakes, Streams	Biologically significant lakes, shallow lakes, wild rice lakes, and trout streams need sufficient **protections** to maintain their water and habitat quality.
Wetlands, Lakes, Streams	**Wetlands** are abundant in the watershed and some land practices could threaten the extent and quality of wetlands, impacting water storage, water quality, and habitat.
Lakes, Streams, Groundwater, Wetlands	**Chloride** concentrations are increasing in lakes and streams due to many sources (water softeners, industry, road salts, stormwater infiltration to groundwater).
Aquifer	Groundwater use has the potential to reduce **groundwater quantity**.

Priority Resources

Resources in the watershed were prioritized based on priority issues, water quality, and management approach. Impaired waters are labeled “Restore,” lakes, streams, and groundwater areas that are not impaired but need improvement are labeled “Enhance,” and lakes, streams, and groundwater areas that are in excellent condition and are a focus of protection are labeled “Protect” (Figures 1.6, 1.7).

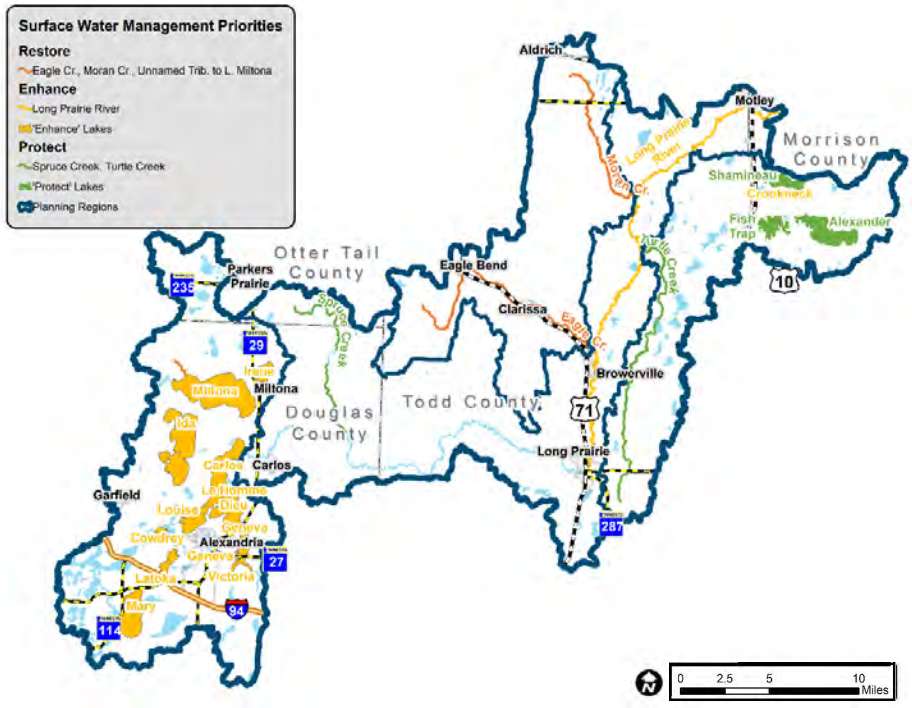


Figure 1.6. Surface water management priorities.

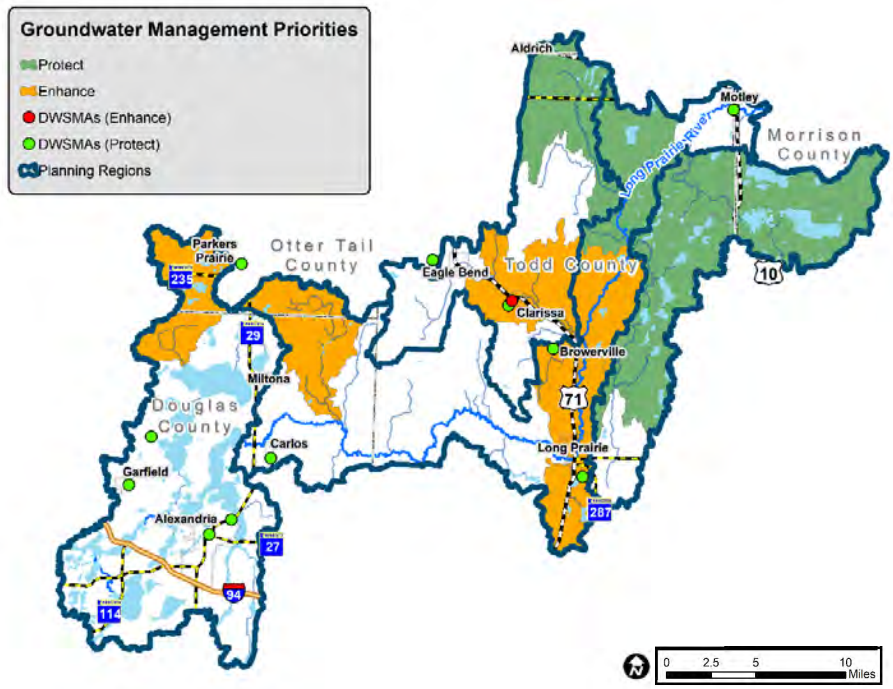


Figure 1.7. Groundwater management priorities.

Measurable Goals

Measurable goals identify the desired change in the resource and indicate how progress will be measured. Goals are developed to address the priority issues. The quantity of how much progress implementation can make toward goals and changes to the resource condition are determined with models and data analysis. The measurable goals were developed over the course of three Technical Advisory Committee meetings and then approved by the Policy Committee. Table 1.3 shows the plan goals along with examples of actions to meet the goals. The goals are explained in detail along with priority focus areas in Section 5 of this plan.

Table 1.3. Plan Goals and examples of actions.

Plan Goals	Examples of Actions to Meet Goal
Agricultural Land Management. Implement 11,090 acres of agricultural best management practices (BMPs) to benefit surface and groundwater quality and quantity.	♦ Nutrient management ♦ Cover crops and no till ♦ Irrigation water management
Phosphorus Reduction. Reach the phosphorus reduction goal for priority lakes.	♦ Stormwater control ♦ Rain gardens ♦ Agricultural BMPs
Forest Management. Implement 10,605 acres of forest management and/or forest protection to benefit habitat, groundwater, and surface water quality.	♦ Forest stewardship plans ♦ Sustainable Forest Incentive Act ♦ Conservation easements ♦ Land acquisition (state, federal)
Runoff Reduction. Build resiliency and keep up with the increasing precipitation trend by adding 1,053 acre-feet of water storage on the landscape.	♦ Wetland restoration ♦ Flood plain restoration ♦ Cover crops
Drinking Water Protection. Seal 20 wells per year watershed-wide and protect Drinking Water Supply Management Areas.	♦ Sealing unused wells ♦ Drinking Water Supply Management Area protection (BMPs, easements)
Bacteria Reduction. Implement 28 bacteria reduction projects to address bacteria sources along impaired waters.	♦ Waste pit closures ♦ Manure storage ♦ Septic system improvements

Implementation

Implementation activities and costs are laid out in Section 6 of this plan. The Technical Advisory and Policy committees recognize that stewardship practices are already occurring on the landscape. The implementation focus of the LPCWMP is to encourage additional BMPs in priority areas to reach the goals (Table 1.3). Plan practices are voluntary on private lands and will be implemented through a variety of cost-share programs, grants, and state and federal funding programs.

To implement the full extent of this plan, additional state or federal funding and capacity over current levels will be necessary. The implementation table labels implementation actions as funding level 2 or 3 (Table 1.4). Level 2 is the new operating level of the watershed after this plan is completed. Level 3 describes partner-sponsored projects that will help achieve plan goals.

Table 1.4. Funding Levels in the LPCWMP.

Level	Description	Estimated 10-yearTotal
Level 1	Current Baseline Funding for the watershed for all programs.	$9,336,000
Level 2	**Baseline + Watershed-Based Implementation Funding + Grants**	**$13,661,800**
Level 3	Partner funding (NRCS, SFIA, CRP, Lessard-Sams, TNC, DNR, MPCA)	$21,060,300

Existing programs will be utilized for implementing plan actions and are organized into four categories: Planned Landscape Management ("Manage It"), Protected Lands Maintenance ("Protect It"), Constructed Environmental Enhancements ("Fix It"), and Analysis and Information. For the Long Prairie River Watershed, the scale is even between programs (Figure 1.8).

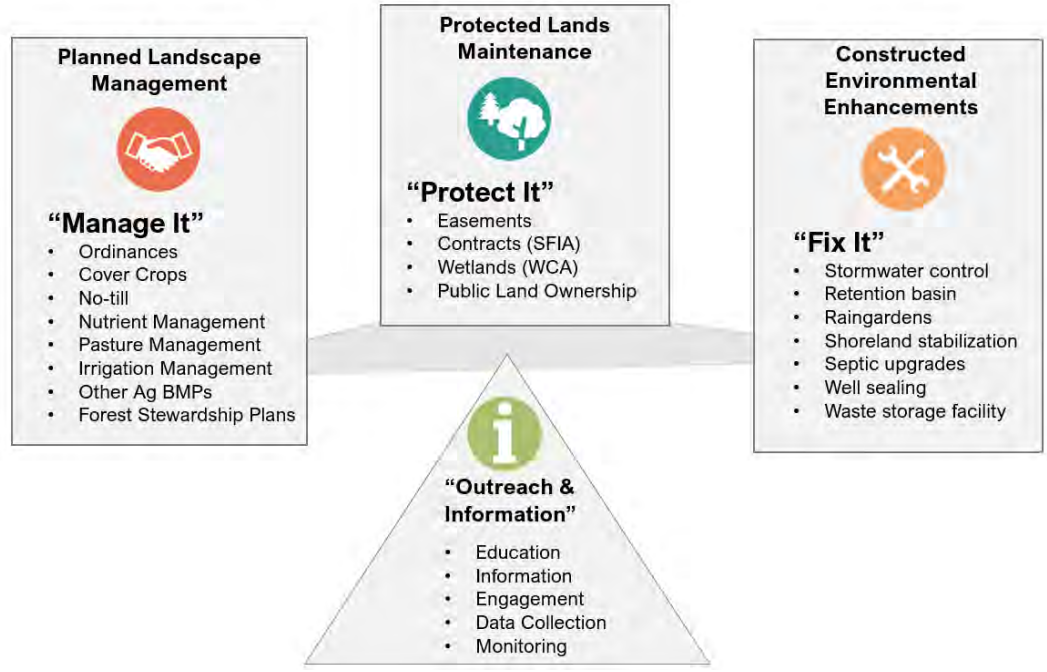


Figure 1.8. Implementation Programs in the LPCWMP.

Overall Plan Benefits

With current funding available plus the new watershed-based funding that will be acquired upon completion of this plan, planning partners aim to achieve the following overall improvements in the watershed (Table 1.5).

Table 1.5. Overall benefits from implementing this 10-year plan.

Surface Water Quality Benefits	**Phosphorus**: the pounds of phosphorus reduced by implementing all plan goals.	**2,333 pounds/year*; equivalent to:** **1.2 million pounds of algae**
	Sediment: the tons of phosphorus reduced by implementing all plan goals.	**418 tons/year*; equivalent to:** **42 dump trucks of sediment**
	Nitrogen: the pounds of nitrogen reduced by implementing all plan goals.	**9,998 lbs/year*; equivalent to:** **2,500 bags of nitrogen fertilizer**
Habitat Benefits	**Habitat**: acres of forest protected by implementing all plan goals.	**10,605 acres; equivalent to:** **7 Lake Shamineaus** **4 Lake Carloses**
Climate Resiliency Benefits**	**Storage**: the amount of new water storage on the landscape or in the soil by implementing all plan goals.	**1,053 acre-feet; equivalent to:** **1,000 football fields covered in 1 foot of water**
	Carbon: the amount of carbon stored and sequestered by implementing plan goals.	**147,337 tonnes; equivalent to:** **Removing 11,640 gas vehicles annually for 10 years**

*These are reductions to the annual load of the waterbody.

**Climate resiliency is the capacity of the ecosystem to cope with stress from heavy rain and extreme heat yet still function.

Plan Administration and Coordination

The Long Prairie River Watershed Collaboration is a coalition of Douglas SWCD, Douglas County, Morrison SWCD, Morrison County, West Otter Tail SWCD, Todd County, and Todd SWCD (Figure 1.9). The Policy Committee previously entered into a Memorandum of Agreement (MOA) for planning the One Watershed One Plan (Appendix H). The entities will enter into a joint powers collaboration (JPC) through a MOA for the purposes of implementing this plan. The Policy Committee is advisor to the individual county, SWCD boards, and fiscal agent under the umbrella of the MOA. Otter Tail County and Wadena SWCD participate in the Technical Advisory Committee but are not signatories on the MOA.

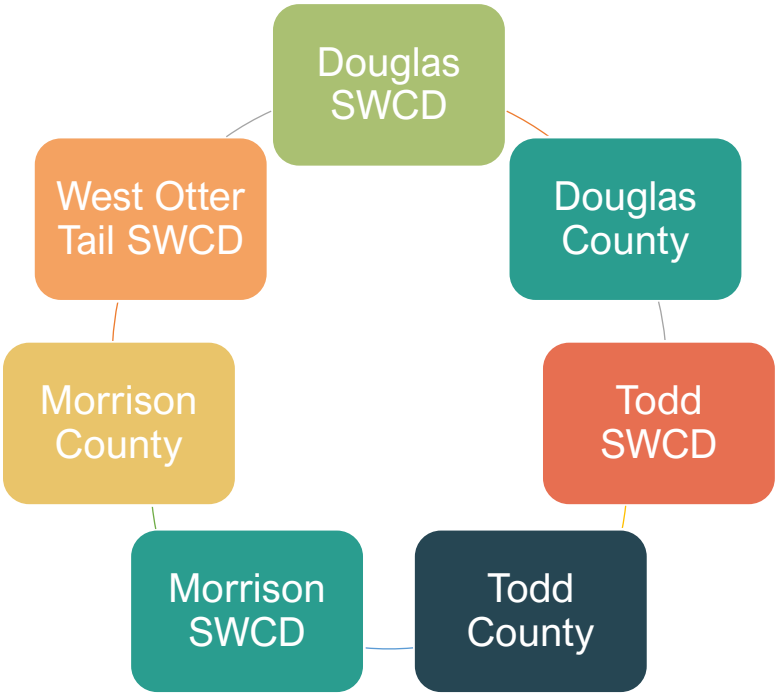


Figure 1.9. The Long Prairie River Watershed Collaboration.

Plan accomplishments will be recorded by watershed partners in a tracking system and summarized annually. In addition, committees that convened for planning will continue into implementation in the same roles although the Technical Advisory Committee and Citizen Advisory Committee will be combined moving forward (Figure 1.3).

Section 2. Land and Resource Narrative

Section 2
Land and Water Resource Narrative

The Long Prairie River, bookended by lake-rich areas, makes up the Long Prairie River Watershed (Figure 2.1). Originating in the Alexandria Lakes Area in Douglas County, the Long Prairie River flows 92 miles through Todd County to join the Crow Wing River south of Motley in Morrison County. Otter Tail and Wadena counties also contain small portions of the watershed.

This watershed encompasses approximately 571,712 acres (893 square miles) in central Minnesota and contains more than 220 lakes and 965 miles of rivers and streams. Primary towns include Alexandria, Long Prairie, Browerville, Clarissa, Eagle Bend, and Motley.

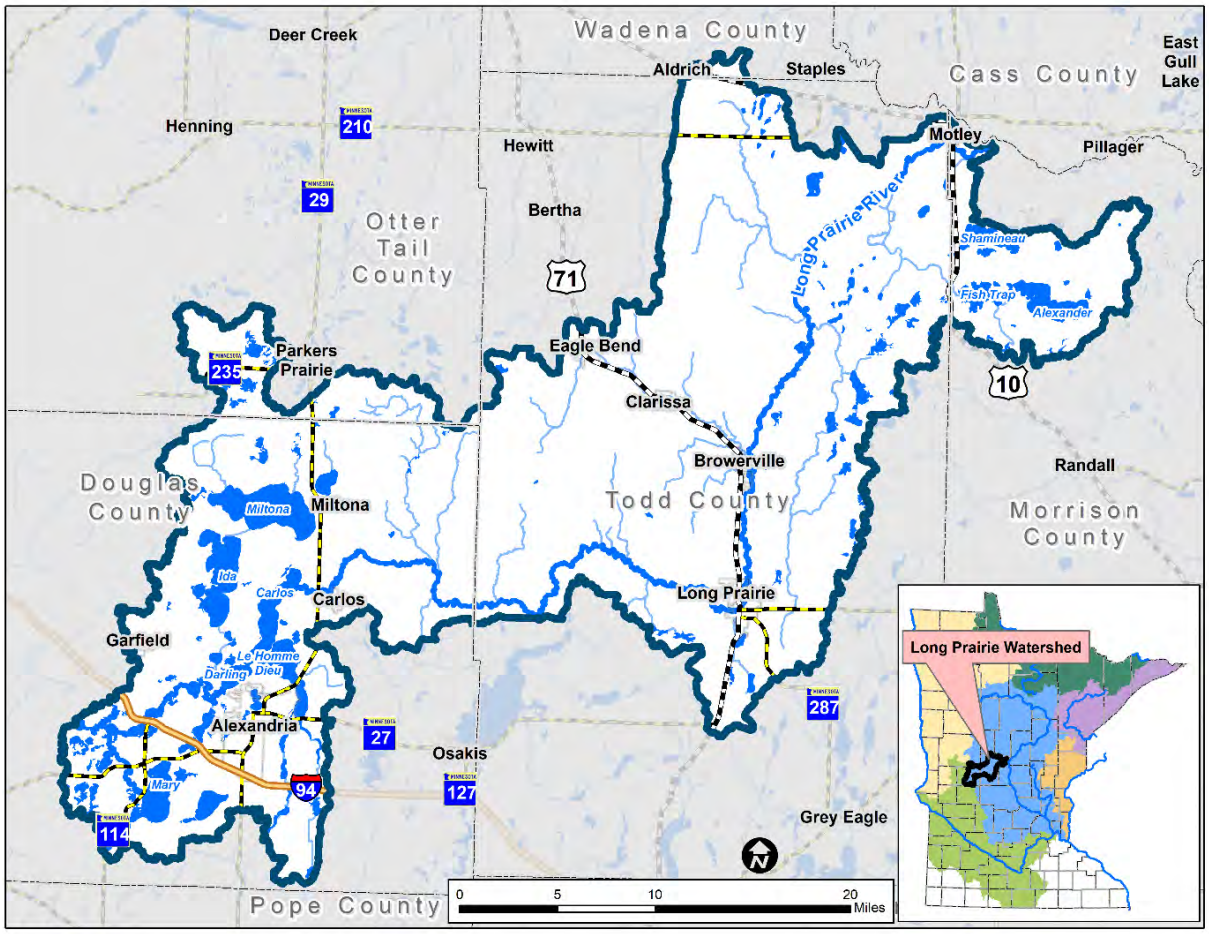


Figure 2.1. The Long Prairie River Watershed.

Past

Geomorphology and Soils

The Long Prairie River Watershed topography and soils were shaped by glacial activity that ended approximately 10,000 years ago. The Wadena Lobe pushed sand and gravel southwest to shape the Alexandria moraine (a ridge of sand and gravel deposited by glaciers), which today holds the Alexandria Lakes Area. Drumlins in northern Todd County, which are long teardrop-shaped deposits of till, mark the retreat of the Wadena Lobe to the northeast. The Rainy and Superior Lobe pushed sand and gravel to shape the St. Croix moraine, which bent the Long Prairie River north where the City of Long Prairie is today and holds the Morrison County lakes (Ojakangas and Matsch 1982, Bray 1980). The middle of the watershed between the two moraines holds the till plain, which is suited for agricultural productivity and contains a mixture of clay, loam, and sandy soils. The glacial outwash also makes up the shallow sandy aquifers that match up with the green areas in Figure 2.2 (NRCS 2007).

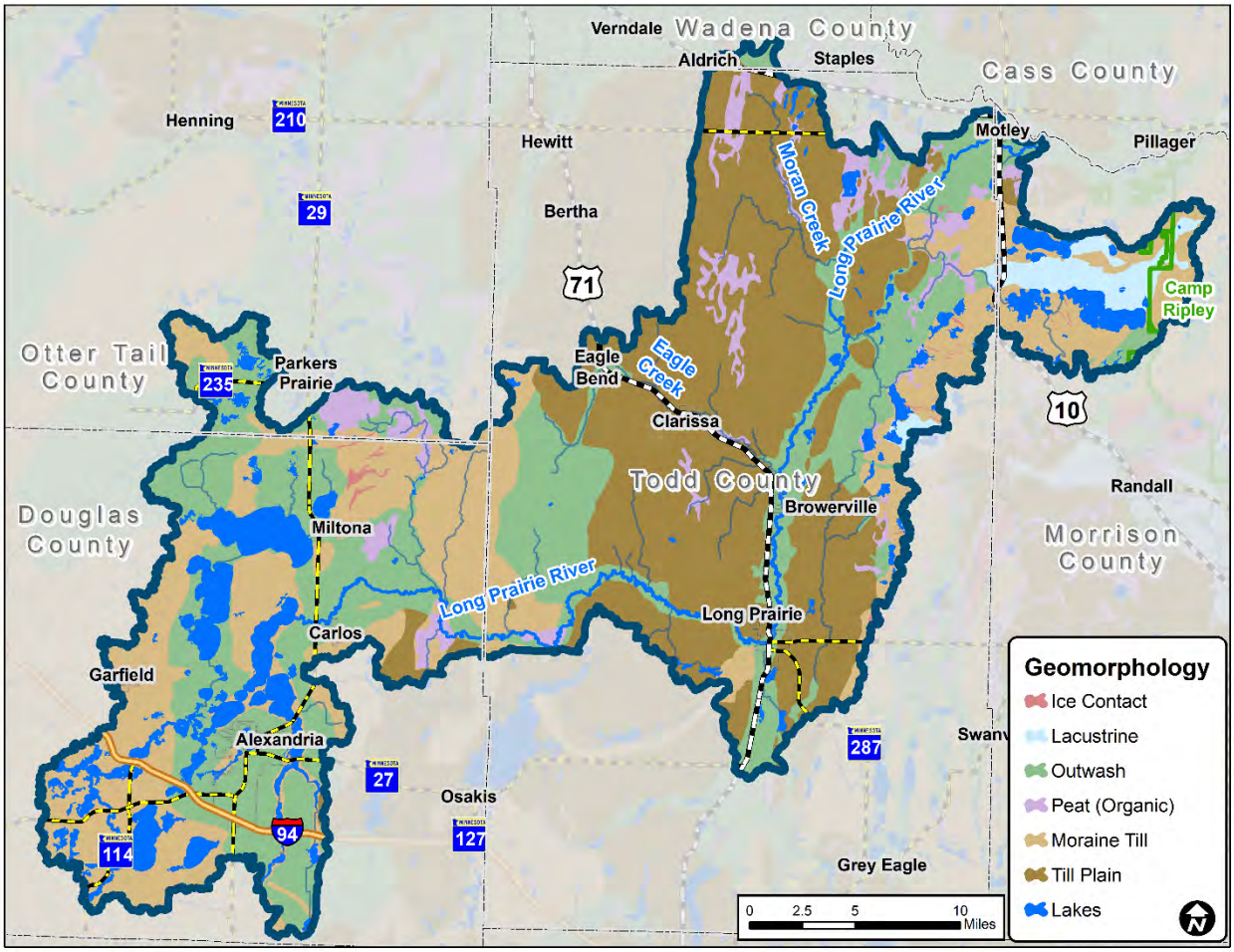


Figure 2.2. Geomorphology of the Long Prairie River Watershed.

Historic Vegetation

The soils influenced by the glaciers also influence what vegetation grows throughout the watershed. Before European settlement, the middle of the watershed in Todd County was covered in deciduous forests and wetlands (Figure 2.3). Commercial logging began around 1866 and continued through the 1890s (DNR). The sandy soils running along the Long Prairie River were susceptible to logging and eroded into the river and streams. Today, this area is a mixture of agricultural lands, forests, and wetlands (Figure 2.10).

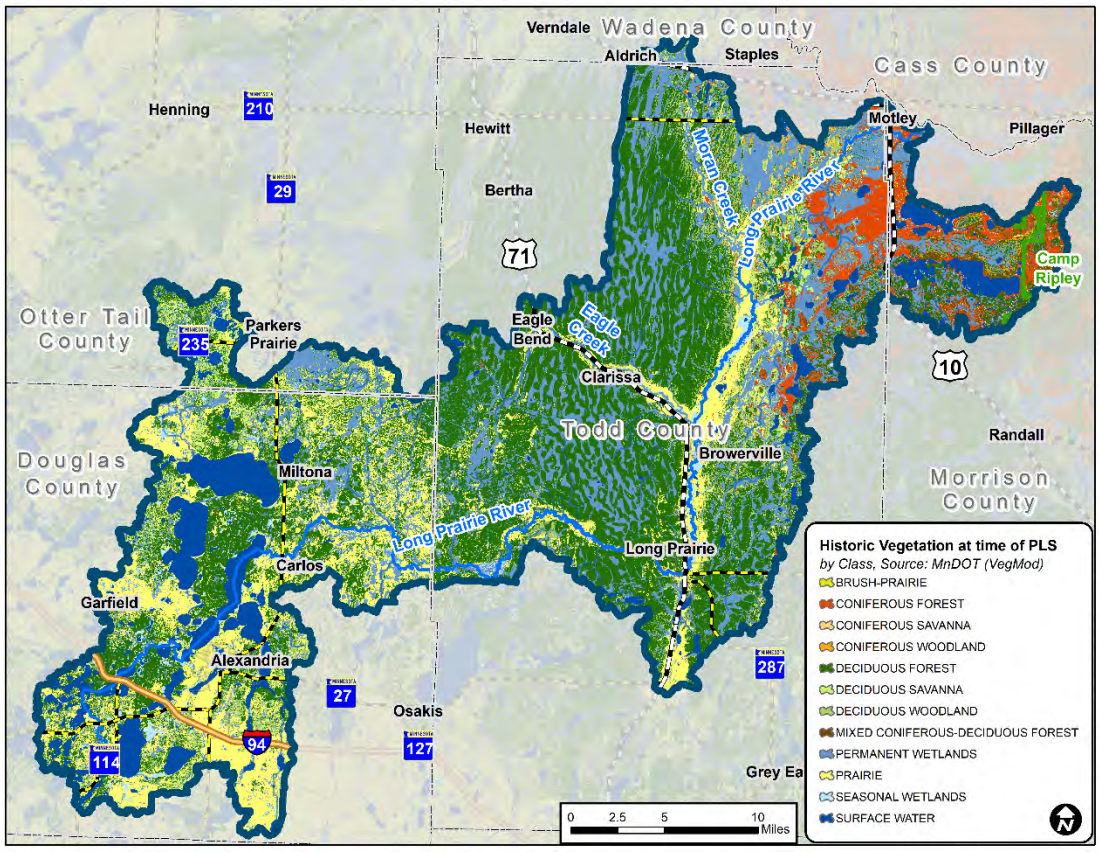


Figure 2.3. Historic vegetation in the Long Prairie River Watershed.

Present

Climate

The Long Prairie Watershed has a temperate, continental climate of warm summers and cold winters. This large swing in temperature limits the agricultural growing season to May through October and causes lakes and small streams to freeze over in the winter. Average annual temperature for the Long Prairie River Watershed is increasing at a rate of 0.25 °F per decade in the timespan 1895-2020. Winter temperatures are warming faster than summer temperatures, increasing at a rate of 0.42 °F per decade (DNR Climate). This trend affects the type of precipitation that falls in winter and also what types of vegetation and trees are adapted to the area. Precipitation averages 25 inches annually in the watershed, and climate data show an increasing trend of 0.4 inches per decade (DNR Climate). This increase has the potential to influence lake water levels, runoff, and erosion in the watershed in the future.

Hydrology

The highest elevation in the Long Prairie River Watershed is 1,663 ft above sea level. The elevation drops 456 feet with an overall mean gradient decrease of 4.8 feet per river mile (MPCA, 2014). The Long Prairie River Watershed originates from the Alexandria Lakes Area, which consists of many regionally significant groundwater-fed lakes such as Miltona, Ida, Le Homme Dieu, Darling, and Carlos. The Long Prairie River begins at the Lake Carlos outlet and flows east to the city of Long Prairie (Figure 2.1). At that point it turns north, and tributaries such as Eagle, Moran, and Turtle Creeks join it until it empties into the Crow Wing River south of Motley. The Crow Wing River then meets the Mississippi River north of Little Falls. The eastern end of the watershed contains regionally significant groundwater-fed lakes in the Cushing area including Shamineau, Crookneck, Fish Trap, and Alexander.

The Long Prairie River is a tributary to the Mississippi River, which is a source water to major downstream cities including Saint Cloud, Minneapolis, and Saint Paul, providing drinking water to over one million people.

Expansion of human land uses such as development and agriculture can cause a desire to drain water from the landscape more quickly than it would naturally. Land use features—and practices such as ditches, culverts, tiling, increased impervious surfaces, and wetland filling—can alter the hydrology of the watershed and impact water levels, habitat, channel stability, and increase nutrient and sediment erosion. Almost half the water courses in the watershed (42%) are considered altered (DNR, 2021).

Figure 2.4. Fish Trap Lake, Morrison County, MN (https://sweetwaterresort.com/things-to-do/).

Water Resources

The Long Prairie River Watershed boasts some of the premier recreational destinations in the region. The lakes, ranging from large and deep to small and shallow, are home to many biologically significant species such as cisco (tullibee) and wild rice. In fact, there are seven lakes with outstanding biological significance, six wild rice lakes, and one designated trout stream in the watershed (Figure 2.5). Fishing is a popular sport in the watershed, with excellent opportunities for walleye, bass, and panfish fishing. Shallow lakes are critically important habitat for riparian species such as waterfowl, blandings turtles, and otters.

The Alexandria Lakes have improving trends in phosphorus, chlorophyll a (algae concentration) and transparency, but these trends are likely due to different factors. In the mid-1970s the Alexandria Lake Area Sanitary District was established to treat wastewater from the city of Alexandria and the surrounding lakes. This waste treatment likely has played a role in the improving phosphorus concentrations. The transparency improvements are likely due to zebra

mussel infestations. They were confirmed in Carlos, Geneva, and Le Homme Dieu in 2009. From there they spread to other lakes in the area. The City of Alexandria continues to implement stormwater improvements and has recently established a stormwater utility fee within city limits for use on stormwater management projects (Douglas SWCD, 2021).

Of the large Morrison County lakes, Fish Trap, Crookneck, and Alexander have improving trends in phosphorus, and Shamineau has declined slightly since 2010. These lakes are connected to the groundwater, and historically high water levels are a current concern, causing shoreline erosion and loss of property. Zebra mussels were discovered in Fish Trap Lake in 2015 and are now in Crookneck and Alexander as well.

The Long Prairie River is a designated state water trail and is a unique public resource for paddling via kayak or canoe. Trends for the Long Prairie River and major tributaries include decreasing total suspended solids and increasing ortho-phosphorus in part due to agricultural subsurface drainage (tiling), which reduced overland flow but can increase soluble phosphorus loss (MPCA, 2017).

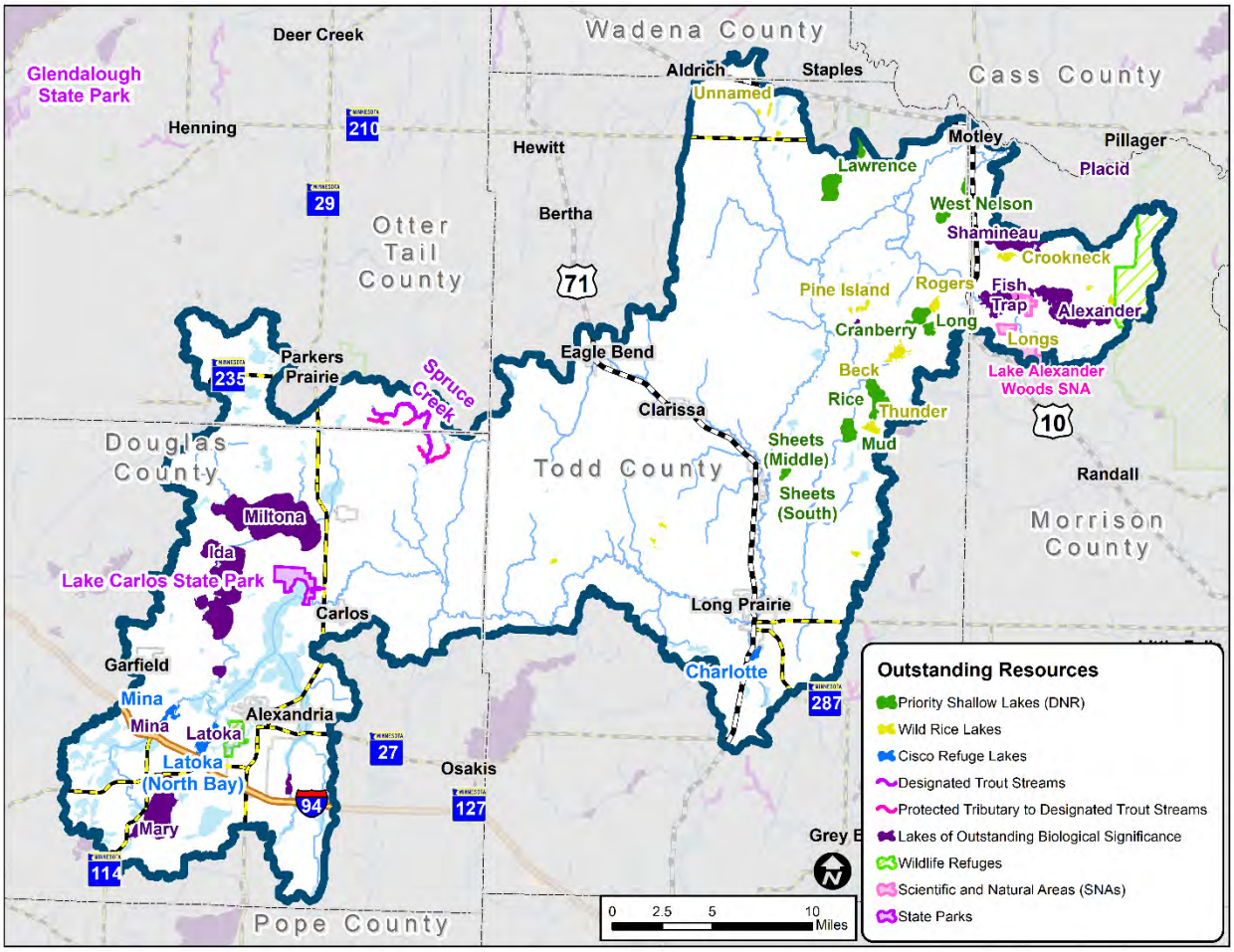


Figure 2.5. Outstanding resources and habitat in the Long Prairie River Watershed.

In 2011, the Minnesota Pollution Control Agency (MPCA) initiated an intensive watershed monitoring effort of the Long Prairie River Watershed's surface waters. This assessment, summarized in the Watershed Restoration and Protection Strategy (WRAPS) (MPCA, 2017), resulted in the impairments illustrated in Figure 2.6 and described in Table 2.1.

Overall, the water resources in the watershed are in good condition. Impaired lakes, including Jessie, Echo, Winona, and Latimer, have had poor water quality over the entire data record and have both point and non-point pollutant sources. There are eight municipal wastewater facilities and 25 industrial stormwater facilities in the watershed (MPCA, 2017).

The biological impairments were related to lack of in-stream structure such as woody debris and alterations to natural stream flow including culverts (MPCA, 2017). This overall good water quality puts much of the water management focus on protection.

Table 2.1. Impairment descriptions in the Long Prairie River Watershed.

Impairment	Description
Biology	Shows if the stream is healthy for fish and invertebrates (insects, crayfish, mussels, etc.)
Dissolved Oxygen (DO)	Fish and aquatic invertebrates need oxygen to survive. Unstable dissolved oxygen levels affect the suitability of the stream for these organisms.
Bacteria (*E. coli*)	*E. coli* bacteria come from warm-blooded animals. High levels indicate fecal contamination in the water, which can be harmful to humans who have direct contact with the water.
Nutrients	Lakes with excess nutrients (phosphorus) are prone to algae blooms.

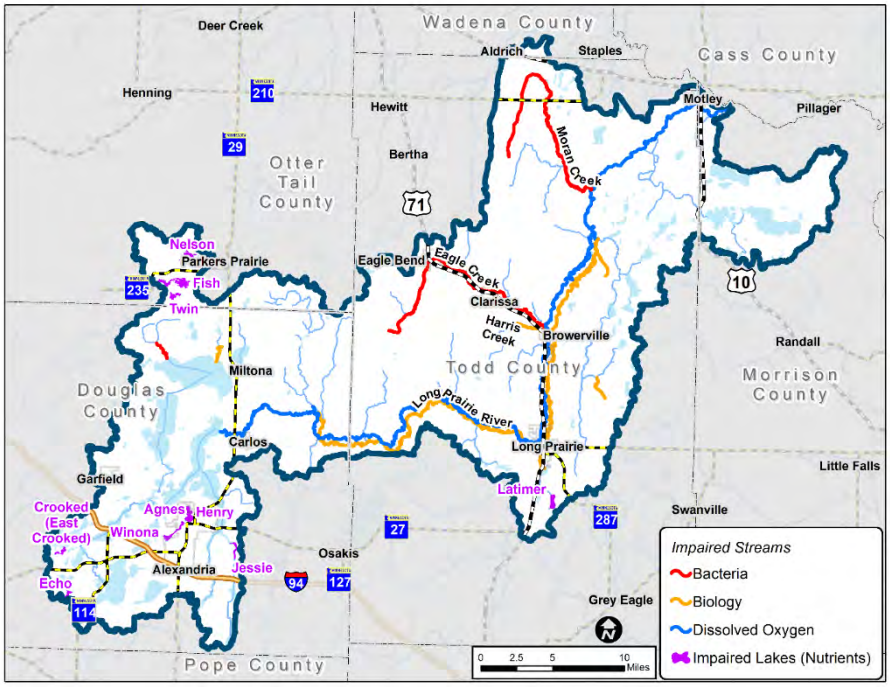


Figure 2.6. Water quality impairments in the Long Prairie Watershed (not including mercury).

