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CLEAN WATER LAND & LEGACY AMENDMENT

WinLaC Partnership —1W1P—

Mississippi River Winona/La Crescent (WinLaC) Comprehensive Watershed Management Plan

2023-2033

WinLaC Partnership —1W1P—

Plan Acknowledgements

WinLaC Partnership

Houston County and Root River SWCD

Olmsted County and SWCD

Wabasha County and SWCD

Winona County and SWCD

City of Winona

Stockton-Rollingstone-Minnesota City Watershed District

Funding provided from the Clean Water Fund as part of the Clean Water, Land, and Legacy Amendment

Advisory Committee Members

Board of Water and Soil Resources

City of Elgin

City of Goodview

City of Kellogg

City of La Crescent

City of Plainview

City of Wabasha

Dairy Grazing Apprenticeship Program

Department of Natural Resources

Friends of Whitewater

Healthy Lake Winona

Hiawatha Valley Resource Conservation and Development Council

Izaak Walton League

La Crescent Area Natural Resource Advisory Group

Land Stewardship Project

Minnesota Department of Agriculture

Minnesota Department of Health

Minnesota Pollution Control Agency

MN Association of Townships

MN Forest Resources Council

MN Forestry Association

MN Land Trust

MN Wild Turkey Federation

National Eagle Center

Olmsted / Wabasha Corn / Soybean Growers

Pheasants Forever

Prairie Enthusiasts

Quail Forever

The Nature Conservancy

Trout Unlimited

University of Minnesota Extension

US Fish & Wildlife Service

Whitewater Farmer-Led Council

Whitewater River Watershed Project

Whitewater Wildlife Management Area

Winona County Farm Bureau

Winona State University

Created in Collaboration With

HOUSTON engineering, inc.

Young Environmental Consulting Group, LLC

Saint Mary's University of Minnesota GeoSpatial Services

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Acronyms

1W1P	One Watershed, One Plan
AACE	Association for Advancement of Cost Engineering
AIS	Aquatic Invasive Species
BMP	Best Management Practice
BWSR	Board of Water and Soil Resources
CIP	Capital Improvement Project
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CSP	Conservation Stewardship Program
CWF	Clean Water Fund
CWMA	Cooperative Weed Management Area
CWMP	Comprehensive Watershed Management Plan
DNR	Minnesota Department of Natural Resources
DO	Dissolved Oxygen
DWSMA	Drinking Water Supply Management Area
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentive Program
FEMA	Federal Emergency Management Agency
FSA	Farm Service Agency
GAM	Grants Administration Manual
GIS	Geographic Information System
HLW	Healthy Lake Winona
HUC	Hydrologic Unit Code
LGU	Local Government Unit
LSOHC	Lessard-Sams Outdoor Heritage Council
MBS	Minnesota Biological Survey
MCL	Maximum Contaminant Level
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MFRC	Minnesota Forest Resources Council
MLT	Minnesota Land Trust
MOA	Memorandum of Agreement

MPCA	Minnesota Pollution Control Agency
MS4	Municipal Separate Storm Sewer System
NACD	National Association of Conservation Districts
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PTMApp	Prioritize, Target, and Measure Application
PWS	Public Water Supply
RCPP	Regional Conservation Partnership Program
RIM	Reinvest in Minnesota
SCD	Soil Conservation District
SMUMN	St. Mary's University of Minnesota
SRMCWD	Stockton-Rollingstone-Minnesota City Watershed District
SSTS	Subsurface Sewage Treatment System
SWAG	Surface Water Assessment Grant
SWAT	Soil and Water Assessment Tool
SWCD	Soil and Water Conservation District
TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TNC	The Nature Conservancy
TP	Total Phosphorus
TSA	Technical Service Area
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WARSSS	Watershed Assessment of River Stability and Sediment Supply
WASCOB	Water and Sediment Control Basin
WBIF	Watershed-based Implementation Funding
WCA	Wetland Conservation Act
WHPA	Wellhead Protection Area
WJPB	Whitewater Joint Powers Board
WMA	Wildlife Management Area
WPLMN	Watershed Pollutant Load Monitoring Network
WPP	Wellhead Protection Plans

WRAPS	Watershed Restoration and Protection Strategy
WWTF	Wastewater Treatment Facilities

Executive Summary

WinLaC Partnership 1W1P

Executive Summary

The Mississippi River Winona/La Crescent watershed (WinLaC) is in southeastern Minnesota where it drains about 750 square miles within four counties (Houston, Olmsted, Wabasha, and Winona). The watershed is home to around 60,000 people, many of whom reside in the cities of Winona, La Crescent, Lewiston, Saint Charles, Eyota, and Wabasha.

The WinLaC watershed is in the driftless ecoregion and the Lower Mississippi River Basin. The watershed consists of cropland, forest, and grassland and supports trout streams. For planning purposes, the watershed plan boundaries cover two USGS HUC-08 watersheds: portions of the Mississippi River-Winona watershed and the Mississippi River-La Crescent watershed located in Minnesota. The majority of the HUC-08s are in Wisconsin, but One Watershed One Plans do not cross state boundaries.

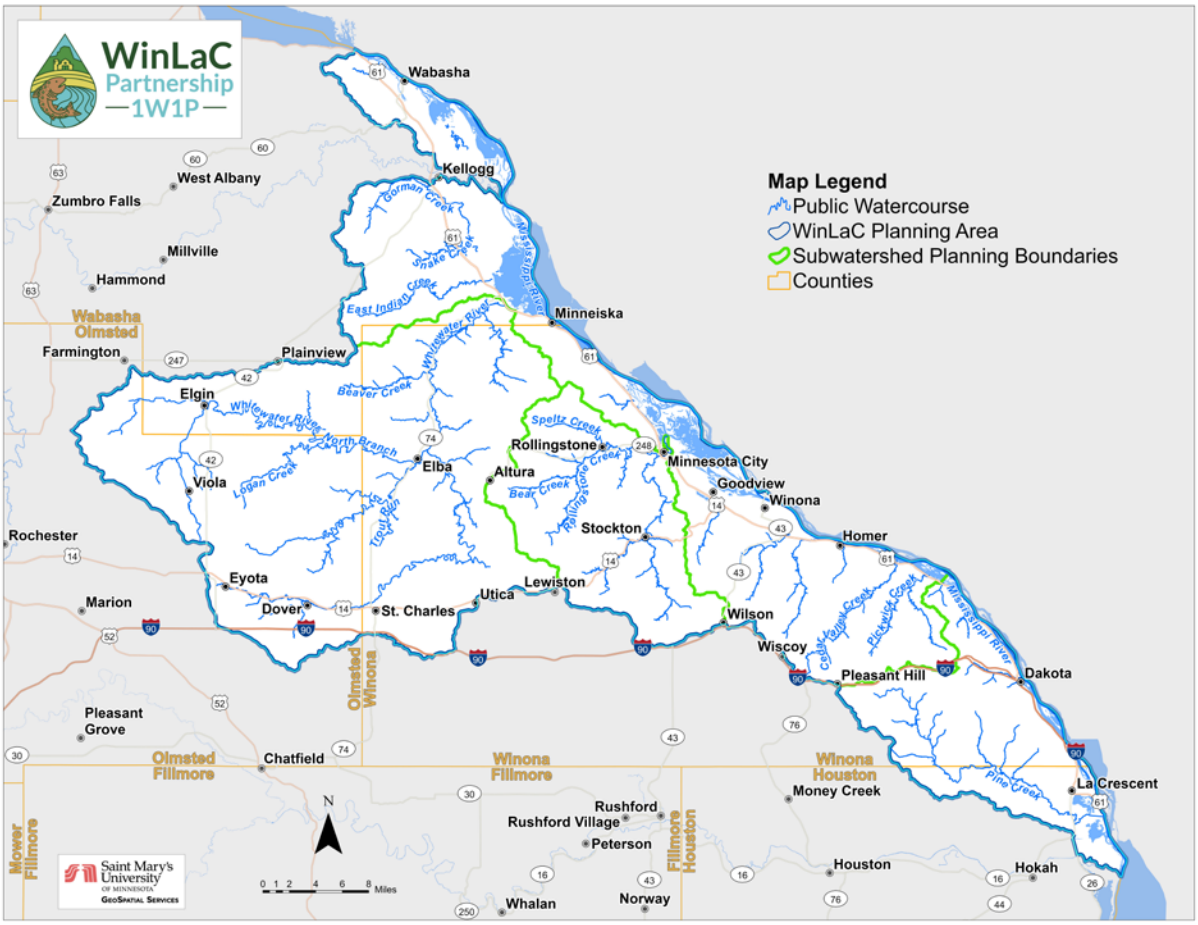


Figure ES-1: WinLaC watershed planning boundary

Purpose, Roles, and Responsibilities

The purpose of One Watershed, One Plan is to align water planning along watershed boundaries, not jurisdictional boundaries such as counties as was done in the past. Prior to this single plan, each of the four counties as well as the watershed district had water-related plans that covered portions of this watershed. Water is connected and ignores county boundaries, so to truly manage the resources overall, a watershed scale is most efficient and effective.

The WinLaC planning process began with a Memorandum of Agreement between local agencies and organizations which includes:

- Houston, Olmsted, Wabasha, and Winona counties,
- Olmsted, Root River, Wabasha, and Winona Soil and Water Conservation Districts,
- The City of Winona, and
- Stockton-Rollingstone-Minnesota City Watershed District.

These entities are collectively known as the WinLaC Partnership, with the vision and mission statement below:

Vision: Through our partnership, we are collaborating to unify local priorities into one active, relevant watershed management plan which streamlines efforts and shares current and future resources.

Mission: Provide citizens with clean water, balanced ecosystems, sustainable farmland, and diverse healthy communities.

A Plan to Reflect the Watershed

The WinLaC CWMP needed to be drafted in a way that appropriately reflects the community it is intended to serve. To accomplish this, the planning process was designed to actively engage two main groups: local planning committees and the public.

Local Planning Committees

The One Watershed, One Plan process uses existing authorities; therefore, a representative from each governmental unit in the Memorandum of Agreement (MOA) was appointed by each board to serve on the **Policy Committee**, which is the decision-making body for this plan. The **Planning Work Group** consisted of staff from each of the entities in the MOA and generated the content in this plan. The **Technical Advisory Committee** consisted of state agencies and local stakeholders and contributed to plan content in an advisory role.

Community Engagement

A simplified summary of the process used to create the WinLaC CWMP is shown in **Figure ES-2**. To ensure the plan reflected community input, events were held at each milestone to receive feedback.

Figure ES-2: Milestones for the WinLaC CWMP planning process.

Public Kickoff Meeting

To receive feedback on **identifying and prioritizing issues**, the WinLaC Partnership hosted a Public Open House Kickoff in the city of Winona in September 2021. During the same time, a survey was created to engage residents not able to attend the kickoff to identify top issues facing water resources in the watershed.

According to responses received, the largest issues facing natural resources were:

- Protecting drinking water from contamination,
- Pollutants like sediment, nutrients, and bacteria impacting aquatic life and recreation, and
- Erosion along streambanks or shorelines.

When asked about specific waterbodies and natural areas of concern, responses indicated that members of the public are most concerned about:

- Lake Winona,
- Whitewater River and,
- Mississippi River.

Figure ES-3: Survey question responses "Using 4-5 words, when you think of the WinLaC Watershed, what comes to mind?"

Waterside Chats

To gain an understanding of residents' water quality **goals** and acceptable solutions to include as **implementation actions** in the plan, the WinLaC Partnership hosted five facilitated "Waterside Chats." These listening sessions were held in Stockton, La Crescent, Winona, Saint Charles, and Wabasha during March and April of 2022. Small group discussions identified where the most important issues are located in the watershed, and what actions should be taken to fix those issues.

We Are Water

In addition to the Waterside Chats, public engagement was also provided during a We Are Water exhibit held in the city of Winona from March through April 2022. People visiting the exhibit had the opportunity to gain experience about the watershed and share what they find most important about it; surveys at the exhibit asked what **implementation action** people wanted to see in the watershed.

WinLaC Waterside Chat Listening Session

We Are Water MN Exhibit (Photo: Winona History Center)

Planning Regions

Sub-watersheds within the WinLaC Planning Area have varying land use and topology which makes prioritizing issues uniformly across the planning area difficult. "Planning Regions" were identified to allow the WinLaC Partnership the ability to focus on unique issues present within each sub-watershed. The WinLaC Watershed has been divided into four planning regions around subwatershed (HUC-10) boundaries: Whitewater, Garvin Brook, Mississippi River-La Crescent, and Small Tributaries (**Figure ES-4**). Each planning region focuses on different issues and uses a unique approach to meet goals.

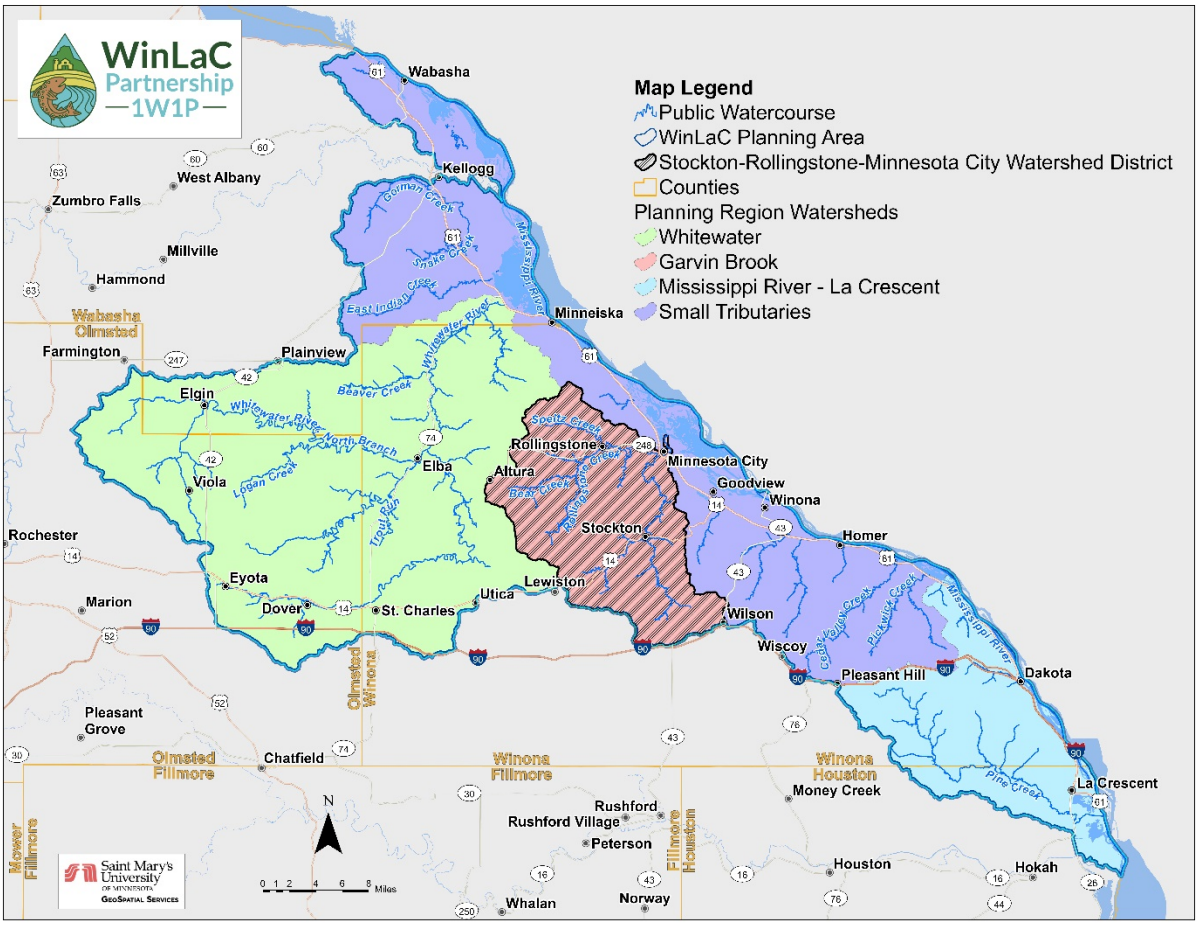


Figure ES-4: WinLaC Planning Regions.

Identify Priority Issues

The first step in prioritizing issues is to identify a comprehensive list of issues that are impacting natural resources in the watershed. The WinLaC Partnership used the available data for the watershed to create a list of all issues and opportunities that are impacting resources of concern. Plans and data reviewed included state, county, and local plans, and agency responses from the 60-Day Notice of Plan Initiation.

A total of 34 issues were identified for consideration in this plan. To better organize information, issues were categorized into one of four groups: groundwater, surface water, land use, and habitat and recreation. These categories are outlined below in **Table ES-1**.

Table ES-1: Breakdown of resource categories and explanation of what is in each category.

Groundwater	Groundwater includes protecting wellheads, dealing with drinking water contamination, and the continued increased demand for groundwater in the region.
Surface Water	Surface water issues consider surface water contamination, urban stormwater, flooding, the connection of tile lines to surface water systems, and the impacts of surface water issues to aquatic habitats.
Land Use	Land use issues include changes to the landscape from development, agriculture, management, and shifting weather patterns that impact how the landscape may change with aging infrastructure, increased precipitation trends and rainfall intensities, and soil health.
Habitat and Recreation	Habitat and recreation issues include providing better access to waterways, habitat protection, and stream connectivity for aquatic species.

The WinLaC watershed plan is a 10-year plan, but not all issues can be addressed within that timeframe. In recognition of this, the WinLaC Partnership prioritized the most pressing issues within the watershed that are within control of a local water plan. Feasibility and cost were also taken into consideration when prioritizing issues. Issues were placed into one of three categories: Priority A, Priority B, and Priority C, with definitions of each provided below (**Figure ES-5**). In total, this plan summarizes ten Priority A issues, 13 Priority B issues, and 11 Priority C issues.

Figure ES-5: Resource categories for the WinLaC CWMP.

Priority A: We expect these issues to be addressed first within the lifespan of this plan. These are the most important.

Priority B: We expect some of these issues to be addressed throughout the lifespan of this plan. These are important, but less of a priority.

Priority C: We may address some of these issues through collecting additional data or funding throughout the lifespan of the plan. These issues may also be addressed through partner groups or may be addressed as a secondary benefit from higher priority issues. These issues are still important, but are the lowest local priority items.

Priority A Issues

These issues were ranked highest among the WinLaC Partnership and are the issues to be addressed first. They have goals and action items assigned to them in sections 4 and 5.

Table ES-2: Priority A Issue Statements.

Category	Issue Statement
	Need for **increased field management practices** to reduce excessive nutrient and sediment delivery to streams and enhance nutrient cycling
	**Elevated levels of nitrates** in drinking water from agricultural and wastewater sources
	**Excess nutrient** loading (nitrogen and phosphorus) to watershed streams, and impact on aquatic life
	**Excess sediment loading** as a primary stressor to **aquatic life, habitat, and recreation**
	**Failing or noncompliant septic systems** and their potential for groundwater and surface water contamination
	**Increased annual precipitation** and more intense rainfall events and their impact on hydrology, water quality, and infrastructure, and the need to plan for **resiliency**
	Increased **protection of wellhead/source water areas** to reduce groundwater contamination
	Need for **improving soil health** for carbon sequestration and agricultural productivity
	**Urban stormwater runoff,** which can contribute to poor water clarity/quality, alter natural flow and infiltration of water, and harm aquatic life
	Excessive **upland and overland sediment loading** due to various land use practices

Priority B Issues

These issues were given a Priority B ranking and will be addressed throughout the lifetime of the plan. They have goals and action items assigned to them in sections 4 and 5.

Table ES-3: Priority B Issue Statements.

Category	Issue Statement
	Enhancement and long-term protection of **forest, native prairie, and pollinator habitats** and corridors
	**Unsealed or poorly constructed wells** as a conduit for groundwater contamination from the land surface

Table continued on next page

Table ES-3 continued

Category	Issue Statement
	**Nutrient runoff** and legacy loading in **Lake Winona** and its impact on water clarity, aquatic life, and habitat
	**Loss of natural wetlands**, in particular riparian and backwater floodplain wetlands (Mississippi River Floodplain), and its impact on water quality, flood damage reduction, and wildlife habitat
	Surface and groundwater interconnectivity due to **karst** geology
	**Excess sediment from near-channel and in-channel sources** (floodplains, terraces, and streambanks)
	**Pasture runoff** and need for managed grazing within riparian corridors
	**Flooding** and its associated impact to homes, infrastructure, and natural resources
	Continued **high levels of *E. coli*** and its impact on aquatic recreation opportunities despite numerous reduction efforts
	Increased drainage (**tile networks and drainage ditches**) increasing downstream speed and velocity of water and associated sediment/nutrient delivery to channels and ditches
	Increased presence of **terrestrial invasive species** and its impact on native plant species
	Enhancement and protection of **trout fisheries** and habitat from adverse conditions
	Presence of **aquatic invasive species** threatening aquatic vegetation and aquatic life

Priority C Issues

These issues are important but will not be the focus of this plan. These issues may be outside of local governmental control or may be addressed by completing a different priority. They will not have goals or action items assigned to address them.

Table ES-4: Priority C Issues

Category	Issue Statement
	Protection of rare habitats and plant communities (calcareous fens, algific talus slopes, bottomland hardwood forests) to support native wildlife, insects, and birds
	Barriers to stream connectivity (i.e., culverts and road crossings) adversely impacting aquatic life, particularly coldwater fish
	Monitoring and protection of groundwater levels to ensure that water availability meets increasing demand

Table continued on next page

Table ES-4 continued

Category	Issue Statement
	Protection of riparian game and non-game habitat
	Protection and management of blufflands from development and erosion
	Risk of chloride contamination for surface waters in the watershed
	Increase in development pressure in both rural and urban areas of watershed
	Low dissolved oxygen levels in streams and its impact on aquatic life
	Inadequate public water access sites to designated trout streams
	Inadequate accessibility and presence of debris in the Whitewater River State Water Trail, impacting navigability of the resource
	Need for improved management of aggregate resources and consumption/transport of resources

Set Measurable Goals

To determine if a plan has been successful, measurable goals are needed to monitor progress and to show quantifiable change in resource conditions.

Section 4. Watershed Resources and Measurable Goals of this plan outlines all measurable goals in actionable short- and long-term situations. Accompanying the priority issue and the short-term and long-term goals is background information on why each measurable goal is needed. A watershed map, broken out by HUC-12 drainage areas, is provided for each measurable goal and highlights what areas of the watershed should be prioritized. An example goal within the measurable goal section is provided in **Figure ES-6**.

WinLaC Partnership —1W1P—

Nutrients

Background

Nutrients addressed by this plan are total nitrogen and total phosphorus. These two nutrients are essential to sustaining life, but in excess, can impact aquatic life, recreation, and consumption.

Total nitrogen refers to the different forms nitrogen can take (such as nitrite or nitrate). Nitrate is easily transported with water across the landscape making it a prevalent issue in streams, lakes, and in groundwater. Leaching loss from row crops and wastewater point sources are the major sources of nitrate in the watershed (MPCA, 2016). As of 2020, there are two nitrate impaired streams in the WinLaC watershed. Four streams have nitrogen listed as a stressor to aquatic life: North, Middle, and South Branch Whitewater, and Bear Creek.

Total phosphorus, like total nitrogen, refers to all the forms of phosphorus (such as dissolved phosphorus). Phosphorus can attach to sediment particles and get transported downstream. In the Lower Mississippi River Basin (where the WinLaC is located) streambank erosion and agricultural runoff have been found to be the highest sources of phosphorus loading (MPCA, 2016). As of 2020, both bays of Lake Winona are impaired for excess phosphorus.

The desired future condition for this plan aligns with targets set forth in the WRAPS to reduce nutrient levels 45%, and ultimately delist all nutrient impaired streams and lakes. The short-term goal represents realistic progress that can be made during plan implementation. For a summary of all nutrient impaired streams and lakes with TMDL resource loading targets, see **Appendix** E.

Priority Issues Addressed

- (A) **Excess nutrient loading** (nitrogen and phosphorus) to watershed streams, and impact on aquatic life.
- (A) Need for **increased field management practices** to reduce excessive nutrient and sediment delivery to streams and enhance nutrient cycling

Short-Term Goal

Reduce overland total nitrogen by 4% per year (or 390,300 lbs/year) and **total phosphorus by 5% (or 17,300 lbs/year) watershed-wide** through implementation of field practices and/or nutrient management plans.

- Indicator: lbs/year of total phosphorus reduced, as estimated by PTMApp (edge of the field).

Desired Future Condition

Total nitrogen and total phosphorus levels down 45% by 2040. All waters support aquatic life and recreation thresholds for nutrients.

Secondary Outcomes from Meeting Goal

- Reduced nutrient loading to urban lakes
- Water storage benefits
- Groundwater contamination reduction
- Soil health benefits

4-1

Figure ES-6: Example of a WinLaC CWMP measurable goal.

Assign Implementation Action

Each goal has a corresponding list of actions designed to make progress toward that goal. Actions were collaboratively brainstormed and vetted for this WinLaC plan from community input, input from local planning committees, and existing reports and plans.

Within **Section 5. Targeted Implementation**, actions are organized and summarized into "action tables" that include the following information:

- **Resource**: Identifies if the action is primarily addressing groundwater, surface water, or land use/habitat concerns
- **Primary Goal**: Identifies the goal the action is primarily addressing
- **Output**: How much of the action will be implemented in the 10-year plan
- **Implementation Program**: The program that will fund the action
- **Focus Area**: Priority subwatersheds and resources for implementation
- **Lead**: Lead entities that will oversee implementation, with partners that may assist with funding and efforts
- **Timeline**: Describes when implementation will occur during the 10-year plan
- **Output for Goal Tracking**: Identifies if the output will be used to report progress back on measurable goals
- **Cost**: Estimates the cost of implementing the action

Each action falls into one of five implementation programs, described below with each program's associated icon (**Figure ES-7**). These are example actions, specific actions within these programs are described more in **Section 5. Targeted Implementation** and **Section 6. Watershed Implementation Programs**.

Actions brainstormed at the city of Winona Waterside Chat.

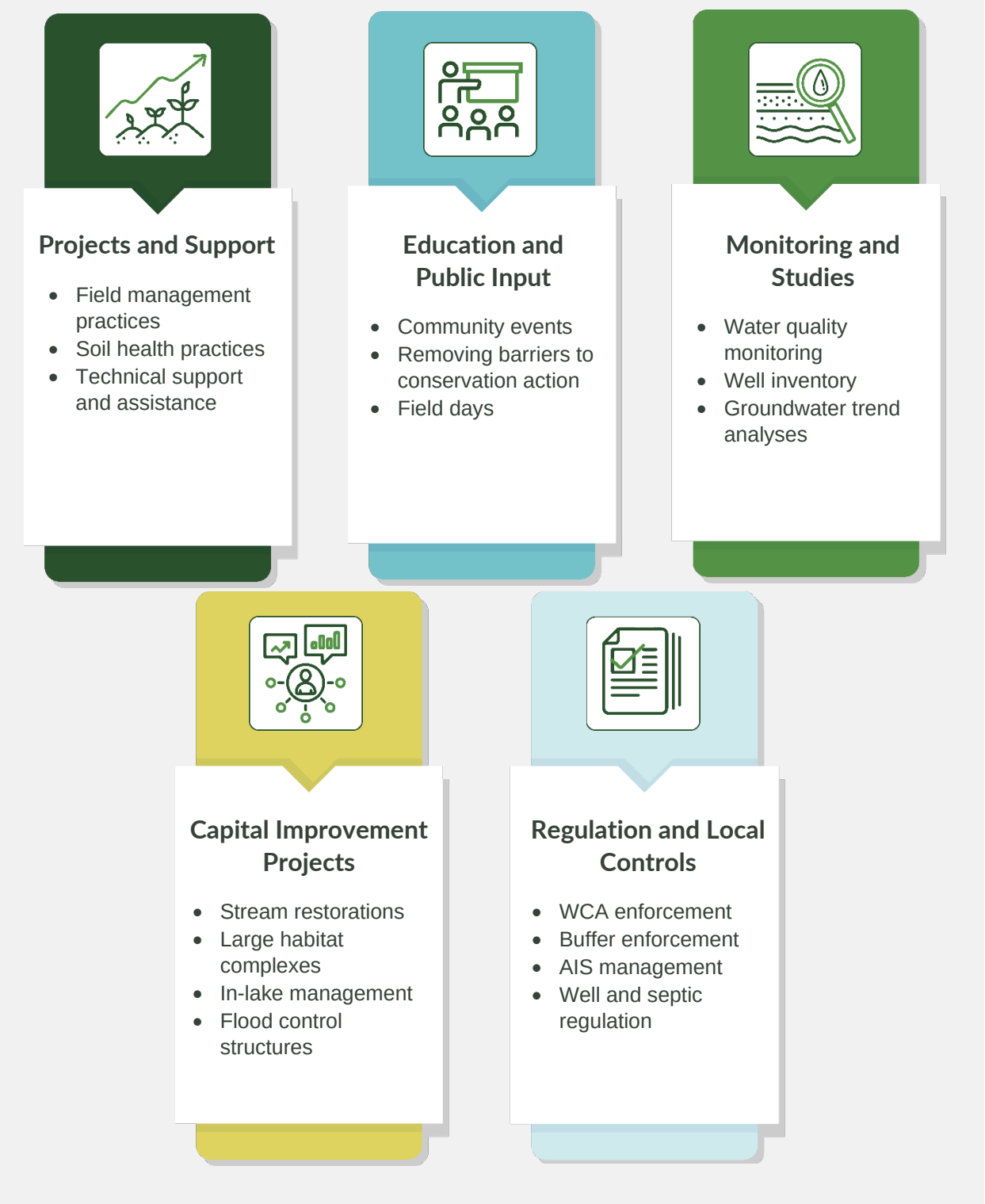
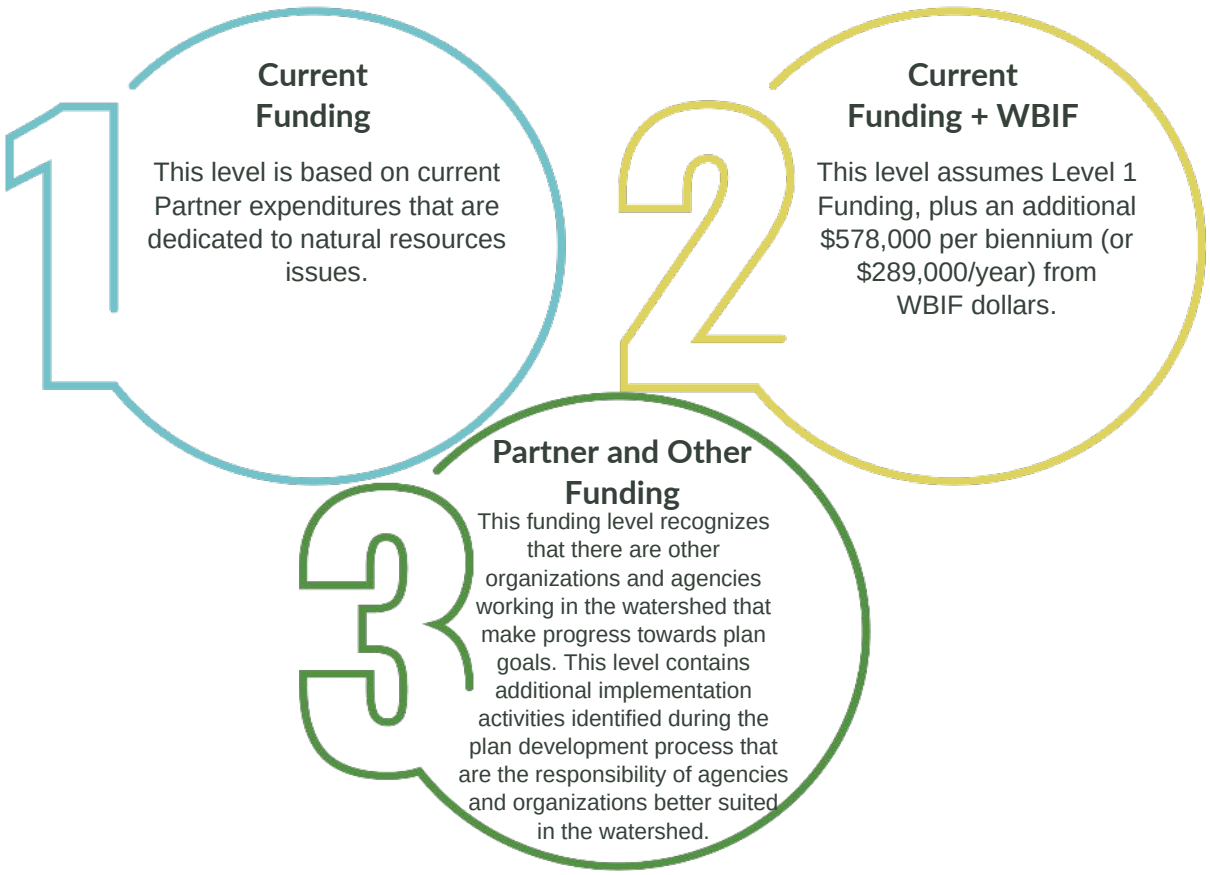


Figure ES-7: Implementation programs for the WinLaC CWMP.

Funding

This plan has defined two funding levels. Funding Level 1 is the estimated total of current funding that the watershed has access to use towards implementing opportunities in this plan. Upon approval of this CWMP, a second pool of funding becomes accessible. This funding is called the Watershed-Based Implementation Fund (WBIF) that is provided by the Board of Soil and Water Resources. Funding Level 2 includes Funding Level 1, the Watershed-Based Implementation Funds, and other funding sources and is the focus of this plan. Level 3 funding includes all other funding- from organizations, agencies, grants, etc. that can be used to implement water quality actions through partnerships.