Groundwater

The glacial activity in the watershed left behind shallow groundwater under sandy soils (surficial sand aquifers) along the moraines and the Long Prairie River. This groundwater is tied to base flow in the Long Prairie River and the watershed's lakes (Peterson, 2010). The combination of sandy soils and shallow groundwater results in a high sensitivity to contaminants, especially nitrates. There are 12 Drinking Water Supply Management Areas (DWSMAs), with most having moderate or low vulnerability (Figure 2.7). Many residents of the Long Prairie River Watershed rely on a private well for the water they drink (over 4,000 private wells with known locations identified in the planning area) (MDH). Through their township testing program that was focused solely on the occurrence of nitrates in groundwater, the Minnesota Department of Agriculture found some

wells with higher levels of nitrates in areas of the watershed, including Parkers Prairie, Ward, Hartford, and Round Prairie townships (Figure 4.4, Section 4).

The groundwater is used for irrigation of agricultural crops as well. There are currently 410 active water appropriation permits in the watershed and 63% of those are used for agricultural irrigation. Other uses include industrial processing, public water supply, and non-crop irrigation (e.g., golf courses, livestock water wells, lake drawdowns, and geothermal heating systems). In addition, groundwater use has increased 20% since 2001 (MPARS). New technology advances in irrigation have enabled more efficient groundwater use. The SWCDs in the watershed have been working with landowners to implement water saving practices.

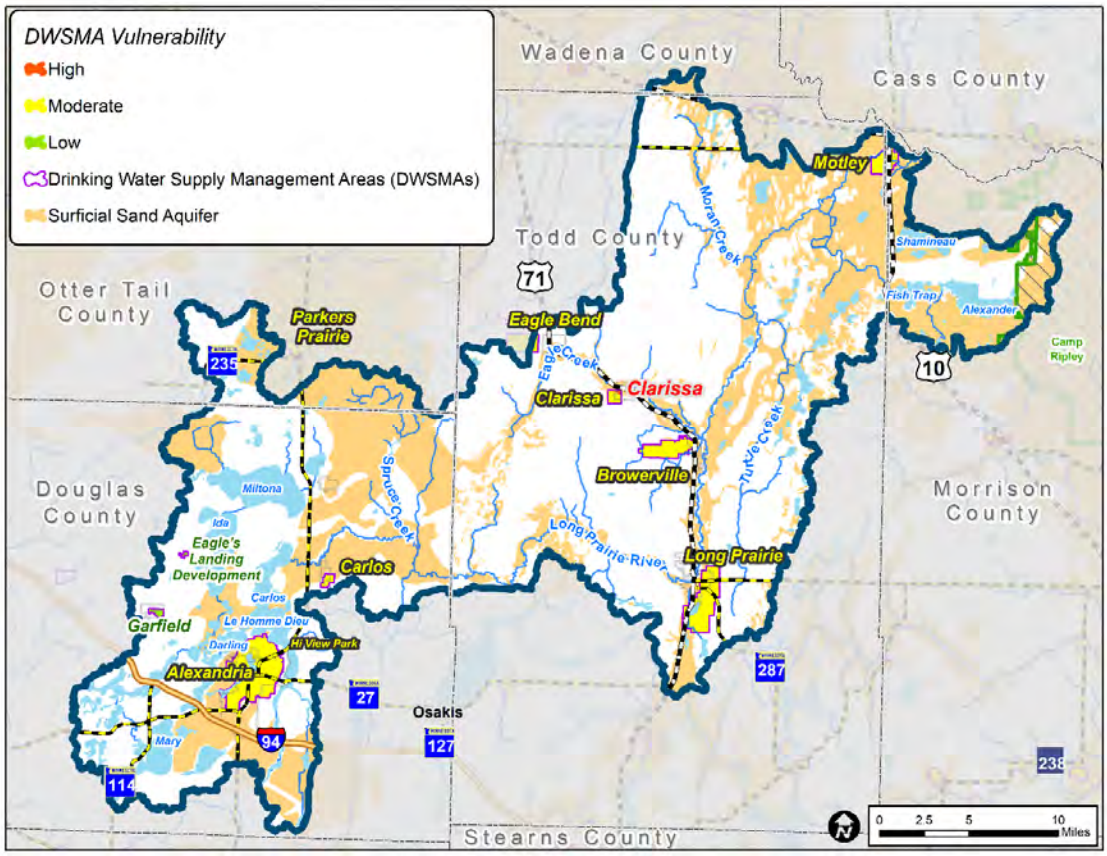


Figure 2.7. Surficial sand aquifers and DWSMAs in the Long Prairie Watershed.

Habitat

Habitat in the Long Prairie River Watershed includes a diversity of forests, woody wetlands, grasslands, riparian, and aquatic areas. Some areas have been permanently protected to provide resilient sites for climate change, habitat corridors, and larger tracts of habitat such as Lake Carlos State Park, Lake Alexander Woods Scenic and Natural Area, Camp Ripley (State Game Refuge), and the Lake Alexander Preserve. These areas support many important and sensitive species, including Blandings Turtles, Red-shouldered Hawks, Cerulean Warblers, Greater Prairie Chicken, Prairie Voles, Dakota Skipper, Bald Eagle, Golden Eagle, and White and Red pines (Harper et al., 2005).

A unique partnership has developed around Camp Ripley in the form of an Army Compatible Use Buffer (ACUB). This ACUB benefits both the Army's training mission and the natural resources by protecting this designated area from development. Through local efforts, nearly 33,000 acres have been protected via conservation easements in the designated ACUB work area. Efforts in the Long Prairie Watershed has resulted in 15,215 acres of protection through a variety of programs, including private conservation easements, public lands, Sustainable Forest Incentive Act (SFIA), and The Nature Conservancy (TNC) Lake Alexander Preserve (Morrison SWCD, 2021).

In 2015, the area surrounding Camp Ripley was designated a Sentinel Landscape forging a partnership between the Department of Defense, Department of Interior, Department of Agriculture, and Fish and Wildlife Service to dedicate resources to the landscape, which ultimately protect and enhance natural resources within the landscape.

Barriers to fish movement such as dams and perched or blocked culverts can block fish migration that is necessary for spawning. There are 20 dams in the watershed as of 2014 (MPCA, 2014). Special concern species, including the Least Darter and Pugnose Shiner, have been documented in the watershed. These species are sensitive to sedimentation that occurs when forests and grasslands are converted to urban and agricultural land uses.

Land Use

The land use makeup in the Long Prairie Watershed is almost half agricultural, 20% forested, 27% surface water—including wetlands—and the rest is developed (Figure 2.8 and Figure 2.10). When it rains, the land use influences where the rain goes. In forests and grasslands with deep roots, the rain infiltrates into the ground and gets filtered before joining the aquifer. In row crops rain has slower infiltration rates and in impervious surface there is no infiltration, resulting in surface runoff to low points such as lakes or streams. As the water runs it may pick up soil, contaminants, manure, and other items in its path (Figure 2.9).

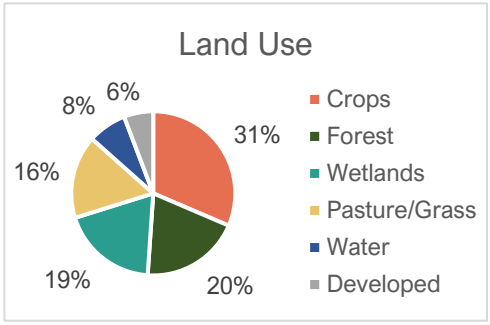


Figure 2.8. Land use in the Long Prairie River Watershed (NLCD 2016).

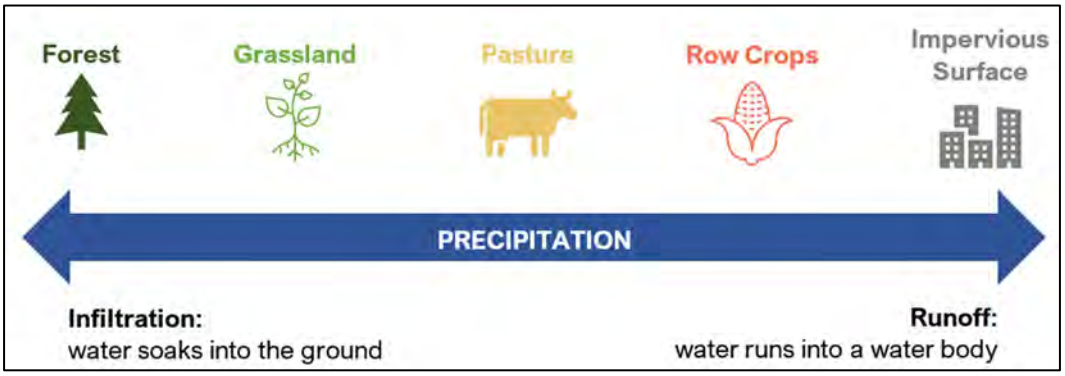


Figure 2.9. Land use in the Long Prairie River Watershed related to precipitation infiltration and runoff. Graphic inspired by text in the Todd County Water Plan.

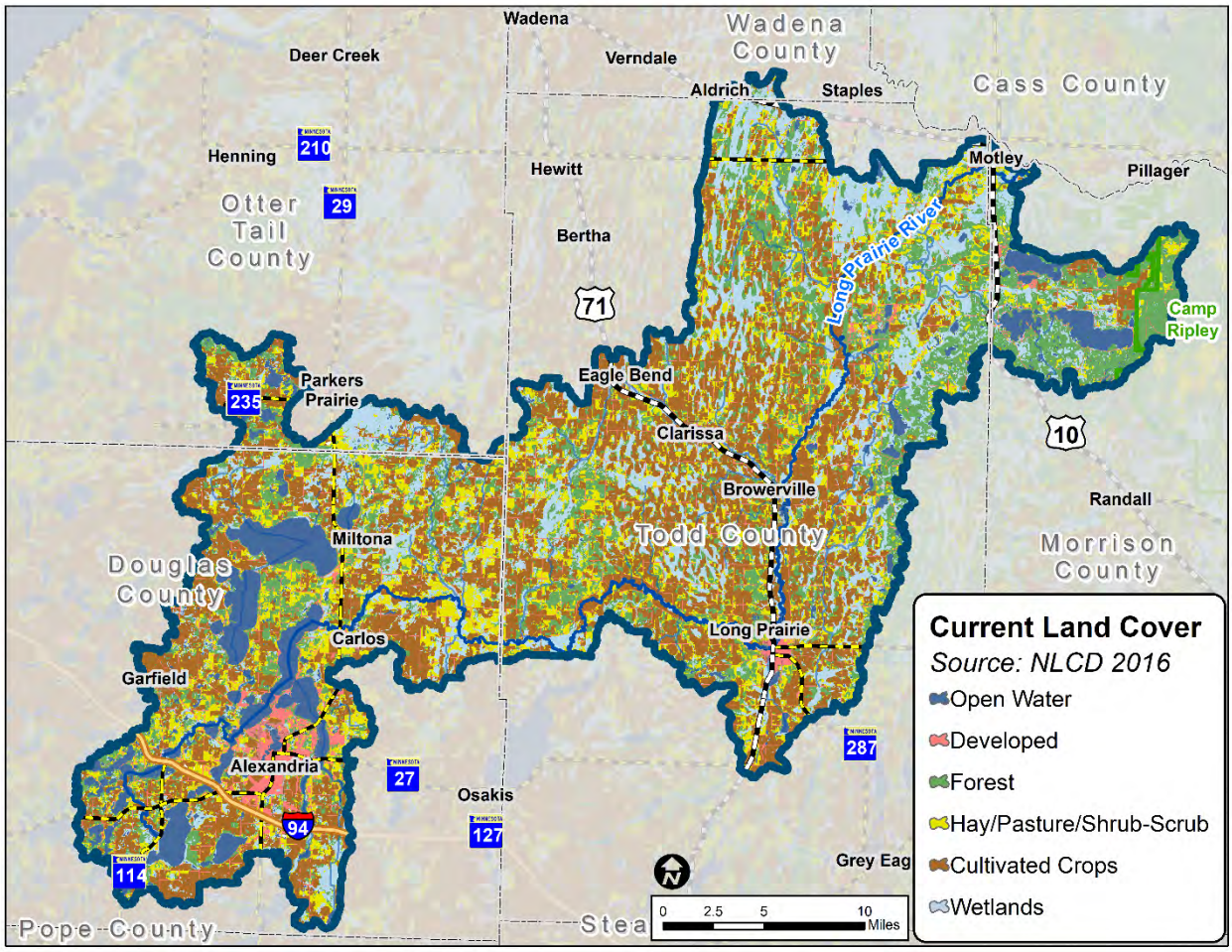


Figure 2.10. Land use map of the Long Prairie River Watershed (NLCD 2016).

Forests play a critical role in keeping water clean. They act like a sponge; their tree roots soak up water and prevent erosion. They also provide shade, which keeps streams and rivers cool and provide habitat for aquatic and land species. The forest cover in the watershed has reduced by 36% since European settlement (MnDOT VegMod). The forests in the Long Prairie Watershed and surrounding region were harvested for lumber until the 1890s when the commercial resource was depleted (Stearns, 1997). In the Midwest, after forest clearing, cutover land was often opportunistically settled and converted to agriculture, as it was already clear of forest (Rhemtulla et al., 2007). This influx of permanent colonist-settlers also formed towns and more densely populated areas. The loss of forest land has led to more erosion and sedimentation in streams and creeks, and has influenced the biological and dissolved oxygen impairments in the Long Prairie River and tributaries.

There are some large developed areas in the watershed, with the largest being the City of Alexandria. Over $2.3 billion of shoreline development is clustered around the lakes in the Alexandria area (MPCA, 2017). While developmental impacts to the environment can be substantial, this concentration of development, in turn, supports local tourism, service, and retail sectors, generating revenue for this portion of the watershed. Douglas County has a projected

growth rate of 12% in the next 30 years due to the presence of lakes, major industries, and commercial activity (MSDC, 2020).

The hill, valley, flat, and outwash till geology creates ideal conditions for diverse wetland resources - depressional, slope, and floodplain flats (MPCA, 2014). Much of the Alexandria lakes area, Turtle Creek area, and Fish Trap Creek area have over 90% of historical wetlands remaining. 50-75% of wetlands are remaining along the Long Prairie River and Eagle Creek (DNR, 2021). Wetlands provide water storage—which reduces flooding—and habitat for fish and wildlife.

Agricultural production is vital to the local economy (Figure 2.11), being the primary economic driver in eastern Douglas and the entire Todd County portions of the watershed. Both crop and animal agriculture play a large role in the watershed, supplying food, creating jobs, and generating tax revenue. Common crops in the watershed include corn, soybeans, cultivated perennials, potatoes, and small grains (DNR, 2021). A significant portion of the Long Prairie River Watershed is rated as Prime Farmland or Farmland of Statewide Importance. Preserving these productive soils is a high priority. Good soil health practices reduce erosion occurrences and benefit crop growth, water quality, and living ecosystems. Installing and adhering to crop BMPs will go a long way towards sustaining the soil for the future of farming and for natural resources stewardship. High crop and land prices have contributed to more conversion of grass and forest land to agricultural land and a decline in the Conservation Reserve Program, which can impact water and habitat quality (Todd County, 2016).

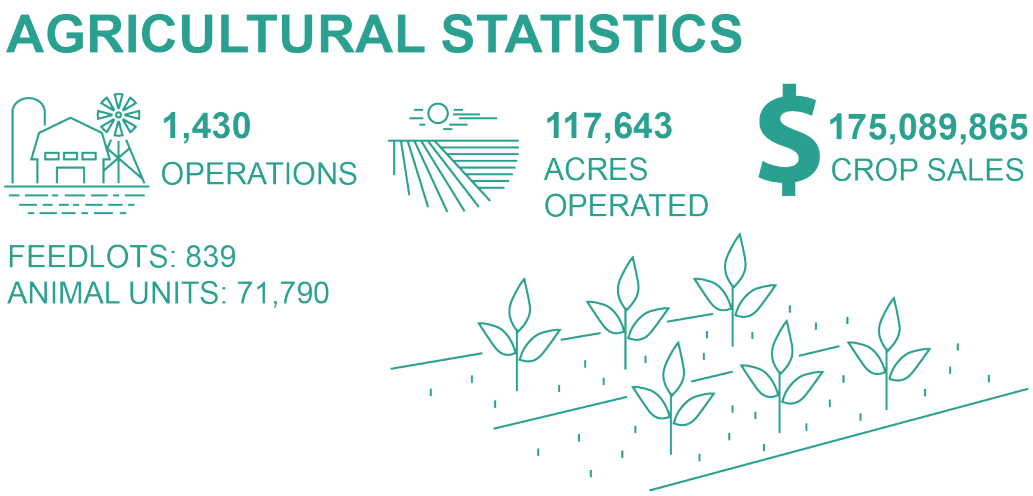


Figure 2.11. Agricultural statistics from NLCD 2016, MPCA, and 2017 Census of agriculture weighted by percent of each county in the Long Prairie Watershed.

Animal agriculture in the watershed includes cattle and calves, beef and milking cows, hogs, and turkeys. There are approximately 839 registered feedlots in the watershed, and 11 large animal feeding operations that require an National Pollutant Discharge Elimination System (NPDES) permit (MPCA, 2017). Feedlots can be a water quality concern due to the potential for phosphorus, nitrates, and bacteria runoff (Todd County, 2016). There are some streams in the watershed impaired for bacteria (Figure 2.6).

Socioeconomics

The Long Prairie River Watershed's socioeconomics can be traced to the original settlement of the area and the local economy. Originally, Native Americans lived along the banks of the Long Prairie River until European settlers pushed them further west and north. This area was an important throughway as it linked the Red River to the Mississippi River by water and by ox cart trails (Historical Society of North Dakota).

The European settlers began with logging the area and then shifted to farming the open lands. Today, with the exception of the Alexandria Area, the watershed remains mostly rural. The total population is 41,867, with 47 people per square mile (DNR, 2021). The people are 96% of European decent, with 4% Hispanic, and 3% Native American and Black (US Census). Most of central Minnesota, between Saint Cloud and Brainerd, has a similar makeup, with similar age, median income, and education (Figure 2.12). In more localized areas of the watershed this makeup is different. Long Prairie's population is 30% Hispanic and the enrollment of the Long Prairie - Grey Eagle school district was 50% Hispanic in October 2021.

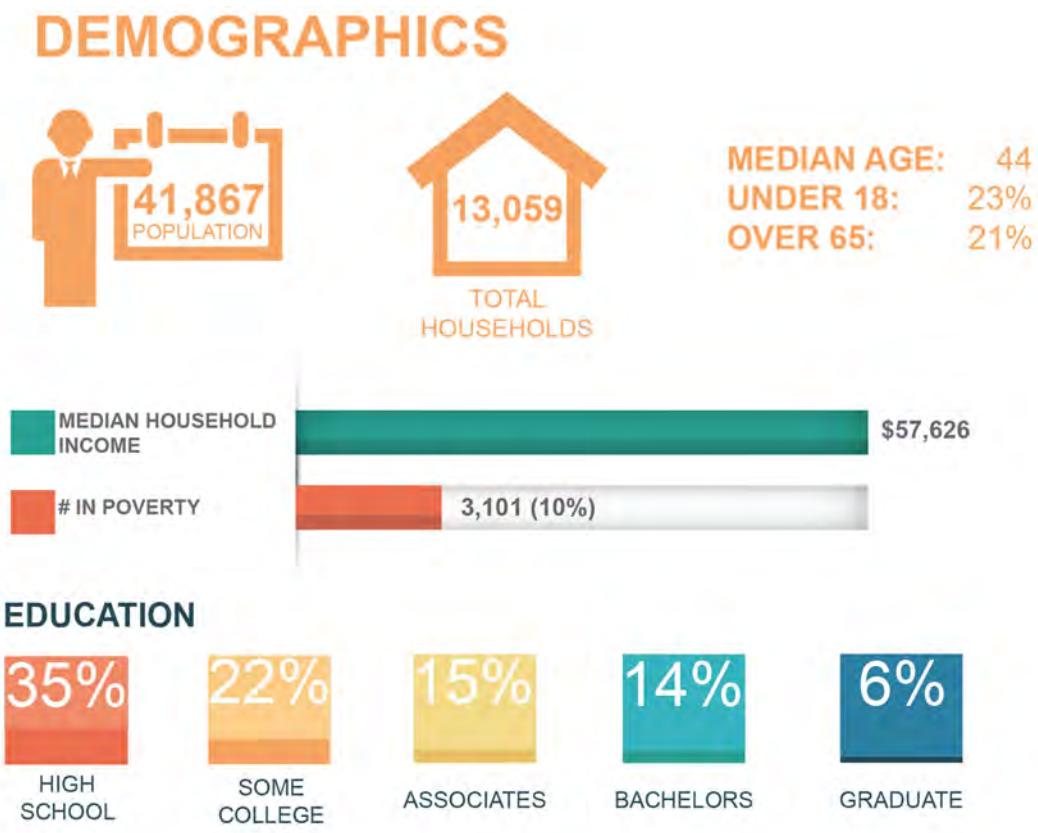


Figure 2.12. Demographic information for the Long Prairie River Watershed. Data is from the WHAF and 2015-2019 US Census American Community Survey weighted by percent of each county in the Long Prairie River Watershed.

Future

The Long Prairie River Watershed is fortunate to be home to clean water, fish and wildlife habitat, and productive agricultural lands. These qualities are what drive life and the economy in the region.

There are some trends within the watershed and on a larger regional scale that can indicate where the watershed is heading and drive future projects to maintain the character of this unique place.

The Long Prairie River
Credit: Luan Thomas-Brunkhorst

- **Lake development pressure**: The large, clear lakes in the watershed are a draw for development as humans love to live by water. Continuing work to minimize stormwater runoff and enhance and protect riparian and aquatic vegetation will help maintain the excellent water quality of these lakes for future enjoyment.
- **Forest conversion**: 36% of the forests in the watershed have already been removed by logging and converted to agricultural lands and development. The loss of forests increases overland runoff and soil erosion, reduces resiliency to increased precipitation from climate change, and fragments valuable habitat. Managing the remaining forests and restoring forests in priority areas can slow this trend and therefore improve the overall quality of the watershed.
- **Agricultural land management:** Agriculture is vital to the local economy and food supply. Working with landowners to adopt BMPs will help preserve soil health and productivity, minimize erosion, and enhance water and habitat quality.
- **Groundwater sensitivity:** The surficial sand aquifer is important for providing base flow to the Long Prairie River and recharging the major lakes in the watershed. The shallow nature of the aquifer and the sandy soils also makes it vulnerable to contamination from land use on the surface. Managing nitrogen inputs and development in these areas will help protect the groundwater quality for supplying surface water flow, irrigation, and drinking water to those in the watershed and downstream.

By building on current connections between people, the water, and the landscape, the Long Prairie River Watershed can continue to be a place in which all can enjoy and prosper.

For a more detailed story map of the Long Prairie River Watershed, visit:
https://storymaps.arcgis.com/stories/aa5a4220ff1d4181826d30ea70eb9fb9

Section 3. Issue Prioritization

Section 3
Issue Prioritization

"Issues" are concerns or opportunities that can be addressed to protect or restore natural resources in the watershed. The issue aggregation process for the Long Prairie River Watershed started with a comprehensive watershed-wide view. Then through a series of steps, the Advisory, Policy, and Citizen committees determined the priority issues that are specific to the four planning regions. Subsequently, priority areas and resources were determined. The next few pages explain in detail the process illustrated in Figure 3.1.

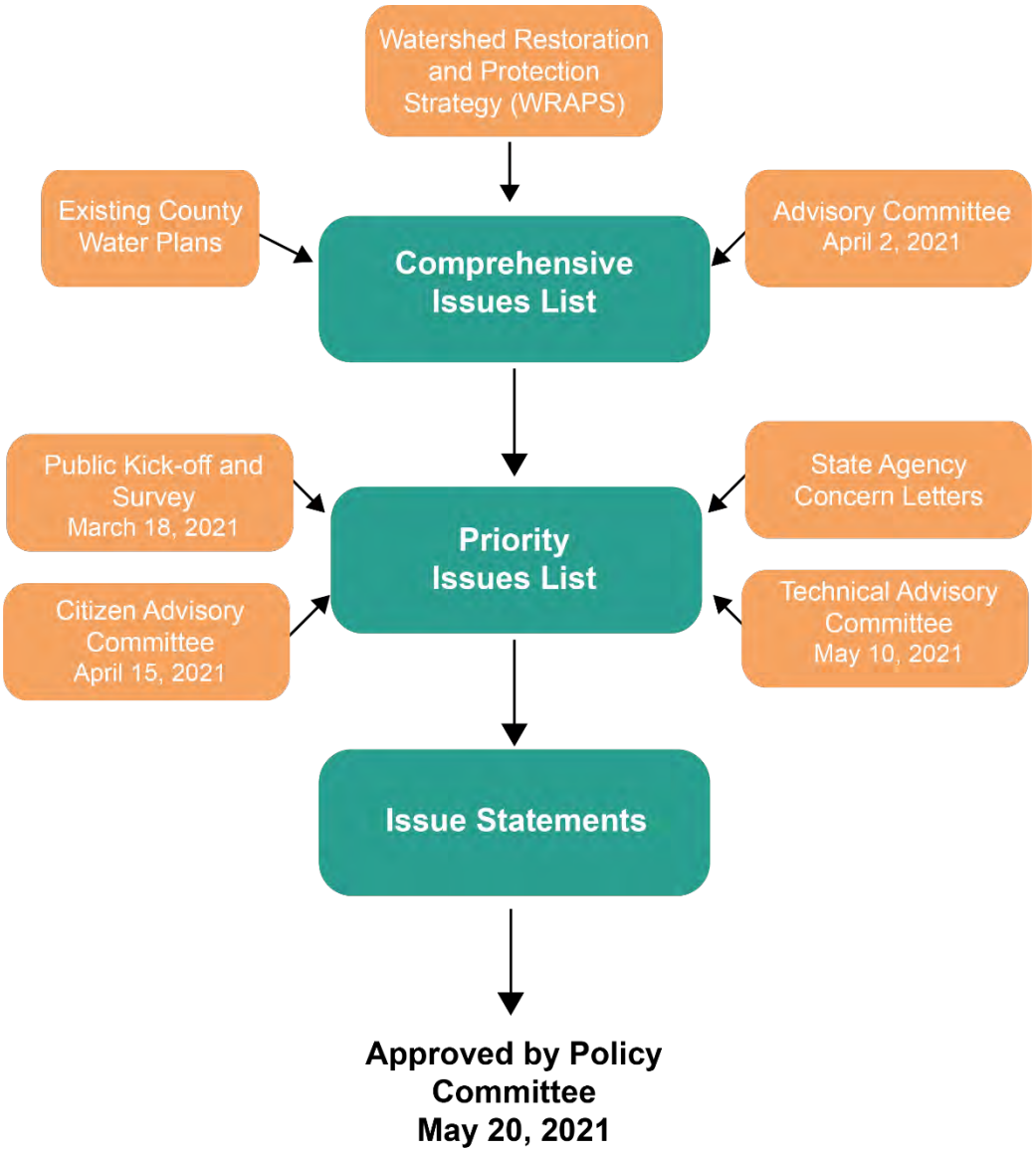


Figure 3.1. Issue prioritization process for the Long Prairie River Watershed.

Issue Aggregation

The issues were brainstormed, gathered, and synthesized into a comprehensive watershed-wide issues list in March and April of 2021 (Figure 3.1). Sources used to gather issues included the Long Prairie River Watershed Restoration and Protection Strategy (WRAPS) and supporting MPCA documents (such as the Stressor Identification, Monitoring and Assessment, and Total Maximum Daily Load reports), local County Water Plans, and County Comprehensive Land Use Plans. Additionally, issues were identified by Agency Concern Letters and datasets (MPCA, BWSR, MDA, MDH, and DNR), and feedback from the Lake Shamineau Association and TNC. Issues were also brainstormed at the April Citizen Advisory Committee and Technical Advisory Committee meetings.

Every issue affects a resource that people care about. A resource is a natural feature that provides drinking water, food, or other benefits for humans or wildlife such as habitat or recreational opportunities. The compiled issues were grouped into five resource categories to help frame the concerns: Urban, Groundwater, Surface water, Land, and Habitat. These categories are described below.

Resource Categories

Urban	Includes water resources affected by developed land, such as cities, developed lakeshores, and roads, often through stormwater pathways.
Groundwater	Includes all groundwater resources such as aquifers and groundwater flow, and drinking water reserves.
Surface water	Includes all water on the surface such as lakes, streams, and wetlands.
Land	Includes multiple benefits of managing the land for healthy soils, groundwater, surface water, and habitat quality.
Habitat	Includes habitat for wildlife, with an emphasis on fish, game, and birds.

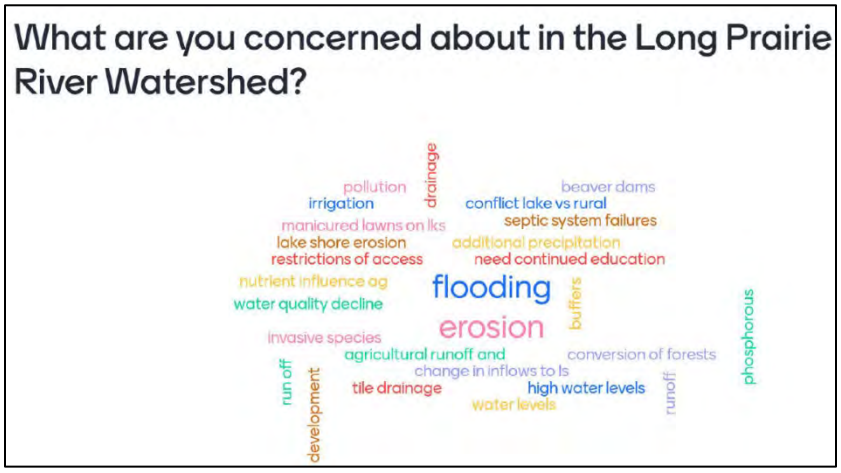


Figure 3.2. The brainstorm results from the Citizen Advisory Committee on April 15, 2021.

Issue Prioritization

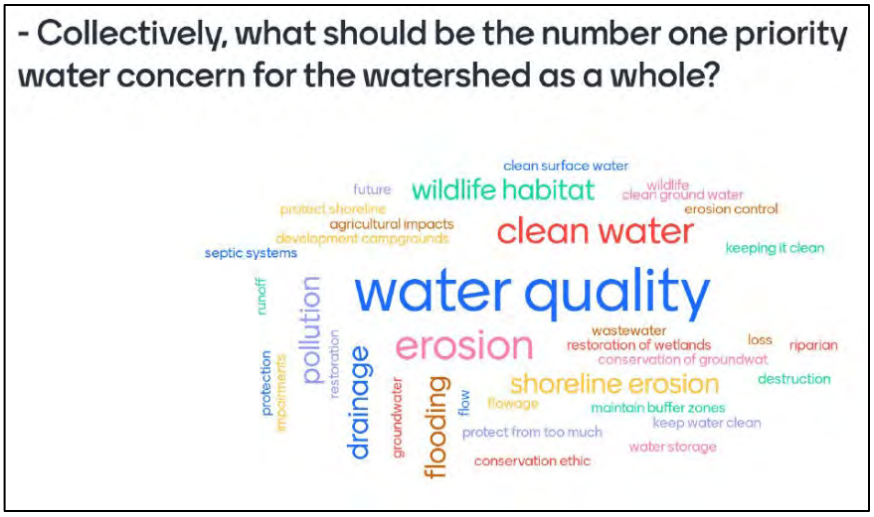


Figure 3.3. Brainstorm results from the Public Kick-off Meeting, March 18, 2021.

In a perfect world there is enough funding and capacity to accomplish everything. In the real world, funding and staff time are limited, so the issues for the plan must be prioritized as to what will be the primary focus over the next 10 years. The comprehensive issues list was prioritized watershed-wide in a few different steps. First, an online public survey and a poll during the Public Kick-off meeting were used to determine which issues the public cared most about. The results from these surveys are summarized in Appendix F.

Next, the Citizen Advisory Committee met and discussed the issues and prioritized them. Priorities from this committee had similarities with the public feedback. Common themes included erosion, runoff, water quality, buffers, and invasive species (Figure 3.2 and Figure 3.3).

The results from the public and Citizen Advisory Committee were then taken to the Technical Advisory Committee, who also considered the letters outlining priorities from state agencies and local organizations received at the beginning of the planning process (Agency Concern Letters). Issue statements were prioritized during an in-meeting poll and discussion.

Priority issues in this plan needed to fit three criteria:

1. Is it within the authority/purpose of the planning partnership to address?
2. Do we understand the current issue (data exist)?
3. Do clear local strategies exist to address the issue?

Through this prioritization process, the issues were separated into three categories: A, B, and C. The Technical Advisory Committee determined that Priority A and B issues would be the focus of goal development. The Priority A, B, and C issues were approved by the Policy Committee on May 20, 2021.

A	Priority A issues are the main focus of this plan and will have the most effort and funding during implementation. They will be the focus of goal development.
B	Priority B issues will also be considered in the plan and will be addressed as effort and funding are available. They will be the focus of goal development.
C	Priority C issues will not be a focus of this plan and will not have goals associated with them

Issue Prioritization by Planning Region

Once the issues were priortized into A, B, and C categories watershed-wide, the next step was to assign where on the landscape these issues need to be addressed. For example, the issue of bacteria in streams could be more urgent in some areas and less urgent in other areas. To focus where to work on a smaller scale, and assign a location to the issues, the Technical Advisory Committee divided the watershed into four planning regions (Figure 3.4 and Table 3.1). The planning regions are based on the HUC-10 subwatershed scale, with a couple of the subwatersheds combined due to similar land uses, resources, and resource conditions.

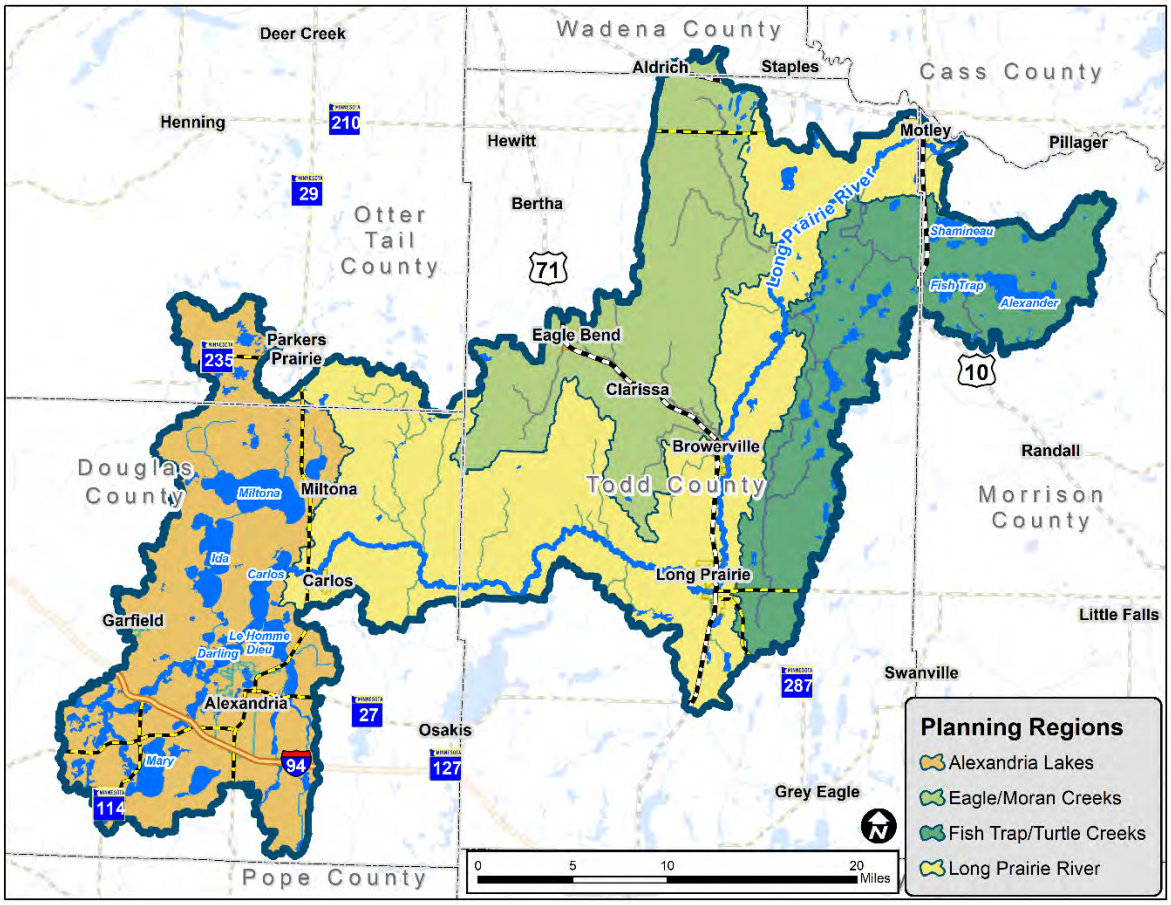


Figure 3.4. Planning Regions in the Long Prairie River Watershed.

Table 3.1. Planning Region descriptions in the Long Prairie River Watershed.

Alexandria Lakes	The Alexandria Lakes Planning Region is the source of the Long Prairie River, marked by its many high-value recreational lakes and the City of Alexandria.
Long Prairie River	The Long Prairie River planning region follows the Long Prairie River and has shallow groundwater, sandy soils, and a mix of agricultural practices.
Eagle/Moran Creeks	The Eagle/Moran Creeks Planning Region has primarily agricultural land use, forests, and wetlands.
Fish Trap/Turtle Creeks	The Fish Trap/Turtle Creeks Planning Region is marked by relative abundance of large and small lakes and forests.

At the June 2021 Technical Advisory Committee meeting, the issue statements were evaluated geographically in the watershed using maps of existing data, scientific studies, and local knowledge. Existing data and studies include the Impaired Waters List, groundwater appropriation permits, the Long Prairie River Watershed Landscape Stewardship Plan, the Nonpoint Priority Funding Plan, the Minnesota Department of Natural Resources' (DNR) Lakes of Phosphorus Sensitivity Significance and Lakes of Biological Significance, and the Watershed Health Assessment Framework.

Issues were assigned a high, medium, or low priority per planning region. This prioritizing exercise defines which issues for each planning region(s) was the most relevant and urgent in the watershed. High priority indicates the Planning Region where this issue will be addressed first during implementation. Reasons for a high priority could range from a water quality impairment to a specific land use to a high quality lake. For example, runoff from animal agriculture was considered a high priority in the Eagle/Moran Creek Planning Region because Eagle and Moran Creeks are impaired for bacteria (*E.coli*).