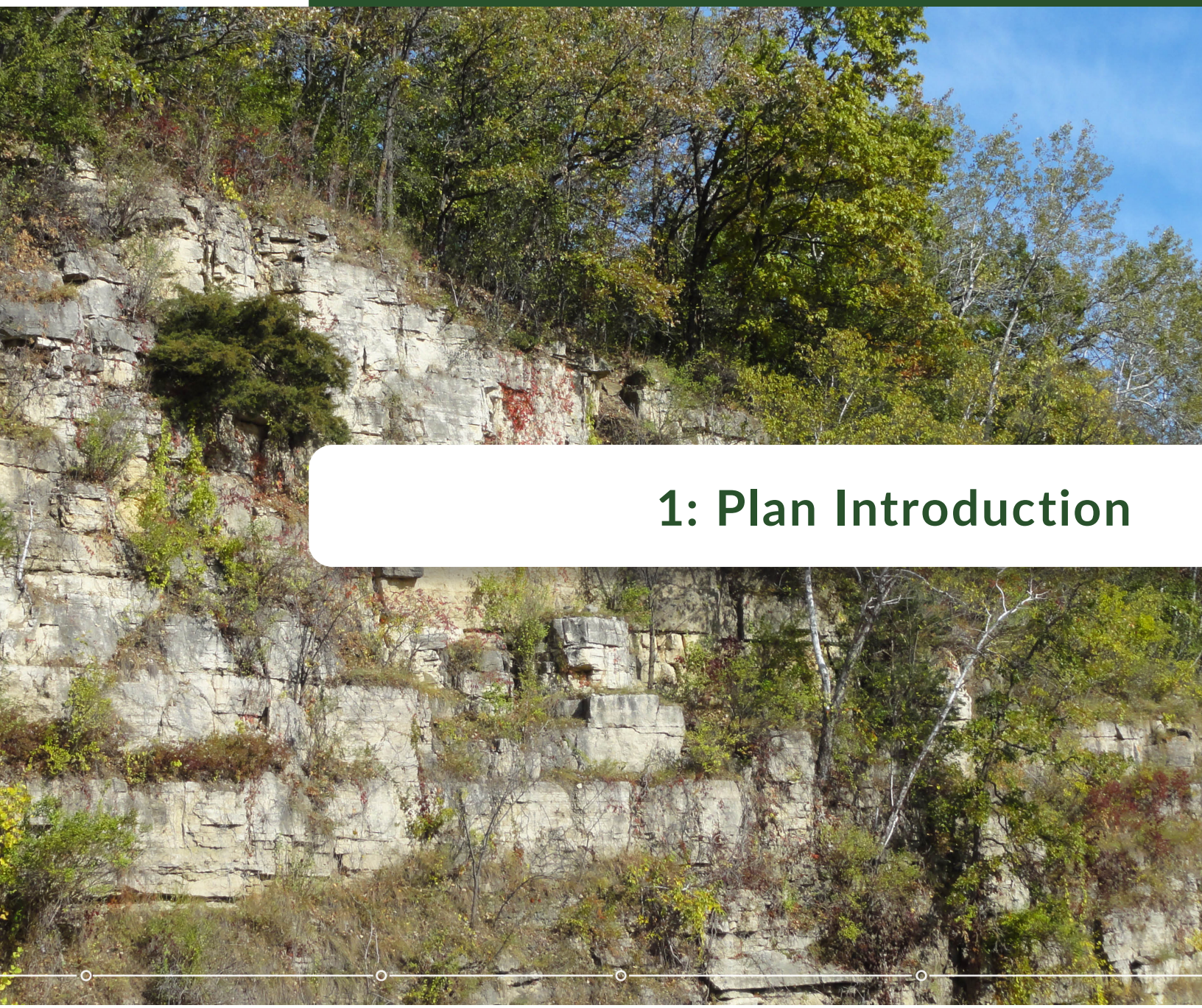


Plan Administration and Coordination

Implementation of the WinLaC CWMP will require increased capacity of plan partners, including increased staffing, funding, and coordination from current levels. Successful implementation will depend on continuing and building on partnerships in the watershed with landowners, planning partners, state agencies, and organizations. The details of the Administration of this plan are described in **Section 7. Plan Administration and Coordination**.

The WinLaC Partnership local partners involved in implementing this plan are listed below:

- Houston, Olmsted, Wabasha, and Winona counties,
- Root River, Olmsted, Wabasha and Winona Soil and Water Conservation Districts (SWCDs),
- City of Winona, and
- Stockton-Rollingstone-Minnesota City Watershed District.



1: Plan Introduction

WinLaC Partnership —1W1P—

1. Introduction

One Watershed, One Plan

The Mississippi River Winona/La Crescent (WinLaC) Watershed Comprehensive Watershed Management Plan (CWMP) has been developed as part of the Minnesota Board of Water and Soil Resources (BWSR) One Watershed, One Plan (1W1P) program described in Minnesota Statute §103B.801. The 1W1P program seeks to create watershed management plans within water boundaries rather than county boundaries as watershed planning was done in the past. This plan was created by the WinLaC Partnership in 2021-2022, with the purpose of equipping local partners with a plan to holistically manage water resources.

Plan Area

The WinLaC watershed is in southeastern Minnesota where it drains about 750 square miles within four counties: Houston, Olmsted, Wabasha, and Winona (**Figure 1-1**). The watershed is home to around 60,000 people, most of whom reside in the cities of Winona, La Crescent, Lewiston, Saint Charles, Eyota, and Wabasha. A detailed overview about the watershed and its natural resources has been provided in **Section 2. Land and Water Resources Narrative.**

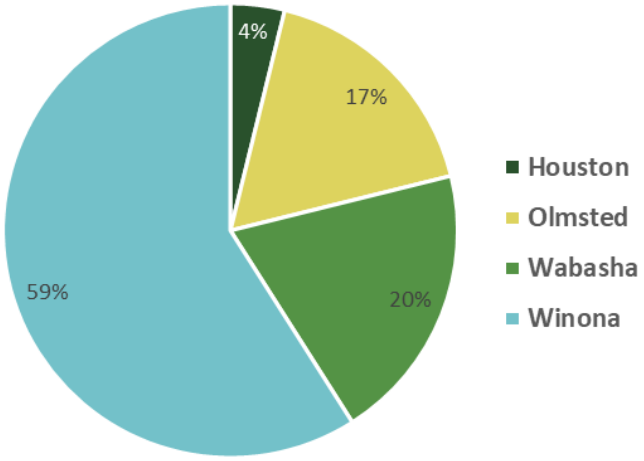


Figure 1-1: Percent of county land in the Watershed.

Purpose, Roles, and Responsibilities

The WinLaC 1W1P planning process began with a Memorandum of Agreement (MOA) (**Appendix A**) between local agencies and organizations that includes:

- The counties of Houston, Olmsted, Wabasha, and Winona,
- The Root River, Olmsted, Wabasha, and Winona Soil and Water Conservation Districts (SWCDs),
- The City of Winona, and
- Stockton-Rollingstone-Minnesota City Watershed District (SRMCWD).

These entities are collectively known as the WinLaC Partnership, with the vision and mission statement as summarized below:

Vision: Through our partnership, we are collaborating to unify local priorities into one active, relevant watershed management plan which streamlines efforts and shares current and future resources.

Mission: Provide citizens with clean water, balanced ecosystems, sustainable farmland, and diverse healthy communities.

A Plan to Reflect the Watershed

The WinLaC CWMP needed to be written in a way that appropriately reflects the community it is intended to serve. To accomplish this, the 1W1P planning process was designed by the WinLaC Partnership to actively engage two main groups: local planning committees, and the community.

Local Planning Committees

The 1W1P process was supported by three local planning committees: the Policy Committee, the Technical Advisory Committee, and the Planning Work Group. During the planning process, the **Policy Committee** served as the decision-making body for this plan, approved the content of the plan, and acted on behalf of their constituents. The 1W1P uses existing authorities; a representative from each governmental unit in the MOA was appointed by each board of authority to serve on the Policy Committee. The **Planning Work Group** consisted of staff from each of the entities in the MOA and generated the content in this plan. The **Technical Advisory Committee** consisted of state agencies and local stakeholders and contributed to plan content in an advisory role to ensure that a technically sound and socially viable plan was developed for inclusion in the WinLaC CWMP.

Community

To ensure the plan reflected community input, public events were held at major planning milestones.

Public Kickoff Meeting

To receive feedback at the beginning of the planning process on **identifying and prioritizing issues**, the Partnership hosted a Public Open House Kickoff in the city of Winona in September 2021. A survey was created to engage residents not able to attend the kickoff to identify top issues facing water resources in the watershed. This event is described in **Section 3. Priority Issues**, and a summary of survey outcomes can be found in **Appendix B**.

Waterside Chats

To gain an understanding of residents' water quality **goals** and acceptable solutions to include for **implementation actions** in the plan, the WinLaC Partnership hosted five facilitated "Waterside Chats." These listening sessions were held in Stockton, La Crescent, Winona, Saint Charles, and Wabasha during March and April of 2022. Small group discussions identified important resources and issues within the watershed, and what actions should be taken to address those issues. A summary of outcomes from the Waterside Chats can be found in **Appendix C**.

We Are Water

Public engagement was provided during a We Are Water exhibit held in the city of Winona from March through April 2022. People visiting the exhibit had the opportunity to gain experience about the watershed and share what they found most important about it; surveys at the exhibit asked which **implementation actions** people wanted to see in the watershed (also in **Appendix C**).

WinLaC Waterside Chat Listening Session

We Are Water MN Exhibit (Photo: Winona History Center)

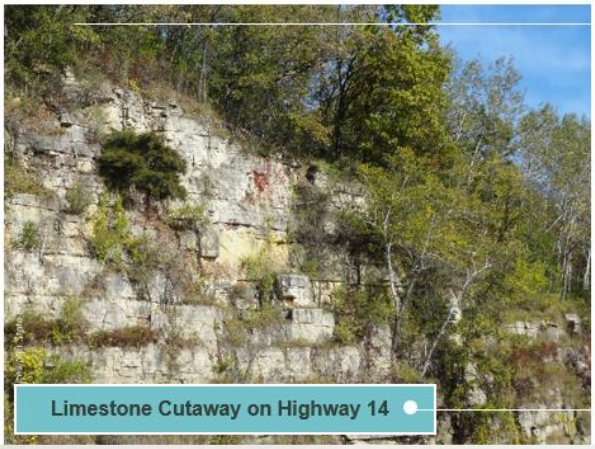
2: Land and Water Resources Narrative

WinLaC Partnership —1W1P—

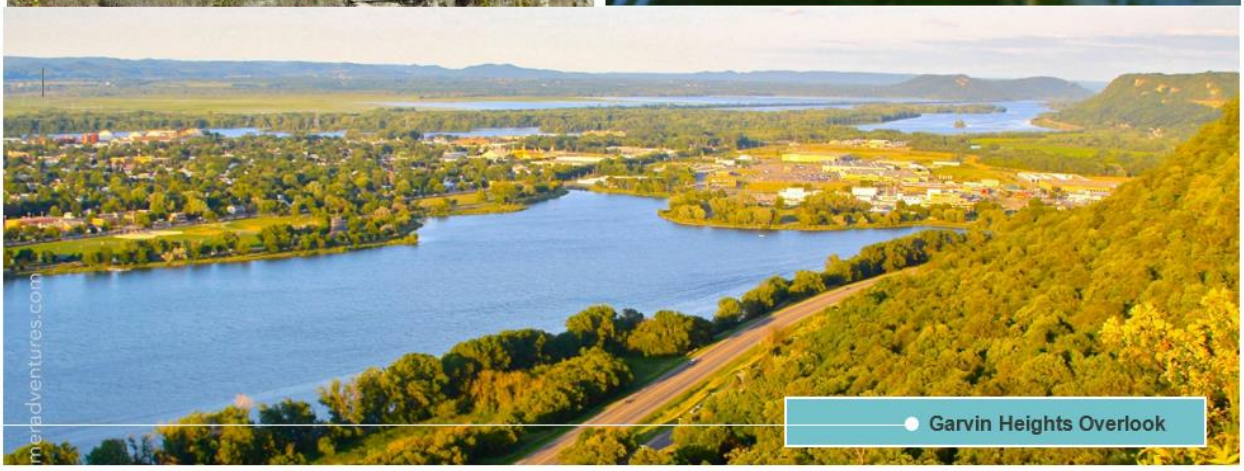
2. Land and Water Resources Narrative

Nestled in the southeastern corner of the state and bordered on the east by the Mississippi River, the WinLaC watershed is a unique landscape characterized by wooded hills, rich agriculture, karst topography, sheer river bluffs, and craggy limestone. The WinLaC is located within the “driftless area,” a region bypassed by the Wisconsin Age glaciation. Because of this, the watershed boasts a landscape of cliffs and valleys that are more abundant than in other areas of the state, and its subsurface geology creates intimate connections between surface water and groundwater resources. This makes the WinLaC home to an abundance of rare natural resources, including many of the state’s best coldwater streams for trout fishing.

Communities within the WinLaC are committed to preserving land to support its natural resources. The watershed is home to a constellation of public parks and trails that highlight the bluffs, old growth white pine stands, coldwater springs, and a plethora of wildflowers. Throughout all four seasons of the year, there are ample outdoor recreation opportunities.


Limestone Cutaway on Highway 14


Native Brook Trout



Garvin Heights Overlook

The WinLaC watershed drains approximately 750 square miles across portions of four counties: Olmsted, Wabasha, Winona, and Houston (**Figure 2-1**). The watershed’s largest city is Winona, a rail and river transportation hub situated between the river and its towering bluffs, home to Winona State University, Saint Mary's University, Minnesota State College-Southeast, and the Minnesota Marine Art Museum (MPCA, 2016). Other cities within the watershed include La Crescent, Lewiston, Saint Charles, Eyota, and Wabasha. A small section of Ho-Chunk Nation Tribal land is also located within the WinLaC watershed, near the city of La Crescent.

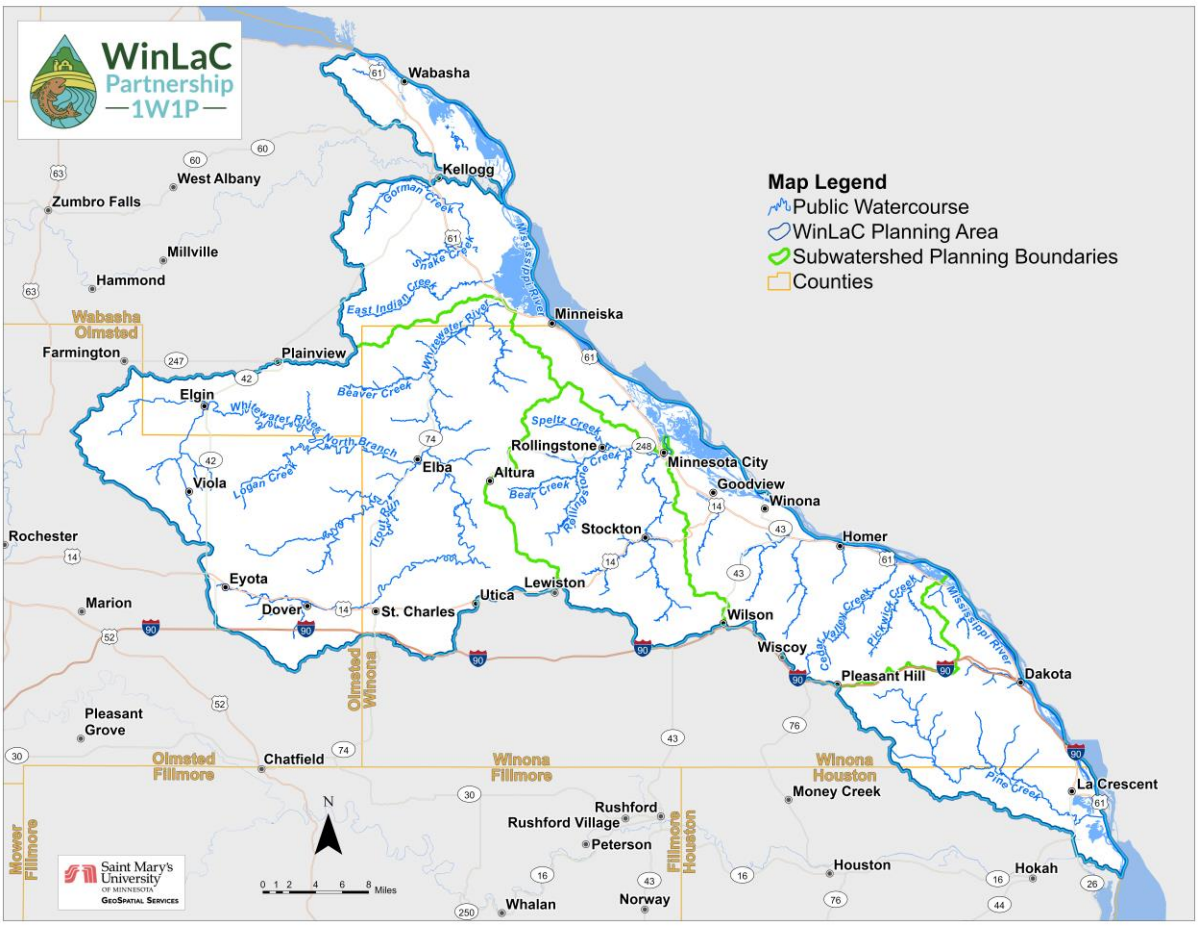
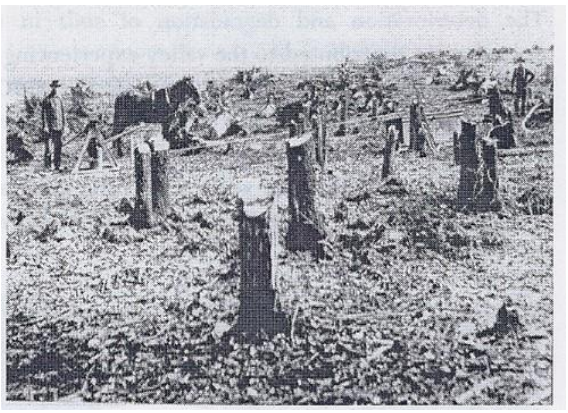


Figure 2-1: WinLaC One Watershed, One Plan planning area.

Land Use: Then and Now

Prior to Euro-American settlement, the WinLaC watershed was covered by Big Woods hardwood forests and prairie systems (DNR, 2014). As Euro-Americans began to settle Minnesota during the early 1800s, Native American tribes such as the Ho-Chunk, Dakota, and Ojibwe cultivated crops on the landscape, including corn, potatoes, turnips, and pumpkins. During early Euro-American settlement of Minnesota (1820 through 1870), the southeastern portion of the state was among the first settled due to the proximity to the Mississippi River and the wooded landscape, which provided materials for fuel, fence and houses (MPCA, 2016). When Euro-American settlers arrived, they began growing wheat and shipping it to market via river. Over the next 100 years, the wheat monoculture in the southeast shifted to oats, corn, and livestock. By the 1950s, the region had become a major player in cattle, hogs, corn, and soybean production, producing nearly 25% of the state's farming products (MPCA, 2016).



Historical photo of watershed

Today, the watershed supports a healthy dairy, livestock, and agricultural crop economy with an estimated 33% of current land used for row crop production and 15% in pasture, although these numbers may fluctuate from year to year due to land use changes and cropping patterns. The landscape also provides a vast resource for recreation and wildlife with 32% of land in forest and 9% in wetlands or open water. This abundance of water, beautiful scenery, and widespread public access make it a popular destination for fishing, paddling, hiking, hunting, and other outdoor recreation (MPCA, 2016). Remaining land uses include urban areas (7%) and shrublands (3%) (MRLC, 2021) (**Figure 2-2**).

Residue in field

WinLaC is home to the first Soil and Water Conservation District (SWCD) in Minnesota – the Burns-Homer-Pleasant Soil Conservation District (SCD) – created in response to the Dust Bowl of the 1930s. Burns-Homer-Pleasant SCD then merged with Rollingstone-Stockton-Gilmore Conservation District and Whitewater SWCD in 1986 to form the Winona County SWCD. This watershed has a long-standing history of working to understand issues facing the health of the land and its people and responding with appropriate action. Significant restoration efforts have taken place within the watershed, but there is still work left to ensure the watershed continues to thrive (MPCA, 2016).

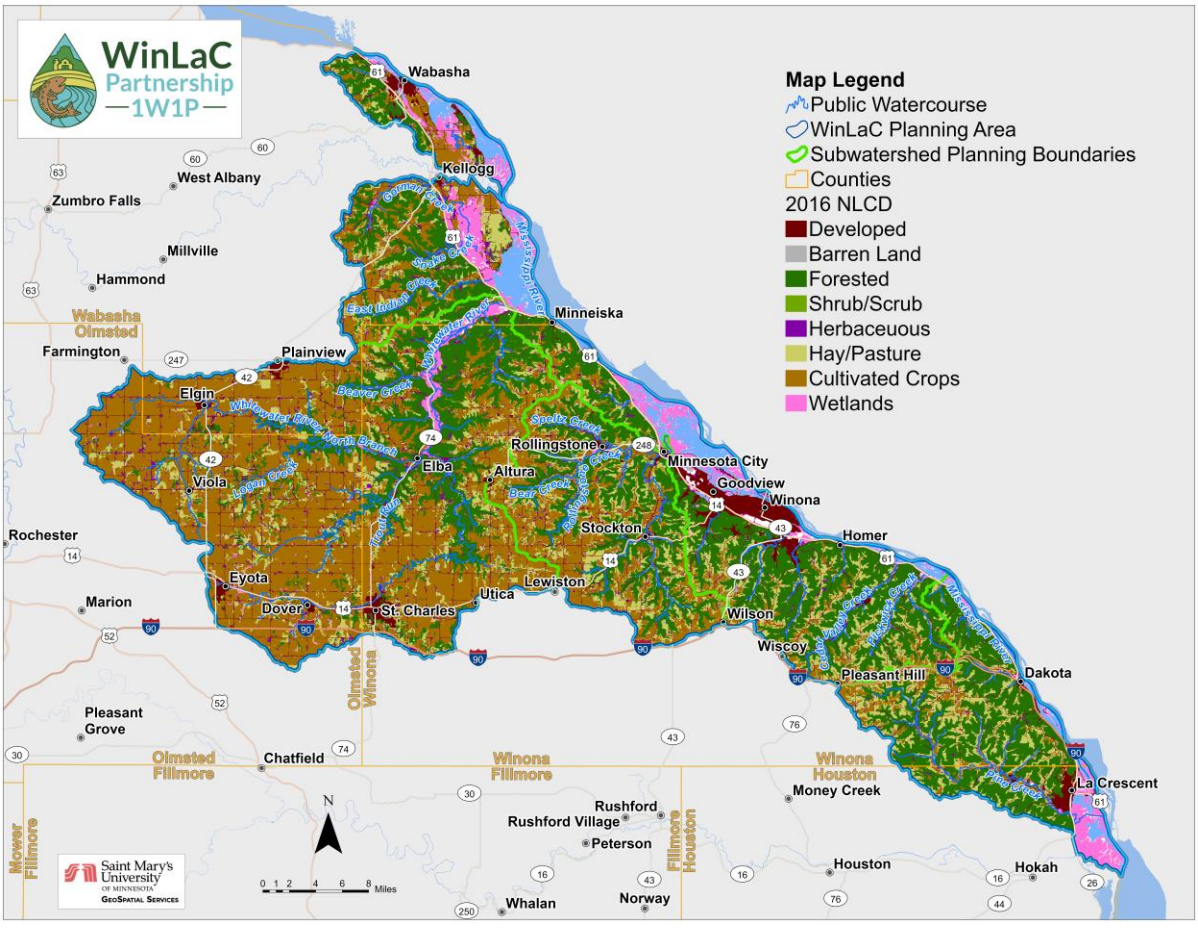


Figure 2-2: Current land use in the WinLaC. Full page map included in Appendix J.

Surface Water Resources

Streams and Lakes

The WinLaC watershed is transected by multiple rivers, each generally flowing west to east until they empty into the Mississippi River. The Whitewater River is the largest river, draining a sizable portion of the northern part of the watershed. The river is a waterfowl staging area and is comprised of three sections: the North, Middle, and South Fork. The three forks merge in Elba, then flow nearly 17 miles before entering the Mississippi River in Weaver. The Middle Fork meanders through Whitewater State Park, just upstream of Elba. Within the vicinity of the South Fork Whitewater River lies the Crystal Springs Fish Hatchery, which provides trout populations for statewide restoration efforts.

South of the Whitewater River lies Garvin Brook, draining a smaller section of the watershed. Garvin Brook is a coldwater trout stream that discharges directly into the Mississippi River at Minnesota City, immediately upstream of the cities of Goodview and Winona. The stream is 17 miles long and meanders northeast from its source in Lewiston. Considerable research has gone into this stream, with studies being funded in the 1980s to identify solutions to sedimentation and habitat destruction issues. Restoration and preservation efforts in this stream continue today, dedicated to keeping trout habitat in good condition.

Pine Creek, on the south end of the watershed (in La Crescent), drains more than 45 square miles and is a coldwater tributary with sections designated as trout streams. Rose Valley Creek, Burns Valley Creek, and Lane Valley Creek drain into Pine Creek. Dakota Creek lies just above Pine Creek and drains a small area directly into the Mississippi River.

There are multiple creeks in the middle of the watershed that have tight bluffs and deep valleys. These creeks, namely Pleasant Valley Creek, Burns Valley Creek (east and west), Cedar Valley Creek, follow the same drainage pattern as other streams in the watershed, generally flowing from the southwest to the northeast towards the Mississippi River. The headwaters to these creeks are comprised of agricultural land, but the land use quickly transitions to forested and hay/pasture land. The upper reaches of these creeks and their confluences with the Mississippi River are not designated trout streams; however, the main creek stems are all either trout streams or trout stream tributary designations due to baseflow contributions from lower aquifers.

Big Trout Creek, also known as Pickwick Creek, is home to the water-powered Pickwick Mill, located roughly halfway between the headwaters and the Mississippi River confluence in Pickwick, MN. This mill is considered a historic site and is registered as a National Historic Landmark. The Pickwick Mill is one of the oldest mills in Minnesota, first to be used as a sawmill after it was completed in 1858. It has been used as a sawmill and flour mill over its 150+ year lifetime, and now serves as a museum discussing its role in the Civil War and support of flour-milling across the region (Pickwick Mill, 2021).

Due to shallow depth-to-bedrock conditions, significant relief, and highly permeable (karsted) bedrock geology, there are very few lakes within the WinLaC watershed. Lake Winona is the only designated recreational lake within the WinLaC. It has a Northwest Bay and Southeast Bay. These two bays are significantly different from one another. Northwest Bay is considered a shallow lake and Southeast Bay a deep lake. These classifications require different restoration techniques to meet standards for a lake for supporting its aquatic recreation use.

View of Winona from Garvin Heights.

Surface Water Quality

Lakes and streams are routinely monitored to assess overall water quality conditions related to a specified designated use, such as aquatic recreation (e.g., fishing, swimming) and aquatic life (e.g., fish and bugs). Water bodies that do not meet standards related to their designated use are deemed impaired. A water quality impairment would suggest the waterbody requires restoration activities, while a waterbody that supports its designated use should be protected so that the feature does not degrade.

In 2016 and 2020, the Minnesota Pollution Control Agency (MPCA) published a Watershed Restoration and Protection Strategy (WRAPS) report for the Winona and La Crescent watersheds that make up the WinLaC planning area. Monitoring efforts associated with these reports resulted in the identification of waterbodies that do not meet state standards for their designated use. Of the 32 assessed streams, 18 did not support aquatic recreation standards and 18 did not support aquatic life standards (**Figure 2-3)**. Sediment, nitrate, bacteria, and aquatic habitat are the primary concerns in the streams within the WinLaC. Contributors to these impairments include stream channelization, low stream gradients, upland sediment transport, nutrient management, and livestock operations.

Conditions for Lake Winona were also summarized as part of the WRAPS. Currently, lake aquatic recreation standards do not exist for the driftless region, so the most applicable standards were used, the North Central Hardwood Forest standard. Neither Northwest Bay nor Southeast Bay meet aquatic recreation standards due to excess nutrients.

The city of Winona has an MS4 (Municipal Separate Storm Sewer System) stormwater permit for discharging stormwater. With the MS4 permit, the city also has an NPDES (National Pollutant Discharge Elimination System) permit, which restricts the amount of pollution allowed to be discharged into waterbodies. The NPDES permit now has a nutrient reduction target for phosphorus (MPCA, 2016).

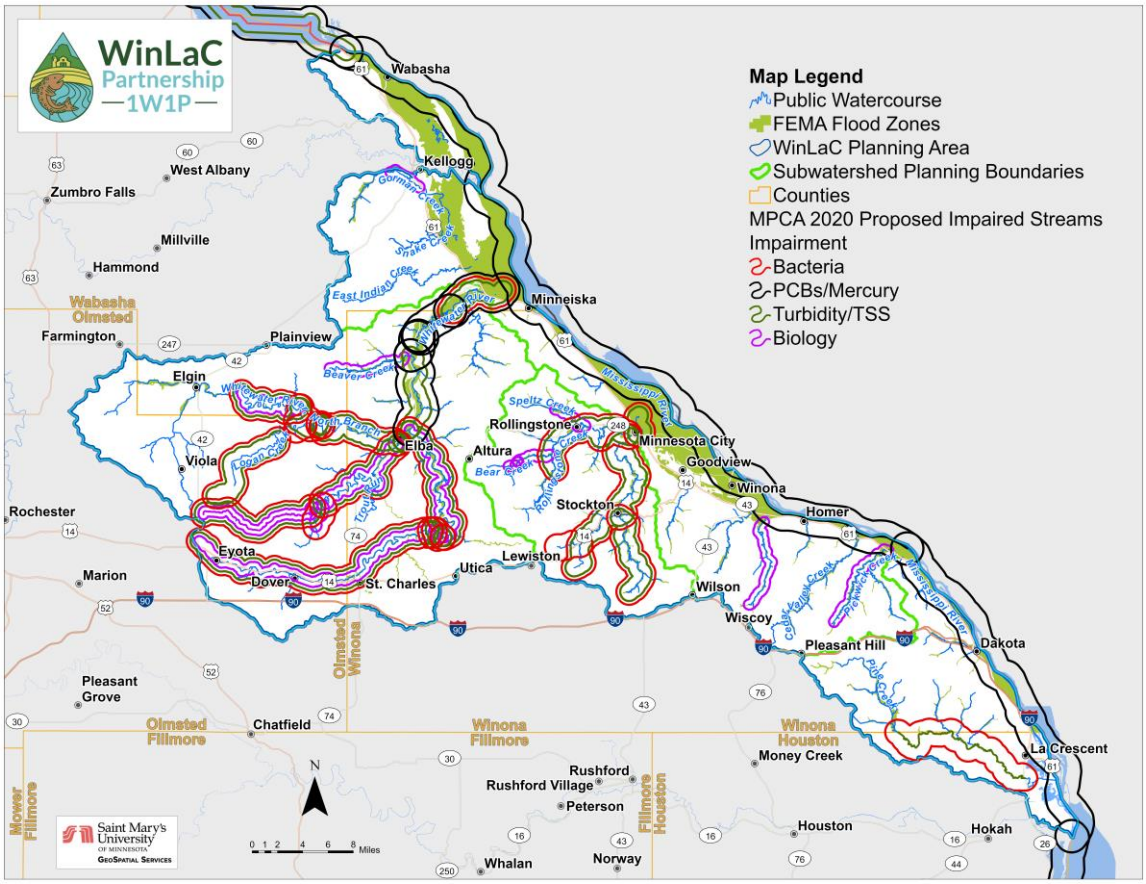


Figure 2-3: Stream impairments within the WinLaC. Full page map included in Appendix J.

Aquatic Invasive Species

The spread of Aquatic Invasive Species (AIS) has been on the rise in Minnesota for the past three decades. These species cause harm to native aquatic populations, water quality, and water recreation (Winona County, 2017). Within the WinLaC watershed, present and actively monitored AIS include, but are not limited to Eurasian watermilfoil, zebra mussels, flowering rush, faucet snail, bighead carp, grass carp, and silver carp (**Figure 2-4**). Once these AIS are established in a water body, they are extremely costly and challenging to eradicate. As such, partners within the WinLaC work proactively to contain and manage current AIS infestations and promote practices to reduce the spread of AIS. AIS programs in the WinLaC are overseen by the county in Olmsted and Wabasha Counties, and by the SWCD in Houston and Winona Counties.

Eurasian watermilfoil, DNR

Flooding and Altered Watercourses

The WinLaC watershed has a history of damaging floods. In August 2007, extreme rainfall and flooding occurred in southeastern Minnesota and into Wisconsin. Between two days, official rainfall readings were as high as 15 inches. Additional flood events took place in 2009 and 2010. These events damaged infrastructure such as roads, buildings, and railroads. In addition, large sections of streams were washed out and downstream reaches were significantly impacted (MPCA, 2016; 2020). A recent storm devastated Homer just outside of Winona on May 19th, 2022. Four inches of rain fell in under an hour, resulting in property and township damage.

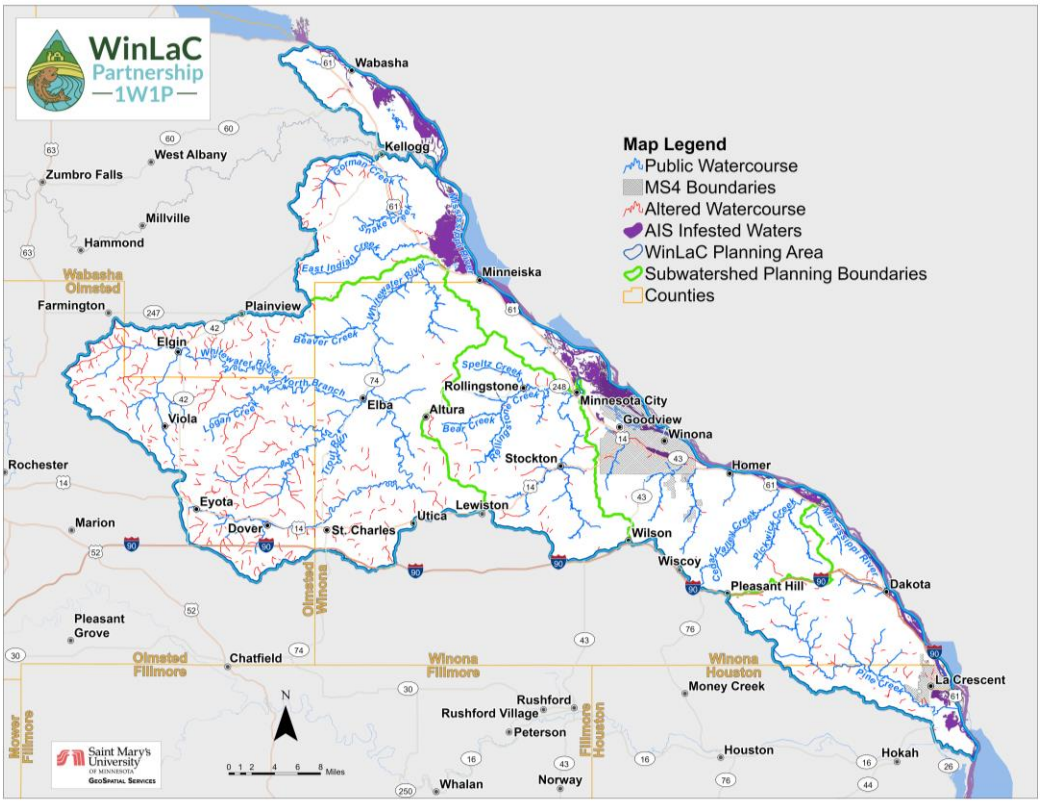


Figure 2-4: Aquatic invasive species and altered watercourses (MPCA, 2020) within the WinLaC. Full page map included in Appendix J.

The hydrology of the WinLaC watershed has been altered for agricultural production and urban land development. This development changes the way water naturally flows on and through the landscape, creating increased peak flows and flooding, reduced infiltration of water, loss of water storage capacity, and increased stormwater runoff (DNR, 2021). This is true in both rural and urban landscapes. More prominent in western portions of the WinLaC, tile drainage systems have been installed to route water quickly from the landscape to promote agricultural production. However, plumbing the landscape this way can increase the rate of water delivered to surface waters and increase associated sediment and pollutants. Increased runoff is also due to a loss in forest cover. Forests play a crucial role in storing water and reducing runoff. When forest land is converted to other land types, those water storage benefits are lost. Conservation and restoration efforts focusing on reforestation and forest edge protection work to restore forest and its water storage ability. Within urban areas, stormwater systems were constructed to remove water quickly during rain events. These stormwater systems typically drain directly to surface water features, carrying pollution and garbage that is left on the streets. This plumbed landscape is important to monitor as it provides information to natural resource managers on the overall health of the watershed (both water and land) and provides the ability to determine if conservation is needed to mitigate potential environmental issues.