Prioritizing issues by Planning Region starts to tie the issues to priority resources such as specific lakes and streams. This connection started during the issue prioritization discussion and will be sythesized in more detail in the next section of the plan: Section 4. Resource Prioritization.

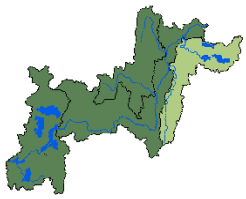
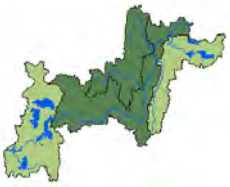
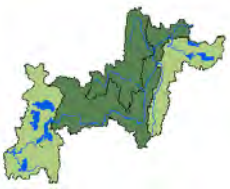
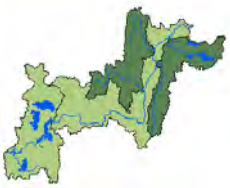
The issues and prioritization per planning region were reviewed by the Policy Committee in September 2021 for their input. All these efforts have resulted in the final issue statements listed in this section.

Irrigated field north of Long Prairie

Priority A Issues

Priority A issues are the most important issues that will be the focus of implementation efforts in the 10-year plan. The main theme of the issue statement is shown in **bold** text.

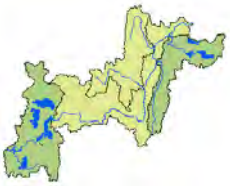
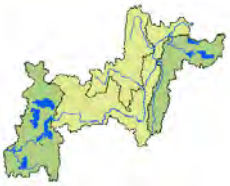
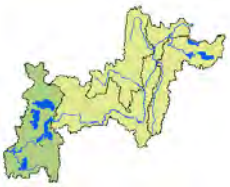
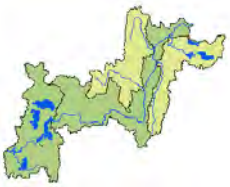
Planning Region Prioritization: = high; = medium; = low.

Resource Category	Resource Affected	Issue Statement	Planning Region Prioritization
	Lakes, Streams	**Stormwater runoff** from urban areas, developed shoreland property, and roads causes contamination of lakes and streams.	
	Drinking water	Shallow groundwater water paired with sandy soils is **vulnerable to contamination**.	
	Lakes, Streams, Groundwater	Bacteria and nutrient runoff from **animal agriculture** impacts water quality.	
	Lakes, Streams	**Field erosion and runoff** causes nutrient and sediment loading and low dissolved oxygen in lakes and streams.	
	Lakes, Streams	Alterations to natural drainage such as **tiling, ditching, and culvert placement** increases the flow of water, streambank erosion, and impacts aquatic life.	
	Soil, Lakes, Streams, Groundwater	Degraded **soil health** can reduce agricultural productivity and water holding capacity.	
	Forest and Grassland	**Fragmentation and conversion of uplands (forest and grassland)** by changes in land use (development, agriculture, disturbance) impacts surface water, groundwater, and habitat quality.	

Priority B Issues

Priority B issues are important and will be addressed as time and funding allows. The main theme of the issue statement is shown in **bold** text.

Planning Region Prioritization: = medium; = low

Resource Category	Resource Affected	Issue Statement	Planning Region Prioritization
	Lakes, Streams	**Intensification of development** on lakes and streams impacts riparian habitat, fragments upland habitat, and affects water quality.	
	Lakes, Streams	**Changing precipitation and temperature patterns** have increased erosion, lake and stream water levels, and overburdened existing public infrastructure.	
	Lakes, Streams	Biologically significant lakes, shallow lakes, wild rice lakes, and trout streams need sufficient **protections** to maintain their water and habitat quality.	
	Wetlands, Lakes, Streams	**Wetlands** are abundant in the watershed and some land practices could threaten the extent and quality of wetlands, impacting water storage, water quality, and habitat.	
	Lakes, Streams, Groundwater, Wetlands	**Chloride** concentrations are increasing in lakes and streams due to many sources (water softeners, industry, road salts, stormwater infiltration to groundwater).	
	Aquifer	Groundwater use has the potential to reduce **groundwater quantity**.	

Priority C Issues

Priority C issues were identified in the planning process but will not be a priority in this 10-year plan. This is because they are either a low priority, emerging issues, and/or already addressed in other existing plans and funding sources. In future plan updates, these issues could be elevated if deemed necessary.

- Nutrient loading from **wastewater discharge** is causing lake impairments
  - *Is covered by the Alexandria Lakes Area Sanitary District Plan and improvements are currently being implemented.*
- **Aquatic Invasive Species** (AIS) impact the aquatic ecosystem, water quality, recreation, and economic development.
  - *Is covered by each county's AIS Plans and funding*
- More **outdoor recreation** access is needed for the public to enjoy the natural resources of the watershed.
  - *Has limited links to water quality and was not rated as a high priority from the public.*

Field in Todd County

Emerging Issues

Emerging issues are concerns in the watershed that lack detailed information but may affect the resources in the Long Prairie River Watershed in the future. These issues are described in this section along with how the plan will address them.

Increasing Precipitation and Temperature

The average annual temperature for the Long Prairie River Watershed is increasing at a rate of 0.25°F per decade in the timespan 1895-2020. Winter temperatures are warming faster than summer temperatures, increasing at a rate of 0.42°F per decade. Changes in winter temperatures (December-February) changes the main type of precipitation between snow and rainfall, and changes snowmelt dynamics in the spring. This affects the timing of streamflow peaks, with more high flows occuring in the fall when precipitation falls as rain and sleet rather than snow.

Annual precipitation is also increasing in the 1895-2020 timeframe, with a trend of 0.40 inches of additional annual precipitation per decade. Since 1895, this is more than an additional 2.8 inches of rain per year, on average (Figure 3.5).

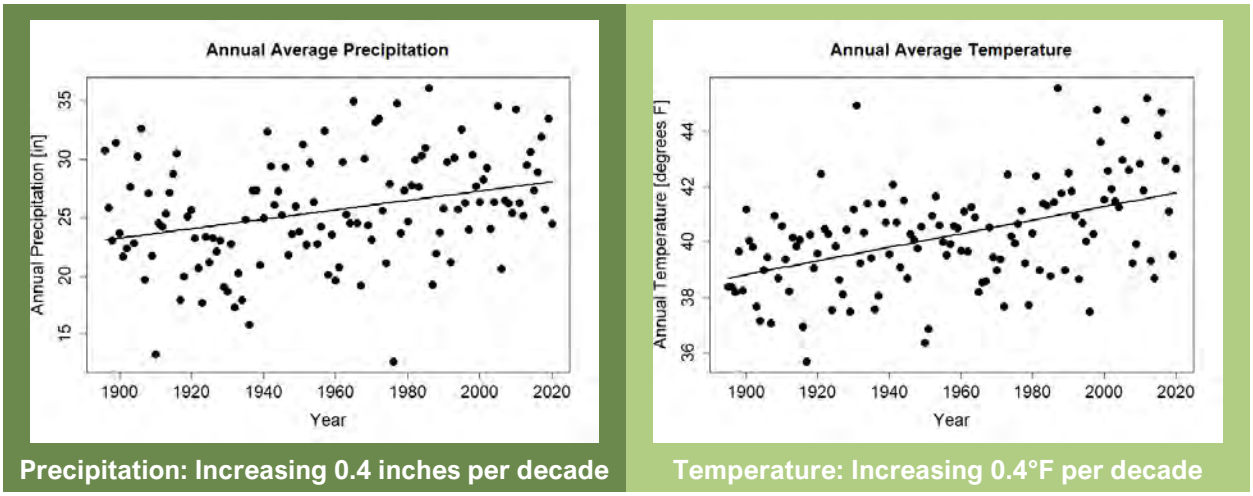


Figure 3.5. Annual average precipitation and temperature trends in the Long Prairie River Watershed (DNR 2021).

Changing trends in precipitation and temperature have many effects such as damaging infrastructure, affecting recreational opportunities, altering the growing season, shortening lake ice cover in the winter, and changing habitats and conditions for native fish, wildlife, plants, and forests. Streamflow will likely increase at times of the year, especially high flows in response to increased extreme precipitation events as observed in existing data throughout Minnesota. Warmer summers have the potential to increase the irrigation needed to cultivate crops, which uses more groundwater.

If current trends continue, the climate of the Long Prairie Watershed will be more like southern Iowa by the year 2070, with warmer winters and summers (NG, 2022). To address the temperature and precipitation trends in the watershed, the activities implemented in this plan aim to include both mitigation (practices that mitigate the effects of climate change by storing carbon in the soil) and adaptation (enhancing the resiliency of the watershed to future changes) (BWSR, 2019).

Contaminants of Emerging Concern

Water quality regulation and planning have focused on nutrient and sediment pollution and highly toxic substances. However, monitoring in Minnesota has identified new contaminants that don't fit within the current regulatory and planning system. These contaminants are also not currently treated in Waste Water Treatment Facilities. The effects of contaminants of emerging concern (CEC) on human and animal health health are unclear. Examples of CECs include pharmaceuticals, estrogenic compounds, pesticides, Teflon, perfluorooctanoic acid (PFOA), microplastics, and many others. Of particular concern are Perfluoroalkyl Substances (PFAS), also known as Perfluorochemicals (PFCs), which are a widely-used family of chemicals that do not break down in the environment on relevent timescales. PFASs have been used in fire-fighting foam, packaging, and many other industrial applications. A subset of the PFAS family of chemicals is Perfluorooctane sulfonic acid (PFOS), known to accumulate in aquatic life, including sportfish. Some of these chemicals are known to be able to disrupt the reproductive systems of fish and other aquatic life. In May 2021, the MDH released new guidance on fish consumption that indicated an emerging harm present in our ecosystem from these CECs. CECs are widespread and more research is needed to determine the health risks, especially in

areas of the Long Prairie River Watershed where there is shallow groundwater used for human consumption. More information can be found at: https://www.pca.state.mn.us/water/contaminants-emerging-concern.

Long Prairie River Sulfate Listing

Sulfate in the environment, in excess, results from industrial pollution from mining, power plant, and wastewater treatment discharges. Sulfate also occurs naturally in some systems. Sulfates released into the environment as industrial waste can inhibit wild rice growth and increase the uptake of mercury into fish (Bjorhus, 2021). Sulfate has not historically been a pollutant addressed in the MPCA's watershed planning cycle, although there has been a statewide sulfate standard since 1973. In 2021, the Environmental Protection Agency (EPA) rejected Minnesota's 2020 Impaired Waters List and proposed that the state list several waters for sulfate. Subsequently the MPCA assessed the sulfate standard for the first time. The result is two stretches of the Long Prairie River found impaired for sulfate. This issue will be further developed during the next intensive watershed cycle starting in the Long Prairie Watershed in 2022.

Long Prairie River at Hwy 29

Invasive Species

Both aquatic and terrestrial invasive species continue to be an issue in Minnesota. Major infested waterbodies in the Long Prairie River Watershed include Lake Shamineau, Fish Trap, Alexander, Crookneck, and nearly all of the Alexandria Area Lakes (Carlos, Le Homme Dieu, Ida, etc.) for zebra mussels and/or eurasian watermilfoil. The Alexandria Area Lakes offer free AIS decontamination provided by Douglas County and the Minnesota DNR; further, AIS inspectors are available in lakes throughout the Long Prairie River Watershed to help slow the spread of AIS. Local governments, agencies, and other local groups all have AIS programs involved in many prevention activities such as lake access inspections, public service announcements, decontamination units, and dock/lift registration. Because these programs are already in place and have their own dedicated funding source, AIS are considered an emerging issue in this plan.

Zebra Mussel Near-Shore Impacts

Zebra mussels (*Dreissena polymorpha*) have infested many waters within the Alexandria Area Lakes, including lakes Carlos, Le Homme Dieu, and Ida. Zebra mussels shift lake food webs and nutrient use from the deep water to near-shore areas (McEachran et al., 2018; Hecky et al., 2004). Increased nutrient availability in near-shore areas cause increased plant and algae growth and water quality problems (Hecky et al., 2004). However, it is unclear how to manage for this shift in nutrient cycling in lakes, especially once it has already occurred. Once the near-shore shift has occurred, even if zebra mussels were eradicated, legacy nutrients and plant matter would likely remain in the near-shore area. More research is needed on how local entities can manage for water quality in near-shore areas of zebra mussel infested lakes.

Lake Le Homme Dieu in Douglas County

Local Issues

High Water in Lakes

There are some lakes in the Long Prairie River Watershed, especially Lake Shamineau in Morrison County and Nelson Lake in Otter Tail County, that have been experiencing high water levels in the last decade. High water can cause damage to private property and public infrastructure. This plan can help address these impacts through shoreline restoration and stabilization, land protection, land management programs. Best management projects such as wetland restoration, cover crops and reforestation can help increase the water storage capacity of the land, reducing runoff to the lakes.

Section 4. Resource Prioritization

Section 4.
Resource Prioritization

Surface water (lakes and streams), groundwater, and habitat in the Long Prairie River Watershed were prioritized to determine where to focus implementation in the next 10 years. The Technical Advisory Committee prioritized the resources based on a management approach, summarized below. Overall, the Long Prairie River Watershed has a protection focus because there are very few water quality impairments. There are no turbidity impairments and the only nutrient impairments are in nine small, shallow lakes.

Management Approach

The Long Prairie River Watershed has many high-quality streams, lakes, groundwater, and habitat resources that are not replaceable if their quality deteriorates. Healthy Long Prairie River Watershed surface water resources (lakes and streams) and habitat support excellent water-based cultural activities and recreation: fishing, hunting, canoeing, boating, and sight-seeing. Drinking water for communities and rural areas is sourced from the groundwater in the region, with surface water and groundwater quality delicately interconnected. Protecting these valuable resources is essential for sustaining the high quality of life that residents in the watershed enjoy.

Converting land use from less-intensive to more-intensive management and use, such as the development of lands for houses and cabins and conversions of forests to agriculture, all have the potential for diminishing surface, groundwater, and habitat quality. For this reason, the first step in determining the management approach for the resource of interest was evaluating how much land surrounding the resource had been changed from its original land cover. The answer dictated which of the three mangement approaches for managing water quality applied to that resource: “Restore,” “Enhance,” or “Protect” (Figure 4.1). These approaches are explained in detail on the next page.

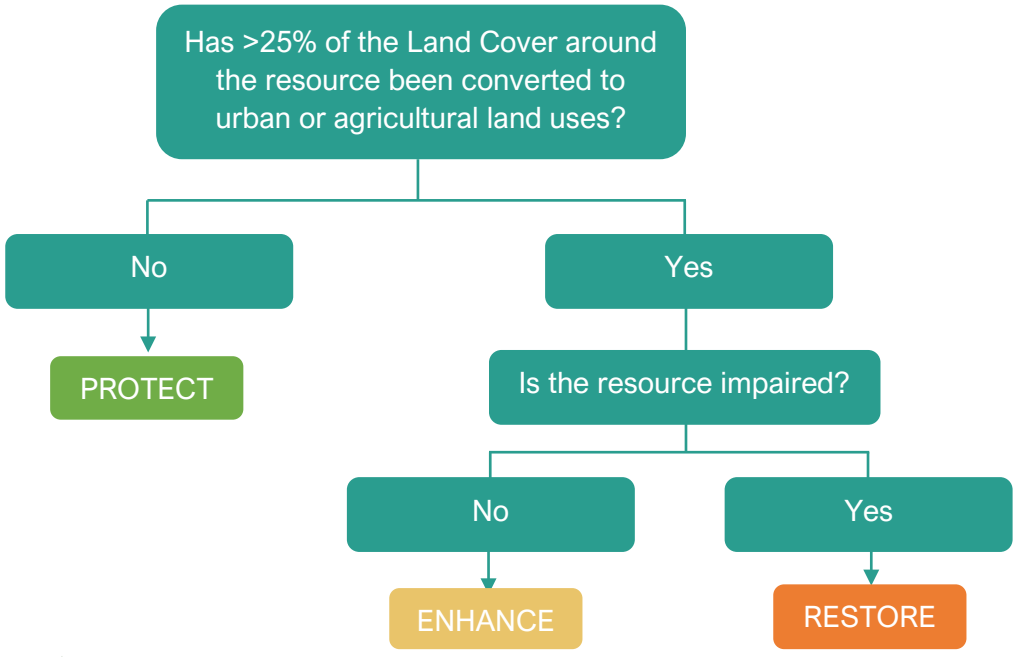


Figure 4.1. Management approaches: Protect, Enhance, Restore.

Restore

For purposes of this plan, the "Restore" management approach for lakes and streams means that the water body is on the Impaired Waters List for nutrients, *E.coli*, or sediment. The water quality is generally already degraded and should be restored to meet its water quality standards for its designated use. To address the root cause of the problem, one approach is to install structural practices and remediation measures to engineer a water quality solution. Engineered solutions are necessary because conversion of urban and currently profitable agricultural land back to a perennial state will remain unlikely. Another common "Restore" management approach is to use BMPs (both agricultural and urban) on lands within a watershed to reduce pollutant delivery to lakes and streams.

Enhance

The "Enhance" approach applies to lakes and streams that have a significant amount of land conversion and/or disturbance in their drainage area but are not currently impaired. For groundwater, the "Enhance" approach focuses on aquifers where pollutants, such as nitrates, are elevated from human land uses. Here, small management actions and targeted BMPs may bring about surface and groundwater quality improvements. While in a restoration approach the mindset tends to be one of "salvage," attempting to gain whatever improvement is possible from an already highly degraded system, the enhancement approach seeks to take actions to prevent further degradation within lightly impacted streams, lakes, and aquifers.

Protect

The "Protect" approach relies on protecting perennial vegetation and forested land within watersheds to preserve their natural ecosystem and biodiversity as well as prevent degradation of surface water, groundwater, and habitat. In this approach, significant land conversion has generally not occurred in the watershed. The "Protect" approach usually involves forest management and permanent land protection to maintan the hydrologic, geomorphic, chemical, and biotic integrity of stream and lake systems; to maintain sustainable quantity and quality of groundwater resources in the area; and to maintain a diverse habitat for fish and wildlife.

Forests near Lake Alexander in Morrison County
(Photo credit Morrison SWCD)

Resource Prioritization

BWSR's Nonpoint Priority Funding Plan for Clean Water Funding Implementation and Minnesota's Clean Water Roadmap set the following priorities:

- Restore those impaired waters that are closest to meeting state water quality standards ("barely impaired");
- Protect those high-quality unimpaired waters at greatest risk of becoming impaired ("nearly impaired"); and
- Restore and protect water resources for public use and public health, including drinking water.

The resources in the Long Prairie River Watershed were evaluated with these priorities in mind; however, though there are a few impaired waters, none of the lakes or streams in the watershed are considered "barely impaired" or "nearly impaired." Therefore, for unimpaired resources, the "Enhance" and "Protect" priorities focus on what has the highest value and the most risk.

Prioritization Criteria

In protection-focused watersheds, a useful guide for prioritization is the following quote from Peter Jacobson, retired DNR Fisheries Researcher:

"*Conservation priority lies at the intersection of risk and value.*"

Existing data sets, referred to here as "criteria," are used to prioritize resources within the watershed based on what has the most value (ecological and/or financial) and what is most at risk of future change. It is important to keep the prioritization quantitative so that there is sound reasoning behind why a lake, stream, or groundwater resource area is considered a priority. It is also important to keep it simple and transparent so that the priorities can be clearly communicated with stakeholders and the public (Figure 4.2).

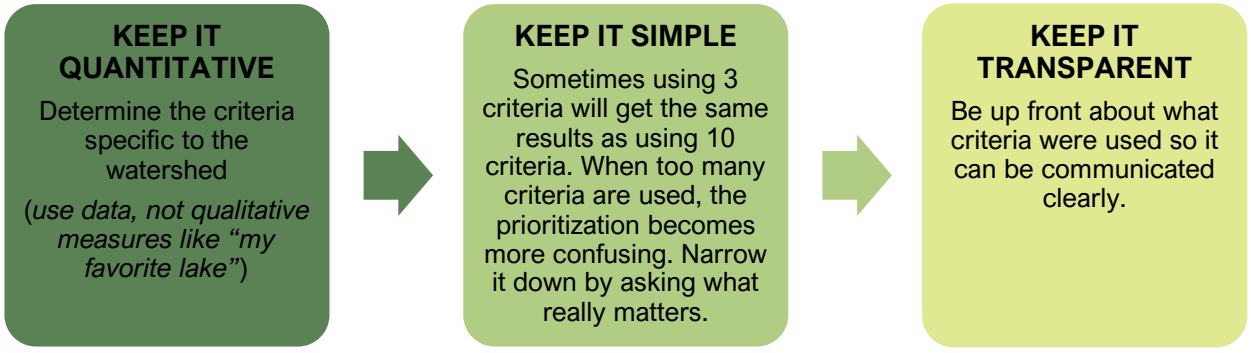


Figure 4.2. Resource prioritization guidelines.

Surface Water Priorities

Lakes

There are approximately 220 lakes in the Long Prairie River Watershed that vary from large to small, deep to shallow, and developed to undeveloped. In a perfect world, there would be enough time and funding to work on all lakes. In reality, time and funding are limited, and the lakes were prioritized to determine where to focus efforts and funding in the next 10 years to make measurable change.

Lakes were prioritized based on two "Value" criteria (teal in Table 4.1) and two "Risk" criteria (orange in Table 4.1), which were developed by the DNR and are used in planning statewide. These criteria were chosen by the Technical Advisory Committee as representative of their priorities for lake management and to choose lakes that benefit the watershed as a whole. Lakes that met all four prioritization criteria shown in Table 4.1 were assigned as Tier 1 lakes, which will be the lakes to work on first during implementation. Some of these lakes, for example Ida, already have projects in development and have the potential to gain measurable improvements in water quality in the near future.

Table 4.1. Tier 1 lake prioritization.

Prioritization Criteria							**Tier 1 Lakes**	**Management Approach**
Outstanding Biological Significance *Lakes with sensitive fish, plant, bird, and amphibian species*	+	**Lakes Benefit: Cost Assessment** *Lakes where improvements give the most return on investment*	+	**Highest Phosphorus Sensitivity** *Lakes most sensitive to declining clarity if the phosphorus increases*	+	**General Development Classification** *Generally large, deep lakes or lakes with high levels of existing development.*	=	**Alexander** **Shamineau**	PROTECT
								Miltona **Latoka** **Ida** **Mary**	ENHANCE

Tier 2 lakes are the remaining General Development lakes, as these are most likely to experience future development pressure and have the most economic value (Table 4.2). General Development Lakes generally have the highest density development, the most current land conversion, and potential for even higher density so the most BMPs are needed on those lakes. Natural Environment lakes have some protections from zoning (i.e., larger setbacks, larger minimum lot sizes) as described on the following page. Some of these lakes also had one or two of the qualities or risks of the Tier 1 lakes, but not all four. Louise Lake has outstanding biological significance while Crookneck, Irene, Louise, and Le Homme Dieu have the highest level of phosphorus sensitivity. Tier 2 lakes will be worked on as time, opportunities, and resources allow.

Lake Winona is impaired for excess nutrients and is connected to the Long Prairie River through Lake Le Homme Dieu and Lake Carlos. Therefore, Winona is a watershed priority for restoration.

Table 4.2. Tier 2 lake prioritization.

Prioritization Criteria					**Tier 2 Lakes**	**Management Approach**
General Development Classification *Generally large, deep lakes or lakes with high levels of existing development.*	=				Fish Trap	PROTECT
					Crookneck Carlos Le Homme Dieu Darling Geneva Victoria Irene Brophy Cowdry Louise	ENHANCE
General Development Classification	+	**Aquatic Use Impairment** *Excess Nutrients*	=		Winona	RESTORE

Lake Shoreline Classifications (DNR)

The purpose of shoreland classifications is to guide development along lakes and rivers consistent with their ability to withstand human development and recreational activity. Minnesota's shoreland rules establish shoreland classifications for lakes and rivers.

The shoreland classification is used in local shoreland zoning ordinances to regulate the following development standards, which vary based on classification:

- Lot area and width
- Structure and septic system setbacks from the water
- Size of the shore impact zone, wherein vegetation and land alteration activity is limited

General Development Lakes are generally large, deep lakes with high levels and mixes of existing development. These lakes often are extensively used for recreation and, except for the very large lakes, are heavily developed around the shore. Second and third tiers of development are fairly common. These lakes also typically have the highest property values.

Recreational Development Lakes are generally medium-sized lakes. They often are characterized by moderate levels of recreational use and existing development. Development consists mainly of seasonal and year-round residences and recreationally-oriented commercial uses.

Natural Environment Lakes: Generally small, often shallow lakes with limited capacities for assimilating the impacts of development and recreational use. They often have adjacent lands with substantial constraints for development such as high water tables, exposed bedrock, and unsuitable soils. These lakes, particularly in rural areas, usually do not have much existing development or recreational use. These lakes also typically have the lowest property values.

What about the lakes that aren't in Tier 1 or Tier 2?

The Tier 1 and Tier 2 lakes in this plan are a priority for overall watershed health. Lakes that are not in Tier 1 or Tier 2 can still be a local priority. The Technical Advisory Committee outlined some of the actions that could still be implemented on non-Tier 1 and non-Tier 2 lakes:

- Continue water quality monitoring to track trends
- SWCDs, Counties, and DNR provide technical assistance and site visits for projects
- Lake Associations could participate in Lake Management Planning
- The lakes will be re-assessed in the next 10-year cycle and could be a priority in the future.

Lobster Lake in Douglas County
(Photo credit Rob Graber)

Lake Charlotte Access in Todd County
(Photo credit Todd County)

Streams

There are over 965 miles of rivers and streams in the Long Prairie River Watershed. Like lakes, the streams need to be prioritized to determine where to focus effort and funding in the next 10 years to make measurable improvements.

Criteria used for prioritizing streams are different than those used for lakes. Stream criteria are based on water quality data, analyses, and designations such as impairments and trout streams. Values are shown in teal boxes and risks are shown in orange boxes.

Based on current data and discussions by the Technical Advisory Committee, Tier 1 priority streams include the Long Prairie River, Eagle Creek, and Moran Creek. Tier 1 streams will be the first to work on during implementation. Tier 2 streams will be worked on as time, opportunity, and resources allow.

The Long Prairie River is overall assigned an “Enhance” management approach. It is a priority for both surface water quality and groundwater quality and quantity since the stretch of the river between the City of Long Prairie and City of Motley is intricately connected to groundwater. Groundwater also provides the base flow in the river (Peterson 2010). Groundwater/surface water interaction and the effects of groundwater withdrawals on streamflow are difficult to represent within existing in-use models; therefore, adequate monitoring is necessary to assess long-term changes due to practices on the landscape. The risks to the Long Prairie River include nitrogen infiltration, groundwater quantity, and a biological impairment for fish communities (Table 4.3).

Table 4.3. Streams with an "Enhance" management approach.

Prioritization Criteria								**Tier 1 Stream**	**Management Approach**
Groundwater Recharge *Areas with high groundwater recharge rates and low nitrogen infiltration risk.*	+	**Nitrogen Infiltration Risk** *Areas with sandy soil, shallow groundwater, and nitrogen application.*	+	**Groundwater Quantity** *Number of groundwater appropriation permits.*	+	**Biological Impairments** *The Long Prairie River has a less diverse fish community than the state standard.*	=	**Long Prairie River** (*from the City of Long Prairie to the City of Motley, Figure 4.9*)	ENHANCE

Streams assigned a “Restore” management approach include Eagle Creek, Moran Creek, and the unnamed Creek to Lake Miltona (Table 4.4) because they are impaired for *E.coli*. These streams also are connected to shallow groundwater recharge areas. The current *E.coli* impairments are based on data from 2011-2012. The MPCA will be starting Cycle 2 intensive watershed monitoring of these streams in the summer of 2022, which may change focus areas in the future.

Table 4.4. Streams with a “Restore” management approach.

Prioritization Criteria				Tier 1 Streams	Management Approach
Groundwater Recharge *Areas with high groundwater recharge rates and low nitrogen infiltration risk.*	+	**Bacteria Impairments** *Streams over the state standard for* E.coli *bacteria.*	=	**Eagle Creek Moran Creek Unnamed Creek to Miltona**	RESTORE

There are two streams with a protection focus: Spruce Creek and Turtle Creek. Spruce Creek is a designated trout stream and is also in an area with high groundwater recharge (Figure 4.7). Turtle Creek has extensive forested land, many wild rice lakes, and DNR priority shallow lakes in its subwatershed, along with high groundwater recharge (Table 4.5). These streams are a priority for riparian protection.

Table 4.5. Streams with a "Protect" management approach.

Prioritization Criteria				Tier 2 Streams	Management Approach
High Quality Resources *Trout, Wild Rice, DNR Priority Shallow Lakes, Forest*	+	**Groundwater Recharge** *Areas with high groundwater recharge rates and low nitrogen infiltration risk.*	=	**Spruce Creek Turtle Creek**	PROTECT

Ground Water Priorities

Risks

There are many areas in the Long Prairie River Watershed where the groundwater and surface water are interconnected, and 14% of private wells are in a highly vulnerable setting (GRAPS 2022). MDH well testing data shows 3.6% of wells have over 3 mg/L nitrate (at risk). MDA well testing shows elevated nitrates along the Long Prairie River (Figure 4.4). This same area shows a high risk for nitrogen infiltration from the surface to the groundwater (Figure 4.5), and a high number of groundwater appropriation permits (Figure 4.6). Therefore this stretch of the river between Hartford and Ward Townships is a priority for managing the land use on the surface to improve groundwater quality (Table 4.6). Elevated nitrates are also detected in Parker's Prairie Township, but the majority of the implementation focus for Parkers Prairie is in the Redeye River Watershed.

Table 4.6. Groundwater with an "Enhance" management approach.

Prioritization Criteria				**Tier 1 Groundwater Area**	**Management Approach**
Nitrogen Infiltration Risk *Areas with sandy soil, shallow groundwater, and nitrogen application.*	+	**Groundwater Quantity** *Number of groundwater appropriation permits.*	=	Ward Township Hartford Township Round Prairie Township Parkers Prairie Township	ENHANCE

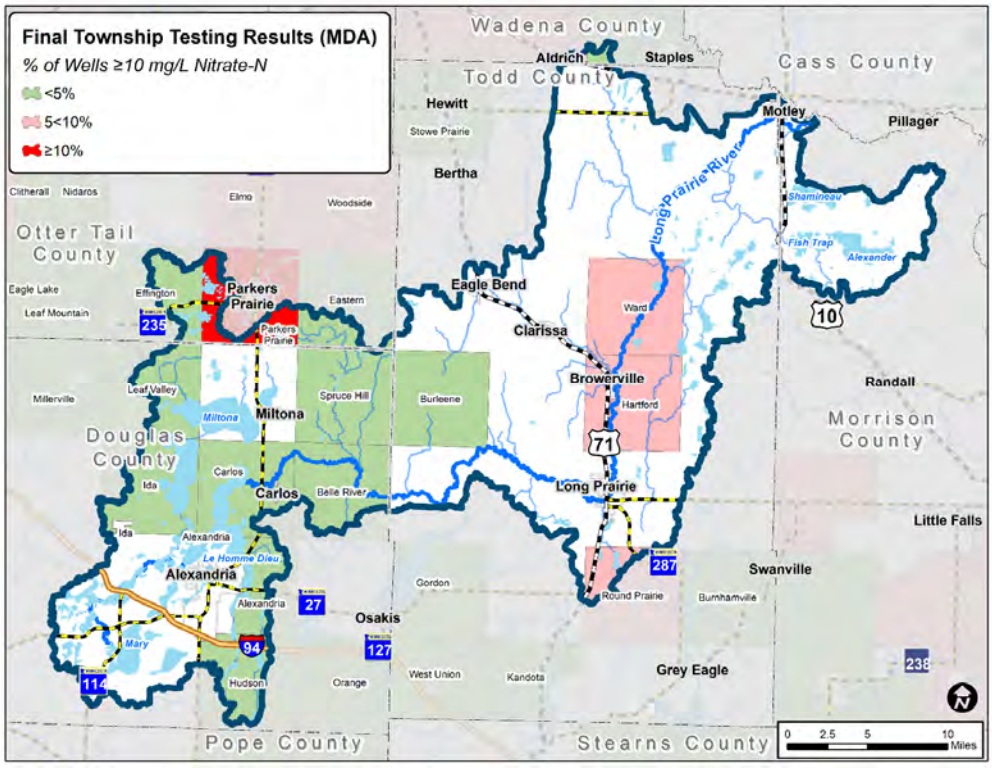


Figure 4.4. MDA Targeted Township Testing Program results.

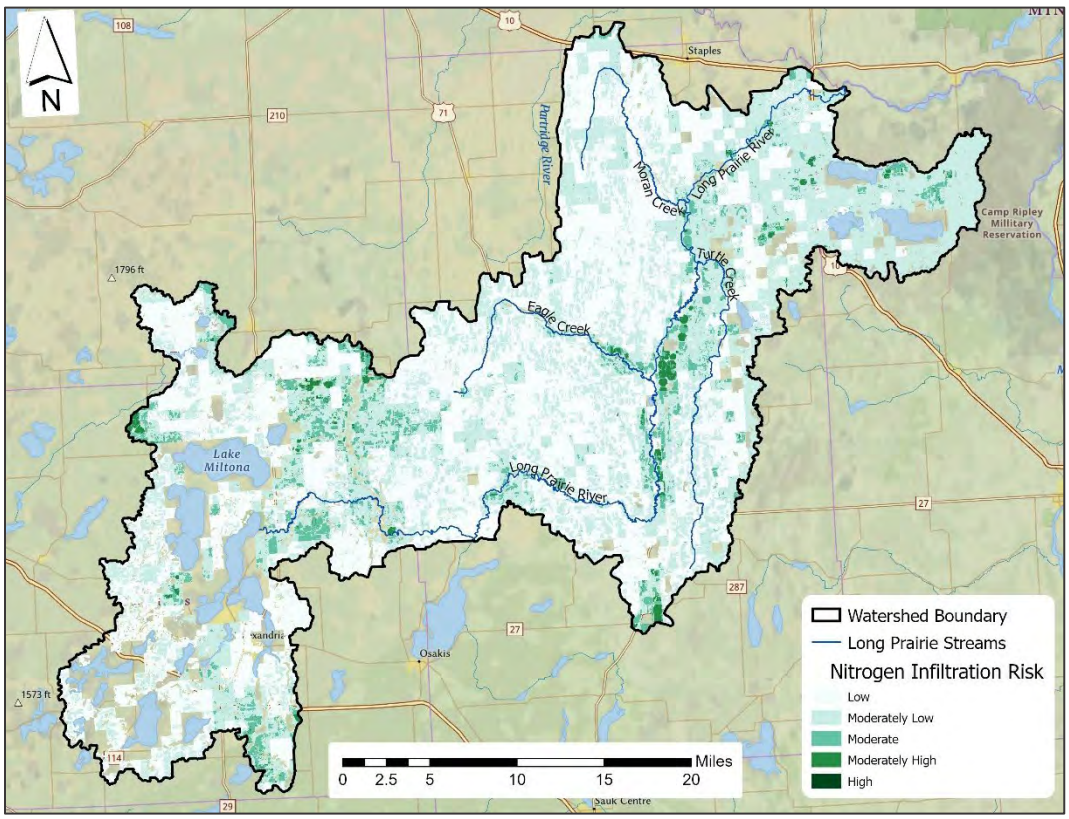


Figure 4.5. Risk of nitrogen infiltrating into the groundwater (Houston Engineering Data Analysis).

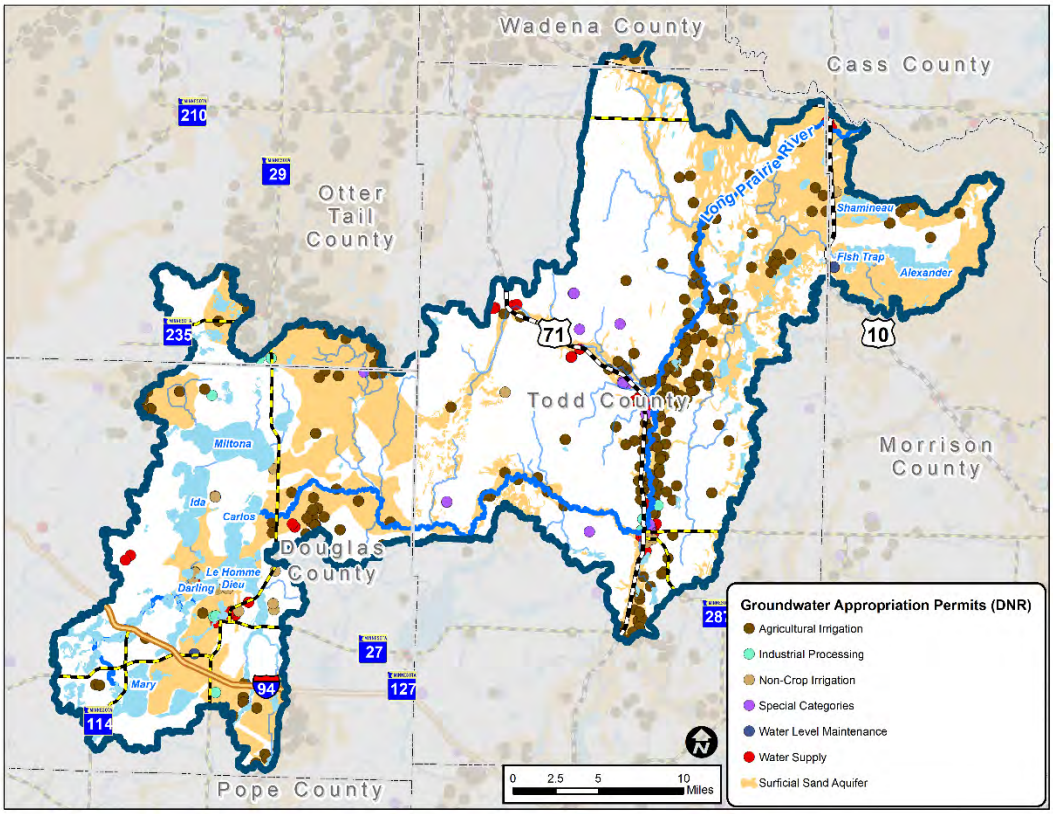


Figure 4.6. Groundwater appropriation permits (DNR MPARs).