Culverts also change how water naturally flows through a landscape. Culverts are generally used to divert water under roadways or move water beneath field crossings. When culverts are not positioned or sized correctly, they can create water backups, increase water energy by concentrating flow, or become a barrier for fish and other aquatic life passage. These conditions can degrade streams and cause water quality issues.

Ground and Drinking Water Resources

Ground and drinking water resources are complex to manage within the southeastern portion of the state. Karst topography and limestone features characteristic of the driftless area form rapid connections between surface and subsurface flows. Surface water may percolate quickly to a groundwater aquifer or enter a sinkhole, flow underground for a brief period of time, then resurface and continue flowing on the surface again.

This intimate connection between groundwater and surface water provides the right conditions for coldwater streams in southeastern Minnesota where trout and other important species thrive. Pollution traveling rapidly along a groundwater path may emerge at a stream, thus posing a threat to the fish, insects or invertebrates, animals, and plants living there. In the same way, pollution that has reached surface water can easily become groundwater pollution, thus posing a pollution risk to the people who rely on groundwater for their drinking water (MPCA, 2016).

The management of surface and groundwater interaction is especially vital in the WinLaC as groundwater provides all the drinking water needs for residents of the planning area (MDH, 2021). Groundwater aquifers used in the planning area range from surficial sand and gravel to the Mt. Simon sandstone formation. Approximately 80% of residents rely on municipal drinking water systems and 20% have private wells. Groundwater issues include nitrate and pesticide contamination, and contamination via septic system leakage or poorly constructed or unsealed wells. Because of these issues, wellhead and source water protection and planning are important in the watershed.

What Is Karst?

Underneath this watershed's beautiful farms, hills, woods, and streams is a natural, integrated drainage system called karst. It is formed by the dissolving action of water on limestone, and over time creates unusual features including sinkholes, springs, disappearing streams, and caves.

Source: MPCA, 2016

Wellhead Protection Areas (WHPAs) are areas surrounding public water supply wells that contribute groundwater to a well. In these areas, water contamination and/or contamination on the land surface can affect the drinking water supply. Drinking Water Supply Management Areas (DWSMAs) contain the wellhead protection area but are outlined by clear boundaries, like roads or property lines (MDH, 2021). These boundaries provide an opportunity to prioritize specific geographic areas for public drinking water protection purposes, especially for those deemed highly vulnerable to potential contaminant risk, such as the DWSMA in Elgin. Within the watershed, there are 21 WHPA and 19 defined DWSMAs (**Figure 2-5**). An MDH map of labeled DWSMAs is included in **Appendix J**, **Figure 5**. MDA determines the mitigation levels for community water supply wells and DWSMAs with increasing nitrate under the Groundwater Protection Rule, which can be accessed here: https://www.mda.state.mn.us/mitigation-level-determination.

No water supply is ever completely free of contaminants. Drinking water standards protect Minnesotans from substances that may be harmful to their health. Some contaminants, such as arsenic and manganese, occur naturally in our environment. Other contaminants enter our water supplies as a result of our own behaviors. Fertilizer and pesticides in run off from lawns and farm fields, cleaners and personal care products that go down household drains, and industrial leaks or improper waste disposal can all lead to water contamination.

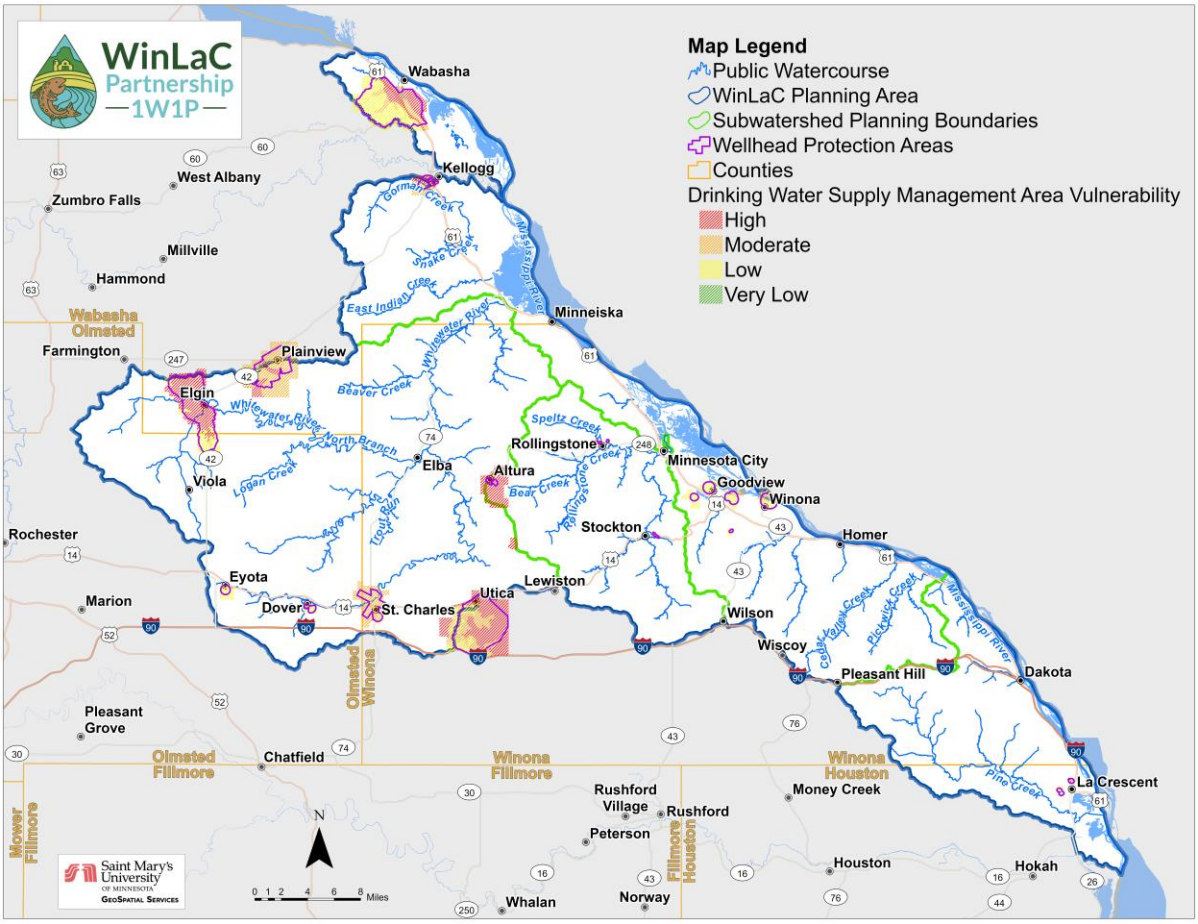


Figure 2-5: Drinking Water Supply Management Areas within the WinLaC. Full page map in Appendix J.

Nitrate in groundwater is a public health concern in the WinLaC, as consuming too much nitrate can affect how blood carries oxygen and can cause methemoglobinemia (also known as blue baby syndrome). Only

recently has scientific evidence emerged to assess the health impacts of drinking water with high nitrate on adults. A growing body of literature indicates potential associations between nitrate/nitrite exposure and other health effects such as increased heart rate, nausea, headaches, and abdominal cramps (MDH, 2022). The EPA Drinking Water Standard for nitrate is 10 mg/L. The MDA Township Testing Program reported the percent of wells in each township with nitrate concentrations measured above the standard and reported that 0-14% of wells in each township in Olmsted County, 0-15% of the wells in townships in Wabasha County, and 0-43% of wells in townships in Winona County had nitrate above 10 mg/L (MDA, 2019a-c). Local programs and initiatives provide free test kits for nitrate, manganese, and arsenic, with assistance available for private well owners with elevated nitrates. Information about these programs and initiatives is available at [Tap In - Safe Drinking Water for SE MN (arcgis.com)].

Understanding pollution sensitivity throughout the watershed is important for prioritizing and targeting broad scale implementation efforts. **Figure 2-6** depicts the pollution sensitivity of near-surface materials for the WinLaC as mapped by the Minnesota Department of Natural Resources (DNR). It shows the areas on the landscape most sensitive to potential groundwater pollution. Karst areas have the highest ranking for pollution sensitivity due to shallow depth-to-bedrock conditions. The majority of the WinLaC planning area either lies within high, high-karst, or moderate pollution sensitivity to groundwater.

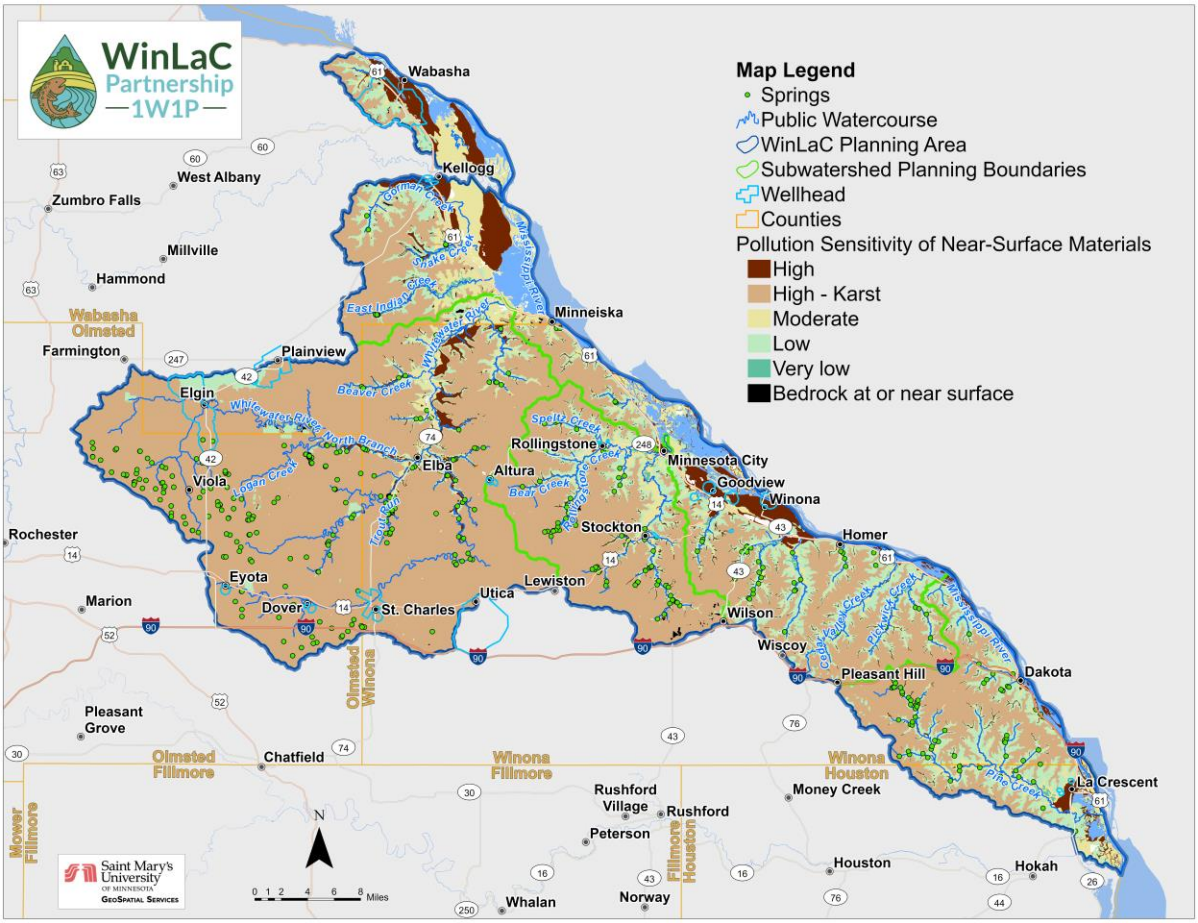


Figure 2-6: Pollution sensitivity of Near-Surface Materials within the WinLaC. Full page map included in Appendix J.

Soils

Derived principally from loess (windblown) and alluvial (water-transported) deposits, soils

in the watershed are dominated by sands and silts. Silt loams and loamy fine sands cover most of the watershed and were primarily deposited as loess from strong glacial winds during the Wisconsin glaciation. On many of the steep hillsides geologic erosion has resulted in areas of exposed bedrock and thin loess cover. Soil drainage in the watershed is typically high. Areas of moderately well to very poorly drained soils can be found, typically in valley floors at the bottom of hills or near streams (MFRC, 2014).

Habitat and Recreation

Because of the karst topography and natural springs, the region is renowned for its coldwater streams, which support populations of both brook and brown trout popular with anglers. Trout streams are abundant within the watershed, with anglers producing an economic benefit to the driftless area of more than a billion dollars every year, making protection of coldwater streams an environmental and economic priority. The Mississippi River and other warm water streams and lakes also support populations of other fish for anglers including walleye, northern pike, bass, catfish, sunfish, and crappies (MFRC, 2014).

The DNR has approximately 55 miles of State Water Trail designated river systems within the watershed. These water trails include the Whitewater and Mississippi River and are maintained and monitored for canoers and kayakers. Wildlife management areas (WMAs) are also scattered throughout the watershed, providing wildlife habitat and access to hunters, wildlife watchers, and countless others (**Figure 2-8**). In addition, the DNR manages four state parks and one state trail in the watershed, which collectively make up over 7,300 acres of land: the Great River Bluffs, Latsch, Carley, and Whitewater State Parks, and the Great River Ridge State Trail. Much of the forest in the WinLaC is a part of the Richard J. Dorer Memorial Hardwood State Forest, which covers over 1,000,000 acres in Southeastern Minnesota.

1. Great River Bluffs
Great River Bluffs State Park is located 20 miles southeast of Winona, known for its majestic views of the Mississippi River

2. Latsch State Park
This small state park has a signature half-mile walk to a breathtaking view of the Mississippi River Valley

3. Carley State Park
The North Branch of the Whitewater River runs through this quiet, forested oasis near Plainview

4. Whitewater State Park
This 2,700-acre park is a favorite place for fishing, camping, and exploration all year long

Figure 2-7: State parks in the WinLaC watershed

This watershed also includes part of a vast fish and wildlife refuge. The Upper Mississippi National Wildlife and Fish Refuge spans the states of Minnesota, Wisconsin, Iowa, and Illinois, encompassing approximately 240,000 acres and 261 river miles. The area is home to fish, wildlife, plants, and migratory

birds, and is also a place for fishing and hunting. The refuge is maintained by the U.S. Fish & Wildlife Service.

Because of their prime habitat, protected areas serve as ideal locations for rare, endangered, and threatened species. There are ten endangered or threatened species within the watershed boundary (USFWS, 2021) (**Table 2-1**). Of the ten endangered or threatened species, there are two flowering plants, one mammal, one bird, one reptile, three clams, and two insects.

Table 2-1: Endangered or Threatened species within the WinLaC Watershed.

Common Name	Scientific Name	Threatened or Endangered	Species Classification
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	Mammal
Whooping Crane	*Grus americana*	Experimental*	Bird
Eastern Massasauga Rattlesnake	*Sistrurus catenatus*	Threatened	Reptile
Timber Rattlesnake	*Crotalus horridus*	Threatened	Reptile
Blanding's Turtle	*Emydoidea blandingii*	Endangered	Reptile
Blanchard Cricket Frog	*Acris blanchardi*	Threatened	Amphibian
Higgins Eye (pearly mussel)	*Lampsilis higginsii*	Endangered	Clam
Sheepnose Mussel	*Plethobasus cyphyus*	Endangered	Clam
Spectaclecase Mussel	*Cumberlandia monodonta*	Endangered	Clam
Karner Blue Butterfly	*Lycaeides melissa samuelis*	Endangered	Insect
Rusty Patched Bumble Bee	*Bombus affinis*	Endangered	Insect
Leedy's Roseroot	*Rhodiola integrifolia ssp. Leedyl*	Threatened	Flowering plant
Prairie Bush-clover	*Lespedeza leptostachya*	Threatened	Flowering plant
Edible Valerian	*Valeriana edulis*	Threatened	Flowering plant

*Experimental defines the species as non-essential to the survival of the population.

With the unique geology, significant water-based recreation opportunities and economic activity, the region has a substantial outdoor advocacy group presence. The DNR, in partnership with other state and federal agencies, work with Trout Unlimited, Healthy Lake Winona, and other citizen groups to ensure habitat protection.

Additionally, as part of the Mississippi River- Winona Watershed Landscape Stewardship Plan, three Conservation Opportunity Areas (COAs) have been identified in the watershed (**Figure 2-8**). These areas were created to help direct conservation efforts within the watershed to the most strategic and cost-effective areas for protecting habitat and water quality. These areas have not been seriously degraded or developed, and support quality natural communities and habitat, but lack much long-term protection or management planning.

This culture of advocacy and engagement carries beyond just habitat. During the development of the WRAPS report, citizen engagement powered the development of watershed websites, a GIS story map, and a revitalization of a newsletter to promote watershed health and engagement opportunities for a healthier watershed.

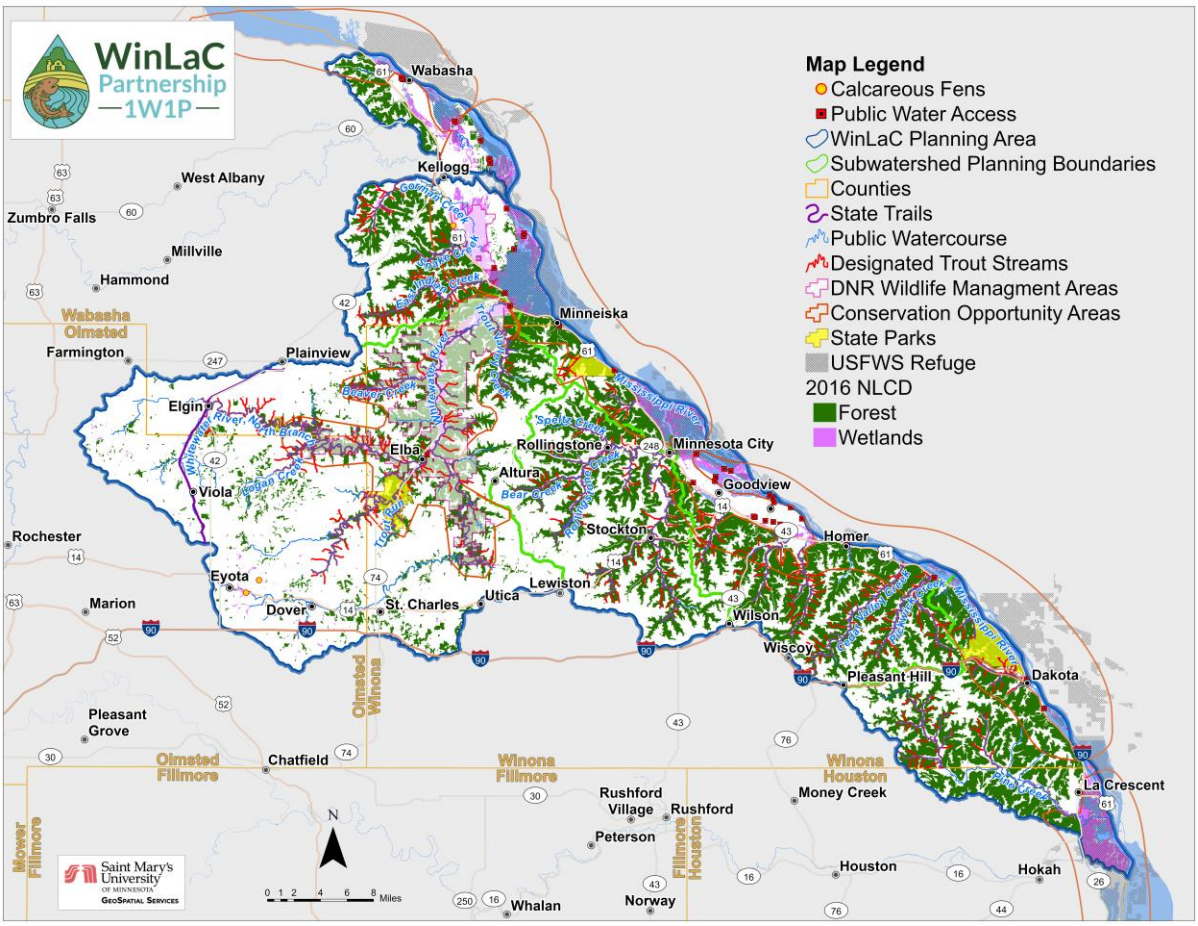


Figure 2-8: Habitat resources within the WinLaC. Full page map included in Appendix J.

Climate and Precipitation

The WinLaC watershed has a humid continental climate, providing four distinct seasons with cold winters and hot summers (Britannica, 2021). Over the last 30 years (1990-2020), precipitation totals have ranged from 24 to 48 inches throughout a given calendar year. The average precipitation for the 30-year period is 36 inches (DNR, 2021). Precipitation over the same time shows that, on average, each decade is getting 1.45 inches more precipitation.

Photo: USFWS

Average annual temperature for the 30-year period ending 2020 (1990-2020) is 45 ˚F. Temperature trends over the same time show that on average, each decade is getting warmer by 0.32 ˚F. The coldest year was in 1996 with average annual temperature of 42 ˚F. The warmest year was 49 ˚F in 2012 (DNR, 2021). Minimum and maximum temperatures are increasing 2-3 times more in the winter than the summer. Precipitation trends are also increasing seasonally, with no notable change in fall and winter but an increase in 1.5 inches from historical rainfall in spring and summer (DNR, 2019).

Demographics

The watershed population is estimated to be just under 62,000 people. Of that population, the median age is 38, with 20% of the population being under the age of 18, and 17% being greater than 65 years of age. The watershed population is 93% white, 3% Hispanic, and 4% identify as other ethnicities. Median household income is estimated to be $63,595. The poverty rate is 11%. Ninety-four percent of the watershed has at least a high school diploma, with 45% of those continuing to complete advanced education (associates, bachelors, or graduate) (U.S. Census, 2019).

The Watershed: Looking Ahead

Population estimates for 2040 suggest that there will be minimal population changes within the WinLaC watershed. Olmsted County had significant population growth between 2000 and 2010; a large part of the population growth has been centered in Rochester, which is not within the watershed boundary (Olmsted County, 2013). With smaller population centers of Olmsted County being within WinLaC (Eyota and Dover), it is more practical to use population estimates from Wabasha and Winona counties as a surrogate for the watershed. These counties estimate population growth of less than 5% between 2010 and 2040.

Source: MPCA

As population increases, it will be necessary to ensure geologically sensitive areas, surface waterbodies, and natural resource assets are preserved. Planning partners within the WinLaC watershed aim to use this plan to build on its history of conservation efforts, establish priorities for future conservation efforts, and streamline implementation efforts to achieve mutual benefits of clean water, balanced ecosystems, sustainable farmland, and diverse healthy communities.

3: Watershed Priority Issues and Opportunities

WinLaC Partnership —1W1P—

3. Watershed Priority Issues and Opportunities

The WinLaC watershed is home to a diverse array of natural resources, and a diverse set of issues and opportunities for managing those resources. To focus time, energy, and funding available during implementation, the issues and opportunities have been identified and prioritized. This section summarizes issues within the watershed, and how available information and community voices were taken into consideration to develop a list of WinLaC CWMP priority issues.

Planning Regions

Breaking up the watershed into "planning regions" enables the WinLaC Partnership to better highlight the differences within the watershed by geographic area. Each planning region can focus on different issues and use different approaches to meet goals.

For purposes of this plan, the WinLaC watershed has been broken down into four planning regions, largely around subwatershed (HUC-10) boundaries: Whitewater, Garvin Brook, Mississippi River-La Crescent, and Small Tributaries (**Figure 3-1**).

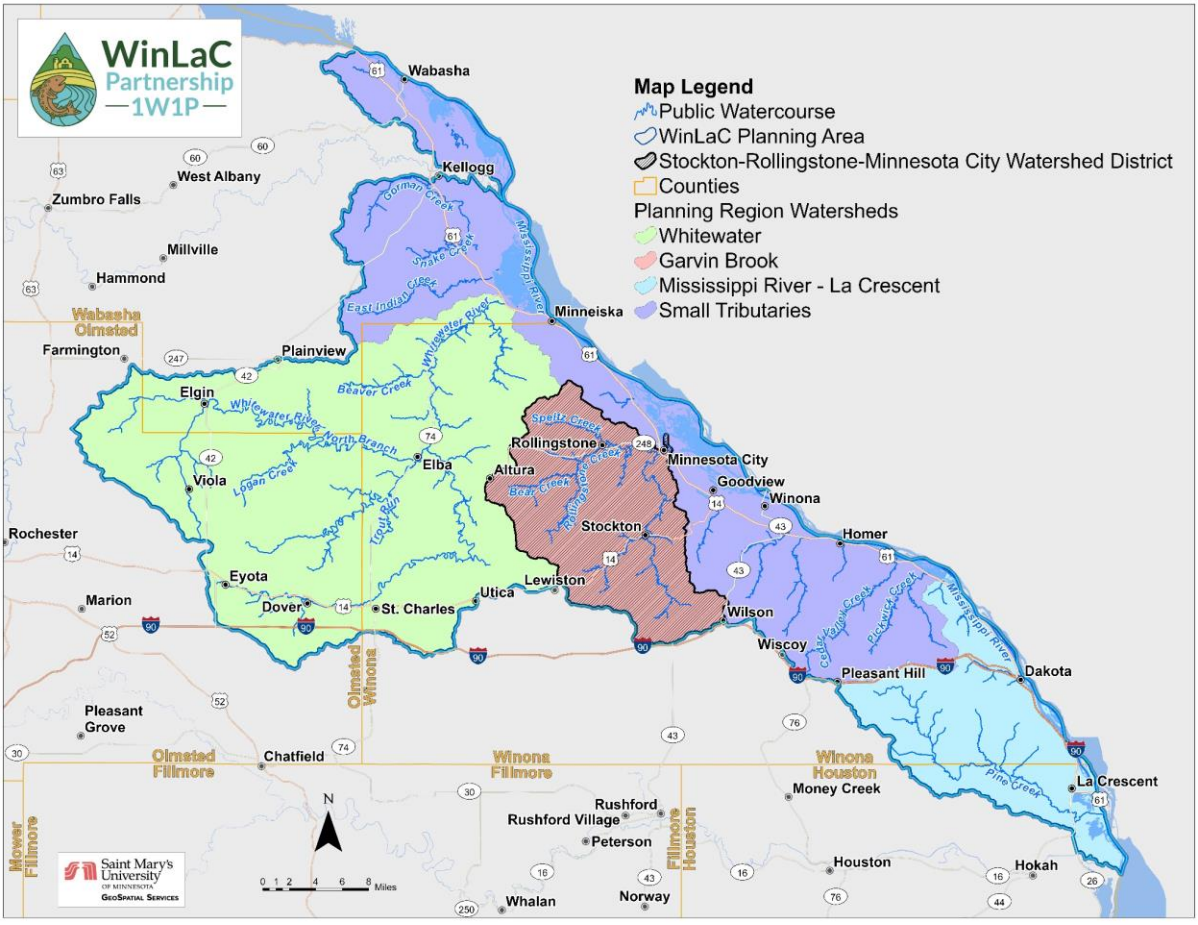


Figure 3-1: WinLaC Watershed Planning Regions.

Whitewater River

The Whitewater River Planning Region contains the Whitewater River watershed and makes up 42% of the planning area with roughly 205,000 acres. This planning region extends into Olmsted, Wabasha, and Winona counties and is home to Carley and Whitewater State Parks. Three river branches - the North, Middle, and South - merge in Elba before entering the Mississippi River at Weaver Bottoms, a waterfowl staging area. Whitewater Joint Powers Board, a local government entity established in 1989, administers the Whitewater River Watershed Project which promotes the establishment of agricultural BMPs and wildlife habitat improvements throughout the watershed.

Garvin Brook

The Garvin Brook Planning Region includes the Garvin Brook and Rollingstone Creek watersheds and makes up 13% of the WinLaC planning area with approximately 63,000 acres. This planning region is located entirely in Winona County. Stockton-Rollingstone-Minnesota City Watershed District was established in 1958 to address flooding issues, reduce sedimentation, and improve trout stream habitat within the watershed.

Mississippi River-La Crescent

The Mississippi River-La Crescent Planning Region includes Pine Creek, Dakota Creek and Miller Valley Creek and makes up 13% of the WinLaC planning area with approximately 60,500 acres. This planning region is located in Houston and Winona counties and contains the Great River Bluffs State Park.

Small Tributaries

The Small Tributaries Planning Region contains numerous smaller watersheds along the bluff landscape and makes up 32% of the WinLaC planning area with approximately 151,000 acres. Watersheds within this planning region include Pickwick Creek, Cedar Creek, Homer Creek, Pleasant Valley Creek, East and West Burns Valley Creeks, Gilmore Valley Creek, Deering Valley Creek, East Indian Creek, Snake Creek, and Gorman Creek. This planning region is located in Wabasha and Winona counties and contains the John A. Latsch State Park.

Identifying Issues

The first step in prioritizing issues is to identify a comprehensive list of issues that are impacting natural resources in the watershed. Issues present opportunities for restoration or protection efforts during this 10-year plan. The Partnership used the available data of the watershed to create a list of all resources and issues that are of concern. A summary of plans and reports used during the review included:

- Local Water Management Plans
- MPCA Watershed Approach document (Total Maximum Daily Loads [TMDLs], Stressor Identification Reports, and WRAPS)
- Reports specific to resource improvement in the watershed (e.g., Lake Winona Water Quality Improvement Plan, creel survey)
- Master Plans for Wildlife Management Areas
- Landscape Stewardship Plans
- Agency and local responses from the 60-Day Notice

A list of resources reviewed during the issue identification process and copies of responses from the 60-Day Notice can be found in **Appendix D**. Each document outlined above was used to gather information about issues. After all reports were reviewed, a table of issues was created to see how frequently a specific issue was called out, providing the first ideas about what types of issues are most prevalent within the watershed. This created a comprehensive issues table that was reviewed by local planning committees with different educational/professional backgrounds and interests within the watershed.

To better organize information, issues were grouped into one of four categories. Categories include groundwater, surface water, land use, and habitat and recreation. These categories are outlined below in **Table 3-1**. The next step was to ensure this list of issues captured what was important to the community.

Table 3-1: Breakdown of categories and explanation of what is in each category.

Groundwater	Groundwater includes protecting wellheads, dealing with drinking water contamination, and the continued increased demand for groundwater in the region.
Surface Water	Surface water issues consider surface water contamination, urban stormwater, flooding areas, the connection of tile lines to surface water systems, and the impacts of surface water issues to aquatic habitats.
Land Use	Land use issues include changes to the landscape from development, agriculture, management, and shifting weather patterns that impact how the landscape may change with aging infrastructure, increased precipitation trends and rainfall intensities, and soil health.
Habitat and Recreation	Habitat and recreation issues include providing better access to waterways, habitat protection, and stream connectivity for aquatic species.

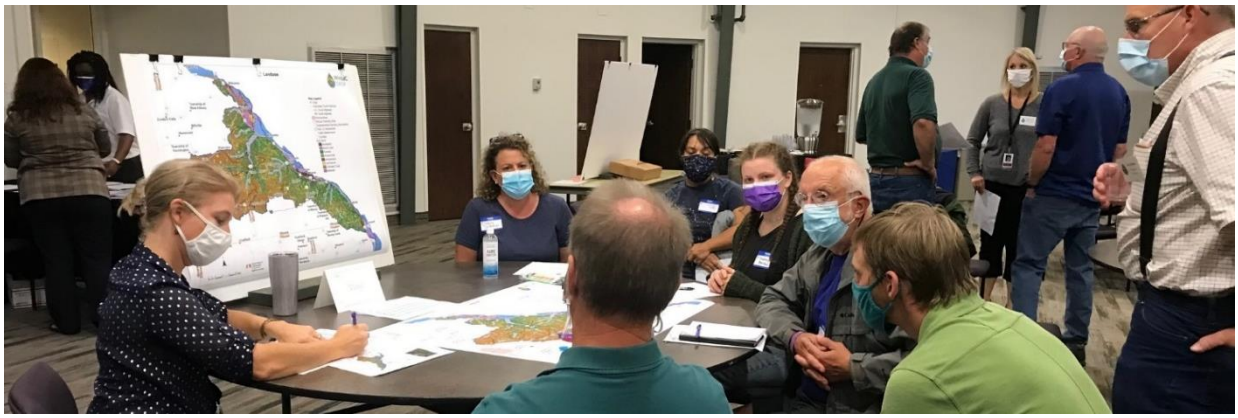
Community Engagement: Issue Identification

This plan is designed to serve the community that lives here. As such, civic engagement is a pillar of the planning process, so that members of the community have an opportunity to gain experience about natural resource issues and share their lived experience and expertise in a meaningful way to influence the plan. As introduced in **Section 1. Plan Introduction**, the Partnership hosted a public kickoff event at the start of the WinLaC 1W1P planning process to receive feedback from the community on natural resource issues important to them.

The public kickoff was held in the city of Winona on September 20, 2021. Due to the ongoing COVID-19 pandemic, the kickoff meeting was held both in-person and through an online virtual event. Meeting participants were provided a brief presentation about natural resource issues, and through a facilitated event, were invited to rotate through one of four “resource stations” throughout the room:

1. Groundwater
2. Surface water
3. Land Use
4. Habitat and Recreation

Each resource station was facilitated by a local planning committee “resource captain” to guide discussions, and a large-scale map to visually display issues impacting the resource. Participants were invited to provide input about issues at each station, identify locations where issues were especially prominent, and brainstorm solutions for addressing issues in the future.



City of Winona Public Kickoff Event.

A virtual and paper survey was also provided during the public kickoff event to gain feedback from the community on what issues were most important to them. The survey consisted of seven questions about water resource concerns in the region. A total of 27 responses were provided either in-person at the kickoff event or online. A summary of input received is provided in **Appendix B.**

One of the survey questions sought a five-word response to the question "When you think of the WinLaC Watershed, what comes to mind?" Those responses were aggregated into a word cloud (**Figure 3-2**). The larger the word in the image, the more times that word was used in the cumulative responses.

Figure 3-2: Word cloud generated from public input for the WinLaC Watershed.

To support engagement beyond the public kickoff, WinLaC local planning committees collaborated with Saint Mary's University of Minnesota (SMUMN) to create a public website that contains information about the watershed, upcoming events, and committee meeting minutes. The website also contains interactive maps, aimed to orient the reader to aspects of the watershed (land use, habitat areas, and surface and groundwater). This transparency allows all interested parties to understand how decisions were made and provides information about additional opportunities to stay engaged in the planning effort.

Prioritizing Issues

To better organize information, issues were grouped into one of four categories: surface water, groundwater, land use, and habitat and recreation. The WinLaC CWMP is a 10-year plan, but not all issues can be addressed within that time. Therefore, the process outlined below helped prioritize the most pressing issues based on need, feasibility and cost-effectiveness. A total of 34 issues were identified and prioritized by the WinLaC local planning committees as being a Priority A, Priority B, or Priority C issue.

!! **Priority A:** We expect these issues to be addressed first within the lifespan of this plan. These are the most important.

! **Priority B:** We expect some of these issues to be addressed throughout the lifespan of this plan. These are important, but less of a priority.

Priority C: We may address some of these issues through collecting additional data or funding throughout the lifespan of the plan. These issues may also be addressed through partner groups or may be addressed as a secondary benefit from higher priority issues. These issues are still important, but the lowest local priority items.