Value

There are many areas in the Long Prairie River Watershed that have high groundwater recharge and low nitrogen infiltration risk due to the presence of perennial vegetation like forests (Figure 4.7). These areas have a protection management focus. Groundwater recharge areas with forest cover and wetlands can be targeted with land protection. Groundwater recharge areas with agricultural land use can be targeted for cover crops and other soil health practices as well as perennial cover.

Table 4.7. Groundwater with a "Protect" management approach.

Prioritization Criteria				**Tier 1 Groundwater Area**	**Management Approach**
Groundwater Recharge *Areas with high groundwater recharge rates and low nitrogen infiltration risk.*	+	**Forest and Wetland Land Cover** *Areas where there are forests and wetlands that can be protected.*	=	See Figure 4.7 and Figure 4.10	PROTECT

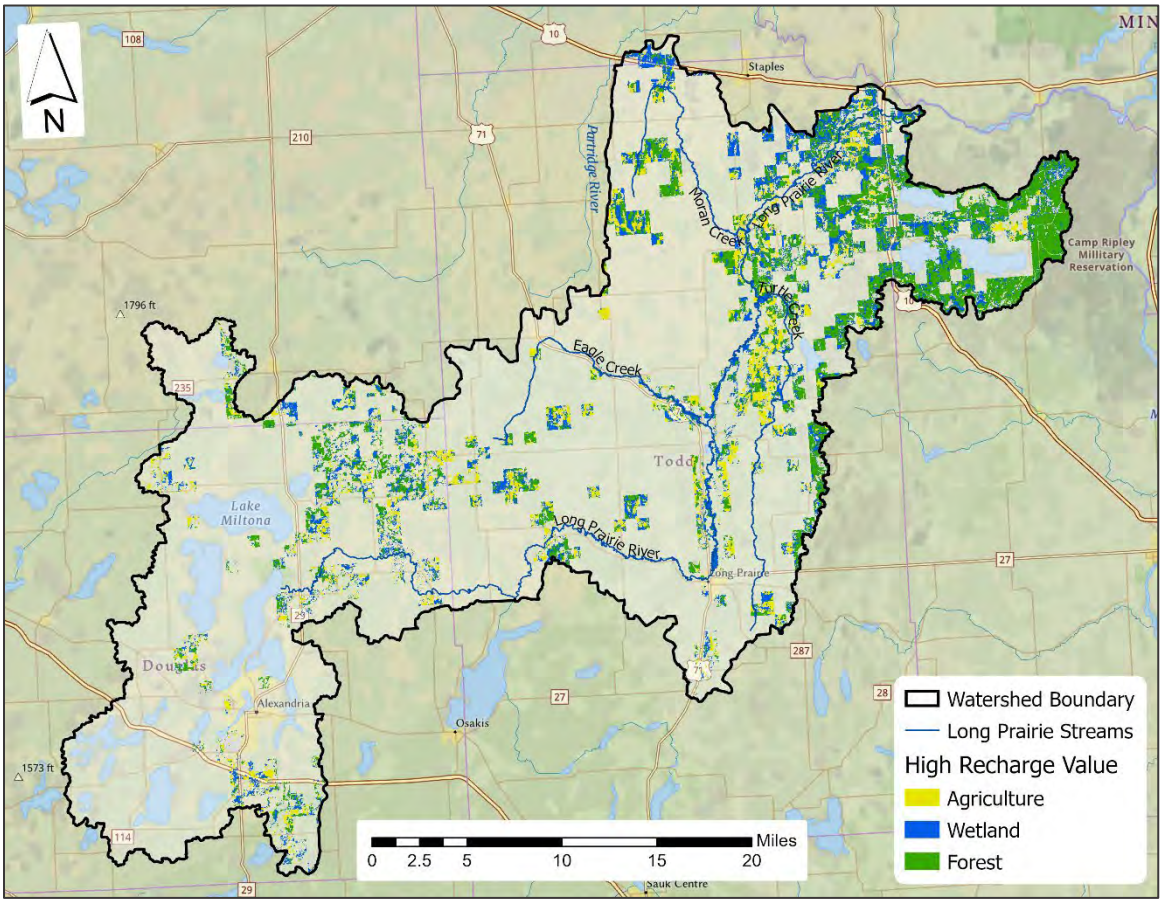


Figure 4.7. Areas with high groundwater recharge value and low nitrogen infiltration risk.

Drinking Water Supply Management Areas

A DWSMA is an area most important to the drinking water source for a public water supplier such as a city. DWSMA boundaries establish a protection area through an extensive evaluation that determines the contribution area of a public water supply well, aquifer vulnerability and provide an opportunity to prioritize specific geographic areas for drinking water protection purposes.

Much of the land within DWSMAs is owned privately. While MDH and public water suppliers are responsible for providing safe drinking water, they do not have the authority or capacity to protect drinking water sources on their own. MDH and public water suppliers work with local decision-makers, other state agencies, and many partner organizations to plan and implement activities that protect drinking water sources (MDH 2022).

In the Long Prairie River Watershed, privately owned lands within the DWSMA can be targeted for voluntary best management practices to protect groundwater and/or for groundwater protection easements. There is one DWSMA with high vulnerability in the Long Prairie River Watershed, Clarissa, which has an "Enhance" management focus. The other DWSMAs have either a moderate vulnerability and a "Protect" focus or low vulnerability (Garfield and Eagle's Landing) (Figure 4.8).

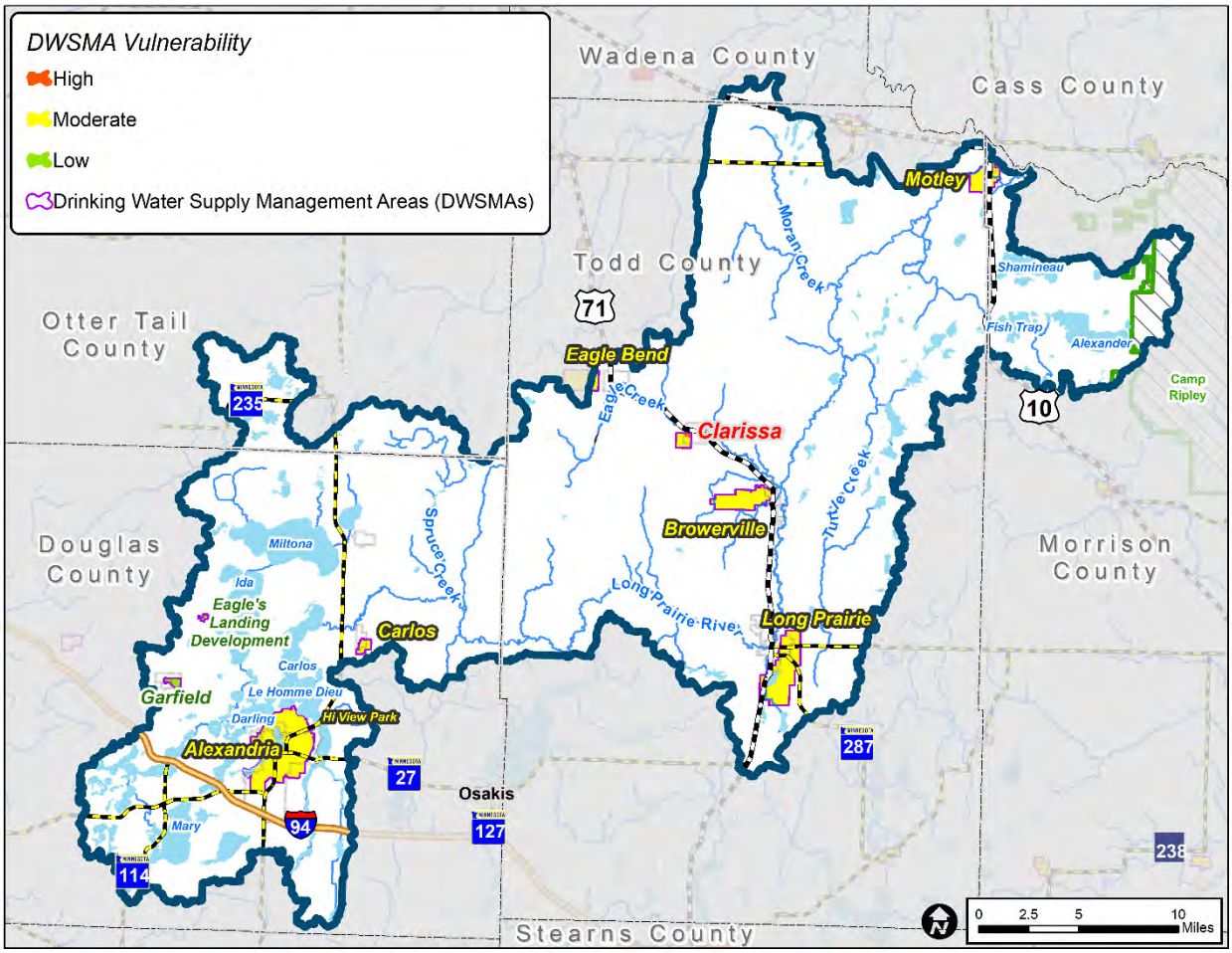


Figure 4.8. Drinking Water Supply Management Areas and their vulnerability (MDH).

Habitat Priorities

Priorities for managing both aquatic and terrestrial habitat are based on the Long Prairie Landscape Stewardship Plan, completed in 2022. Habitat priorities are closely tied to the surface and groundwater resources already mentioned in this plan section, and benefit many sensitive fish and wildlife species. Protecting the habitat for these species ensures their survival. Drivers of Quality and Risk were defined during the Landscape Stewardship Planning Process and are summarized below:

Drivers of Quality

Abundant lakes
Lakes of Biological Significance
Cisco – Latoka, Mina, Charlotte
Lake Carlos State Park
Urban sewer infrastructure
Trout – Spruce Creek
Spruce forests
Drumlin fields
Wetlands
Old growth white pine forests
Wild rice lakes
Shallow lakes
Camp Ripley Army Compatible Use Buffer
Sentinal Landscape
Lake Alexander Woods Scientific and Natural Area
Lake Alexander Preserve
Existing trees along the Long Prairie River Corridor

Drivers of Risk

Phosphorus sensitive lakes
Impaired lakes
Parcelization and fragmentation
Urban development
Shoreline development
Agricultural land practices
Impaired streams

These priorities were compiled during the planning process, and resulted in priority habitat management and protection areas in Figure 4.11.

Fish Trap Lake in Morrison County

Overall Surface Water Management Priorities

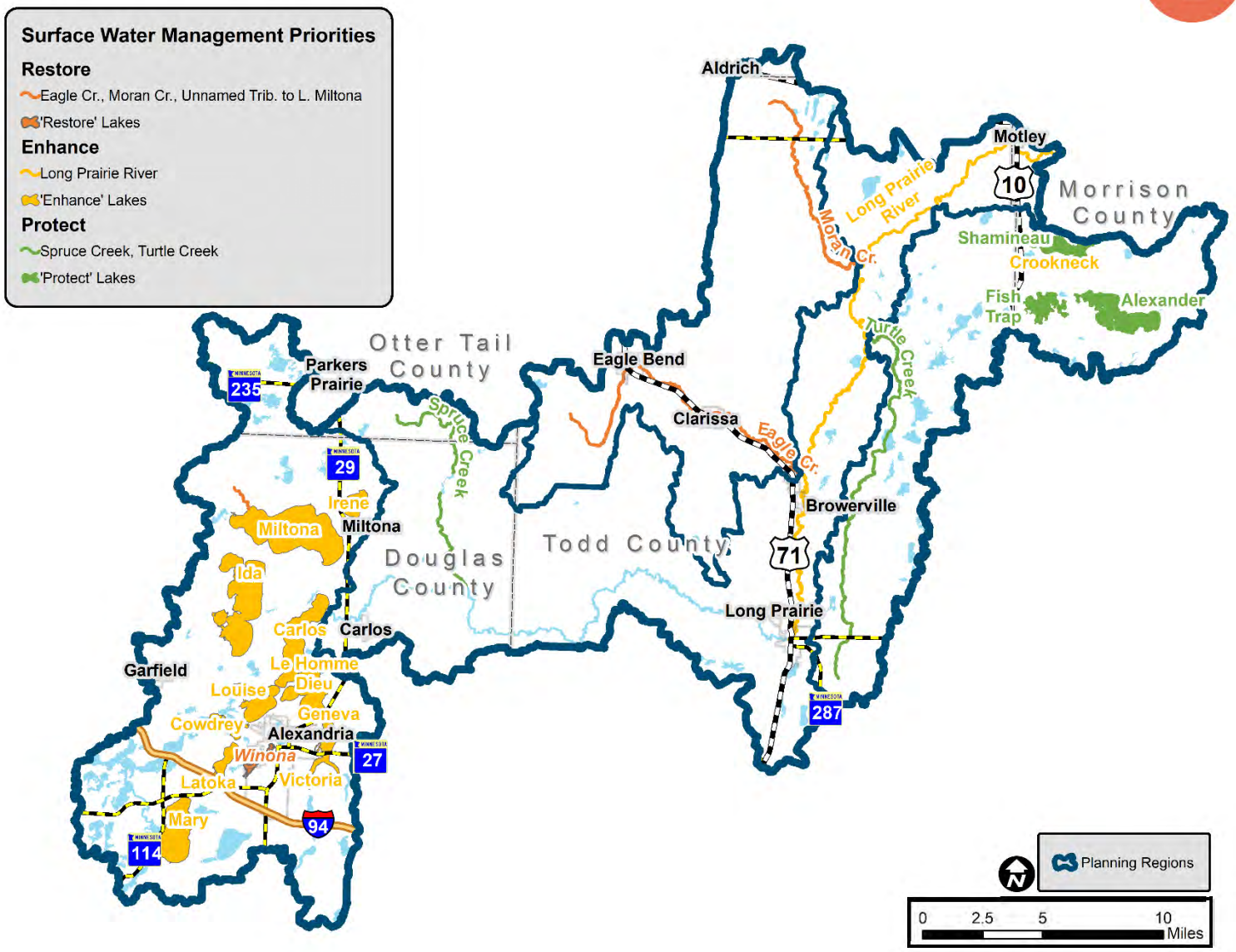


Figure 4.9. Overall surface water management priorities.

Overall Groundwater Management Priorities

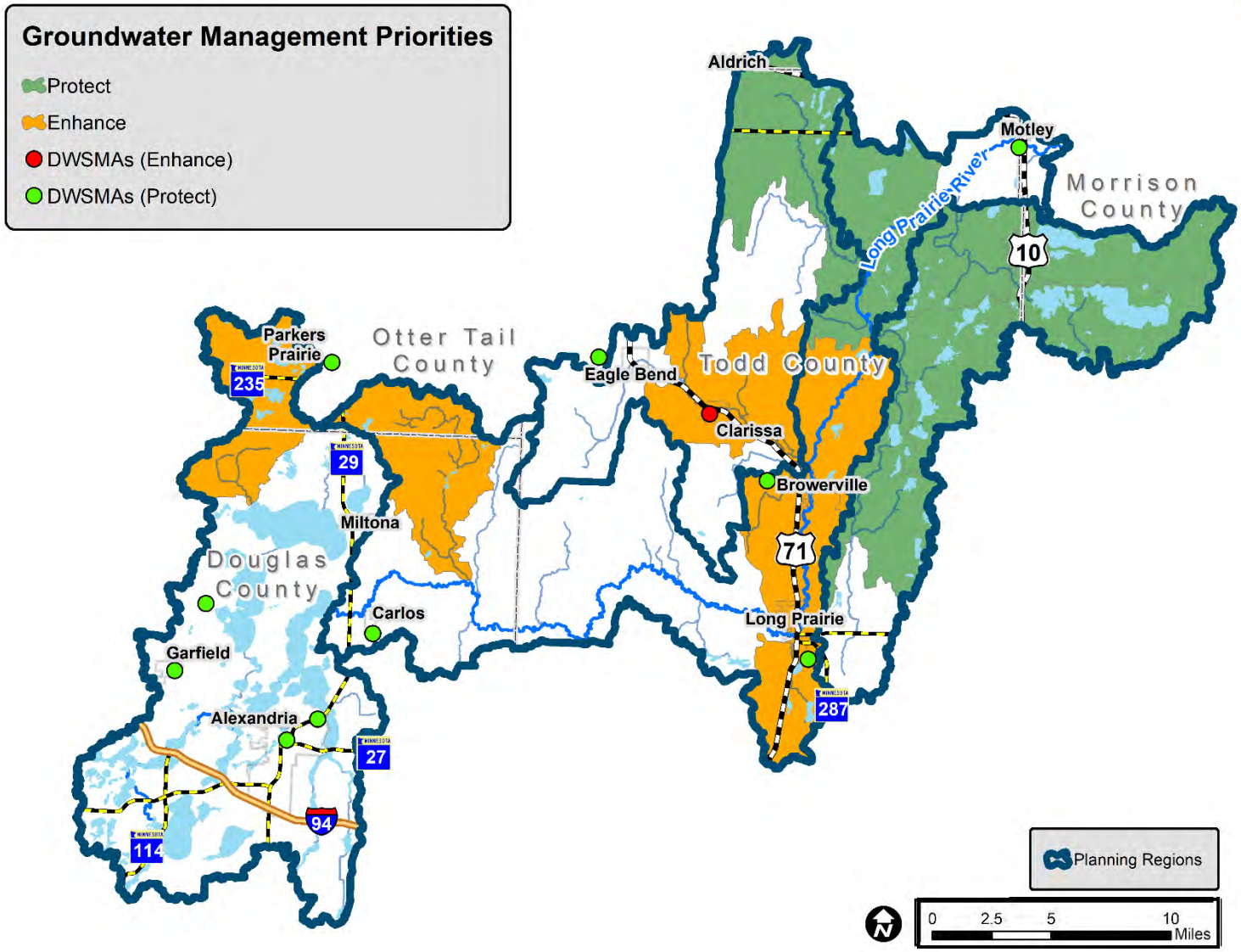


Figure 4.10. Overall groundwater management priorities.

Overall Habitat Management Priorities

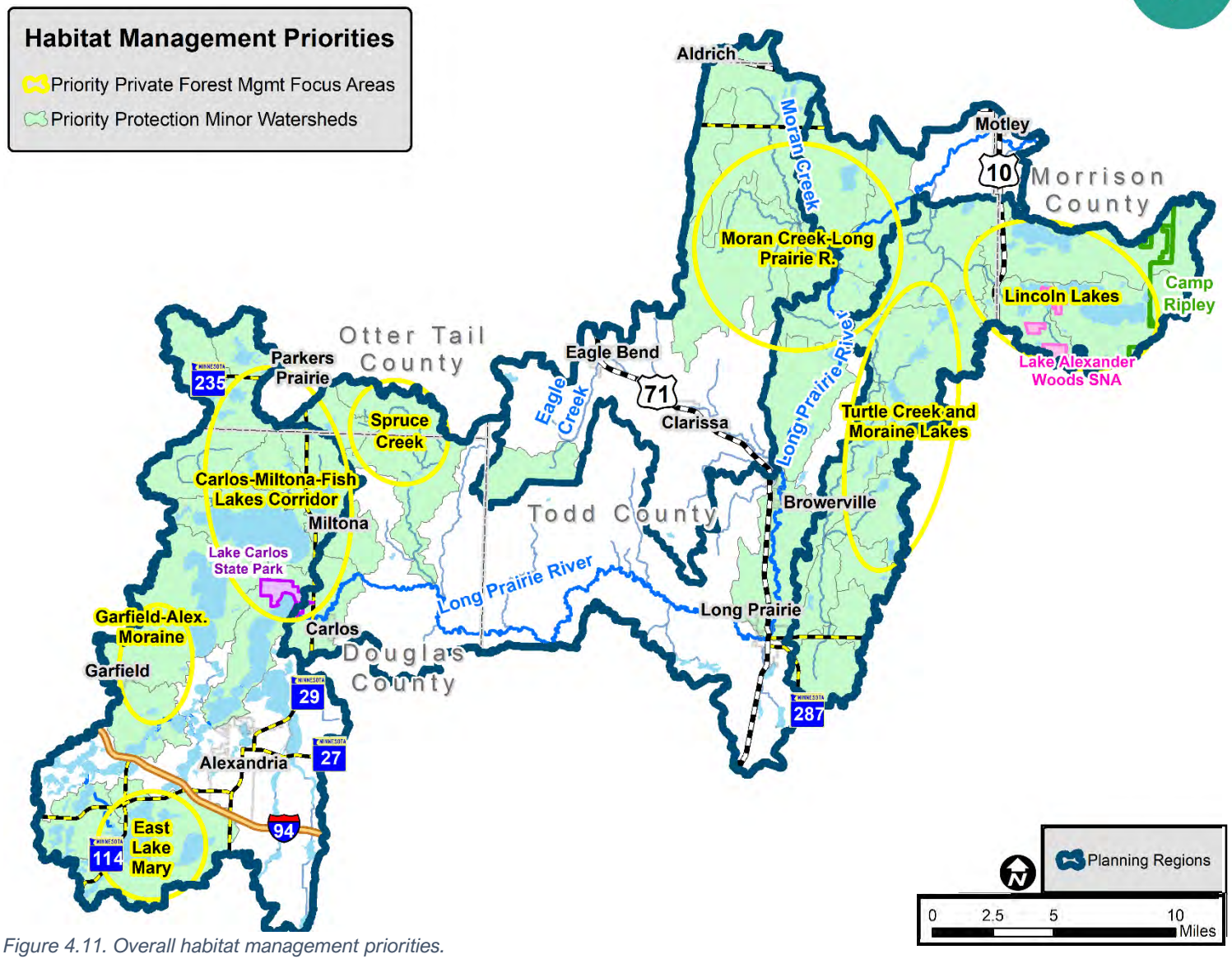


Figure 4.11. Overall habitat management priorities.

Section 5. Goals

Section 5.
Measurable Goals

Measurable goals identify the desired change in the resource of concern and indicate how progress will be measured during implementation. Goals are developed to address all the priority issues (Section 3), although it is not a one-to-one process as a single goal can address multiple issues. The quantity of how much progress implementation can make toward goals and changes to the resource condition are determined with models and data analysis. In this plan, HSPF, HSPF SAM, existing monitoring data, and eLINK data were used to determine the current condition of the resources and the potential improvements that can be made during implementation. HSPF and HSPF SAM are watershed models commonly used in planning.

The measurable goals were developed by the Technical Advisory Committee (TAC) over the course of three meetings. The TAC considered what they are currently measuring as indicators of progress in projects, what types of projects they commonly implement, and what types of projects landowners in the watershed are interested in implementing.

Once the primary measure was determined for each goal, additional benefits of the goal were also calculated (Table 5.1). For example, the primary measure for the Agricultural Lands Management goal is acres of management practices implemented; however, these practices also reduce phosphorus, nitrogen, and sediment to the Long Prairie River and sequester carbon. The calculations for determining these additional benefits are described in Appendix D.

This plan section describes each goal with the following items:

- Issues addressed
- Outcomes
- Infographic of the goal actions
- Desired future condition: the long-term goal that doesn't have an end date
- Short-term goal: the progress that will be made in 10 years
- Measuring: how the goal will be measured and the milestones for each Planning Region
- Stacking Additional Benefits: the other benefits of this goal, including water quality, habitat, and climate resilience (Table 5.1). Climate resilience is the capacity of the ecosystem to cope with stress from heavy rain and extreme heat yet still function.
- Focus Areas: where outreach and implementation will be concentrated for this goal

Table 5.1. Stacking additional benefits from implementing the 10-year plan goals.

Surface Water Quality Benefits	**Phosphorus**: the pounds of phosphorus reduced by implementing this goal.
	Sediment: the tons of sediment reduced by implementing this goal.
	Nitrogen: the pounds of nitrogen reduced by implementing this goal.
Habitat Benefits	**Habitat**: acres of forest protected by implementing this goal.
Climate Resiliency Benefits	**Storage**: the amount of water stored on the landscape or in the soil in acre-feet. One acre-foot is equivalent to a football field being covered in one foot of water.
	Carbon: the amount of carbon stored in existing forest and sequestered by implementing cover crops.

Goal: Agricultural Land Management

Agricultural production is vital to the economy in the Long Prairie River Watershed, generating over $175 million in crop sales annually. Animal and crop production supplies food, creates jobs, boosts investment in local businesses and generates tax revenue.

Much of the Long Prairie Watershed is made up of sandy soils and/or shallow water tables creating scenarios in which contaminants can quickly reach groundwater. The Minnesota Department of Agriculture has detected nitrate concentrations over acceptable state standards in some private wells within the watershed (Section 4, Figure 4.4).

Working with landowners to adopt BMPs such as nutrient management, rotational grazing, irrigation water management, cover crops, and reduced tillage will help enhance drinking water and surface water quality, preserve soil health and productivity, and minimize soil erosion. The graphic below is meant to describe some of these practices on the landscape.

Issues Addressed:

Drinking Water Quality

Groundwater Quantity

Soil Health

Field Erosion and Runoff

Changing Precipitation and Temperature Patterns

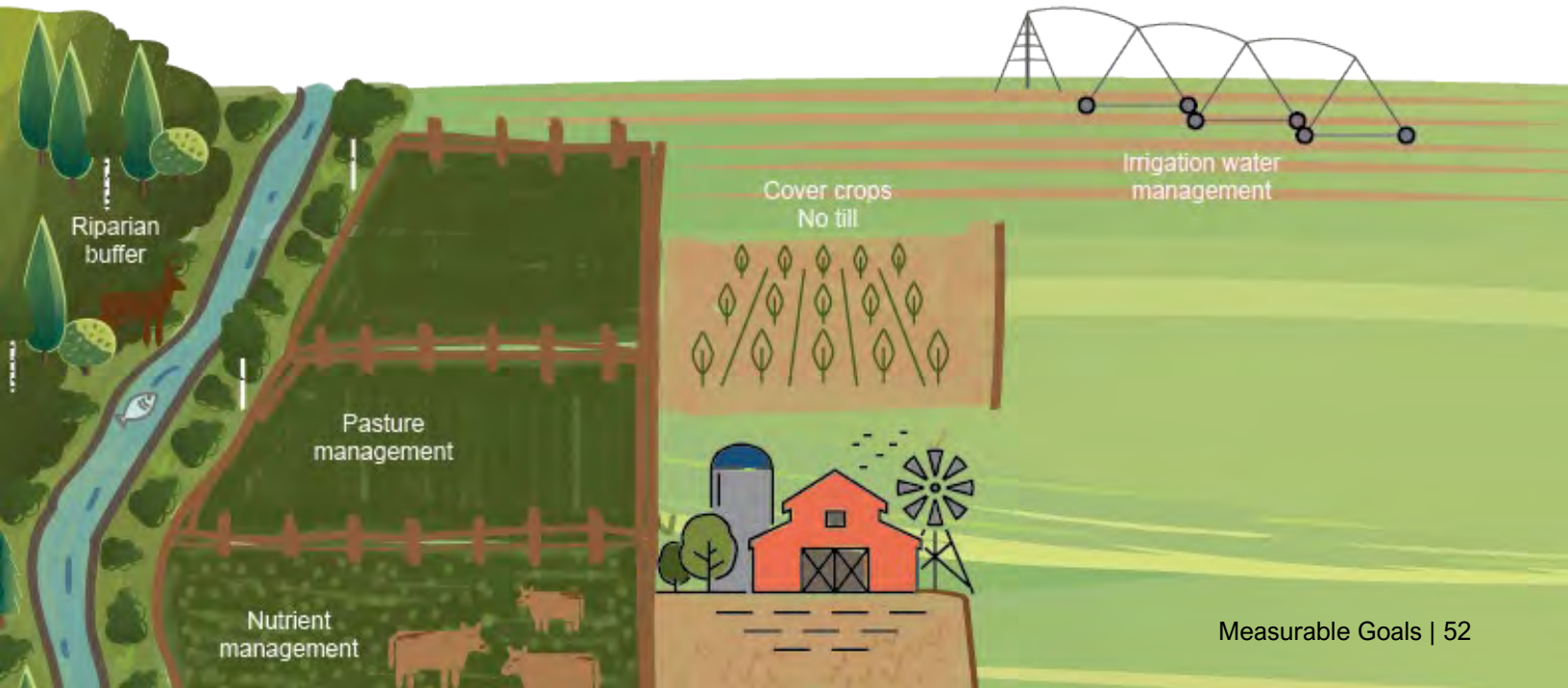
Goal Outcomes:

Drinking Water Protection

Reduced Nutrients Entering Streams and Lakes

Improved Soil Health

Groundwater Quantity Conservation



Measurable Goals

Desired Future Condition: BMPs on all agricultural land with nitrogen infiltration risk in the watershed (32,099 acres) and prevent impairment of the Long Prairie River.

10-Year Goal: Implement 11,090 acres (35% progress towards long-term goal) of agricultural BMPs to benefit surface and groundwater quality and quantity.

Measuring

Progress will be measured in acres of agricultural land management practices implemented in each Planning Region (*scenario is based on implementing approximately 45% cover crops, 45% nutrient management, and 10% structural agricultural practices by acre*). Acres with the highest risk for nitrogen infiltration into the groundwater will be targeted for implementation.

Planning Region	10-Year Milestone (acres)
Alexandria Lakes	2,246
Long Prairie River	7,402
Eagle/Moran Creeks	376
Turtle/Fish Trap Creeks	1,076
Total	**11,090**

Stacking Additional Benefits

Work toward this goal also makes progress towards reductions in phosphorus, sediment, and nitrogen to surface and groundwater; stores water in the soil; and sequesters carbon. For details see Appendix D.

Surface Water Quality Benefits	Phosphorus = 635 lbs/yr
	Sediment = 418 tons/yr
	Nitrogen = 9,998 lbs/yr
Climate Resiliency Benefits	Storage = 698 acre-feet
	Carbon = 337 tonnes

Focus Areas

Since this goal addresses surface and groundwater quality and quantity, focus areas for implementation incorporated one data set for each of these issues. Existing data on phosphorus runoff, nitrogen risk to groundwater, and groundwater appropriation permits were combined to determine the priority areas to focus work for this goal.

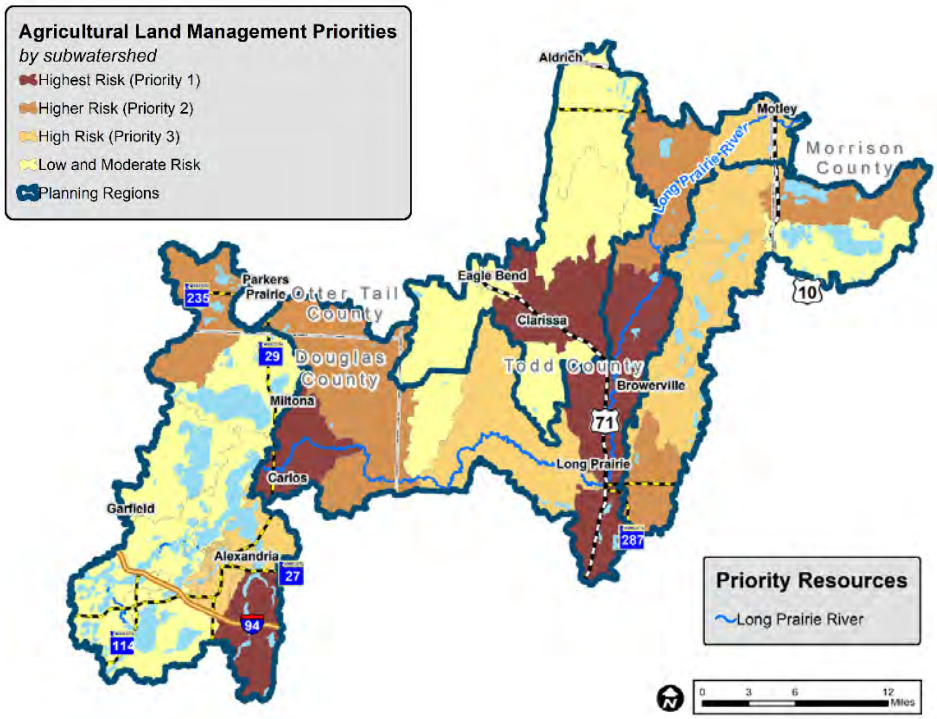


Figure 5.1. Focus areas for agricultural best management practices.

Goal: Forest Land Management

Forests are vital to life on earth. Besides providing habitat for animals and livelihoods for humans, forests also offer water quality protection, prevent soil erosion, infiltrate precipitation, and mitigate increasing temperature and precipitation trends. The Long Prairie Watershed is home to a mix of both evergreen and hardwood forests.

Forest management is a key tool to ensure forests maintain their quality. Publicly owned land is managed by resource professionals, but a large portion of forests are privately owned. Forest Stewardship Plans provide private landowners a guide on how to manage their forests, preserving the important ecological benefits of their property while meeting their goals and supporting the local wood products industry. Once a landowner has a Forest Stewardship Plan in place, they are eligible for tax incentives such as the Sustainable Forest Incentive Act (SFIA). Landowners looking for more permanent protection can establish a conservation easement.

Issues Addressed:

Upland Fragmentation and Conversion

Drinking Water Quality

Changing Precipitation and Temperature Patterns

Development Intensification

Biologically Significant Resource Protection

Wetland Protection

Outcomes:

Protect and Improve Forest Habitat

Protect Groundwater Quality

Protect Lake and Stream Water Quality

Store Water in the Ground and Reduce Runoff

Protect Carbon Storage in Trees

Measurable Goals

Desired Future Condition: To reach the Landscape Stewardship Plan (LSP) Goal for all priority subwatersheds: 29,590 acres protected (SFIA or easement).

10-Year Goal: Make 50% progress towards LSP goals for focus subwatersheds in Figure 5.2 (10,605 acres) to benefit habitat, groundwater, and surface water quality.

Measuring

Progress will be measured in acres of forest stewardship plans, SFIA and conservation easement practices implemented in each Planning Region. See the options explained in Figure 5.3 on the next page.

Planning Region	Milestone (acres)
Alexandria Lakes	1,700
Long Prairie River	2,582
Eagle/Moran Creeks	1,846
Turtle/Fish Trap Creeks	4,477
Total	**10,605**

Stacking Additional Benefits

Work towards this goal also makes progress towards protecting water storage in the forest soils, protecting carbon in the trees, and providing habitat.

Habitat Benefits	Habitat = 10,605 acres
Climate Resiliency Benefits	Protected Storage = 2,500 - 3,500 acre-feet
	Protected Carbon = 147,000 tonnes

Focus Areas

Focus subwatersheds were identified during the Landscape Stewardship Planning process (LSP Priorities). These LSP areas were narrowed down further into focus areas around Tier 1 Lakes, riparian areas, and groundwater recharge locations as shown in blue and green below.

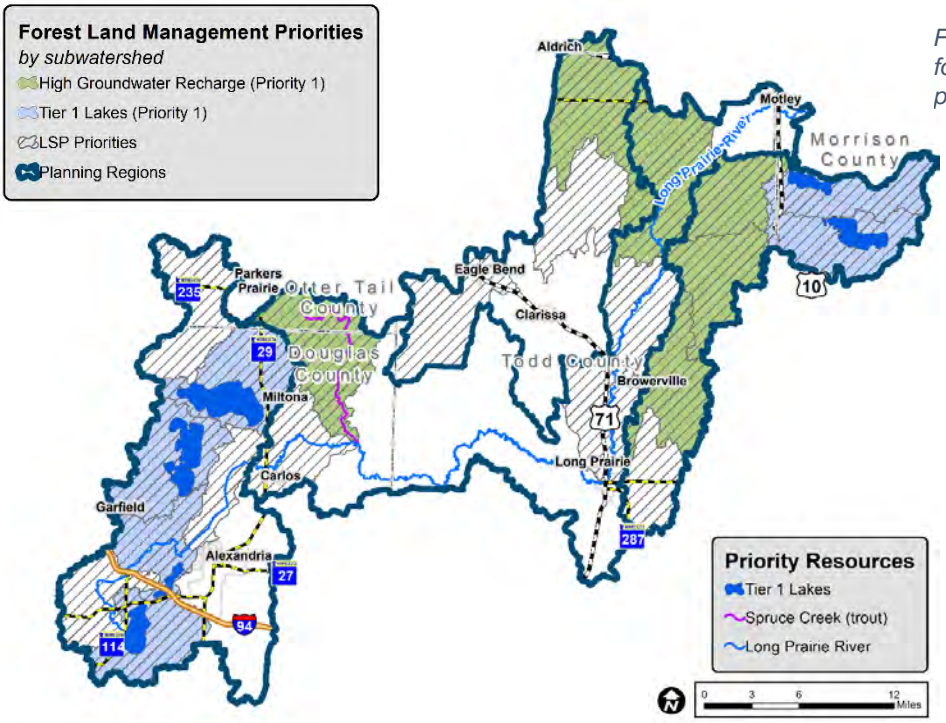


Figure 5.2. Focus areas for forest management and protection.

Private Forest Management Options

There is a wide spectrum of options for private forest landowners (Figure 5.3). Forest stewardship plans provide a way for the landowner to actively manage their forest, including generating income from the wood products. A forest stewardship plan is required for enrollment in SFIA and 2c programs. A forest isn't considered protected from future land use change in the long-term until it is enrolled in SFIA or a conservation easement.

Private forest landowners in the watershed will be incentivized to move from a forest stewardship plan to SFIA or a conservation easement. To be tracked towards the protection goal, SFIA, an easement, or land acquisition by a government entity is necessary.