Planning committees used six criteria to evaluate if an issue was a Priority A, B, or C:

1. Feasibility of addressing the issue
2. Urgency of need
3. Economic importance
4. Leveraging funding
5. Ecosystem importance
6. Cultural and social importance and intrinsic worth

Using these criteria, local planning committees arrived at a final list of priority issues, which was confirmed by the Policy Committee in their January 2022 meeting.

Watershed-Wide Priority Issues

!! Priority A Issues

These issues were ranked highest among the working group and are the issues to be addressed first. They have goals and action items assigned to them in sections 4 and 5.

Table 3-2: Priority A Issues

Category	Issue Statement
	Need for **increased field management practices** to reduce excessive nutrient and sediment delivery to streams and enhance nutrient cycling
	Elevated levels of nitrates in drinking water from agricultural and wastewater sources
	Excess nutrient loading (nitrogen and phosphorus) to watershed streams and impact on aquatic life
	Excess sediment loading as a primary stressor to **aquatic life, habitat, and recreation**
	Failing or noncompliant septic systems and their potential for groundwater and surface water contamination
	Increased annual precipitation and more intense rainfall events and their impact on hydrology, water quality, and infrastructure, and the need to plan for **resiliency**
	Increased **protection of wellhead/source water areas** to reduce groundwater contamination

Table continued on next page

Table 3-2 continued

Category	Issue Statement
	Need for **improving soil health** for carbon sequestration and agricultural productivity
	Urban stormwater runoff, which can contribute to poor water clarity/quality, alter natural flow and infiltration of water, and harm aquatic life
	Excessive **upland and overland sediment loading** due to various land use practices

! Priority B Issues

These issues were given a Priority B ranking and will be addressed throughout the lifetime of the plan. They have goals and action items assigned to them in sections 4 and 5.

Table 3-3: Priority B Issues

Category	Issue Statement
	Enhancement and long-term protection of **forest, native prairie, and pollinator habitats** and corridors
	Unsealed or poorly constructed wells as a conduit for groundwater contamination from the land surface
	Nutrient runoff and legacy loading in **Lake Winona** and its impact on water clarity, aquatic life, and habitat
	Loss of natural wetlands, in particular riparian and backwater floodplain wetlands (Mississippi River Floodplain), and its impact on water quality, flood damage reduction, and wildlife habitat
	Surface and groundwater interconnectivity due to **karst** geology
	Excess sediment from near-channel and in-channel sources (floodplains, terraces, and streambanks)
	Pasture runoff and need for managed grazing within riparian corridors
	Flooding and its associated impact to homes, infrastructure, and natural resources
	Continued **high levels of *E. coli*** and its impacts on aquatic recreation opportunities despite numerous reduction efforts
	Increased drainage (**tile networks and drainage ditches**) increasing downstream speed and velocity of water and associated sediment/nutrient delivery to channels and ditches
	Increased presence of **terrestrial invasive species** and its impact on native plant species

Table continued on next page

Table 3-3 continued

Category	Issue Statement
	Enhancement and protection of **trout fisheries** and habitat from adverse conditions
	Presence of **aquatic invasive species** threatening aquatic vegetation and aquatic life

Priority C Issues

These issues are important but will not be the focus of this plan. These issues may be outside of local governmental control or may be addressed by completing a different priority. They will not have goals or action items assigned to address them.

Table 3-4: Priority C Issues

Category	Issue Statement
	Protection of rare habitats and plant communities (calcareous fens, algific talus slopes, bottomland hardwood forests) to support native wildlife, insects, and birds
	Barriers to stream connectivity (i.e., culverts and road crossings) adversely impacting aquatic life, particularly coldwater fish
	Monitoring and protection of groundwater levels to ensure that water availability meets increasing demand
	Protection of riparian game and non-game habitat
	Protection and management of blufflands from development and erosion
	Risk of chloride contamination for surface waters in the watershed
	Increase in development pressure in both rural and urban areas of watershed
	Low dissolved oxygen levels in streams and its impact on aquatic life
	Inadequate public water access sites to designated trout streams
	Inadequate accessibility and presence of debris in the Whitewater River State Water Trail, impacting navigability of the resource
	Need for improved management of aggregate resources and consumption/transport of resources

4: Measurable Goals

WinLaC Partnership —1W1P—

4. Watershed Resources and Measurable Goals

Setting measurable goals is a requirement for each priority issue. The measurable goals must consist of a clearly defined, quantifiable change in a resource condition that can be accomplished from implementing the 10-year plan. Goals should relate to the desired future condition of the resource. Goals can be watershed-wide, subwatershed specific, or directed to a particular natural resource.

Goals for the WinLaC CWMP are both short-term and long-term (describes the desired future condition), as defined below.

Short-Term Goal

Describes quanitifiable change in the condition of a resource expected to be reached in 10 years by the implementation of the plan.

Desired Future Condition

Describes the desired future condition of a resource that planning partners would like to see, without a given time constraint.

Measurable goals were developed by compiling feedback and information from multiple sources including:

- Existing reports (WRAPS, TMDL, local water management plans),
- Output from the Prioritize, Target, and Measurable Application (PTMApp), and
- Local expertise from public meetings and local planning committee members.

Factsheets are provided to summarize each of the 16 measurable goals created for the WinLaC CWMP. **These 16 goals collectively address the 23 Priority A and B issues in this plan**. Each factsheet includes:

- Background on the priority issue(s) the goal seeks to address,
- The priority issues that are addressed with the goal,
- The short-term goal and desired future conditions (long-term goal),
- Secondary outcomes from meeting the goal,
- What work will be done,
- Heat maps showing priority resources and subwatersheds where work will be focused.

Priority resources were identified based on a review of scientific data and expertise of the local planning committees. They include (for example) lakes and streams that are impaired, stream reaches that are prioritized for enhancement or restoration, and locations most suitable for habitat expansion. Priority resources also include “nearly” and “barely” impaired resources to align with the Nonpoint Priority Funding Plan for Clean Water Funding Implementation (BWSR, 2014).

In addition to priority resources, this plan identifies small subwatersheds (HUC-12 scale) that should be the initial focus of implementation efforts specific to each goal. These subwatersheds were identified based on a geospatial analysis that considered information including the prominence of priority resources present in each subwatershed, WRAPS data, SWAT data, and loading information from PTMApp. Additional detail about this geospatial analysis and full-page maps are available in **Appendix F**.

Groundwater Contamination and Nitrates

Background

Elevated levels of nitrates in drinking water from agricultural sources is a priority concern for this WinLaC CWMP. Consuming too much nitrate can affect how blood carries oxygen and can cause methemoglobinemia (also known as blue baby syndrome). Only recently has scientific evidence emerged to assess the health impacts of drinking water with high nitrate on adults. A growing body of literature indicates potential associations between nitrate/nitrite exposure and other health effects such as increased heart rate, nausea, headaches, and abdominal cramps (MDH, 2022).

Contamination of groundwater occurs when surface water infiltrates into the ground and carries a contaminant from the surface. In this instance, the contaminant of concern is nitrate. Nitrate moves with water through the soil and into groundwater. As more nitrogen is being used on the landscape, more nitrate is available to be transported into the groundwater.

The time it takes surface water contaminants to reach groundwater varies dramatically. Groundwater depth, geology, and aquifer pressure can impact contaminant movement in groundwater. Due to topography and karst geology within the watershed, water moves relatively quickly from the surface to the groundwater supply. This creates an urgent need to protect both surface and subsurface water supplies.

This plan sets goals to reduce the amount of nitrogen being lost on the landscape. This can be accomplished through implementing conservation action such as alternative cropping systems, perennial cover and nutrient management (source control). Nutrient management plans help identify the best times and locations to apply nutrients so the crops can access nutrients at the most optimal conditions.

Priority Issues Addressed

- (A) **Elevated levels of nitrates** in drinking water from agricultural and wastewater sources.
- (A) Increased **protection of wellhead/source water areas** to reduce groundwater

Short-Term Goal

Reduce risk of nitrogen loading to groundwater by reducing overland nitrogen loading by 4% per year (or 390,300 lbs/year) through the implementation of conservation action.

- Indicator: lbs/year of total nitrogen reduced, as estimated by PTMApp (edge of the field).*

Desired Future Condition

Decreasing nitrate trends for all tested public drinking water supplies and private wells above 3 parts per million (ppm). All wells meet Environmental Protection Agency's (EPA) Drinking Water Standard of 10 ppm.

Secondary Outcomes from Meeting Goal

- Reduced nutrient and sediment loading to surface waters
- Water storage benefits
- Soil health benefits
- Carbon sequestration benefits
- Addressing nitrogen stressors to aquatic life
- Meeting MN Nutrient Reduction Strategy goals
- Meeting trout stream goals

**PTMApp estimates nitrogen reduction from overland transport, which is not the primary mode of nitrogen transport in the WinLaC. While this deficiency exists, PTMApp is the best available tool for developing numeric nitrogen reduction goals at this time. The overland reduction goal is considered a surrogate for a vertical leaching reduction goal. Activities listed in Section 5 will aim to address nitrogen leaching into groundwater.*

Groundwater Contamination and Nitrates (continued)

Work to be Done

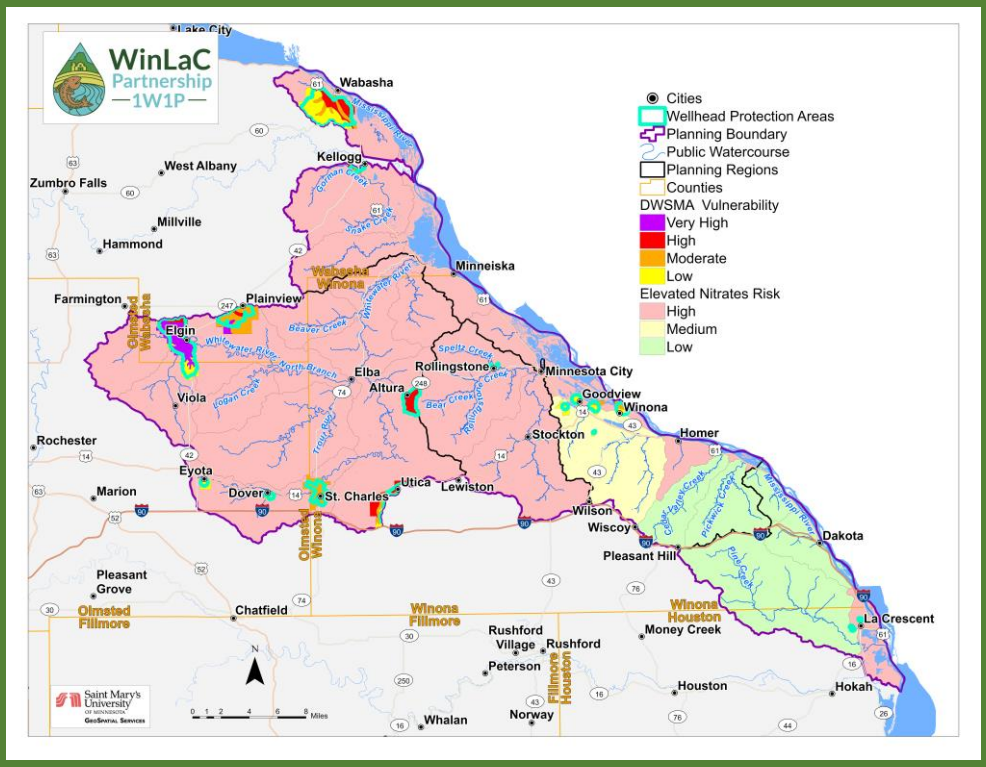
Below are some actions that can be implemented to make progress toward the groundwater contamination measurable goals. A full list is shown in **Section 5**:

- Nutrient management plans
- Field management practices (e.g., cover crops, buffers, perennial cover, reduced tillage)
- Increase protection of source water and well head protection areas

Example field management practice (cover crop).

Where to Focus Work

Actions related to this measurable goal will be preferentially focused in subwatersheds shown as a “High” priority in pink. These watersheds have the DWSMAs with the highest vulnerability, and the townships with the highest nitrate testing results from MDA targeted township testing.



Unsealed and Poorly Constructed Wells

Background

Water wells are like straws in a cup that get drilled into the ground. Well depth can vary due to factors such as installation date, local well codes or ordinances, depth to groundwater, expected water use (drinking or irrigation) and if the well water is for public or private consumption.

Generally, deeper wells have a better likelihood of having less contaminated water from the surface. Deeper wells force water to travel further through the subsurface before entering the well and being consumed. The further distance water has to travel through the ground, the higher likelihood that nutrients and contaminants will be filtered or retained by the soil and other restricting layers. Deeper wells can also enter an aquifer not directly connected to the groundwater at the surface of the landscape. This aquifer will be more protected from contaminants because there is a layer of rock or clay above it that will restrict or slow contaminants from moving deeper into the ground. Wells need to be constructed properly, including having a casing that will restrict water flow between aquifers.

Unsealed or abandoned wells can form a direct conduit for pollutants from the land surface to reach the groundwater, as it removes the protection of being filtered by soils.

Groundwater provides all the drinking water needs for residents of the planning area with 20% of residents getting water from private wells (MDH, 2021). As such, a desired future condition for this plan is to reduce risk to public health through well management and maintenance. During implementation, this plan will focus on sealing 10 abandoned wells per year to reduce the risk to the public drinking water supply.

Priority Issue Addressed

(B) **Unsealed or poorly constructed wells** as a conduit for groundwater contamination from the land surface.

Short-Term Goal

Reduce risk of *E.coli* and other contaminants through **sealing an average of 10 abandoned private and public wells per year**, or 100 over the 10-year plan.

- Indicator: Number of wells sealed.

Desired Future Condition

Reduce risk to public health through appropriate well management and maintenance.

Photos: MDH – Faulty or unused wells

Secondary Outcomes from Meeting Goal

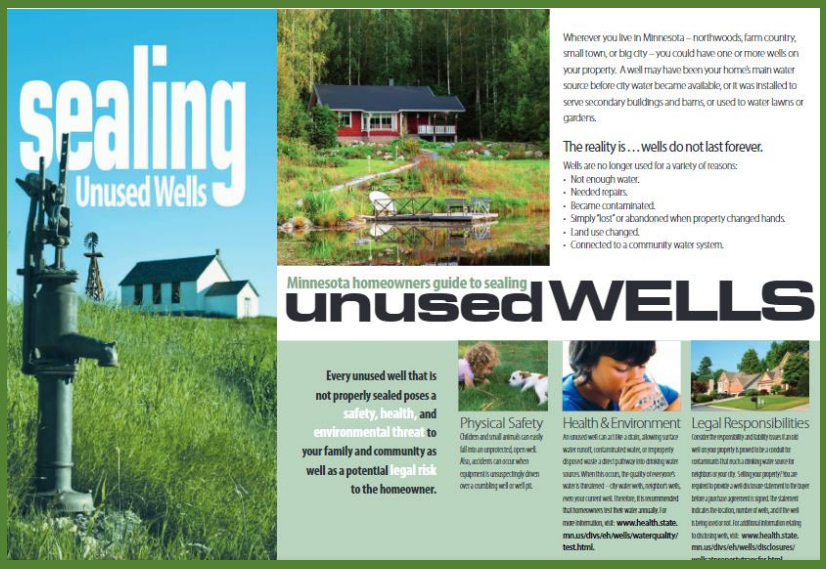
- Reduced groundwater contamination and nitrates

Unsealed and Poorly Constructed Wells (continued)

Work to be Done

Below are some actions that can be implemented to make progress toward the unsealed and poorly constructed wells goals. A full list is shown in **Section 5**:

- Sealing abandoned or unused wells
- Inventory of abandoned wells throughout watershed
- Education regarding well construction and maintenance
- Treatment systems and new well assistance



Example educational material for sealing wells (Photo: MDH).

Where to Focus Work

Unsealed and poorly constructed wells are a watershed-wide problem. Local knowledge will be used to prioritize well sealing and maintenance work on a case-by-case basis.

Karst

Background

Underneath the watershed's farms, hills, woods, and streams is a natural, leaky, or porous geology called karst. Southeastern Minnesota was untouched during the last glacial period, leaving a varied and rugged landscape. The dissolving action of water on underlying limestone enables large cavities of space to form underground and connect to the surface.

This karst topography provides a direct link between surface water and groundwater systems. This surface water and groundwater connection allows surface water to quickly infiltrate into groundwater aquifers with little to no filtration of nutrients and contaminants.

Because the surface/groundwater interaction is difficult to predict, and groundwater can be impacted readily by surface contamination, it is very important to address and minimize contamination in shallow depth-to-bedrock areas. Much of the area is less than 50 feet to bedrock. Therefore, priority areas are widespread and are shown on Figure 2-6, *Pollution Sensitivity of Near-Surface Materials within the WinLaC* as High- Karst. Protection is also critical in the Decorah Edge landscape.

The Decorah shale is a thin, restricting clay layer underground. When groundwater percolating downward reaches this layer, it moves laterally until it reaches the Decorah Edge, a woodland/wetland ecosystem critical for groundwater filtration and recharge.

Priority Issue Addressed

(B) Surface and groundwater interconnectivity due to **karst** geology.