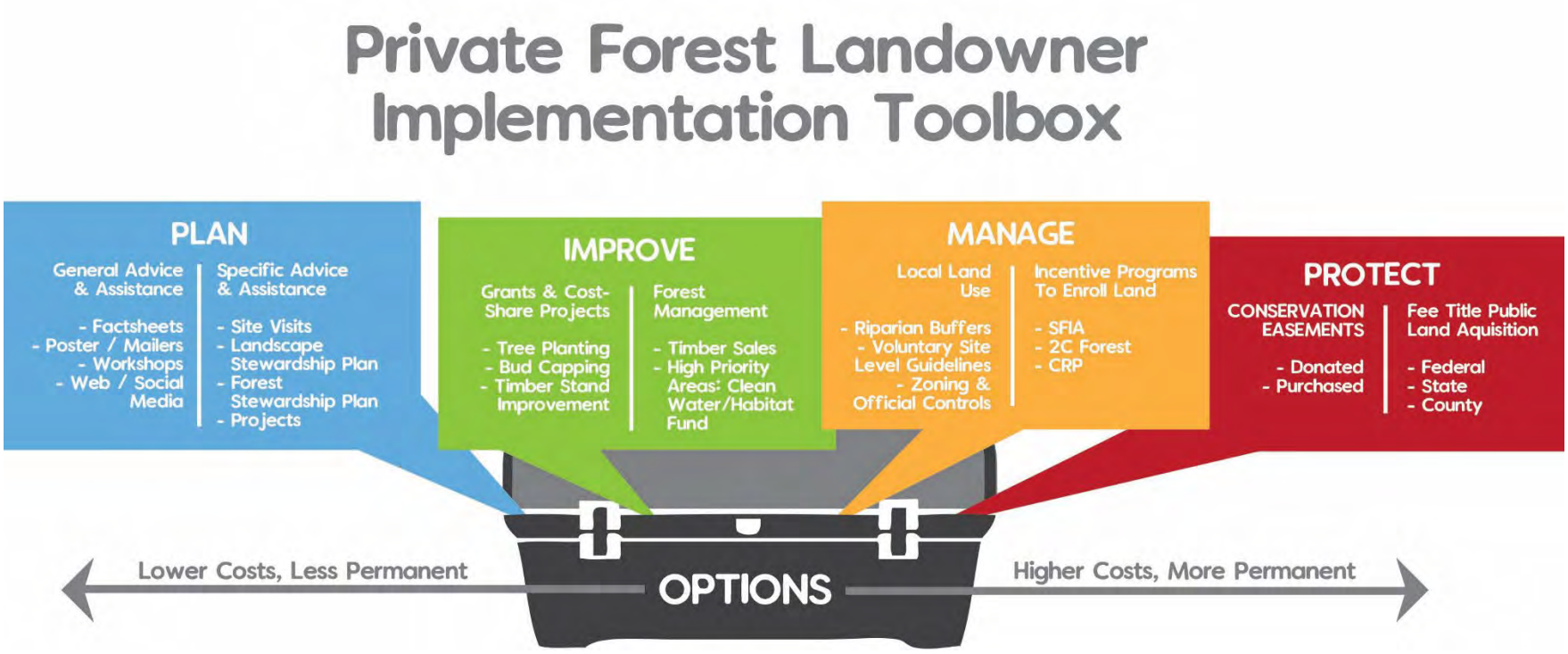


Figure 5.3. Focus areas for forest management and protection.

Goal: Phosphorus Reduction

The Long Prairie River Watershed has many regionally significant lakes that are important for fishing, tourism, and recreation. Shoreland development in Alexandria alone is valued at more than $2.3 billion. It is important to protect and improve the water quality in these lakes to maintain their recreational quality, fisheries, and property values.

This goal aims to reduce phosphorus loading to priority lakes, as phosphorus is the main nutrient in these lakes that fuels algae and plant growth. See Section 4 for the lake prioritization process. Implementation actions for reducing phosphorus include stormwater control projects, agricultural BMPs, local ordinances, septic system maintenance, and continued water quality monitoring. The graphic below is meant to describe some of these practices on the landscape.

In addition, the Agricultural Land Management Goal actions also will reduce phosphorus in the Long Prairie River. Therefore a phosphorus reduction goal is set for the Long Prairie River to protect it from future impairment.

Issues Addressed:

Stormwater Runoff

Development Intensification

Chloride

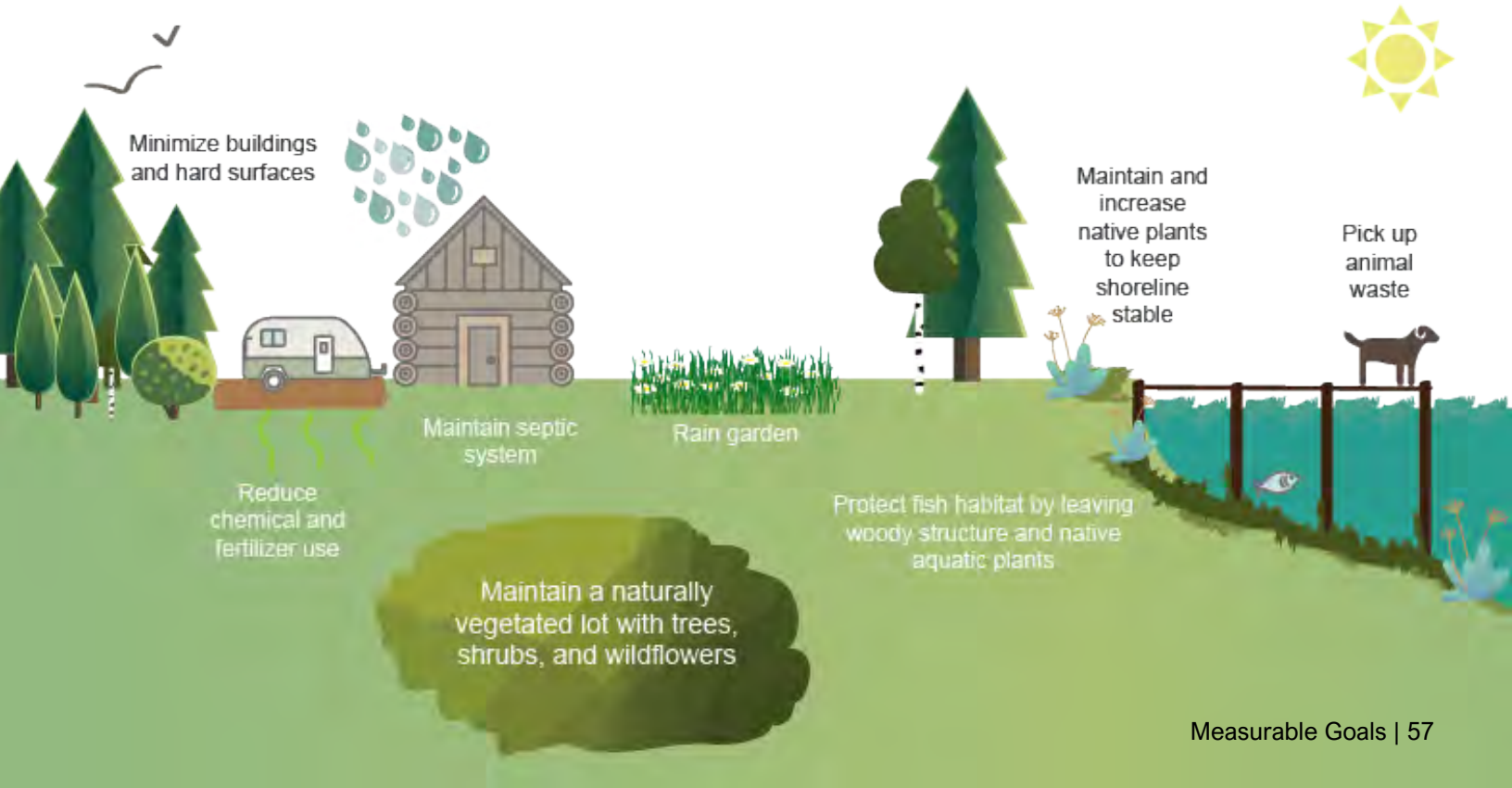
Outcomes:

Lakes Continue to be Fishable and Swimmable

Increase/maintain Lake Property Values

Protection of Sensitive Species Such as Wild Rice and Cisco

Protect the Long Prairie River from Impairment



Measurable Goals

Desired Future Condition: Reach the long-term phosphorus reduction goal for priority lakes (Table 5.1) and protect the Long Prairie River from impairment.

10-Year Goal: Make 50% progress towards the long-term goal for lakes and reach the Long Prairie River Protection goal (map below).

Measuring

The long-term goal was determined by running a modeling scenario (HSPF SAM) to see what the maximum reduction was if all the crop and urban land in the lake's drainage area had BMPs installed. Progress in the short-term goal will be measured in pounds of phosphorus reduced to each priority lake and the Long Prairie River based on project estimates. For a table of goals for each lake see Table 5.1 on the next page.

Stacking Additional Benefits

Reducing phosphorus also makes progress towards reducing algae and improving lake and stream water clarity.

Surface Water Quality Benefits	One pound of phosphorus can produce 500 pounds of algae.

Focus Areas

The focus lakes for this goal were determined through a prioritization process in Section 4. Tier 1 lakes and the Long Prairie River will be the first focus, and Tier 2 lakes the second focus.

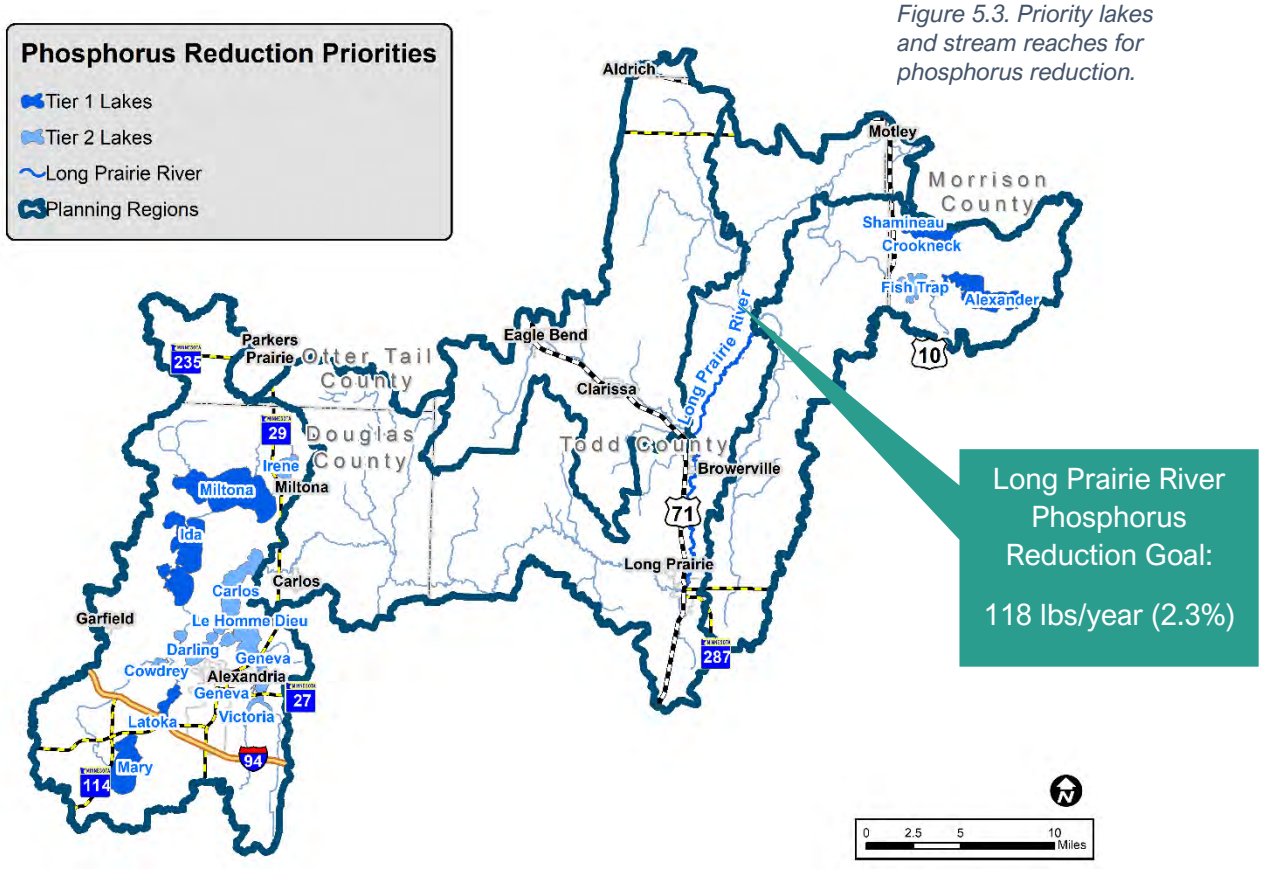


Figure 5.3. Priority lakes and stream reaches for phosphorus reduction.

Individual Lake Goals

The goals for each lake (Tier 1 and Tier 2 lakes) were determined by running a modeling scenario to see the best possible phosphorus reduction to the lake if all the agricultural and urban lands around the lake had BMPs installed (Long-Term Load Goal Reduction, Table 5.1). Some lakes, such as Alexander and Fish Trap, already have very low phosphorus concentrations and a mostly forested watershed, therefore major reductions are likely not feasible. The management approach for these lakes is to protect the existing forest around the lake (Forest Management Goal). The lakes in the Alexandria Area have good potential for measurable phosphorus reductions. Lakes that are not in Table 5.1 can be assisted as opportunities arise.

Table 5.1. Individual lake phosphorus reduction goals (HSPF SAM). These goals include upstream reductions.

Lake	Tier	Management Approach	Current P Load [lbs/yr]	Long-Term Load Goal Reduction [lbs/yr] (% Reduction)	Short-Term Load Goal Reduction [lbs/yr]	W:L Ratio	BMP Focus
Alexander	1	**Protect**	852	29 (3.4%)	**15**	5	Nearshore
Shamineau	1	**Protect**	1,265	63 (5%)	**32**	9	Nearshore
Miltona	1	**Enhance**	6,268	481 (7.7%)	**241**	8	Nearshore
Latoka	1	**Enhance**	476	49 (10.4%)	**25**	3	Nearshore
Ida	1	**Enhance**	7,931	463 (5.8%)	**240***	15	Nearshore
Mary	1	**Enhance**	2,850	285 (10%)	**143**	7	Nearshore
Fish Trap	2	**Protect**	4,338	5 (1%)	**5**	16	Nearshore
Irene	2	**Enhance**	930	50 (5.3%)	**25**	10	Nearshore
Brophy	2	**Enhance**	5,640	132 (2.3%)	**66**	134	Watershed
Cowdry	2	**Enhance**	7,816	93 (1.2%)	**47**	465	Watershed
Darling	2	**Enhance**	12,718	283 (2.2%)	**142**	109	Watershed
Carlos	2	**Enhance**	13,707	294 (2.1%)	**147**	60	Watershed
Louise	2	**Enhance**	2,935	94 (3.2%)	**47**	319	Watershed
Geneva	2	**Enhance**	2,076	207 (10%)	**104**	29	Mix
Victoria	2	**Enhance**	3,614	418 (11.6%)	**209**	38	Mix
Le Homme Dieu	2	**Enhance**	7,135	471 (6.6%)	**236**	19	Mix
Crookneck	2	**Enhance**	41	1 (0.6%)	**1**	2	Nearshore
Winona**	2	**Restore**	4,274	55-62%	**213**	16	Nearshore

**Goal from the County Ditch 23 Wetland Project.*
***Winona is the City of Alexandria's priority*

BMP Focus | Watershed: Lake Ratio (W:L)

The watershed to lake ratio (W:L) can be used to determine where to focus BMPs. Lakes with a small W:L have a small drainage area and therefore a nearshore focus. Lakes with a large W:L have many lakes upstream and a watershed focus.

- Nearshore (0-16): focus BMPs along the shoreline and in the direct drainage area to the lake.
- Mix (17-59): focus BMPs along the shoreline and upstream in the watershed.
- Watershed (>60): focus BMPs upstream in the watershed.

Goal: Drinking Water Protection

Safe drinking water is imperative to human health. This goal aims to protect public and private drinking water sources in the watershed, DWSMAs, and Non-Community Public Water Supplies.

Unused wells that are not properly sealed can pose a safety, health, and environmental threat to the community. Sealing these wells protects the groundwater from contamination. Other implementation activities aimed at protecting groundwater include well monitoring and outreach to private landowners, upgrading noncompliant septic systems, protecting DWSMAs through land management practices that keep continuous vegetative cover on the landscape and minimize contaminants reaching the groundwater, protection of drinking water source areas from hazardous spills, and the future testing of any emerging contaminants.

In addition, the Agricultural Land Management Goal actions aim to reduce nitrogen in the groundwater, and the Forest Management Goal actions aim to protect groundwater quality.

Issues Addressed:

Drinking Water Quality

Goal Outcomes:

Safe Drinking Water

Measurable Goals

Desired Future Condition: Drinking water in the watershed to be safe for consumption.

10-Year Goal: Seal 20 wells per year watershed-wide and implement agricultural BMPs and land protection in the Clarissa DWSMA.

Measuring

The short-term well-sealing goal was determined using eLINK data to see what has been implemented in the past 10 years. Progress will be measured in wells sealed per year. Acres of BMPs and protection practices in DWSMAs can be guided by land use within the DWSMA (Figure 5.4).

	10-Year Milestone
Watershed Total	200 wells sealed
Clarissa DWSMA	2 acres of agricultural BMPs and land protection

Stacking Additional Benefits

Other goals in this plan also aim to enhance and protection drinking water:

- The Agricultural Land Management goal includes nutrient management and irrigation water management to reduce nitrate reaching the groundwater.
- The Forest Management goal includes forest protection in high groundwater recharge areas to protect groundwater quality.

Focus Areas

Sealing unused wells is a priority watershed-wide. DWSMA land management and protection is a priority in Clarissa, which has high vulnerability, and the DWSMAs below with moderate vulnerability.

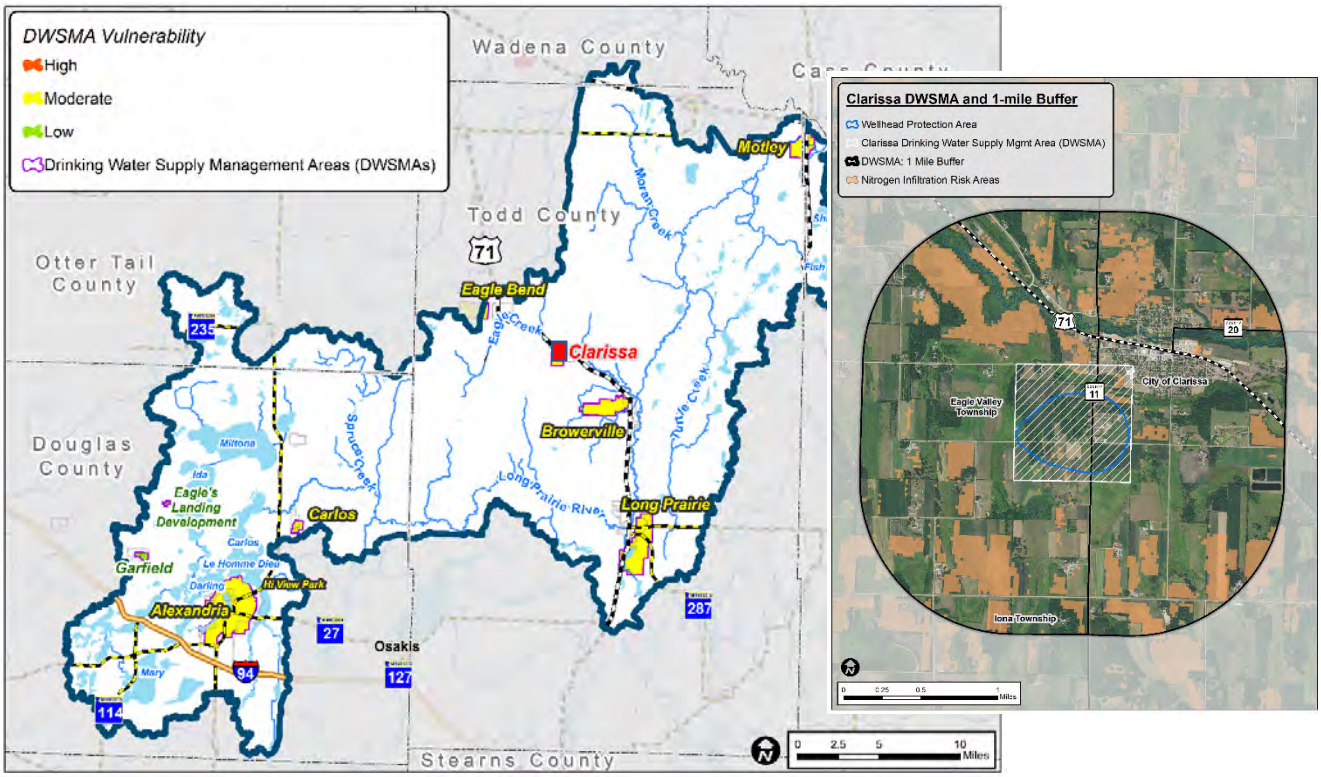


Figure 5.4. DWSMA vulnerability, and nitrogen risk areas for BMPs in and around the Clarissa DWSMA.

Goal: Bacteria Reduction

E. coli bacteria exists in the guts of warm-blooded animals such as livestock, humans, birds, and pets. When *E. coli* runs off the landscape into lakes and streams, it can make humans, pets and livestock sick.

Water quality monitoring has identified three streams in the watershed that are impaired (over the state standard for *E. coli* concentration in the water).

This goal aims to implement bacteria management projects in areas with impairments to work towards decreasing the amount of *E. coli* in these impaired streams. Bacteria management projects include manure management BMPs, pasture rotation, fencing cattle away from streams (while providing a new water source), closing unused manure pits, manure incorporation, land application, carcass disposal, septic system inspections and management, and continued monitoring. Reducing bacteria can also protect groundwater quality and human health. The graphic below is meant to describe some of these practices on the landscape.

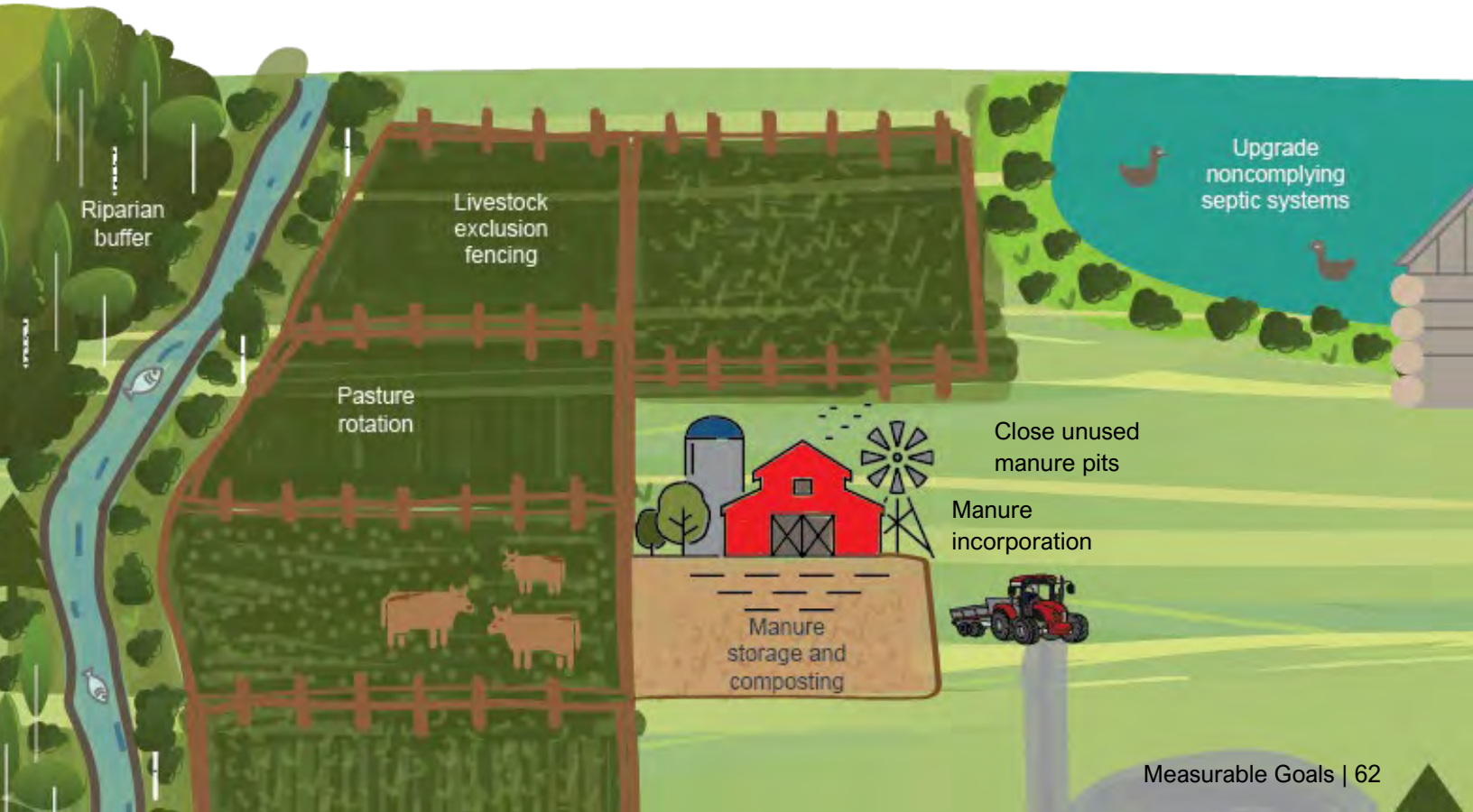
Issues Addressed:

Animal Agriculture (*E.coli* Impairments)

Outcomes:

Safe Drinking Water

Reduced Pollutants Entering Streams and Lakes



Measurable Goals

Desired Future Condition: Best management practices at all animal operations within 500 feet of streams and lakes, 100% compliance with feedlot rules, and upgrade noncompliant septic systems.

10-Year Goal: Implement 28 bacteria reduction projects to address bacteria sources along impaired waters, 90% compliance with feedlot rules, and upgrade noncompliant septic systems.

Measuring

The short-term goal was determined using eLINK data to see what has been implemented in the past 10 years and then discussions with the Advisory Committee resulted in decisions as to what is reasonable to implement in the next 10 years. Monitoring and assessment will begin in 2022 to determine progress towards this goal.

Planning Region	Milestone (# of projects)
Alexandria Lakes	4
Long Prairie River	9
Eagle/Moran Creeks	13
Turtle/Fish Trap Creeks	3
Total	**28**

Stacking Additional Benefits

Work toward this goal also makes progress towards reductions in phosphorus, sediment, and nitrogen to surface and groundwater.

Surface Water Quality Benefits	Phosphorus reduction
	Sediment reduction
	Nitrogen reduction

Watershed-wide Goal:	250 septic system upgrades/year

Focus Areas

Focus areas for potential projects were determined by mapping feedlots, pasture land use, and monitoring sites showing *E.coli* data (2011-2012). Projects will be focused within 500 feet of priority streams. "Restore" sites are impaired and "Enhance" sites had some elevated *E.coli* levels but are not listed as impaired. For more details and bacteria data, see Appendix D.

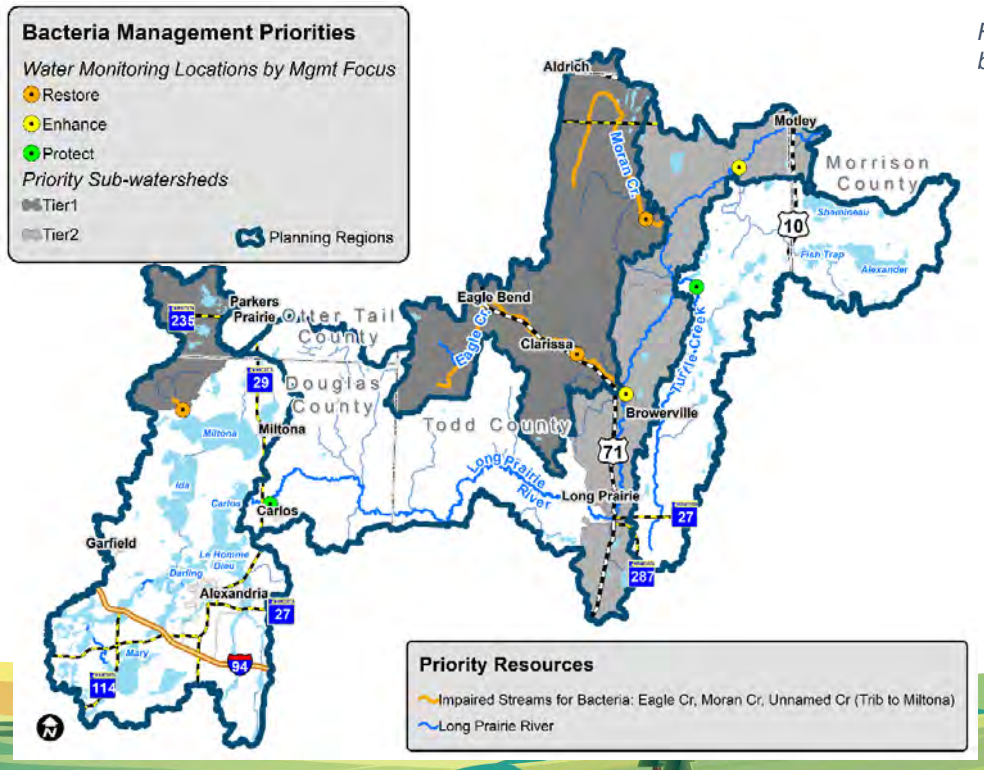


Figure 5.5. Focus areas for bacteria reduction projects.

Goal: Runoff Reduction

Human alteration of the landscape, including draining wetlands, channelizing drainage, and removing forests and perennial vegetation have caused precipitation to runoff more in present times than pre-European settlement in Minnesota. However, flow duration curve data from Long Prairie River Watershed show that peak flow events and erosive stream flows have not changed over time in this area. Some possible reasons for this could include the natural water storage in the lakes at the headwaters of the watershed (Alexandria), the more than 80% of remaining wetlands from pre-European settlement, and the permeable sandy soils along the Long Prairie River.

To build resiliency and keep up with the increasing precipitation trend in the watershed, additional water storage is needed in the future for food retention and runoff reduction. Increasing storage is expensive, and likely not feasible everywhere due to land ownership. The activities in this plan aim to enhance the resiliency of the watershed to future changes. The graphic below illustrates some of the ways to protect and increase storage in the watershed. Protecting forests, native vegetation, and planting cover crops stores water in the soil and helps it infiltrate into the ground. Restoring wetlands stores water on the surface.

Issues Addressed:

Altered Hydrology

Wetland Protection

Changes in Precipitation and Temperature

Outcomes:

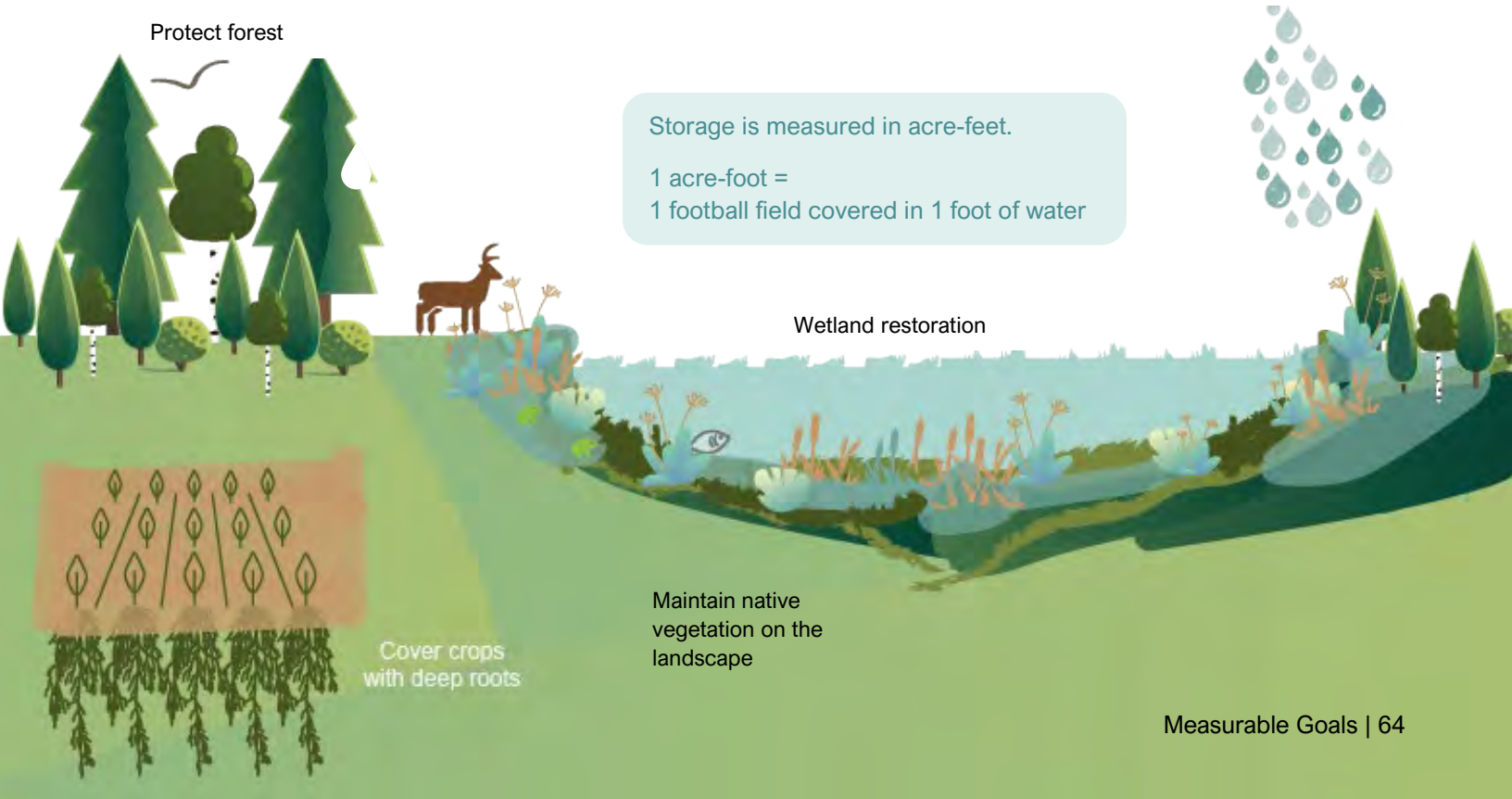
Store Increasing Future Precipitation

Prevent Increased Erosion in the Future

Protect Vulnerable Infrastructure

Mitigate Drought Effects

Soil Health



Measurable Goals

Desired Future Condition: Build resiliency and keep up with the increasing precipitation trend by adding 4,212 acre-feet of storage.

10-Year Goal: To make 25% or 1,053 acre-feet of storage progress towards the desired future condition.

Measuring

Progress will be measured in acre-feet of storage added in each Planning Region. Most of the short-term goal will be met by cover crops implemented in the Agricultural Land Management goal (698 acre-feet). The remaining will be met by wetland restoration and tree planting (355 acre-feet).

Planning Region	Milestone (acre-feet)
Alexandria Lakes	260
Long Prairie River	584
Eagle/Moran Creeks	141
Turtle/Fish Trap Creeks	68
Total	**1,053**

Stacking Additional Benefits

Reducing runoff in the watershed also reduces the amount of sediment, phosphorus, and nitrogen reaching streams and lakes. In addition, keeping forested areas forested protects current storage in the soil. This protected storage is the amount that would be lost if forest was cleared for development or agriculture in this watershed.

Climate Resiliency Benefits	Protected Storage from the Forest Goal = 2,500 - 3,500 acre-feet

Focus Areas

An analysis was done recently to characterize wetland loss in the watershed (BWSR Compensation Planning Framework, Appendix D). The areas with the most wetland loss will be the focus of future storage projects.

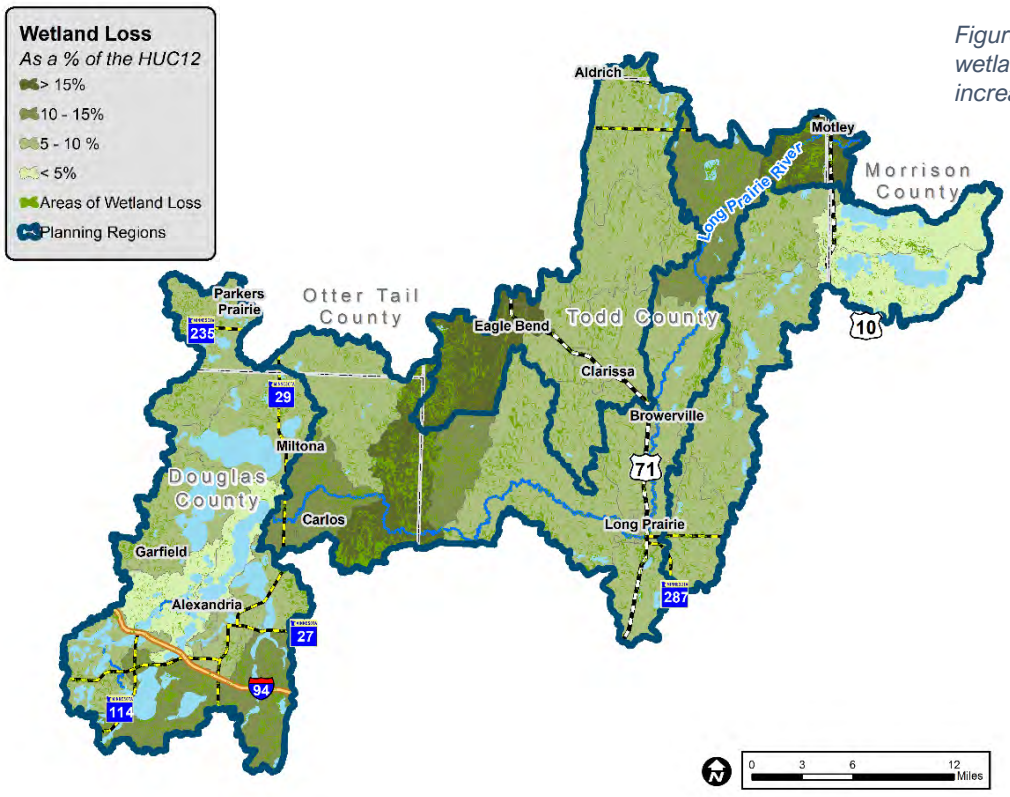


Figure 5.6. Focus areas for wetland restoration and increased water storage.

Overall Plan Benefits

With current funding available plus the new watershed-based funding that will be acquired upon completion of this plan, planning partners aim to achieve the following overall improvements in the watershed.

Table 5.2. Overall benefits from implementing this 10-year plan.

Surface Water Quality Benefits	**Phosphorus**: the pounds of phosphorus reduced by implementing all plan goals.	**2,333 pounds/year*; equivalent to:**  **1.2 million pounds of algae**
	Sediment: the tons of phosphorus reduced by implementing all plan goals.	**418 tons/year*; equivalent to:**  **42 dump trucks of sediment**
	Nitrogen: the pounds of nitrogen reduced by implementing all plan goals.	**9,998 lbs/year*; equivalent to:**  **2,500 bags of nitrogen fertilzer**
Habitat Benefits	**Habitat**: acres of forest protected by implementing all plan goals.	**10,605 acres; equivalent to:**  **7 Lake Shamineaus** **4 Lake Carloses**
Climate Resiliency Benefits	**Storage**: the amount of new water storage on the landscape or in the soil by implementing all plan goals.	**1,053 acre-feet; equivalent to:**  **1,000 football fields covered in 1 foot of water**
	Carbon: the amount of carbon stored and sequestered by implementing plan goals.	**147,337 tonnes; equivalent to:**  **Removing 116,404 gas vehicles driven for one year**

*These are reductions to the annual load of the waterbody.

Section 6. Implementation Schedule

Section 6
Targeted Implementation Schedule

The Targeted Implementation Schedule is the culmination of the planning process, bringing together the identification of issues in the watershed, the goals that planning partners created to make progress toward improving the issues, and the funding mechanisms and actions to help achieve those goals. The Targeted Implementation Schedule, or action table, lists actions that planning partners and local citizens will take and identifies where, when, and how these actions will be implemented over the course of this 10-year plan.

Progress toward plan goals depends on funding, with a variety of sources available to implement actions in the watershed. The primary purpose of the LPCWMP is to prioritize where actions will occur on the landscape so that they can have the greatest impact based on available funding. As a result, this plan organizes actions into three funding levels (Table 6.1). The Long Prairie Watershed Collaboration will be operating at Level 2 funding for the implementation of this plan.

Table 6.1. Funding levels for the Long Prairie Watershed.

Funding Level	Description
Level 1	Current Baseline Funding for the watershed for all programs.
Level 2	**Baseline + Watershed-Based Implementation Funding + Grants**
Level 3	Partner funding (NRCS, SFIA, CRP, Lessard Sams, TNC, DNR, MPCA)

The actions listed in the Targeted Implementation Schedule were determined by considering practices in existing local plans and what's currently being implemented in the watershed (Known Stewardship, see next page). The Targeted Implementation Schedule identifies who will complete each action, including plan partners, state agencies, federal agencies, and non-governmental organizations (NGOs). It is important to identify actions that other groups will complete, as it clarifies roles and recognizes the work of others: practices implemented by all entities contribute to overall benefits within the watershed.

The Long Prairie River
Photo credit: Luan Thomas-Brunkhorst

Known Stewardship

There are already a variety of actions that have been implemented in the watershed, including state and federally funded practices, the Conservation Reserve Program (CRP), and the Minnesota Agricultural Water Quality Certification Program. Figures 6.1 and 6.2 illustrate the extent of these programs in the watershed. Figure 6.2 illustrates current implementation of conservation practices in Long Prairie Watershed utilizing the Environmental Quality Incentives Program (EQIP) administered by the Natural Resource Conservation Service (NRCS) or eLINK, a system that tracks local conservation projects and grants, indicators and pollution benefits, accumulated grant funding over a period of time.

Ag Water Quality Certification

Conservation Reserve Program (CRP)

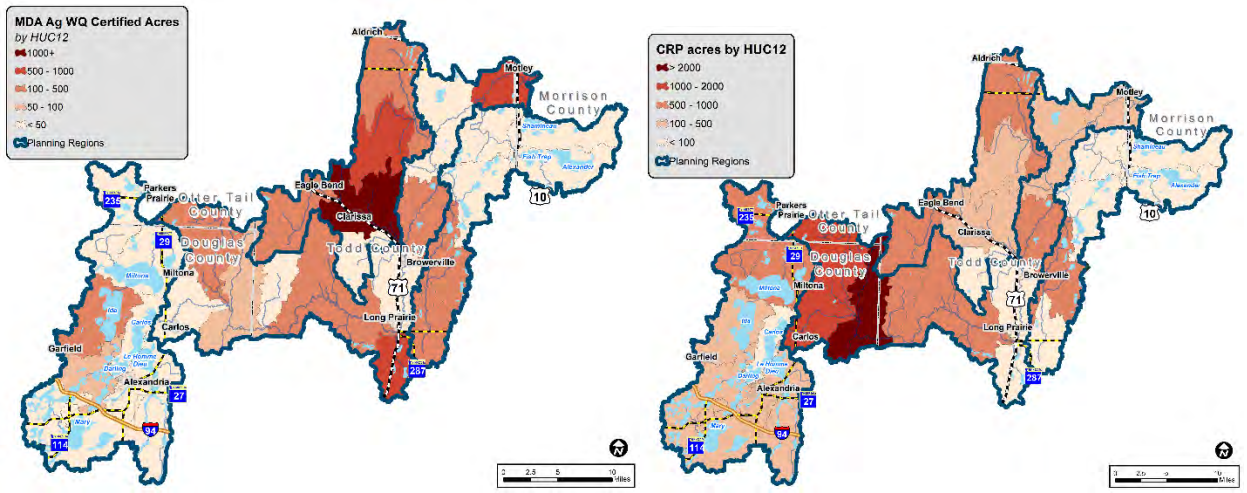


Figure 6.1. Locations of Ag Water Quality Certification and Conservation Reserve Program.

EQIP and e-LINK practices (2004-2020)

Well Sealing 370 wells	**Erosion Control** 77 structures	**Forestry Management** 323 acres
Pasture Management 21,200 acres	**Septic System Improvements** 103 systems	**Urban Stormwater Control** 27 structures
Manure Management and Feedlot Practices 15,400 acres	**Soil Health Practices** 20,200 acres	**Irrigation Water Management** 1,694 acres

Figure 6.2. Conservation practices implemented with cost share by local governments, partners, and landowners in the Long Prairie Watershed (2004-2020).

Targeting Practices

Targeting includes where projects should be done and with whom. For the Long Prairie River Watershed, targeting data is available to the individual parcel level for use in outreach. These data sets are meant to target the root causes of watershed issues. For example, agricultural land management practices are targeted to where nitrogen infiltration has the most risk to groundwater. See Appendix D for more information on these targeting analyses.

Table 6.2. Targeting data for each plan goal.

Goal	Targeting Data	Scale
Agricultural Land Management	Nitrogen Infiltration Risk: where there is the most risk of nitrogen infiltrating to the groundwater.	Parcel
Forest Management	Risk Adjacency Quality (RAQ) maps: where privately-owned forests have the best impact on water and habitat quality.	Parcel
Phosphorus Reduction	Phosphorus runoff analysis: where the most phosphorus is running off the landscape into lakes (both urban and agriculture)	Catchment
Drinking Water Protection	Well sealing Watershed-wide Drinking Water Supply Management Areas	Parcel
Bacteria Reduction	Within 500 feet of streams: where there is the most risk of bacteria entering the stream (500 ft is based in impact distance from pit closures).	Parcel
Runoff Reduction	Restorable wetlands analysis: where there is suitable soil for wetland restoration.	Parcel

Implementation

The numbers, cost, and locations of practices in the Targeted Implementation Schedule represent a best-case scenario for planning. Due to voluntary participation, field verification, and funding availability, prioritized projects may not be feasible, in which case the next highest priority project will be targeted. In addition, projects may emerge that were not identified in the Targeted Implementation Schedule. These projects will still be pursued if environmental and economic benefits are comparable to those identified in the Targeted Implementation Schedule.

A variety of factors will ultimately determine where implementation occurs, including but not limited to the following:

- Voluntary participation by landowners and residents
- Field verification of practice type and location
- Amount of funding available for implementation
- New data on resource conditions
- Emerging practices
- Practices/projects ready to implement
- Effectiveness of education and outreach and research initiatives

Where to Work First

The long-term goals detailed in Section 5 represent the desired future condition for the LPR Watershed and its resources given time, funding, and capacity. The short-term goals represent what is possible to accomplish in 10 years, and that means putting efforts and funding toward areas that need it most.

To prioritize where to work first overall, the focus areas for the goals were stacked together to determine overall watershed priorities. The outcome is shown below in Figure 6.3 and indicates where outreach and funding will be focused in the first five years of plan implementation.

A scoring sheet will be developed by the Steering Committee that has criteria to use in selecting projects and dispersing funds in implementation. Projects that address priority issues in priority areas along with the best pollutant reductions and cost effectiveness will be prioritized.

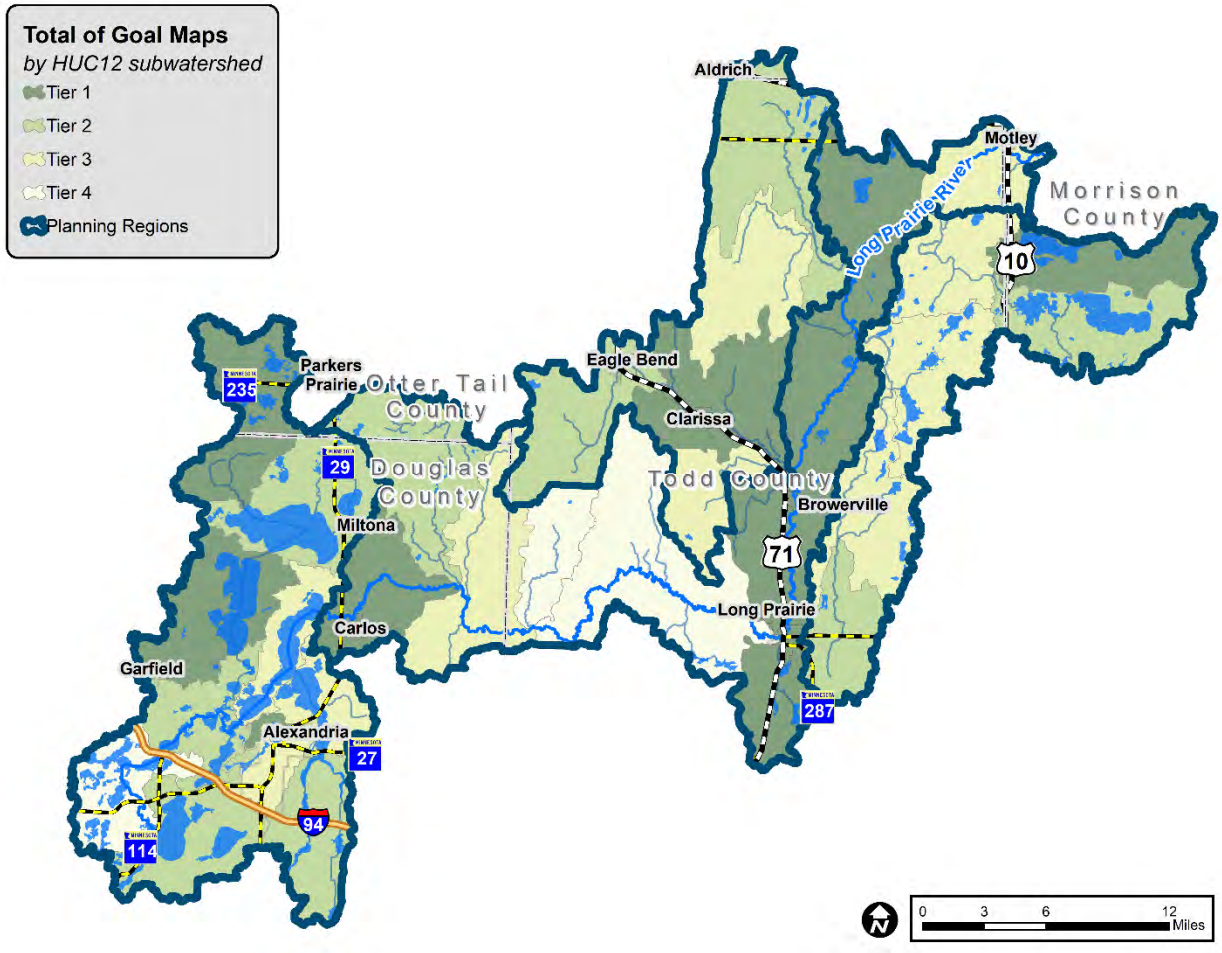


Figure 6.3. Prioritization of where to work first based on plan goals.

Implementation Programs

The implementation of this plan will take coordination between watershed partners and multiple funding sources. Implementation is a balancing act between planned landscape management ("Manage It"), protected lands maintenance ("Protect It"), constructed environmental enhancements ("Fix It"), and "Outreach & Information" (Figure 6.4). In the LPR Watershed, the balance is very even between programs. Each action in the Targeted Implementation Schedule has an Implementation Program icon associated with it.

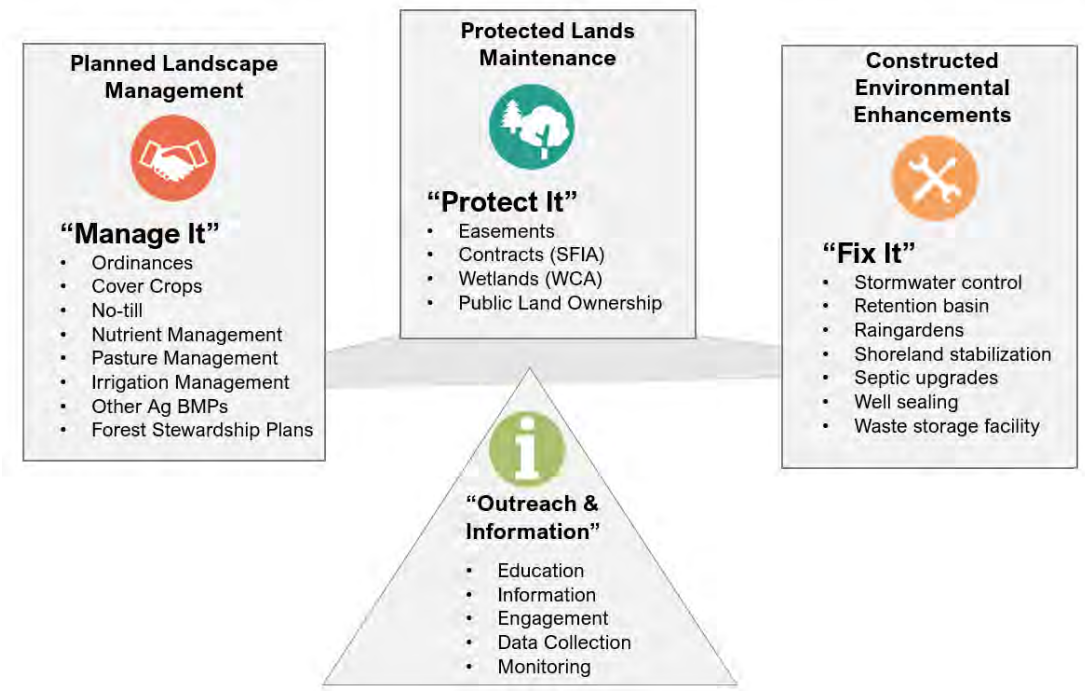


Figure 6.4. Implementation Programs in the LPCWMP.

Targeted Implementation Schedule

The Targeted Implementation Schedule is presented in five tables in the next few pages. Actions that are tailored to specific planning regions are presented in the planning region tables and watershed-wide actions are in the their own table.

1. Alexandria Lakes Area Planning Region
2. Long Prairie River Planning Region
3. Eagle/Moran Creeks Planning Region
4. Fish Trap/Turtle Creeks Planning Region
5. Watershed-Wide

The costs of the actions in these tables includes the full cost of the practice plus an additional 25% for staff time for project development (5%), engineering, and design of the practice (20%). Progress towards the Agricultural Lands Management goal will be tracked by acres of cover crops, nutrient management, irrigation water management, and acres treated by structural agricultural practices such as water and sediment control basins. If more than one practice is implemented on the same acres, more benefits could be reported, but the acres treated doesn't change.

Alexandria Lakes Area Planning Region Implementation Table

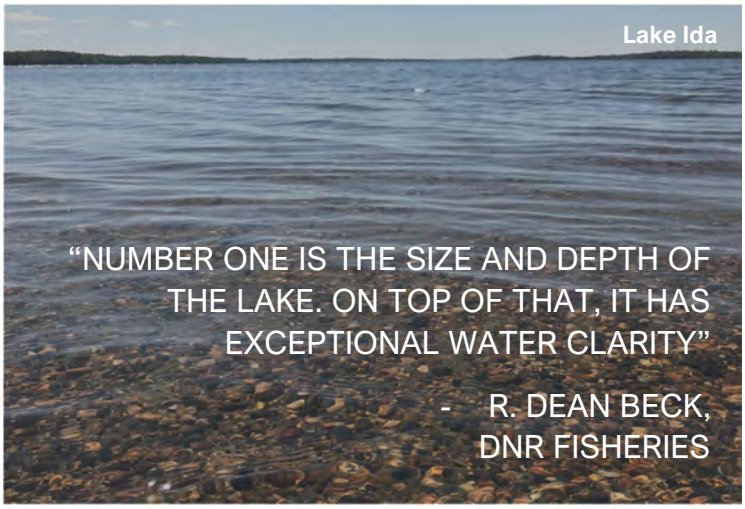
Action	Program	Priority Resources	10-Year Output**	Measurable Goals: Agricultural Land Management	Drinking Water Protection	Bacteria Reduction	Forest Land Management	Runoff Reduction	Lake Phosphorus Reduction	Responsibility/Partners (Bold = Lead)	Timeline: 2023-2024	2025-2026	2027-2028	2029-2030	2031-2032	Estimated Costs: Estimated Annual Cost	Estimated Total 10-Year Cost
Agricultural Land Management Practices (i.e. cover crops, irrigation water management, nutrient management, pasture management, perennial agriculture, filter strips, water and sediment control basins)		Tier 1 Lakes Long Prairie River Groundwater	4,492 acres	●	○	○		○	●	**Douglas SWCD**, **West Otter Tail SWCD**, **NRCS**, MDA	●	●	●	●	●	**$47,600**	**$476,000**
Bacteria Reduction Projects (i.e. waste pit closures, manure storage, livestock fencing and crossing, agricultural waste systems, manure management plans, land application)		Unnamed Creek	4 projects		○	●			○	**NRCS, Douglas SWCD**, **West Otter Tail SWCD**, MPCA			●	●	●	**$8,750** $8,750	**$87,500** $87,500
Storage Practices (i.e. wetland restoration, floodplain connectivity, cover crops)		Tier 1 Lakes	230 acre-feet		○			●	○	**USFWS, Douglas SWCD**, **West Otter Tail SWCD**, **NRCS**, DNR	●	●	●	●	●	**$13,655**	**$136,550**
Forest Stewardship Plans		Tier 1 Lakes	1,700* acres, 28 plans		○		●	○	○	**Douglas SWCD**, BWSR, TNC, DNR, Private Foresters		●	●	●	●	**$8,500**	**$85,000**
Forest and Land Protection (SFIA, 2c, Easements, acquisition)		Tier 1 Lakes	1,700* acres		●		●	○	○	**Douglas SWCD**, **TNC,** BWSR, DNR, cities, counties, MDH, MPCA, BWSR (RIM)		●	●	●	●	$201,470	$2,014,700
Urban Runoff Control* ** (i.e. storm sewer maintenance, street cleaning, construction stormwater treatment, rain gardens, green infrastructure)		Tier 1 Lakes	1,519 pounds of phosphorus**		○			○	●	**City of Alexandria,** Douglas SWCD, Douglas County, Lake Associations		●	●	●	●	**$184,500**	**$1,845,000**
Chloride Management (i.e. road salt/dust suppressant ordinances, explore alternatives for water softeners, etc.)		Tier 1 Lakes	TBD		○				●	**City of Alexandria**, Douglas SWCD, Douglas County, ALASD	●	●	●	●	●	Level 3	Level 3, costs unavailable
Buffer and Shoreline Management (i.e. shoreline restoration, riparian buffers, riparian enhancement)		Tier 1 Lakes	30 projects				○	○	●	**Douglas SWCD**, **Otter Tail SWCD**, Douglas County, Otter Tail County, West Otter Tail SWCD, DNR	●	●	●	●	●	**$12,000**	**$120,000**
Lake and Fisheries Management (i.e. Management internal phosphorus loading, carp control)		Lake Winona	213 pounds of phosphorus						●	**City of Alexandria**, **Douglas SWCD**, Douglas County, Lake Associations, **ALASD**, DNR			●	●	●	Level 3	Level 3, costs unavailable
City of Alexandria Conservation Project (13 mile trail through Alexandria and stormwater control)		Tier 1 and 2 Lakes	TBD during project design				○	●	●	TNC, **City of Alexandria**, Douglas County, Douglas SWCD	●	●				$2,000	$20,000
										Total Level 2 Funding Scenario (Base+WBIF+Grants):						**$275,005**	**$2,750,050**
										Total Level 3 Funding (Partner Projects):						$212,220	$2,122,200

* these actions all apply to the same acres.
**per lake goal numbers are in the Goals section, page 59
***The City of Alexandria is currently doing a subwatershed Assessment that can be used to target projects

● Primary Goal this action will address

○ Secondary Goal this action will address

Lake Ida Improvement Project



Lake Ida is unique among Douglas County's 400-some lakes. It's cold enough to support tullibee – fish that feed walleye and northern. Its irregular shoreline supports 839 parcels. With an estimated market value of nearly $245 million, their combined tax capacity exceeds $2.3 million.

Lake Ida is at risk for excess phosphorus, which feeds the algae that turns lakes green. In fall of 2017, the Douglas SWCD launched an investigation into what's causing phosphorus loading. Since then, the Douglas SWCD has acquired two BWSR grants totaling $1,022,098 to design and work on solutions to improve Lake Ida's water quality. Comprehensive solutions include ditch modifications, agricultural practices, wetland management, shoreline restorations, and rain gardens. This project will work to ensure Lake Ida can be enjoyed by future generations.

Aquatic Invasive Species Prevention and Management

The Alexandria Area lakes were some of the first outside the Twin Cities to be infested with zebra mussels. Since then, Douglas County has been on the forefront of AIS prevention and management. Since 2014, Douglas County has received funds annually from the state that is dedicated for AIS prevention activities. Much of the money in the AIS budget goes to pay for watercraft inspectors, advertising, education, monitoring and decontamination unit maintenance, and field supplies. Watercraft inspectors go to lake accesses and not only complete inspections and decontamination of watercraft, but they also talk with boaters and educate them on AIS. They show them how to do self-inspections and answer any questions boaters might have. In addition, AIS funds have been used for aquatic invasive plant surveys. To date, 45 lakes in Douglas County have been surveyed. There is a program for lake associations to help eradicate invasive plants if need be. The county also reserves some funding every year for rapid response to any new infestations. For instance, if there were an invasion of starry stonewort, those reserve dollars would help pay for eradication measures.

Long Prairie Planning Region Implementation Table

Action	Program	Priority Resources	10-Year Output	Measurable Goals: Agricultural Land Management	Drinking Water Protection	Bacteria Reduction	Forest Land Management	Runoff Reduction	Lake Phosphorus Reduction	Responsibility/Partners (Bold = Lead)	Timeline: 2023-2024	2025-2026	2027-2028	2029-2030	2031-2032	Estimated Costs: Estimated Annual Cost	Estimated Total 10-Year Cost
Agricultural Land Management Practices (i.e. cover crops, irrigation water management, nutrient management, pasture management, perennial agriculture, filter strips, water and sediment control basins)		Long Prairie River, Groundwater	14,803 acres	●	○			○	○	**Todd SWCD**, **Douglas SWCD, NRCS**, Soil Health Coalition, RCPP Irrigation	●	●	●	●	●	**$156,900**	**$1,569,000**
Precision Irrigation Technology		Long Prairie River, Groundwater	2 units	●	○					**Todd SWCD,** Five-County Irrigation Collaboration, RCPP Irrigation Team			●	●	●	**$10,000**	**$100,000**
Bacteria Reduction Projects (i.e. waste pit closures, manure storage, livestock fencing and crossing, agricultural waste systems, manure management plans, land application)		Long Prairie River	9 projects		○	●			○	**NRCS, Todd SWCD**, **Douglas SWCD,** Todd County, CRSL	●	●	●	●	●	**$22,500** $22,500	**$225,000** $225,000
Storage Practices (i.e. wetland restoration, floodplain connectivity, cover crops)		Long Prairie River	555 acre-feet		○			●	○	**Todd SWCD**, **USFWS, NRCS, Douglas SWCD,** DNR	●	●	●	●	●	**$32,918**	**$329,180**
Forest Stewardship Plans		Long Prairie River	2,582* acres, 43 plans		○		●	○	○	**Todd SWCD, Douglas SWCD, CRSL,** DNR, BWSR, Private Foresters		●	●	●	●	**$12,910**	**$129,100**
Forest and Land Protection (i.e. SFIA, 2c, Easements, acquisition)		Long Prairie River, Spruce Creek	2,582* acres		○		●	○	○	**Todd SWCD, BWSR, TNC, Douglas SWCD, CRSL, State of MN**		●	●	●	●	$119,870	$1,198,700
Forestry BMPs and restoration		Tier 1 Lakes, Groundwater	2,582* acres		○		●	○	○	**Morrison SWCD**, **Todd SWCD**, DNR, Private Foresters, BWSR		●	●	●	●	**$1,000**	**$10,000**
Urban Runoff Control (i.e. storm sewer maintenance, street cleaning, construction stormwater treatment, rain gardens, green infrastructure)		Long Prairie River	TBD		○			○	●	**City of Long Prairie,** Todd SWCD, Todd County, Douglas SWCD (Carlos)		●	●	●	●	**$1,000**	**$10,000**
Chloride Management (i.e. Road salt/dust suppressant ordinances, explore alternatives for water softeners, etc.)		Long Prairie River	TBD						●	**City of Long Prairie**, Todd SWCD	●	●	●	●	●	Level 3	Level 3, costs unavailable
Buffer and Shoreline Management (shoreline restoration, riparian buffers, riparian enhancement)		Long Prairie River, Spruce Creek	5 projects				○	○	●	**Todd SWCD**, **Douglas SWCD,** Todd County, DNR	●	●	●	●	●	**$1,000**	**$10,000**
DWSMA Protection (i.e. easements, wellhead protection, demonstration plots)		Groundwater (Long Prairie)	2 acres	●		●				**Todd SWCD**, Todd County, City of Long Prairie				●	●	**$1,600**	**$16,000**
										Total Level 2 Funding Scenario (Base+WBIF+Grants):						**$239,828**	**$2,398,280**
										Total Level 3 Funding (Partner Projects):						$142,370	$1,423,700

* these actions all apply to the same acres.

● Primary Goal this action will address

○ Secondary Goal this action will address

City of Long Prairie Waste Water Treatment Plant

Before the Clean Water Act, many cities and industries discharged directly into rivers and lakes, and the Long Prairie River shows higher than expected phosphorus concentrations as a legacy of these practices.

When Long Prairie Packing and Central Bi-products eliminated their surface water discharge from their ponds and started discharging to the city's mechanical facility, loading to the river significantly decreased. In order for this changeover to occur, the city needed to upgrade their wastewater treatment plant to handle a larger than average amount of waste water for a town of its size.

The newly completed addition to the town's wastewater treatment plant (2021) is the second phase of expansion that began in 2002 to handle the large volume of industrial and residential waste within the system before it enters the Long Prairie River. Over $14 million has been invested in these upgrades, which benefit the industries, the city, and the water quality of the Long Prairie River. For more information, see Appendix B.

Todd SWCD 319 Grant

Todd SWCD was awarded two Clean Water Act Section 319 grants totaling to address non-point sources to the Long Prairie River. In the first grant, there were three focus areas - vegetation establishment, animal agriculture activities, and structural changes. Vegetation establishment included reforestations, shelterbelt and shelterbelt renovation, riparian tree planting, and lakeshore restoration. Animal agriculture included installing a cattle travel lane, agricultural waste pits, pond closures, and wastewater and feedlot runoff control. Structural practices included a bioretention basin, unused well sealing, and a stream barb project. In the second grant, 28 different BMPs were put in place, including a sediment basin, well decommissioning, ag waste systems, prescribed grazing plan, bio-retention projects, shelterbelt, field windbreak, pond abandonments, streambank and shoreline protection projects, and many reforestations.

Eagle/Moran Creeks Planning Region Implementation Table

Action	Program	Priority Resources	10-Year Output	Measurable Goals: Agricultural Land Management	Drinking Water Protection	Bacteria Reduction	Forest Land Management	Runoff Reduction	Responsibility/Partners (Bold = Lead)	Timeline: 2023-2024	2025-2026	2027-2028	2029-2030	2031-2032	Estimated Annual Cost	Estimated Total 10-Year Cost
Agricultural Land Management Practices (i.e. cover crops, irrigation water management, nutrient management, pasture management, perennial agriculture, filter strips, water and sediment control basins)		Eagle/Moran Creeks	734 acres	●	○			○	**Todd SWCD**, Wadena SWCD, NRCS, Soil Health Coalition, RCPP Irrigation	●	●	●	●	●	**$7,780**	**$77,800**
Bacteria Reduction Projects (i.e. waste pit closures, manure storage, livestock fencing and crossing, agricultural waste systems, manure management plans, land application)		Eagle/Moran Creeks	13 projects		○	●			**NRCS, Todd SWCD**, **Wadena SWCD**, Todd County	●	●	●	●	●	**$31,200** $31,200	**$312,000** $312,000
Storage Practices (wetland restoration, floodplain connectivity, cover crops)		Eagle/Moran Creeks	112 acre-feet		○			●	**Todd SWCD**, **NRCS**, **USFWS**	●	●	●	●	●	**$6,634**	**$66,347**
Forest Stewardship Plans		Eagle/Moran Creeks, Groundwater	1,846* acres, 31 plans		○		●	○	**Todd SWCD**, **Wadena SWCD**, BWSR, TNC, DNR, Private Foresters			●	●	●	**$9,230**	**$92,300**
Forest and Land Protection (SFIA, 2c, Easements, acquisition)		Eagle/Moran Creeks, Groundwater	1,846* acres		○		●	○	**Todd SWCD**, **Wadena SWCD**, BWSR, TNC, DNR, State of MN			●	●	●	$81,107	$811,077
Forestry BMPs and restoration		Eagle/Moran Creeks, Groundwater	1,846* acres				●	○	**Todd SWCD**, **Wadena SWCD,** DNR, BWSR, Private Foresters	●	●	●	●	●	**$1,000**	**$10,000**
Buffer and Shoreline Management (shoreline restoration, riparian buffers, riparian enhancement)		Eagle/Moran Creeks	5 projects				●	○	**Todd SWCD**, **Wadena SWCD**, Todd County			●	●	●	**$1,000**	**$10,000**
DWSMA Protection (easements, wellhead protection, demonstration plots)		Groundwater (Clarissa)	2 acres	●	●				**Todd SWCD, City of Clarissa**				●	●	**$1,071**	**$10,710**
															Total Level 2 Funding Scenario (Base+WBIF+Grants):	**$57,915**	**$579,157**
															Total Level 3 Funding (Partner Projects):	$112,307	$1,123,077

* these actions all apply to the same acres.

● Primary Goal this action will address

○ Secondary Goal this action will address

Ag Water Quality Certification

The Minnesota Agricultural Water Quality Certification Program (MAWQCP) is a voluntary opportunity for farmers and agricultural landowners to take the lead in implementing conservation practices that protect our water. Those who implement and maintain approved farm management practices will be certified and in turn obtain regulatory certainty for a period of 10 years.

Through this program, certified producers receive:

- Regulatory certainty: certified producers are deemed to be in compliance with any new water quality rules or laws during the period of certification
- Recognition: certified producers may use their status to promote their business as protective of water quality
- Priority for technical assistance: producers seeking certification can obtain specially designated technical and financial assistance to implement practices that promote water quality

Through this program, the public receives:

- Assurance that certified producers are using conservation practices to protect Minnesota's lakes, rivers, and streams

In the Long Prairie River Watershed, the Eagle/Moran Planning Region has the highest number of certified acres (Figure 6.5).

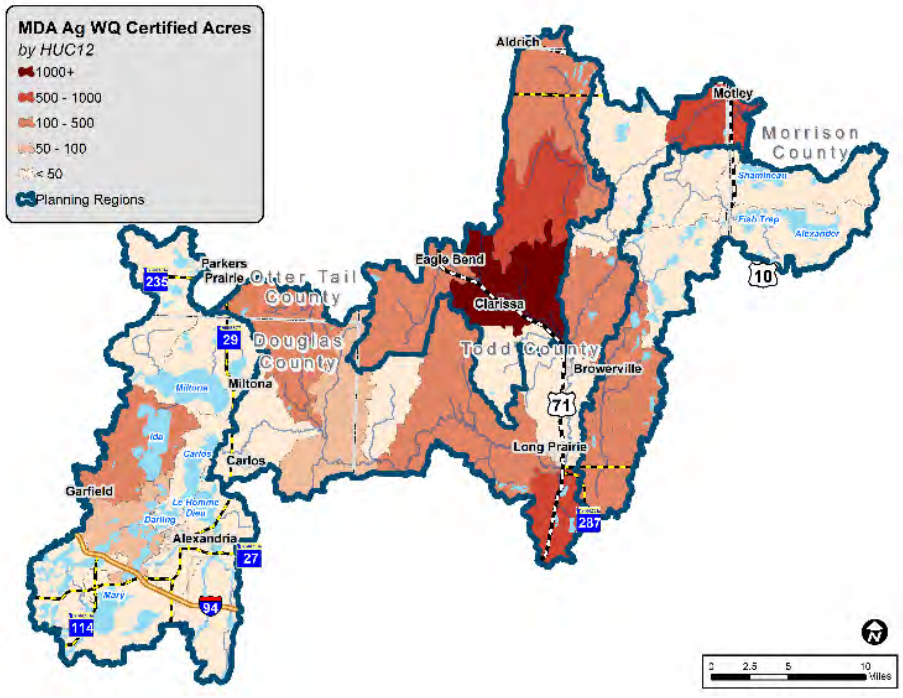


Figure 6.5. MDA Ag Water Quality Certified Acres in the Long Prairie River Watershed.

Fish Trap/Turtle Creeks Planning Region Implementation Table

Action	Program	Priority Resources	10-Year Output**	Measurable Goals: Agricultural Land Management	Drinking Water Protection	Bacteria Reduction	Forest Land Management	Runoff Reduction	Lake Phosphorus Reduction	Responsibility (Bold = Lead)	Timeline: 2023-2024	2025-2026	2027-2028	2029-2030	2031-2032	Estimated Costs: Estimated Annual Cost	Estimated Total 10-Year Cost
Agricultural Land Management Practices (i.e. cover crops, irrigation water management, nutrient management, pasture management, perennial agriculture, filter strips, water and sediment control basins)		Tier 1 Lakes	2,151 acres	●	○			○	●	**Todd SWCD, Morrison SWCD, NRCS,** Soil Health Coalition, CRSL, RCPP Irrigation	●	●	●	●	●	**$22,800**	**$228,000**
Bacteria Reduction Projects (i.e. waste pit closures, manure storage, livestock fencing and crossing, agricultural waste systems, manure management plans, land application)		Tier 1 Lakes	3 projects		○	●			○	**Morrison SWCD, Todd SWCD, NRCS,** Todd County, CRSL			●	●	●	**$6,200** $6,200	**$62,000** $62,000
Storage Practices (wetland restoration, floodplain connectivity, cover crops)		Tier 1 Lakes	157 acre-feet		○			●	○	**USFWS, Morrison SWCD, NRCS, Todd SWCD,** DNR	●			●		**$9,282**	**$92,820**
Forest Stewardship Plans		Tier 1 Lakes, Groundwater	4,477* acres, 75 plans		○		●	○	○	**Morrison SWCD, Todd SWCD,** TNC, BWSR, DNR, Crow Wing SWCD, CRSL, Private Forestry	●	●	●	●	●	**$22,385**	**$223,850**
Forest and Land Protection (SFIA, 2c, Easements, ACUB, acquisition)		Tier 1 Lakes, Groundwater	4,477* acres		○		●	○	○	**Morrison SWCD, Todd SWCD,** TNC, BWSR, DNR, Crow Wing SWCD, CRSL, Private Forestry	●	●	●	●	●	$291,570	$2,915,700
Forestry BMPs and restoration		Tier 1 Lakes, Groundwater	4,477* acres		○		●	○	○	**Morrison SWCD, Todd SWCD,** DNR, Private Foresters, BWSR	●	●	●	●	●	**$1,000**	**$10,000**
Urban Runoff Control (rain gardens, stormwater basins)		Tier 1 Lakes	59 pounds of phosphorus		○			○	●	**Morrison County,** Morrison SWCD	●	●	●	●	●	**$52,470**	**$524,700**
Buffer and Shoreline Management (shoreline restoration, riparian buffers, riparian enhancement)		Tier 1 Lakes, Turtle Creek	20 projects				●	○	●	**Morrison SWCD, Morrison County, Todd SWCD,** Todd County	●	●	●	●	●	**$8,000**	**$80,000**
										Total Level 2 Funding Scenario (Base+WBIF+Grants):						**$122,137**	**$1,221,370**
										Total Level 3 Funding (Partner Projects):						$297,770	$2,977,700

* these actions all apply to the same acres.

**per lake goal numbers are in the Goals section, page 59

● Primary Goal this action will address

○ Secondary Goal this action will address

Camp Ripley Army Compatible Use Buffer

Camp Ripley is a 53,000-acre regional training center hosting numerous ranges and state-of-the-art facilities to support the training requirements of military and civilian agencies. A unique partnership has developed around Camp Ripley in the form of an Army Compatible Use Buffer (ACUB). This ACUB benefits both the Army's training mission and the natural resources by protecting this designated area from development.

Through local efforts, the ACUB program has enrolled over 33,000 acres through more than 300 Reinvest In Minnesota (RIM) easements in Morrison, Crow Wing, and Cass counties since 2006.

ACUB easements funded through the Outdoor Heritage Fund protect existing high-quality natural resources—primarily forests and riparian areas. Federally funded ACUB easements prevent future development but allow farming to continue. The permanent conservation easements purchase development rights. Landowners receive a per-acre sum.

Together with public lands and waters, the easements recorded through early 2022 bring ACUB to 64% of its 78,000-acre compatible-use lands goal.

The $43.6 million for RIM funding to date includes $33 million from the U.S. Department of Defense's Readiness and Environmental Protection Integration (REPI) program and $10.6 million in Lessard-Sams Outdoor Heritage Fund (LSOHF) investments since 2010.

GOAL IS 64% COMPLETE

- 707 interested landowners
- 295 land deals under easement
- 36 land deals ongoing

For more information, visit https://morrisonswcd.org/programs-services/acub/.

Watershedwide Implementation Table

Action	Program	10-Year Output	Measurable Goals: Agricultural Land Management	Drinking Water Protection	Bacteria Reduction	Forest Land Management	Runoff Reduction	Lake Phosphorus Reduction	Responsibility/Partners (Bold = Lead)	Timeline: 2023-2024	2025-2026	2027-2028	2029-2030	2031-2032	Estimated Costs: Estimated Annual Cost	Estimated Total 10-Year Cost
Regulation and Ordinances (See Section 7 and Appendix I)		Continue current program	●	●	●	●	●	●	**Counties**, SWCDs, MPCA, DNR, BWSR	●	●	●	●	●	**$104,700**	**$1,047,000**
Education and Outreach (Schools, landowners, public, see Section 7, Figure 7.5)		Implement program	●	●	●	●	●	●	**SWCDs, Counties,** Lake Associations, Cities	●	●	●	●	●	**$60,000**	**$600,000**
Develop an outreach plan to promote consistent messaging and strategies		1 Plan	●		●	●	●	●	**SWCDs**, Counties, BWSR	●					**--**	**$2,000**
Track progress towards goals during implementation		Create tracking program and track progress	●		●	●	●	●	**SWCDs, Counties**, BWSR	●	●	●	●	●	**$1,000**	**$10,000**
Determine how many acres already have Ag BMPs to track towards long-term goal		Determine total of current practices and map them	●						**SWCDs,** BWSR, NRCS	●	●				**$1,000**	**$10,000**
Surface Water Monitoring (Lakes, Streams, USGS gages, see Section 7, Figure 7.3)		Continue current program	●		●	●	●	●	**MPCA**, **Lake Associations**, SWCDs, USGS, DNR	●	●	●	●	●	Level 3	Level 3, costs unavailable
Groundwater Monitoring (Monitoring wells, township testing, see Section 7 page 92)		Continue current program	●	●					**DNR, MDA, MDH,** SWCDs	●	●	●	●	●	Level 3	Level 3, costs unavailable
Well Sealing		20 wells/year		●					**MDH, SWCDs**, Counties	●	●	●	●	●	**$12,000**	**$120,000**
Subsurface Sewage Treatment Systems Replace noncomplying systems		250 systems/year (on average 10 systems with WBIF and the rest with Level 3 funding).		○	●			●	**Counties**, Region 5, landowners	●	●	●	●	●	**$60,000** Level 3	**$600,000** Level 3
Stream Restoration Including connectivity restoration, culverts, dams		1 large project plus culverts as needed.					●	●	**DNR**, SWCDs, TNC				●	●	**--**	**$150,000**
Land Retirement Programs (CRP, CREP, WRP)		Maintain current CRP (13,721 acres in 2021) (4,757 acres expire by 2025)	●		○		○	○	**FSA,** SWCDs	●	●	●	●	●	$1,042,796	$10,427,960
Ag Water Quality Certification		2 Farms/year	●		○			○	**MDA**, SWCDs	●	●	●	●	●	$100,000	$1,000,000
Aquatic Invasive Species management and prevention		Continue county programs						○	**Counties**, SWCDs, DNR, Lake Assocations	●	●	●	●	●	$198,571	$1,985,710
									Total Level 2 Funding Scenario (Base+WBIF+Grants):						**$238,700**	**$2,539,000**
									Total Level 3 Funding (Partner Projects):						$1,341,367	13,413,670

● Primary Goal this action will address

○ Secondary Goal this action will address

Freshwater Mussels – Sentinels of Watershed Health

Freshwater mussels, also called Clams, often go unnoticed but they are common and beneficial inhabitants of healthy rivers and lakes. Because mussels require good water quality and habitat to thrive, many of the 51 species known from Minnesota have declined or disappeared, and monitoring their populations is a useful biological indicator of watershed health. The Minnesota DNR surveyed mussels at 24 sites in the Long Prairie River in 2000 and four sites in 2016. Although long-term population trends were not assessed, these surveys showed the river supports populations of 10 species, including two species of Special Concern (Black Sandshell and Creek Heelsplitter). Over 2,000 live mussels were collected and young individuals 0-5 years old were found for most species.

Mussels are important to river ecosystems. They filter vast amounts of water—up to 8 gallons per mussel per day—removing food (fine particles like algae, bacteria, and fungi), oxygen, and other inedible suspended particles. Large mussel aggregations can filter the entire volume of a river many times over, increasing water clarity as particles are captured. Mussels form a base of the aquatic food web by depositing pelleted remains of filtered materials on the river bottom. These deposits (captured energy) are consumed by other organisms such as aquatic insect larvae that in turn are eaten by fish or terrestrial animals when adult insects emerge and fly to adjacent habitats. The shells of living and dead mussels provide habitat for small fish, crayfish, and other invertebrates to live on or hide; as structure for laying eggs; and surfaces to graze attached algae. Mussels are also eaten by various animals such as fish, muskrats, and river otters.


Black Sandshell


Plain Pocketbook

Information and photos from Bernard Sietman, Minnesota DNR.

Section 7. Implementation Programs

Section 7.
Implementation Programs

This section of the plan describes the programs that will be used for implementing this plan. There are four main categories: Planned Landscape Management ("Manage It"), Protected Lands Maintenance ("Protect It"), Constructed Environmental Enhancements ("Fix It") and Outreach and Information. For the Long Prairie River (LPR) Watershed, the scale is fairly evenly balanced between "Manage It," "Protect It," and "Fix It" programs. These programs balance on "Outreach and Information" (Figure 7.1).

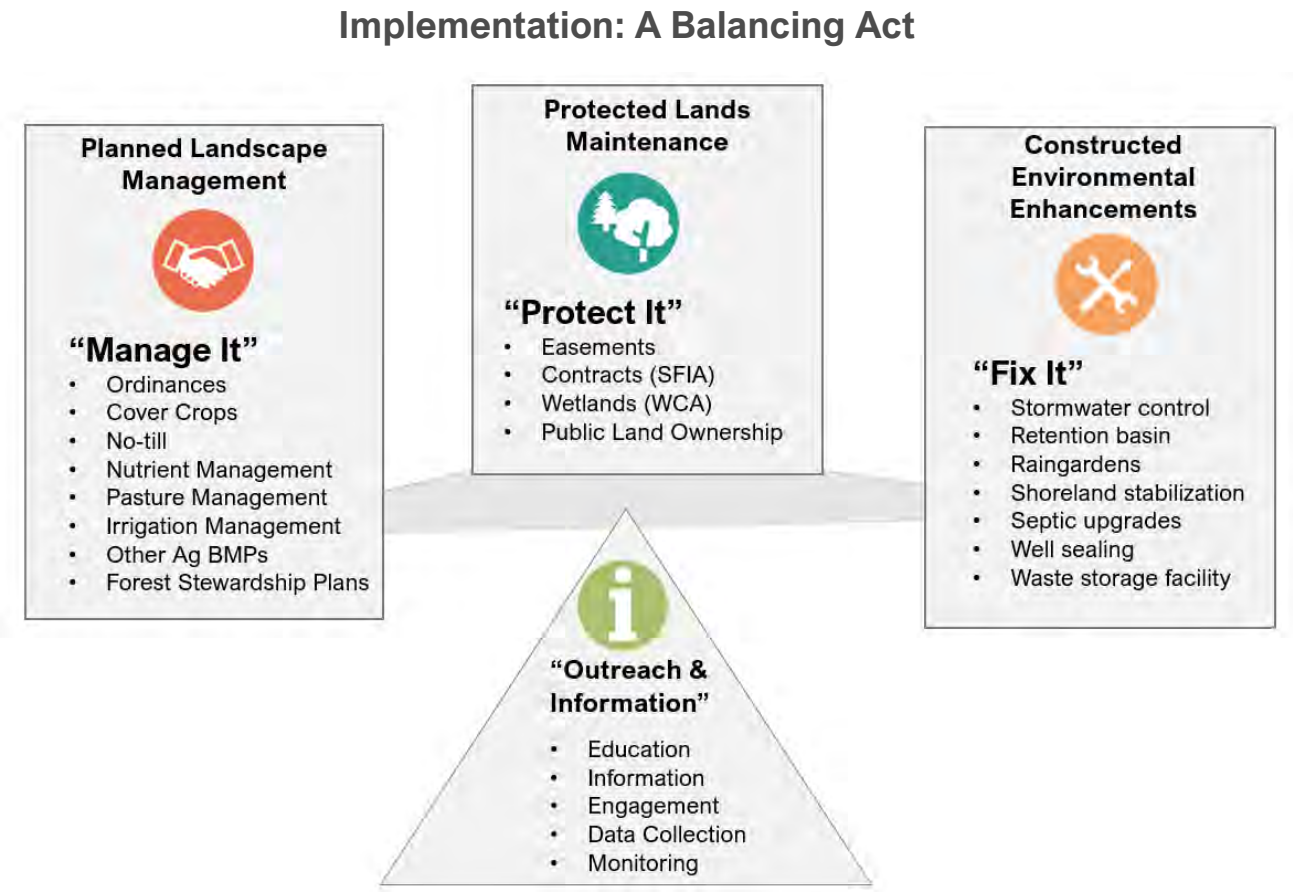


Figure 7.1. Implementation Programs for the LPR Watershed.

PLANNED LANDSCAPE MANAGEMENT

"MANAGE IT" PROGRAMS INVOLVE CONTINUAL MANAGEMENT OF THE LANDSCAPE INCLUDING SOIL HEALTH PRACTICES SUCH AS COVER CROPS AND REDUCED TILLAGE, NUTRIENT MANAGEMENT, PASTURE MANAGEMENT, IRRIGATION MANAGEMENT, FOREST STEWARDSHIP PLANS, AND ORDINANCES.

Manage It

Implementation of this plan will involve programs that will be actively targeted to prioritized areas for management (Section 4 Resource Prioritization). Non-priority areas will be considered on an opportunity basis.

Cost-Share Programs

Cost-share programs or projects are those where the cost of installing a project is shared with the landowner(s). Implementing soil health practices such as cover crops and reduced tillage, forest enhancement, or irrigation water management are applicable examples that meet plan goals.

Private Forest Management

Forest Stewardship Plans

Forest owners can manage their woods through Woodland Stewardship Plans through coordination with the DNR's Forest Stewardship Program. Forest goals can be developed in coordination with trained foresters to create wildlife habitat, increase natural beauty, enhance environmental benefits, or harvest timber. Plans must be prepared by a DNR-approved plan writer, which may include SWCD staff and private foresters.

Forest 2C Designation

Landowners with DNR-registered Woodland Stewardship Plans are then eligible for 2C Classification, which is a state program that provides a reduced tax rate to forested property of 20 acres or more. This is an annual program.

Sustainable Forest Incentive Act (SFIA)

SFIA is considered in the "Protect It" program because most people that start with an 8-year covenant move to a 50-year covenant. In addition, the SFIA covenant is more restrictive than 2C designation. See the "Protect It" section on page 87 for more details.

Conservation Reserve Program (CRP)

CRP is administered by the Farm Service Agency of the USDA. It is a voluntary program that contracts with agricultural producers so that environmentally sensitive agricultural land is not farmed or ranched, but instead devoted to conservation benefits. CRP participants establish long-term, resource-conserving plant species to control soil erosion, improve water quality, and develop wildlife habitat. In return, FSA provides participants with rental payments and cost-share assistance. The CRP's contract duration is 10-15 years.

Regulatory Programs

Counties and cities will meet once a year to discuss ordinances and counties will notify each other of any proposed ordinance amendments. Activities will be tracked by the individual counties. An effort will be made to compile the information watershed-wide. A full comparison of Otter Tail, Wadena, Todd, Douglas, and Morrison County Ordinances is provided in Appendix I. A more in depth comparison will be completed by planning partners during implementation.

Watershed partners will explore ways to better integrate this watershed management plan into all of the county comprehensive land use plans.

Aggregate Management

The MPCA oversees air permits, hazardous waste licenses, stormwater and wastewater management, and storage tanks (https://www.pca.state.mn.us/regulations/aggregate-sand-and-gravel). Local ordinances are in place in Douglas, Otter Tail, Wadena, Morrison, and Todd counties that include additional guidelines for aggregate management in those jurisdictions.

- Regulations: Minnesota Statutes 298.75, 394.25

Bluffland Protection

Blufflands are managed under several State programs, including programs for shoreland management and Wild and Scenic Rivers. Minimum structure setbacks from bluffs and related development standards apply to land in shoreland for this watershed. The Statewide shoreland program includes land within 1,000 feet of any public water body, 300 feet of any public water river or stream, or the landward extent of their floodplains. Only land around public waters with a shoreland classification are regulated. There are differences between the ordinances between each county (setback, height, practices allowed, etc.) (Appendix I).

Construction Soil Erosion

Temporary construction erosion control is the practice of preventing and/or reducing the movement of sediment from a site during construction. All construction projects should follow construction BMPs, but projects disturbing one acre or more of land will require an NPDES Permit from the MPCA. Otter Tail County has local oversight over construction erosion control for areas within the designated shoreland management areas. Todd and Wadena counties write construction soil erosion-related conditions into county-issued permits and approvals. In Douglas County, the City of Alexandria has a construction erosion control ordinance. Morrison County also has an ordinance for construction erosion control.

- Regulations: Minnesota Rules, chapter 7090

Feedlots

MPCA rules govern the collection, transportation, storage, processing, and land application of animal manure and other livestock operation wastes. Todd, Morrison, and Douglas counties hold their own ordinances for feedlots, as does Wadena SWCD. The SWCDs conduct compliance checks. Douglas, Morrison, Todd, and Wadena counties are in the MPCA County Feedlot Program. The state has jurisdiction over the feedlot enforcement in Otter Tail county.

- Regulations: Minnesota Rules Chapter 7020

Groundwater Use
The DNR administers groundwater appropriation permits for all users who withdraw more than 10,000 gallons of water per day or 1 million gallons per year. SWCDs, counties, and municipalities cooperate with the state and are offered the opportunity to comment on landowners' permit applications.

- Regulations: Minnesota Statute 103G for appropriation; 103H, 1989 Groundwater Act

Groundwater Protection Rule
The MDA administers the Groundwater Protection Rule, which went into effect on June 24, 2019. The rule has two parts: Part 1 restricts the application of nitrogen fertilizer in the fall and on frozen soils, and applies in the LPR Watershed. Part 2 does not apply to the LPR Watershed.

- Regulations: Minnesota Statute 14.16

Hazard Management
Hazard mitigation may be defined as any action taken to eliminate or reduce the future risk to human life and property from natural and human-caused hazards. Climate change adaptation also plays a part in hazard management. These requirements direct the state to administer cost-sharing. Hazard Mitigation Local Emergency Management Programs are deployed in each of the contributing counties within the 1W1P boundary.

- Regulations: Minnesota Statute, chapter 12

Invasive Species
Aquatic and terrestrial invasive species can cause ecological and economic damage to water resources and forests. The DNR has regulatory authority over aquatic plants and animals as well as terrestrial animals. For aquatic species, permits are required by the general public for transporting lake water and invasive species and for treating invasive species. In Otter Tail and Douglas counties, the Land Departments administer the AIS program. In Wadena, Morrison, and Todd counties, the SWCDs oversee the AIS program.

- Regulations: Minnesota Statute 84D

Noxious Weed Law
Noxious weeds affect the natural, native balance of ecological functions. The Noxious Weed Law in Minnesota is administered by the MDA through SWCDs. The State maintains noxious weed lists of those species to eradicate, control, restrict, and specially regulated plants.

- Regulations: Minnesota Statutes 18.75-18.91

Public Drainage Systems: Establishment, Improvement, Re-routing, Repairs, and Impoundments
Minnesota Drainage Law enables multiple landowners to collectively construct, improve, and repair drainage systems across property boundaries and governmental boundaries. These drainage systems can be open ditches and/or subsurface tile. Drainage systems have their own laws and requirements that LGUs must uphold. These ditches are managed by the county for the benefit of the landowners.

- Regulations: Minnesota Statute 103E

Shoreland Management

Minnesota has shoreland management rules that are administered by the DNR. LGUs are required to have land use controls that protect shorelands along lakes and rivers, and they can adopt more strict ordinances than the state's, if desired. All counties in the LPR Watershed have shoreland ordinances (Table 7.1). The DNR published an Innovative Shoreland Standards Showcase website that may be helpful to local governments as they implement this plan: https://www.dnr.state.mn.us/waters/watermgmt_section/shoreland/innovative-standards.html.

- Regulations: Minnesota Statute 103F and Minnesota Rules 6120.2500-3900

Table 7.1. Comparison of Shoreline Ordinances per county.

	General Development	Recreational Development	Natural Environment
Definition (MN DNR)	Generally large, deep lakes with high levels and mixes of existing development. These lakes often are extensively used for recreation and are heavily developed around the shore.	Generally medium-sized lakes often characterized by moderate levels of recreational use and existing development. Development consists mainly of seasonal and year-round residences and recreationally-oriented commercial uses.	Generally small, shallow lakes. They often have adjacent lands with substantial constraints for development such as wetlands and unsuitable soils. These lakes usually do not have much existing development or recreational use.
Minimum Water Frontage and Lot Width	Morrison: 120 feet Douglas, Otter Tail, Todd: 100 feet Wadena: 300 feet	Douglas, Otter Tail, Todd: 150 feet Morrison: 175 feet Wadena: 300 feet	Douglas: 200-300 feet Morrison, Otter Tail, Todd: 200 feet Wadena: 300 feet
Minimum Lot Area (single home)	Douglas, Otter Tail, Todd: 20,000 feet^2 Morrison: 30,000 feet^2 Wadena: 80,000 feet^2	Douglas, Otter Tail, Todd: 40,000 feet^2 Morrison: 50,000 feet^2 Wadena: 80,000 feet^2	Douglas: 60,000-90,000 feet^2 Morrison, Otter Tail, Todd, Wadena: 80,000 feet^2
Minimum Setback from Ordinary High Water Level	All: 75 feet	All: 100 feet	Otter Tail: 200 feet Morrision, Douglas, Todd, Wadena: 150 feet
Number of Lakes in the Watershed	**19**	**17**	**184**

Minimum Lot Sizes and Dwelling Density

Minimum lot sizes and dwelling densities for subdividing parcels also varies per county (Figure 7.2). Larger tracts of land (20-40 acres) could be protected by forest stewardship, while smaller lot sizes (1 acre or less) are poised for future subdivision for development. In Otter Tail County, the minimum lot size outside of the shoreland zone is 2.5 acres. In Douglas County, there is a lot of area around the lakes with one acre or less minimum lot sizes, which is poised for expansion of development. In Morrison County, the blue areas in Figure 7.2 are agricultural zoning and the minimum lot size is 5 acres, but a maxiumum of 3 dwellings are allowed per 40 acres. In Todd County, the dark green areas are zoned AF1 and AF2, and the minimum lot size is 2 acres, but a maxiumum of one dwelling is allowed per 40 acres in AF1 and two dwellings in AF2.

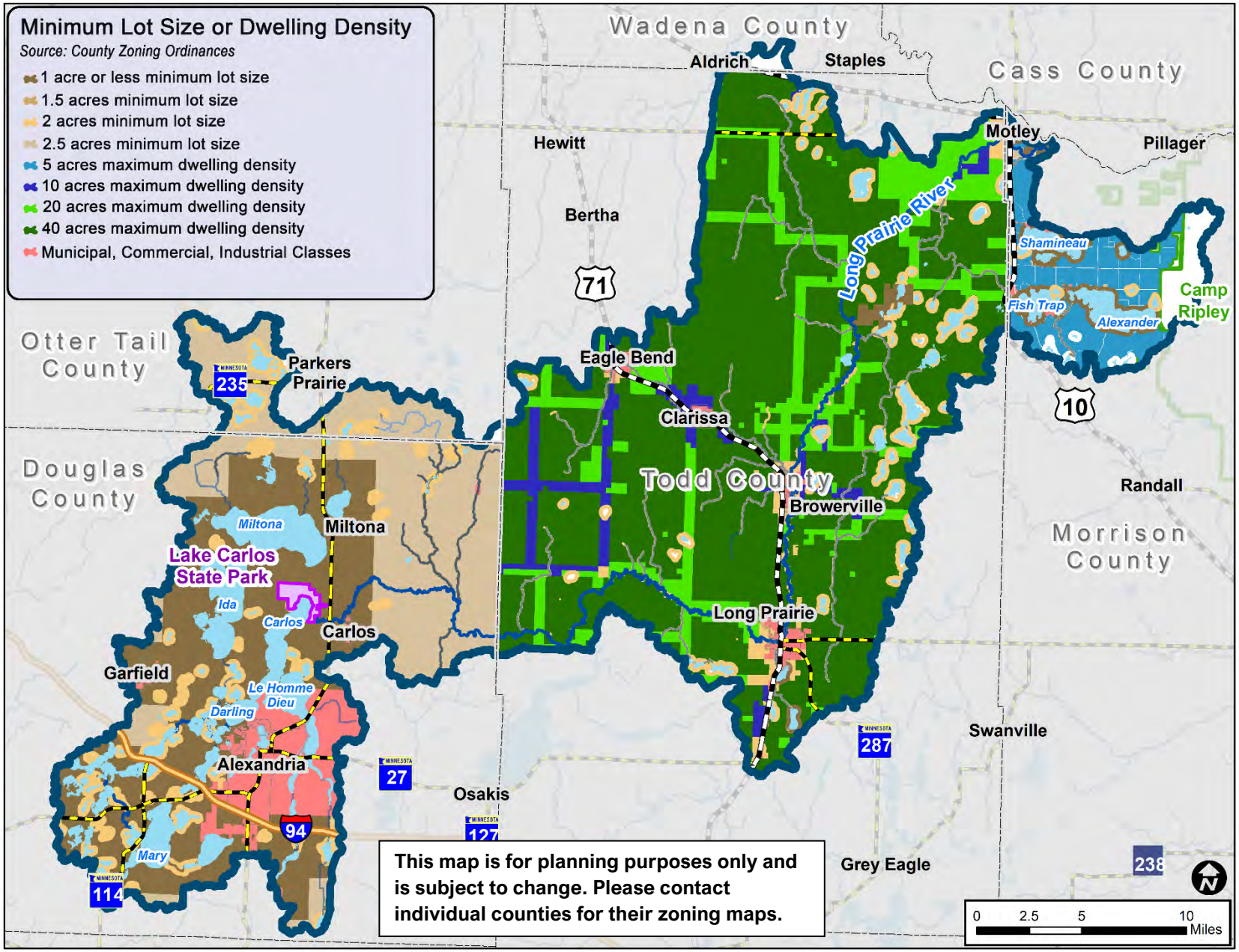


Figure 7.2. Minimum lot size comparisons between counties in the LPR Watershed.

Stormwater Management – MS4
The MS4 general permit is designed to reduce the amount of sediment and other pollutants entering state waters from stormwater systems. Entities regulated by the MS4 general permit must develop a stormwater pollution prevention program and adopt best practices.The City of Alexandria is the only municipality in the watershed with an MS4 permit regulating stormwater management. The MS4 stormwater program is administered by the MPCA.

- Regulations: Minnesota state rule Minn. R. 7090

Subsurface Sewage Treatment Systems
The Subsurface Sewage Treatment System (SSTS) Programs are required by Minnesota State Statute in order to protect the public health and environment. Counties are required to have an ordinance that regulates SSTS enforced at the county level. Cities and townships may administer their own programs but must be as strict as their county's ordinance. Low-interest loans and low-income grants are available through the SWCD, county, or Region 5. Douglas, Otter Tail, Wadena, and Todd counties require SSTS inspections on point-of-sale.

- Regulations: Minnesota Statutes 115.55 and 115.56; Minnesota Rules Chapters 7080, 7081, 7082, and 7083

Waste Management
Each county has a Solid Waste Management Plan (10-year Plan) that is approved by the MPCA. Solid Waste Management in Minnesota is managed at the county level and includes programs related to mixed municipal solid waste, industrial waste, and non-landfill programs such as recycling to include paper, plastics, metal, tires, electronics, appliances, and other recyclable items. As part of this plan, each county manages a household hazardous waste programs (HHW) that receives some state funding to implement. Counties also received SCORE funds from the state to help cover some of the cost of recycling. Wadena, Otter Tail, and Todd counties share a common Director of Solid Waste Management.

- Regulations: Minnesota Statutes 115.55; Minnesota Rules Chapters 7001, 7035, 7045, 7150, 7151, 9215, and 9220

Wellhead Protection
The purpose of the Wellhead Protection Program is to prevent contamination of public drinking water supplies by identifying water supply recharge areas and implementing management practices for potential pollution sources found within those areas. The program has since expanded to Source Water Protection to include supplies that rely on surface water. Wellhead Protection is mostly administered at the city level.

- Regulations: Minnesota Statutes, chapter 103I; Minnesota Rules, chapter 4720; Federal Safe Drinking Water Act, US Code, Title 42, Chapter 6A, Subchapter XII, Part E, Section 300j-13; Minnesota Rules, chapter 4725

Well Construction Standards
Well construction standards are a Minnesota Department of Health Program.

- Regulations: Minnesota Well Code/ Minnesota Rules Chapter 4725

Operations and Maintenance
After projects are installed, regular on-site inspections and maintenance to ensure the project's continued function and success are required by the BWSR Grants Administration Manual. These details, along with records, including notes and photos, should be included with each project's Operations and Maintenance Plan. BWSR's recommended inspection plans, according to the Grants Administration Manual, include the following:

Conservation practice with a minimum effective life of 10 years:

- The ends of Years 1, 3, and 9 after the certified completion are recommended.

Comprehensive Plans

County/City comprehensive plans are required to implement land use regulatory ordinances and provide the framework of the ordinance requirements. It is recommended that when a County/City updates its comprehensive plan, that at a minimum the County/City adopt all comprehensive watershed management plans within the County/City by reference. One step further would be for the County/City to utilize specific goals and strategies from the CWMP when developing a comprehensive plan.

Current Water Plans in the LPR Watershed

- Douglas County Water Plan (2016)
- Morrison County Water Plan (2017)
- Otter Tail County Water Plan (2009)
- Todd County Water Plan (2016)
- Wadena County Water Plan (2016)
- Alexandria Lakes Area Plan (2002)

Current Comprehensive Land Use Plans in the LPR Watershed

- Douglas County Comprehensive Plan (2020)
- Morrison County Comprehensive Plan (2016)
- Todd County Comprehensive Plan (2009)
- Wadena County Comprehensive Plan (2013)
- City of Alexandria Comprehensive Plan (2020)
- City of Long Prairie Comprehensive Plan (2015)

Other Plans in the LPR Watershed

- Alexandria Lake Area Sanitary District Chloride Investigation and Minimization Plan (2020)

PROTECTED LANDS MAINTENANCE

"PROTECT IT" PROGRAMS ARE THOSE THAT INVOLVE PERMANENT LANDSCAPE PROTECTION. THIS INCLUDES SUSTAINABLE FOREST INCENTIVE ACT COVENANT LANDS, CONSERVATION EASEMENTS, AQUATIC MANAGEMENT AREAS, AND PUBLIC LAND OWNERSHIP.

Protect It

Implementation of this plan will involve programs that will be actively targeted to prioritized areas for protection (Forest Land Management Goal, page 53). Non-priority areas will be considered on an opportunity basis.

Conservation Easements

Conservation easements are voluntary, legal agreements between a landowner and governmental or nonprofit organization, whereby land use and development are limited on a property while conserving natural values that reside upon that landscape. The easements are individually tailored agreements with an organization such as BWSR, DNR, Minnesota Land Trust, or TNC.

Sustainable Forest Incentive Act

SFIA provides annual incentive payments for the landowner recording a covenant taking away some of the rights of the land (development and farming, for example). Private landowners can receive a payment for each acre of qualifying forest land they enroll in SFIA. In return, they follow the covenant for a set period of time: either 8, 20, or 50 years. Data on current enrollees shows that landowners who start with an 8-year covenant commonly move up to a 50-year covenant (DNR), which is why this program is considered under "Protect It."

Wetlands

Wetlands are protected by the Minnesota Wetland Conservation Act (WCA). The overall goal of the act is no net loss of wetlands. Draining, filling, and in some cases excavating in wetlands is prohibited unless (a) the drain, fill, or excavation activity is exempt from requiring replacement or (b) wetlands are replaced by restoring or creating wetland areas of at least equal public value. Replacement can be buying credits or creating/restoring a wetland (usually credits are encouraged over an on-site replacement). Wadena SWCD, Douglas SWCD, Morrison SWCD, Todd SWCD, and Otter Tail County serve as the local LGU for implementing WCA.

- Regulations: Minnesota Rules, part 8420.0105

Buffers

In 2015, Minnesota enacted legislation requiring buffers of perennial vegetation of an average of 50 feet with a minimum of 30 feet on public waters and 16.5 feet for public drainage systems. This program is regulated by BWSR and implemented at the county level. Each county has an ordinance for buffer management. All counties are near 100% compliance with Minnesota Buffer Law.

- Regulations: Minnesota Statutes 103B and 103F.48 Subd. 4

Land Acquisition
For areas with unique and important resources that meet state goals, the DNR, United States Fish and Wildlife Service (USFWS), counties, cities, townships, and other entities may purchase and manage the land. Examples include Aquatic Management Areas that are used for fish spawning habitat and Wildlife Management Areas that are used for small game hunting and waterfowl migration.

Army Compatible Use Buffer (ACUB)
A unique partnership has developed around Camp Ripley in the form of an ACUB. This ACUB benefits both the Army's training mission and the natural resources by protecting the designated area from development. Land protection is achieved through a variety of programs, including private conservation easements, public lands, SFIA, and TNC Lake Alexander Preserve.

Sentinal Landscape
In 2015, the area surrounding Camp Ripley was designated a Sentinel Landscape forging a partnership between the Department of Defense, Department of Interior, Department of Agriculture, and USFWS to dedicate resources to the landscape, which ultimately protect and enhance natural resources within the landscape.

CONSTRUCTED ENVIRONMENTAL ENHANCEMENTS

"FIX IT" PROGRAMS INCLUDE INSTALLATION OF ON-THE-GROUND, USUALLY PERMANENT OR LONG-TERM CONSTRUCTED ENHANCEMENTS, INCLUDING SEPTIC SYSTEM UPGRADES, STORMWATER CONTROL, CAPITAL IMPROVEMENT PROJECTS, AND WELL SEALING.

Fix It

Low-Interest Loans
Low-interest loans may be made available for septic system replacement, small community wastewater treatment systems, agricultural BMPs, and other projects that meet eligibility criteria for funding.

Cost-Share Programs
Cost-share programs can also be used for structural practices. Implementing fencing and water sources for grazing cattle away from streams, shoreline restorations on lakeshore, and well sealing are applicable examples that meet the goals of this plan. Implementation of this plan will involve cost-share programs that will be actively targeted to prioritized areas for projects. Non-priority areas will be considered on an opportunity basis.

Capital Improvements
Capital improvements are large projects that require significant investment and have a longer lifespan than cost-share programs. These types of projects and activities often require feasibility studies before design and construction can proceed. Capital improvement projects often involve collaboration amongst multiple public and private organizations or governmental departments and are often good candidates for state or federal grant funding. Urban stormwater control projects are an example of capital improvement projects within the plan boundary.

Operations and Maintenance
After projects are installed, the BWSR Grants Administration Manual requires regular on-site inspections and maintenance to ensure the project's continued function and success. These details, along with records, including notes and photos, should be included with each project's Operations and Maintenance Plan. BWSR's recommended inspection plans, according to the Grants Administration Manual, include the following:

Capital-improvement projects with a minimum effective life of 25 years:

- The ends of Years 1, 8, 17, and 24 after certified completion is a recommended minimum.

OUTREACH & INFORMATION

"OUTREACH & INFORMATION" PROGRAMS ARE INTEGRAL TO ACHIEVING THE PLAN'S GOALS. PROGRAMS ARE THOSE THAT INCLUDE INVENTORIES, MONITORING, AND PUBLIC OUTREACH AND ENGAGEMENT EFFORTS.

Outreach & Information

Data Collection and Analysis

Data collection, inventories, and monitoring are crucial for determining where projects are needed, investigating problems, and tracking progress towards the measurable goals of this plan. Current data collection and monitoring efforts are described, along with data gaps that have actions for implementation, in this plan.

Current Data Collection and Monitoring Efforts

Currently, a wide variety of monitoring is carried out on multiple government and local organization levels (Table 7.2). These existing data helped determine the current conditions of surface water, groundwater, and habitat in this plan and developed a starting point for measuring goals moving forward. Because these are already established projects, they don't cost additional funds for this plan.

Table 7.2. Summary of ongoing water quality and quantity monitoring programs. RS = rivers and streams, L = lakes, W = wetlands, and GW = groundwater.

Parameters	MPCA	DNR	MDH	MDA	County and SWCD	Lake Associations
Nutrients	RS, L, W	RS, L		RS, GW	GW	RS, L
Suspended Solids	RS, L, W	RS		RS		
Productivity	RS, L	RS				RS, L
Pesticides				RS, L, W, GW		
Bacteria	RS, L		GW		RS	
Biology	RS, L, W	RS, L				
Water level/Flow	RS, L	RS, L				
Algal Toxins	L					
Invasive Species		RS, L			L	RS, L
Fish Contaminants	RS	L				
Chlorides	RS, L, W	RS	RS, L, GW		L, RS	
Sulfates	RS, L, W	RS, L	RS, L, GW			

Surface Water

- As part of the Intensive Watershed Approach, the MPCA conducts lake and stream monitoring in each watershed on a 10-year cycle. This assessment includes water chemistry and biological parameters, any Total Maximum Daily Loads (TMDL) needed, and results in comprehensive reports. The LPR Watershed was first assessed in 2011 and is scheduled for Cycle 2 to begin in 2022 (Figure 7.3).
- There are many active lake associations that conduct general condition monitoring annually, including total phosphorus, chlorophyll-a, and transparency parameters. This monitoring is coordinated county-wide in Douglas County by the Douglas County Lakes Association. In Todd and Morrison Counties, the Lake Associations or Lake Improvement Districts conduct the water quality monitoring (Figure 7.3).
- The MPCA Watershed Pollutant Load Monitoring Network (WPLMN) provides funding to local partners to assist with intensive water quality monitoring at long-term sites. Monitoring at these sites can be used to track progress towards reduction of phosphorus, sediment, nitrogen, and water outflow during plan implementation (Figure 7.3).
- To track pollutant reductions from plan implementation actions (Section 6) and point source improvements, it would be beneficial to continue monitoring sites in priority resources such as the Long Prairie River, Eagle Creek, Moran Creek, and Tier 1 and Tier 2 lakes.

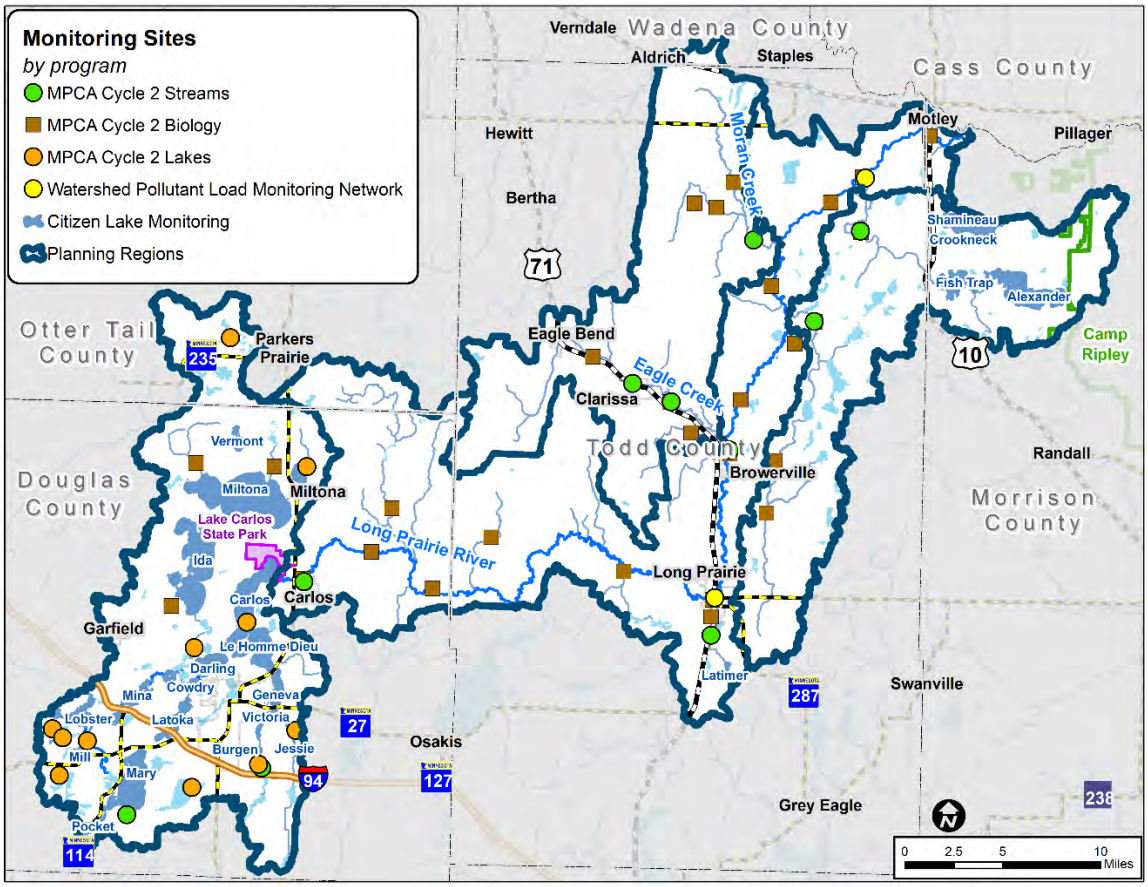


Figure 7.3. Surface water monitoring sites in the LPR Watershed.

Groundwater

- The roles in groundwater monitoring in Minnesota are spread between four agencies:

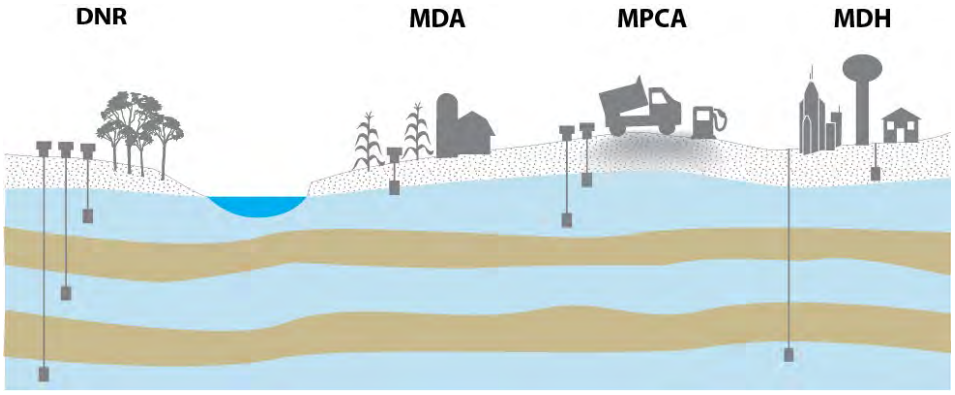


Image credit: DNR

- The DNR monitors groundwater availability and ecological impacts through the Cooperative Groundwater Monitoring network. There are 20 monitoring observation wells in the LPR Watershed.
- The MDA monitors groundwater for agricultural chemicals and fertilizer contamination.
- The MPCA monitors groundwater for industrial contamination.
- The MDH monitors wells and drinking water supplies for public health, including bacteria, nitrates, and arsenic.
- The SWCDs have participated in the MDA's Township Testing Program and Central Sands Private Well Network that work with property owners to test their wells. Results from this testing were used in prioritizing areas for groundwater enhancement (Section 4, Figure 4.4.).

Habitat

- Bird populations are monitored by a DNR program (Loons), Audubon Society (marshbirds, other birds), USFWS (migratory birds), and the National Breeding Bird Survey (all birds).
- During the MPCA's intensive monitoring cycle, the rivers in the watershed are tested for biological parameters, including fish and macroinvertebrates (Figure 6.3). Any biological impairments are assigned a stressor that is likely causing the reduction in diversity. Stressors include loss of habitat, loss of connectivity, sediment, dissolved oxygen, and altered hydrology.
- Forest habitat is described in the Long Prairie Watershed Landscape Stewardship Plan. Areas for restoration and enhancement and recommended species assemblages are outlined in the plan.

Land Stewardship

- Land Stewardship practices are tracked in eLINK and NRCS databases.
- The *Long Prairie Watershed Landscape Stewardship Plan* provides the current number of protected acres in each minor watershed, the potential acres for additional protection, and a per minor watershed protection goal. These numbers were used in this plan in the Forest Land Management Goal, and as these statistics get updated in the future it will show progress toward this goal.

Filling Data Gaps

This planning process has identified data gaps to be filled through implementation of this plan or further into the future (Table 7.3). The following inventory and study activities were developed by the Technical Advisory Committee and the associated Plan Goal (Section 5) is noted.

Table 7.3. Data gaps identified in the Long Prairie River Watershed.

	Data Gap	Associated Plan Goal(s)
	♦ Hydroconditioning of the watershed ♦ *E. coli* DNA source testing ♦ Additional modeling such as PTMApp or ACPF ♦ Culvert inventory ♦ Septic system inventory ♦ Subsurface drainage inventory ♦ Survey abandoned properties/dump sites ♦ Identify manure application sites (septic, municipalities, industry) ♦ Better understand the effects of zebra mussels on lake water quality ♦ Monitoring data since 2012 at Long Prairie River, Eagle and Moran Creeks	♦ Runoff Reduction, Lake Phosphorus Reduction ♦ *E. coli* Reduction ♦ Agricultural Land Management ♦ Runoff reduction ♦ Phosphorus Reduction ♦ Agricultural Land Management ♦ *E.coli* Reduction ♦ *E.coli* Reduction ♦ Phosphorus Reduction ♦ Phosphorus Reduction
	♦ Well inventory ♦ Complete Geologic Atlas for all counties in the watershed ♦ Prescription drug collection sites ♦ Map commercial transportation routes ♦ Monitoring for emerging contaminants (PFAS, estrogenic compounds, etc) ♦ Studies to determine how much nitrogen land management practices reduce in groundwater	♦ Drinking Water Protection ♦ Drinking Water Protection ♦ Drinking Water Protection ♦ Drinking Water Protection ♦ Drinking Water Protection ♦ Drinking Water Protection
	♦ Wetland survey to determine habitat and functional quality ♦ Native plant survey ♦ Identify areas of significance: cultural significance, endangered species, etc. ♦ Score your shore and lake shoreline inventories to identify locations for shoreline restoration	♦ Runoff Reduction ♦ Phosphorus Reduction ♦ General ♦ Phosphorus Reduction
	♦ Comprehensive Plan comparisions ♦ Identify development encroachment on prime agricultural land and protect it with zoning	♦ All ♦ Agricultural Land Management, Forest Land Management

Outreach and Project Development

Public participation and engagement are essential for successfully implementing this plan. The implementation of actions in this plan is voluntary and require willing landowner participation.

Landowners have varying levels of understanding of conservation practices, programs, and funding opportunities available. Many times, the first step towards adopting conservation practices is outreach. Outreach can be conducted in a variety of ways, including mailings, workshops, and social media. It can be targeted to landowners in priority areas to help target conservation practices in those areas to reach plan goals (Figure 7.4).

Figure 7.4. Communications strategies.

The second step is project development, including site visits, technical assistance, peer-to-peer networks, and demonstration plots. Sometimes the outreach and project development can take years before landowners adopt the practices. Once the landowner is interested in adopting practices, incentives and cost-share programs can help them get started. For example, incentives for farmers to adopt cover crops from the SWCD or the EQIP program can help them implement the practice for a few years to ensure profitability.

Forest Walk at The Nature Conservancy Open House Event near Lake Alexander.
Photo credit: Glenys Warner-Holman

Outreach

Watershed partners already implement numerous outreach strategies. Current and future strategies are outlined in Figure 7.5 along with their frequency.

Figure 7.5. Outreach strategies in the Long Prairie River Watershed.

Project Development

Project development is outreach targeted to landowners to specifically develop projects to achieve plan goals. Project development strategies are outlined in Figure 7.6 along with their frequency.

Figure 7.6. Protect development strategies in the Long Prairie River Watershed.

Achieving Plan Goals

Overall plan progress towards goals will be tracked by watershed partners. The Steering Committee will develop ranking criteria to develop projects during work planning, with the assumption that projects identified in this plan will be prioritized for funding.

Table 7.6 summarizes the different levels of measuring progress and how it will be implemented in this plan. Projects will be tracked during plan implementation using a system set up for the watershed.

Table 7.4. Description of how different activities will be measured during plan implementation.

Level	Description	Long Prairie 1W1P Application
Tracking	Practices, acres, pounds of phosphorus.	Outputs in Targeted Implementation Schedule (Section 6). Projects will be tracked with a system and reported in eLINK during implementation.
Estimating	Using lower resolution calculators and tools to give a sense of the collective impacts of projects.	HSPF SAM benefits calculator (Appendix D).
Modeling	Incorporating landscape factors and project information to predict future conditions.	HSPF in WRAPS Cycle 2 starting in 2022.
Measuring	Using field-collected information to assess the condition of the water.	Pollutant Load Monitoring Network stream monitoring at watershed pour point (S005-729), WRAPS Cycle 2 in 2022, continued annual monitoring at Tier 1 and Tier 2 lakes, Long Prairie River, Eagle, and Moran Creeks throughout the 10-year plan.
Proving	Having enough measurements to compare with standards and decide if it's improved.	Analysis of lake water quality trends, Analysis of loading at watershed pour point (S000-282), WRAPS Cycle 2 in 2022.

Water, Equity, and Resiliency

Water is a universal, free-flowing entity and a requirement for all life. Water is therefore not only its material, chemical composition; water shapes and is also shaped by humans and embedded in social, cultural, and political practices.

The water belongs to everyone, so the work belongs to everyone.

Equity

Equity throughout communities and in larger geographies is important because of increasing temperature and precipitation trends and the development of sustainable and resilient communities. Addressing equity at a watershed scale is a way of exploring, delineating, and prescribing actions for addressing the equitable management of natural resources for the welfare

of all people in those communities within the plan boundaries. Though particular goals or actions directly addressing equity are not specifically prescribed in this plan, it is encouraged to be considered during plan implementation.

Resiliency

Resilience is the ability of a system to experience change but not be affected. Resilience can be both social and ecological (MGLP, 2021). Social resilience is organization and regulation. For example, having a Lake Association or Lake Improvement District builds social framework to implement lake projects. Ecological resilience includes landscape diversity, water retention, and fixing past hydrological alterations. For example, protecting forests at the watershed and landscape scale provide resilience to increasing precipitation trends.

This plan includes actions and programs that build both social and ecological resilience.

- Social resilience programs and actions:
    - Regulatory program
    - Outreach and education program
    - Cost share incentives for practices
- Ecological resilience programs and actions:
    - Forest management and protection
    - Cover crops
    - Wetland restoration
    - Stormwater retention

The Nature Conservancy recently completed a national analysis for climate resilience called the Resilient and Connected Network. These priorities line up with focus areas in this plan and these maps can be used to support project funding requests. Specific information can be found at the links below.

- https://maps.tnc.org/resilientland/
- https://climate.state.mn.us/minnesotas-climate-action-framework

By managing the watershed holistically including equity, resilience, and water and land stewardship, the Long Prairie River watershed partners can work towards achieving the vision of the watershed:

Uniting the people of the Long Prairie Watershed in balancing agriculture, recreation, tourism, and timber with the protection of the environment for the future.

Section 8. Plan Administration and Coordination

Section 8.
Plan Administration and Coordination

Plan Administration describes how the plan will be implemented, how the watershed partners will work together, how the funding will move between them, and who will handle the administrative duties. The LPCWMP will be implemented through a Memorandum of Agreement (MOA) between the local governments in Figure 8.1. The LGUs in the MOA will be collectively referred to as the Long Prairie River Watershed Collaboration.

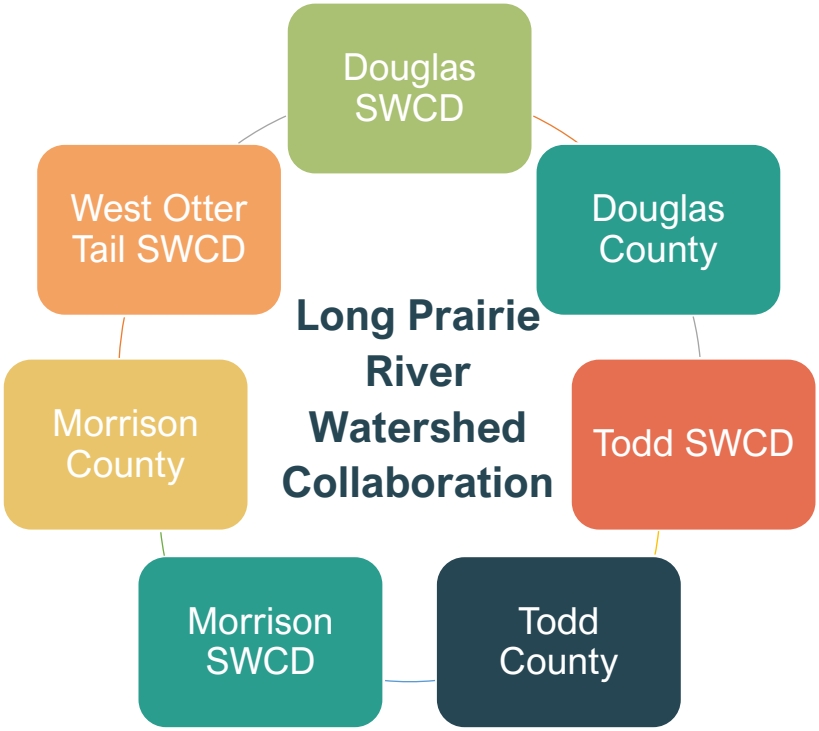


Figure 8.1. Members of the Long Prairie River Watershed Collaboration.

Decision-making and Staffing

Implementation of the LPCWMP will require increased capacity of plan partners, including increased staffing, funding, and coordination from current levels. Successful plan implementation will depend on generating active interest and partnerships within the watershed.

The decision-making and staffing for implementing the LPCWMP will be conducted based on the concepts outlined in this section of the plan. Presented below are the probable roles and functions related to plan implementation (Table 8.1). Expectations are that the roles of each committee will shift and change during implementation to best meet the needs of the Long Prairie River Watershed Collaboration. Fiscal and administrative duties for plan implementation will be assigned to an LGU through a Policy Committee decision as outlined in the formal

agreement. Responsibilities for work planning and serving as the central fiscal agent will be revisited by the Policy Committee on a biennial basis.

Table 8.1. Roles for LPCWMP Implementation. The LGUs will be collectively referred to as the Long Prairie River Watershed Collaboration.

Committee Name	Description	Primary Implementation Role and Functions
Policy Committee	One board member from each MOA entity.	♦ Meet twice a year or as needed ♦ Annual review and confirmation of Steering and Technical Advisory Committee recommendations ♦ Direction to Steering Committee on addressing emerging issues ♦ Recommend approval of the annual work plan by the individual boards of the MOA members ♦ Review the implementation funds from plan participants
Local Fiscal Agent and Coordinator	One or two of the participating LGUs as decided by the Policy Committee.	♦ Convene committee meetings ♦ Prepare the annual work plan ♦ Prepare and submit grant applications/funding requests ♦ Research opportunities for collaborative grants ♦ Report on how funds were used ♦ Compile annual results for annual assessment
Steering Committee	One staff member from each MOA entity and local BWSR Board Conservationist.	♦ Meet monthly or as needed to review projects ♦ Review the status of available implementation funds from plan participants ♦ Review opportunities for collaborative grants ♦ Review annual fiscal reports ♦ Review annual reports submitted to BWSR ♦ Biennial review and confirmation of priority issues ♦ Evaluate and recommend response to emerging issues ♦ Prepare plan amendments ♦ Implement the targeted implementation schedule
Advisory Committee	State Agencies and local stakeholders appointed by the Policy Committee.	♦ Meet annually or as needed ♦ Review and provide input for the annual work plan ♦ Review and identify collaborative funding opportunities ♦ Recommendations to Steering Committee on program adjustments ♦ Assist with execution of the targeted implementation schedule ♦ Provide input for the annual work plan ♦ Communicate the needs of local landowners ♦ Be a local supporter for the plan

Collaboration

Collaboration between Planning Partners

The Long Prairie River Watershed Collaboration acknowledges the value of collaboration between planning partners to achieve successful plan implementation. Benefits of successful collaboration for the Long Prairie River Watershed Collaboration include consistent implementation of actions watershed-wide, increase likelihood of funding, and resource efficiencies gained.

There is already some collaboration between the Long Prairie River Watershed Collaboration. This collaboration is an advantage for implementation in the watershed. Where possible and feasible, the Long Prairie River Watershed Collaboration will pursue opportunities for collaboration with fellow Long Prairie River Watershed Collaboration members to gain program efficiencies, pursue collaborative grants, and provide technical assistance. The Long Prairie River Watershed Collaboration will also review similarities and differences in local regulatory administration to identify local successes and identify changes needed in the future to make progress towards goals outlined in this plan.

Current collaboration includes the West Central Technical Service Area 2 (WCTSA) (Figure 8.2). The WCTSA provides engineering assistance to private landowners via SWCDs for a variety of non-point water quality management practices. They will be instrumental in assisting in LPCWMP plan implemenation.

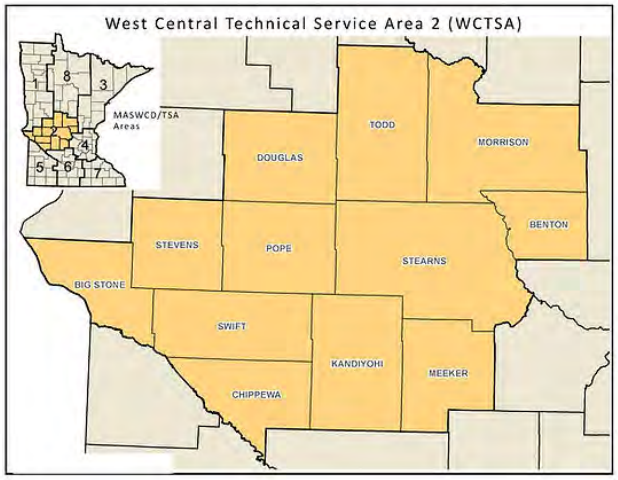


Figure 8.2. Counties covered by the West Central Technical Service Area.

Currently, there are no shared positions between the Long Prairie River Watershed Collaboration but future possibilities that have been discussed by the Steering Committee include:

- Media & Marketing
- Conservation Agronomist
- Wetland Conservation Act
- Forest Management
- Project Engineer

Collaboration with Other Units of Government

The Long Prairie River Watershed Collaboration will continue to coordinate and cooperate with other governmental units at all levels. Coordination with state agencies, including BWSR, DNR, MDH, MDA, and the MPCA, will continue as they are experts in many of the topic areas included in this plan, have been participating members of the planning Advisory Committee, and will be members of the implementation Advisory Committee. Cooperation with units of government such as NRCS, municipalities, Alexandria Lakes Area Sanitary District, city councils, township boards, county boards, joint powers boards, and other water management authorities are a practical necessity to facilitate watershed-wide activities. Examples of collaborative programs in the watershed include EQIP (NRCS), CRP (FSA), Minnesota Agriculture Water Quality Certification (MDA), Targeted Township Testing (MDA), Farm Bill Biologist (MDA), Wellhead Protection for Community Water Suppy DWSMAs (MRWA and MDH), and Minnesota Forest Resource Council and WRAPS (MPCA).

LPCWMP implementation actions and goals were developed through a collaborative process. Some agency goals, objectives, directions, and strategies for resource management within the plan area have not been selected as priority issues. The responsibility for achieving the goals associated with lower priority tier issues remains with the respective agency or organization. Tier 3 issues and emerging issues can be found in Section 3.

Collaboration with Others

Local support and partnerships will drive the success of final outcomes of the actions prescribed for implementing this plan. Because this plan's focus is voluntary land stewardship practices, collaborations with landowners in the watershed is of paramount importance. There are many actions in the plan that describe working with individual landowners and providing cost share and technical assistance for implementing land stewardship practices (Section 6). Many of the existing collaborations in the watershed have been involved in the development of this plan and are committed to protecting and enhancing the watershed resources. Partners for these collaborations include, but are not limited to, Lake Associations, Lake Improvement Districts, Douglas County Lakes Association (DCLA), The Nature Conservancy, Central Minnesota Irrigators (CMIC), Central Lakes College Agriculture and Energy Center (CLC), Ducks Unlimited, Trout Unlimited, MN Deer Hunters Association, Pheasants Forever, Sportsman's Clubs, National Wild Turkey Federation, Northwest AqwaTek Solutions, Freshwater Society, local co-ops, University of Minnesota Extension, civic groups, private businesses, individuals, and foundations. The Long Prairie River Watershed Collaboration collaborates with these groups for education, outreach, monitoring, and project implementation.

Todd County fields in winter

Regional Collaborations

Two notable regional collaborations between local, state, and federal governments as well as local organizations are:

- **Regional Conservation Partnership Program (RCPP): Implementing Innovative Irrigation Practices to Protect Groundwater Quality and Quantity.** This project, sponsored by the Minnesota Department of Agriculture, is a partnership of 20 Minnesota SWCDs, Central Lakes College Ag and Energy Center, AgCentric, Northern Center of Agricultural Excellence, Mille Lacs Band of Ojibwe, Irrigators Association of Minnesota, Central Minnesota Irrigators, Todd-Wadena Electric Coop, Reinke Manufacturing, RD Offutt Farms, RESPEC Consulting, University of Minnesota, Minnesota Board of Water and Soil Resources, and Minnesota Department of Health. https://www.agcentric.org/rcpp-precision-irrigation/

Center pivot irrigation

- **Camp Ripley Sentinel Landscape.** Partners in protecting and enhancing natural resources within the landscape include US Army National Guard, Farm Service Agency, Forest Service, Natural Resource Conservation Service, US Department of Defence, US Fish and Wildlife Service, National Park Service, Board of Water and Soil Resources, Minnesota Department of Agriculture, Minnesota Department of Military Affairs, Minnesota Department of Natural Resources, Forest Resource Council, Minnesota Pollution Control Agency, City of Baxter, Crow Wing Soil and Water Conservation District, Morrision Soil and Water Conservation District, Mississippi Headwaters Board, Sylvan Township, Great River Greening, The Conservation Fund, and The Nature Conservancy. In the future, partners could explore expanding the sentinel landscape borders to enhance protection benefits in the region. https://sentinellandscapes.org/landscapes/camp-ripley/

Camp Ripley Sentinel Landscape

Funding

The Long Prairie River Watershed Collaboration will pursue funding opportunities collaboratively in order to implement the activities prescribed in the targeted implementation schedule (Section 6). Current programs and funding (Level 1) will not be enough to meet the full targeted implementation schedule. The success of plan implementation will hinge on reliable non-competitive watershed-based funding being available for plan implementation in addition to competitive state, federal, and private grant dollars. The Long Prairie River Watershed Collaboration acknowledges that additional staffing may be necessary to meet plan goals. Because implementation is occurring under an MOA, staff will be hired by existing local government units in the watershed.

The current funding level (Level 1) is based on the annual revenue and expenditures for the following counties and SWCDs: Douglas, Morrison, Otter Tail, and Todd. The current level of investment by each local government unit is expected to remain the same during the LPCWMP 10-year time period. It includes local funds such as county allocations for SWCD support, in-kind match for office space, tree sale, and state funds such as state programs and conservation delivery grants, including the Natural Resources Block Grant and SWCD Local Capacity Building Grants. It also includes federal programs like the Farm Bill (Table 8.2).

Table 8.2. Level 1 funding for the Long Prairie River Watershed.

Funding Level	Annual Local Estimate	Annual State Estimate	Annual Federal Estimate	Annual Total Estimate
Level 1	$438,792 (47%)	$448,128 (48%)	46,680 (5%)	$933,600

Level 2 funding describes the baseline funding plus additional funding that could be obtained to implement the plan, including noncompetitive watershed-based funding and competitive grants (Table 8.3). The total estimated funding for Level 2, which is just the funding that is administered by the Long Prairie River Watershed Collaboration, is $1,366,180 annually and $13,661,800 over the 10-year life of the LPCWMP (Table 8.3). Administration costs are estimated at 10% of the Watershed-Based Funding annually (~$35,740).

Level 3 funding consists of funding that is administered outside of the Long Prairie Watershed Collaboration by partners, including projects implemented by The Nature Conservancy, CRP, SFIA, NRCS, and state agencies. There is likely much more project funding occuring in the watershed in addition to these totals as it is difficult to document projects by all entities, including private landowners.

Table 8.3: Estimated implementation funding for the LPCWMP (per Levels 1-3)

Funding Level	Description	Estimated Plan Total (10 years)	Estimated Annual Average
Level 1	Current Baseline Funding	$9,336,000	$933,600
Level 2	**Baseline + Watershed-Based Funding + Grants**	**$13,661,800**	**$1,366,180**
Level 3	Partner funding (i.e. TNC, CRP, NRCS, SFIA)	$21,060,300	$2,106,030
	Total Level 2+3*	$34,722,100	$3,472,210

*Level 1 is not included in the overall total because Level 2 includes Level 1

The total funding can also be broken out by Implementation Program (Table 8.4).

Table 8.4: Estimated implementation funding for the LPCWMP (per program, Levels 2+3).

Implementation Program	Percent
Manage It	51%
Fix It	18%
Keep It	23%
Outreach & Information	8%
Total	**100%**

Overall, 92% of the plan funding is being used for implementing conservation and 8% for Outreach & Information (Table 8.4). The funding sources vary from goal to goal, and some goals, like Forest Land Management, have a lot of funding from Level 3, which in this case is the SFIA that is funded directly from the Minnesota state general fund (Figure 8.3).

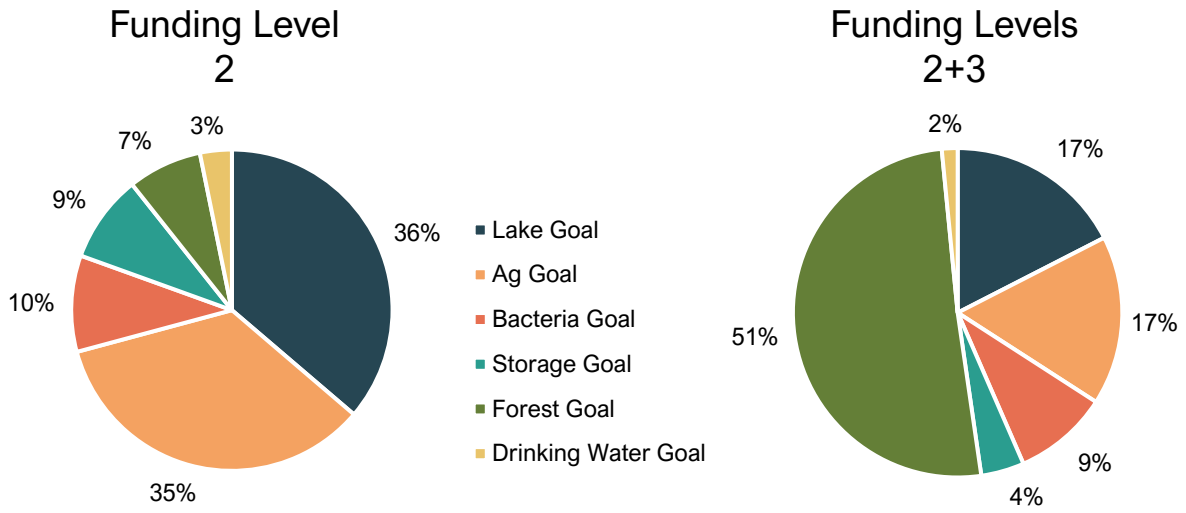


Figure 8.3. Percentage of funding for each goal comparing Funding Level 2 and Levels 2+3.

Plan funding can also be broken down by management strategy. Figure 8.4 reflects the fact that this plan is focused on protection, and there are very few impairments in this watershed.

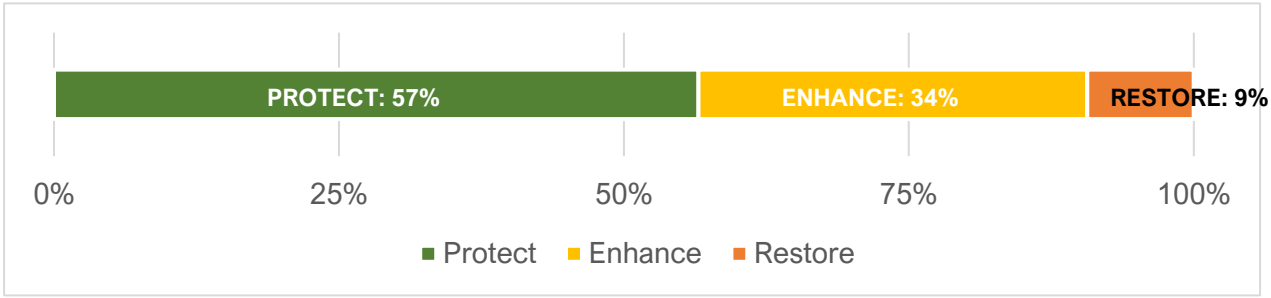


Figure 8.4. Percentage of funding going to each management category.

Table 8.5 lists the most used programs and grants for executing the implementation programs described by this plan and used within the targeted implementation schedule. The funding grants and programs are cross-referenced to plan implementation programs, thereby showing potential sources of revenue for implementation. Programs will be coordinated uniformly throughout the watershed where possible.

Table 8.5: Funding sources available for implementing the LPCWMP

Source	Agency	Program/Fund Name	Type of Assistance	Form of Assistance				
STATE FUNDING	BWSR	Clean Water Fund	Financial	Grant	•	•	•	•
	BWSR	Reinvest in Minnesota (RIM)	Financial	Easement			•	
	BWSR	Natural Resources Block Grant	Financial	Grant	•	•		
	BWSR	SWCD Local Capacity Service Grants	Financial	Grant	•	•	•	•
	BWSR	Erosion Control & Management Program	Financial	Grant	•	•		•
	DNR	Conservation Partners Legacy	Financial	Grant	•		•	
	DNR	Aquatic Invasive Species Control	Financial/ Technical	Grant		•		
	DNR	Forest Stewardship Program	Technical	Cost Share		•	•	
	DNR	Aquatic Management Area, Wildlife Management Area	Financial	Fee Title Acquisition			•	
	DNR/Revenue	Sustainable Forest Incentive Act	Financial	Incentive payment			•	
	MPCA	Clean Water Partnership	Financial	Grant	•			
	MPCA	State-Revolving Fund	Financial	Grant	•			
	MPCA	Surface Water Assessment Grant	Financial	Grant				•
	MDH	Source Water Protection Grant	Financial	Grant	•	•	•	
	MDA	Nitrate Testing	Technical	Monitoring				•
	MDA	Agricultural BMP Loan Program	Financial	Loan	•	•		
	LSOHC	Outdoor Heritage Funds	Financial	Grant			•	
	LCCMR	Environmental Trust Fund	Financial	Grant	•		•	
	Legislature	Bonding	Financial	Bond	•			
FEDERAL FUNDING	FSA	Conservation Reserve Program	Financial	Cost Share		•	•	
	FSA	Grassland Reserve Program	Financial	Cost Share		•	•	

Source	Agency	Program/Fund Name	Type of Assistance	Form of Assistance				
	NRCS	Conservation Innovation Grant	Financial	Grant	•			
	NRCS	EQIP	Financial	Cost Share	•	•		
	USGS	Stream Gaging Network	Technical	Monitoring				•
	USACE	Planning Assistance	Technical	Planning		•		
	EPA	State Revolving Fund	Financial	Loan	•			
OTHER FUNDING	Ducks Unlimited		Financial/ Technical	Easement/Cost Share	•		•	
	Trout Unlimited		Financial/ Technical	Easement/Cost Share	•		•	
	Muskies, Inc		Financial/ Technical	Easement/Cost Share	•		•	
	The Nature Conservancy		Financial	Easement			•	
	Minnesota Land Trust		Financial	Easement			•	

Local Funding

Funding derived from either the local property tax base or in-kind services of any personnel funded from the local tax base is local revenue. Local funding excludes general operating funds obtained from BWSR, fees for service and grants, or partnership agreements with the federal government or other conservation organizations.

Local funds will be used for locally focused programs where opportunities for state and federal funding are lacking because of misalignment of a program's purpose with state or federal objectives. These funds will also be used for matching grants where statutory authority already exists. Some examples include:

Water Planning Authority for Special Projects (Minnesota Statute 103B.355):

- Counties have the authority to levy funds for priority projects and assist SWCDs with program implementation.

Road Authorities:

- Counties can provide limited local funding to assist with the local share of road retention and other floodwater-retention projects.

Drainage System Costs (Minnesota Statute 103E):

- Funding of all costs related to construction, maintenance, and improvement of drainage systems is apportioned to property owners within the drainage system based on the benefits received from the improved drainage.
- A drainage authority can accept and use funds from sources other than assessments from benefitted landowners for the purposes of flood control, wetland restoration, or

water quality improvements. Minnesota Statutes Chapter 103E, Section 15, subdivision 1a requires drainage authorities to investigate the potential use of external funding for the purposes identified in Minnesota Statutes Chapter 103E, Section 11, subdivision 5.

State Funding

Leadership from the state agencies that are tasked with protection and restoration of Minnesota's water resources came together and agreed on a set of high-level state priorities that align their programs and activities working to reduce nonpoint source pollution. The resulting Nonpoint Priority Funding Plan outlines a criteria-based process to prioritize Clean Water Fund investments. These high-level state priority criteria include:

- Restoring those waters that are closest to meeting state water quality standards
- Protecting those high-quality unimpaired waters at the greatest risk of becoming impaired
- Restoring and protecting water resources for public use and public health, including drinking water

State funding includes funds derived from the State tax base for state cost-share and regulatory purposes. State funding excludes general operating funds obtained from BWSR, counties, fees for service and grants, or partnership agreements with the federal government or other conservation organizations.

Collaborative Grants

The fiscal agent will apply for collaborative grants on behalf of the Long Prairie River Watershed Collaboration, which may be competitive or non-competitive. The assumption is that future base support for implementation will be provided to the LPCWMP as one or more non-competitive implementation watershed-based funding allocations. Where the purpose of an initiative aligns with the objectives of various state, local, non-profit, or private programs, these dollars will be used to help fund the implementation programs described by this plan. Funding sources that are currently available at the time of developing this plan are listed in Table 8.4.

Federal Funding

Federal funding includes all funds derived from the federal tax base. This includes programs such as the EQIP administered by NRCS. Federal funding does not include general operating funds obtained from BWSR, counties, fees for service and grants or partnership agreements with state government or other conservation organizations.

Federal agencies can be engaged following the approval of this plan and prior to implementation, to create an avenue to access federal resources for implementation. Opportunity may exist to leverage state dollars through some form of federal cost-share program. Where the purpose of an implementation program aligns with the objectives of various federal agencies, federal dollars will be used to help fund the implementation programs described by this plan. For example, the NRCS will likely provide support for agricultural best management practices, while the FSA may provide land-retirement program funds such as CRP (Table 8.4).

Other Funding Sources

Foundations, nonprofit organizations, and private contributions (including landowners and corporate entities) will be sought for plan implementation activities. Local foundations may fund education, civic engagement, and other local priority efforts. Several conservation organizations are active in the watershed, such as The Nature Conservancy, the Douglas County Lakes Association, Ducks Unlimited, Trout Unlimited, MN Deer Hunters Association, Pheasants Forever, Sportsman's Clubs, National Wild Turkey Federation, Northwest AqwaTek Solutions, Freshwater Society, CLC Ag Center, and local co-ops. These organizations acquire funding of their own and may have project dollars and technical assistance that can be leveraged. Major cooperators and funding sources are private landowners who typically contribute 25% of project costs and many donate land, services, or equipment for projects or programs.

Work Planning

This plan envisions collaborative implementation. Biennial work planning will be completed to align the priority issues addressed, the availability of funds, and the roles and responsibilities for implementation.

Local Work Plan

The Long Prairie River Watershed Collaboration will be responsible for completing a biennial work plan based on the targeted implementation schedule. Adjustments to the biennial work plan will be made through self-assessments. Then the biennial work plan will be presented to the Policy Committee, who is ultimately responsible for its approval. The purpose of these biennial work plans is to obtain BWSR watershed-based implementation funding, maintain collaborative progress towards completing the targeted implementation schedule and reaching the outcomes prescribed in the plan.

Funding Request

The Long Prairie River Watershed Collaboration will collaboratively develop, review, and submit a watershed-based funding request from this plan. This request will be submitted to and ultimately approved by the Policy Committee prior to submittal to BWSR. The watershed-based funding request will be developed based on the 2023-2024 priority projects outlined in the targeted implementation schedule and any adjustments made through self-assessments.

Todd County farmland

Todd County farmland

Assessment, Evaluation, and Reporting

Accomplishment Assessment

The Steering Committee will provide the Policy Committee with an annual update on the progress of the plan's implementation. For example, any additional acres of land BMPs will be tracked so that each year the Steering Committee will report how many additional acres were managed in the watershed. A tracking system will be used to measure progress and will serve as a platform for plan constituents and the public. Tracking these metrics will also make them available for supporting future work plan development, progress evaluation, and reporting.

Partnership Assessment

Biennially, the Steering Committee, with the help of the Advisory Committee, will review the LPCWMP goals and progress toward implementation, including fulfillment of committee purposes and roles, efficiencies in service delivery, collaboration with other units of government, and success in securing funding. During this review process, feedback will be solicited from the boards, Policy Committee, Citizen Committee, and partners such as state agencies and non-governmental organizations. This feedback will be presented to the Policy Committee to set the coming biennium's priorities for achieving the plan's goals and to decide on the direction for grant submittals. Also, this feedback will be documented and incorporated into the 5-year evaluation. The Long Prairie River Watershed Collaboration intends to pursue watershed-based funding to meet goals and plan implementation schedules.

Five-Year Evaluation

Beginning in 2022, this plan will be in effect for 10 years. Over the course of the plan's life cycle, progress toward reaching goals and completing the implementation schedule may vary. New issues may emerge as the plan progresses, and/or new monitoring data, models, or research may become available. Therefore, in 2027-2028, a 5-year evaluation will be undertaken, as per the BWSR Order approving it, to determine if the current course of actions is sufficient to reach the goals of the plan, or if a change in the course of actions is necessary. At the 10-year mark, and every 5 years after, the plan will be fully re-evaluated.

Reporting

LGUs have several annual reporting requirements. Some of these reporting requirements will remain a responsibility of the LGUs. Reporting related to grants and programs developed collaboratively and administered under this plan will be reported by the plan's fiscal agent (Table 8.1). In addition to annual reporting, the Long Prairie River Watershed Collaboration will also develop a biennial *Watershed Report* to present to the Policy Committee. This report will document progress toward reaching goals and completing the targeted implementation schedule and will describe any new emerging issues of priorities. The information needed to biennially update the *Watershed Report* will be developed through the annual evaluation process.

The fiscal agent is responsible for submitting all required reports and completing annual reporting requirements for LPCWMP as required by state law and policy. The Steering

Committee will assist in developing the required reports and roles and responsibilities will be defined in the MOA Bylaws.

Plan Amendments

The LPCWMP is effective through 2032 per the BWSR Order approving it. Activities described in this plan are voluntary, not prescriptive, and are meant to allow flexibility in implementation. An amendment will not be required for addition, substitution, or deletion of any of the actions, initiatives, and projects if those changes will still produce outcomes that are consistent with achieving the plan goals. This provision for flexibility includes changes to the activities except for those of capital improvement projects.

During the time this plan is in effect, it is likely that new data giving a better understanding of watershed issues and solutions will be generated, especially with MPCA's Cycle 2 starting in summer of 2022. Administrative authorities, state policies, and resource concerns may also change. New information; significant changes to the projects, programs, or funding in the plan; or the potential impact of emerging concerns and issues may require activities to be added to the plan. If revisions are required or requested, the Policy Committee will initiate a plan amendment process consistent with Minnesota Statute 103B.314, Subd. 6.

Formal Agreements

The Long Prairie River Watershed Collaboration is a coalition of Douglas SWCD, Douglas County, Morrison SWCD, Morrison County, West Otter Tail SWCD, Otter Tail County, Todd County, and Todd SWCD (Figure 8.1). The Policy Committee previously entered into a Memorandum of Agreement (MOA) for planning the One Watershed, One Plan for the LPR Watershed (Appendix H). The entities will enter into a joint powers collaboration implemented through a memorandum of agreement for purposes of implementing this plan. The Policy Committee is advisory to the individual county and SWCD boards under the umbrella of the MOA.