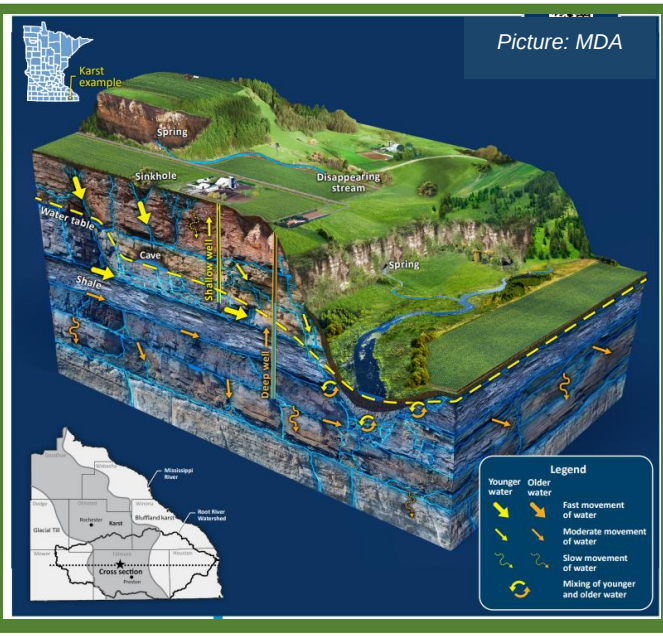
Short-Term Goal

Minimize groundwater contamination resulting from infiltration in the Decorah Edge, near springs/ sinkholes, and other areas of Karst geology through incentives and **1 educational workshop per year.**

- Indicator: Number of educational workshops per year.

Desired Future Condition

Maintain safe and sustainable groundwater supply for future use.



Picture: MDA

Secondary Outcomes from Meeting Goal

- Reduced groundwater contamination and nitrates
- Reduced nutrient loading to surface waters
- Wetland benefits
- Land protection benefits

Karst (continued)

Work to be Done

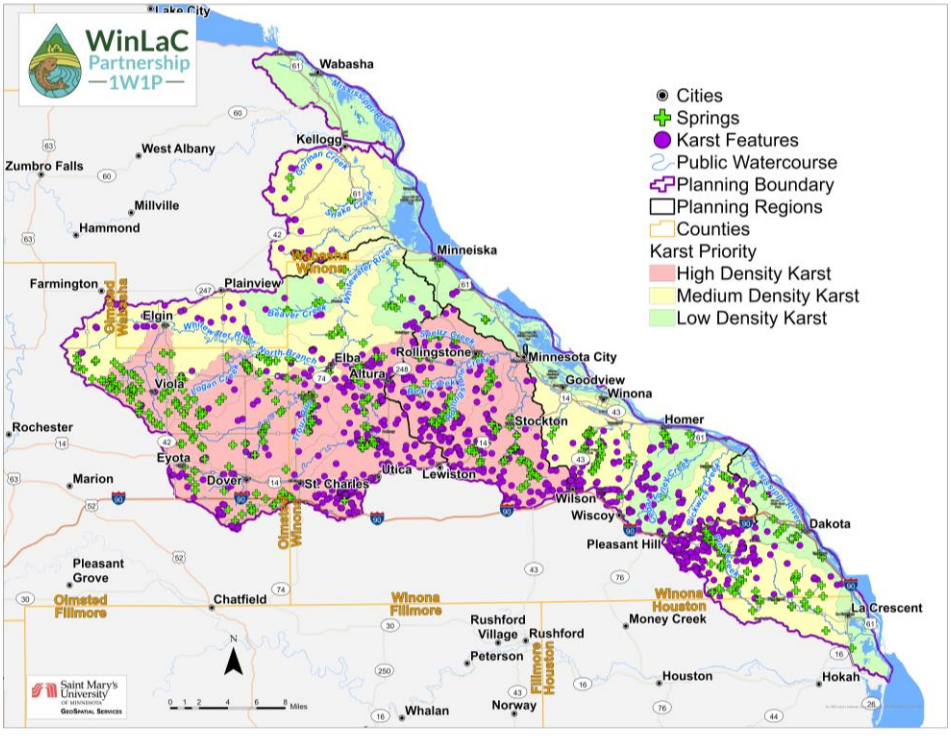
Below are some actions that can be implemented to make progress toward the karst measurable goals. A full list is shown in **Section 5**:

- Buffers around sinkholes
- Education and outreach about karst features and the Decorah Edge

Sinkhole in a field.

Where to Focus Work

Actions related to this measurable goal will be preferentially focused in subwatersheds shown as a "High" priority in pink. These watersheds have a higher density of karst features than other subwatersheds in the planning area.



Nutrients

Background

Nutrients addressed by this plan are total nitrogen and total phosphorus. These two nutrients are essential to sustaining life, but in excess, can impact aquatic life, recreation, and consumption.

Total nitrogen refers to the different forms nitrogen can take (such as nitrite or nitrate). Nitrate is easily transported with water across the landscape making it a prevalent issue in streams, lakes, and in groundwater. Leaching loss from row crops and wastewater point sources are the major sources of nitrate in the watershed (MPCA, 2016). As of 2020, there are two nitrate impaired streams in the WinLaC watershed. Four streams have nitrogen listed as a stressor to aquatic life: North, Middle, and South Branch Whitewater, and Bear Creek.

Total phosphorus, like total nitrogen, refers to all the forms of phosphorus (such as dissolved phosphorus). Phosphorus can attach to sediment particles and get transported downstream. In the Lower Mississippi River Basin (where the WinLaC is located) streambank erosion and agricultural runoff have been found to be the highest sources of phosphorus loading (MPCA, 2016). As of 2020, both bays of Lake Winona are impaired for excess phosphorus.

The desired future condition for this plan aligns with targets set forth in the WRAPS to reduce nutrient levels 45%, and ultimately delist all nutrient impaired streams and lakes. The short-term goal represents realistic progress that can be made during plan implementation. For a summary of all nutrient impaired streams and lakes with TMDL resource loading targets, see **Appendix E**.

Priority Issues Addressed

- (A) **Excess nutrient loading** (nitrogen and phosphorus) to watershed streams, and impact on aquatic life.
- (A) Need for **increased field management practices** to reduce excessive nutrient and sediment delivery to streams and enhance nutrient cycling

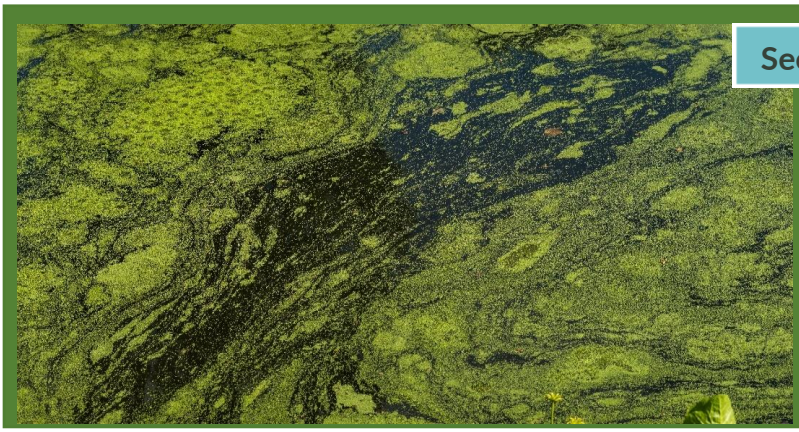
Short-Term Goal

Reduce overland total nitrogen by 4% per year (or 390,300 lbs/year) and **total phosphorus by 5% (or 17,300 lbs/year) watershed-wide** through implementation of field practices and/or nutrient management plans.

- Indicator: lbs/year of total phosphorus reduced, as estimated by PTMApp (edge of the field).

Desired Future Condition

Total nitrogen and total phosphorus levels down 45% by 2040. All waters support aquatic life and recreation thresholds for nutrients.



Secondary Outcomes from Meeting Goal

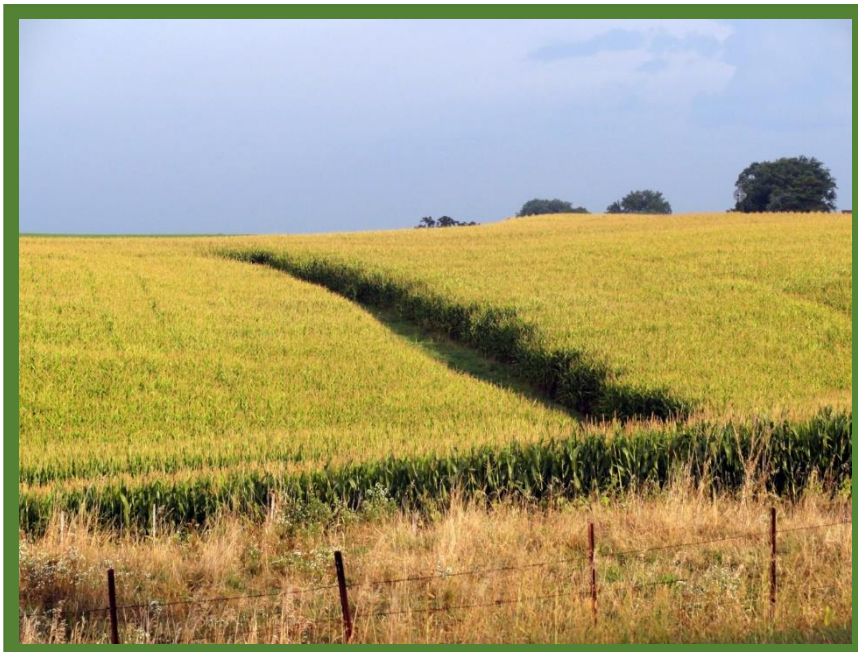
- Reduced nutrient loading to urban lakes
- Water storage benefits
- Groundwater contamination reduction
- Soil health benefits

Nutrients (continued)

Work to be Done

Below are some example actions that can be implemented to make progress toward this measurable goal. A full list is shown in **Section 5**:

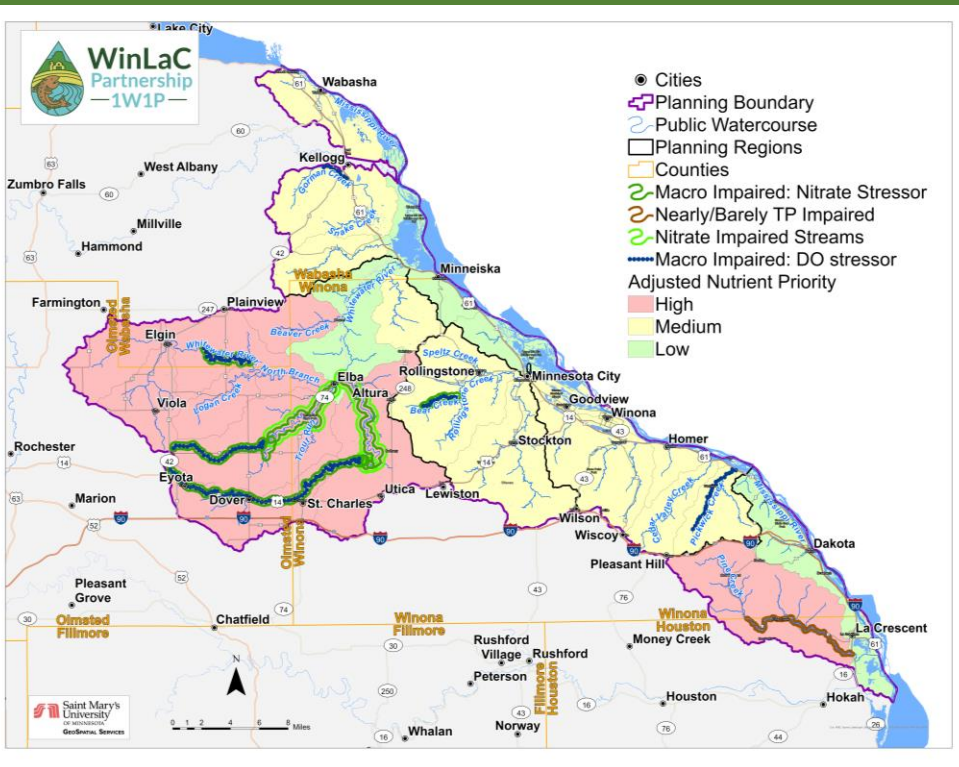
- Nutrient management plans
- Field practices, such as grassed waterways, water and sediment control basins, tillage management, and cover crops
- Contractor field days for erosion control practices
- Forest management, especially in riparian areas



Grassed waterway in the WinLaC Watershed.

Where to Focus Work

Actions related to this measurable goal will be preferentially focused in subwatersheds shown as a "High" priority in pink. These watersheds have the highest amount of nutrients leaving the land through surface runoff (as estimated by SWAT and PTMApp), and/or contain the highest prominence of nutrient impaired or stressed streams.



Urban

Background

In urban settings, untreated stormwater runoff often ends up in built infrastructure where it is routed to a lake, stream, or river. Stormwater carries with it sediment, chloride from road and sidewalk salting, nutrients, fertilizers, trash, and *E. coli* from uncollected domesticated animal droppings and from other animals and birds that live in the built environment.

Reducing the amount of pollutants that get picked up and moved with stormwater can go a long way in reducing the impact stormwater has on downstream water systems, not to mention, increasing the cleanliness and livability of the surrounding built environment.

Lake Winona has a water quality improvement plan (Barr and WHKS, 2020) which aims to reduce the amount of total phosphorus entering the lake, with the goal of improving the lake's water quality. Stormwater runoff has been identified as a large source of total phosphorus entering the lake. To meet state water quality standards, that plan found that total phosphorus must be reduced by 210 pounds (15% reduction) from the watershed entering the Northwest Bay, followed by an in-lake alum treatment and 46-pound reduction in total phosphorus from the direct watershed for the Southeast Bay.

As Lake Winona is a prized resource, this plan's short-term goal aligns with the targets in the Lake Winona water quality improvement plan. This plan also recognizes the need for in-lake management such as alum treatment, which is included as a capital improvement in Section 5. This goal has a desired future condition of delisting the lake (and other urban waterways).

Priority Issue Addressed

- (A) **Urban stormwater runoff** which can contribute to poor water clarity/quality, alter natural flow and infiltration of water, and harm aquatic life.
- (B) **Nutrient runoff and legacy loading** in **Lake Winona** and its impact on water clarity, aquatic life, and habitat.

Short-Term Goal

Reduce total phosphorus loads to Lake Winona by 210 lbs from the watershed entering Northwest Bay and 46 lbs from the direct watershed for the Southeast Bay; Implement **40 stormwater practices** focused on urban runoff.

- **Indicator**: lbs of total phosphorus reduced, as estimated by P8 or other model suited for urban stormwater modeling; # of stormwater practices to be implemented in years when P8 is not used

Desired Future Condition

Lake Winona and urban waterways support aquatic life and recreation thresholds for phosphorus and chloride.

Secondary Outcomes from Meeting Goal

- Added water storage to build climate resiliency
- Nutrient reduction to surface waters

Urban (continued)

Work to be Done

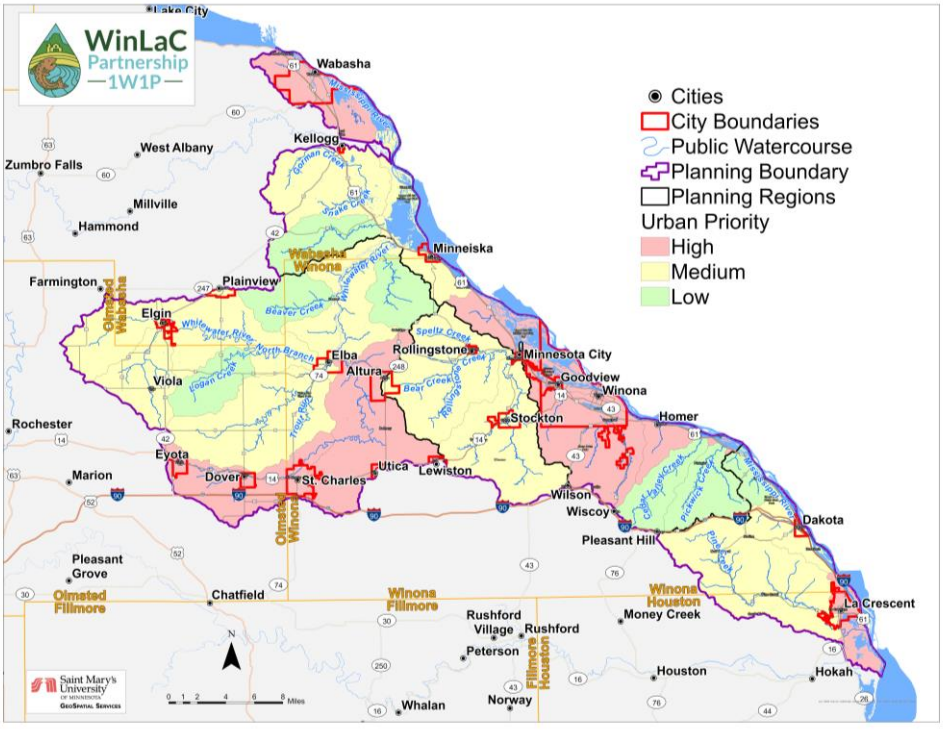
Below are some example actions that can be implemented to make progress toward the urban measurable goal. A full list is shown in **Section 5**:

- Implement stormwater best management practices (e.g., raingardens, rain barrels, water reuse, low impact design practices)
- Promote salt application awareness and training
- Continue and expand public education efforts related to urban stormwater management

Raingarden in the City of Winona.

Where to Focus Work

Actions related to this measurable goal will be preferentially focused in subwatersheds shown as a "High" priority in pink. These subwatersheds have a higher prominence of urban and impervious areas.



Sediment

Background

Sedimentation occurs when wind and water erosion move soil off the land and deposit it in a different place. Overland erosion is caused when exposed soils encounter heavy rains, rushing water, or strong winds. Human activities can increase erosion when vegetation is removed from the land for agriculture, development, construction, or logging. When sediment is deposited on the land, it can inhibit crop productivity and damage roads and bridges. Sediment in streams can decrease the quality of aquatic habitat and harm aquatic life. Within the WinLaC watershed, there are 15 streams that are impaired for aquatic life due to total suspended solids or sediment (MPCA, 2020). For a summary of all sediment impaired streams with TMDL resource loading targets, see **Appendix E**.

Trends within WinLaC suggest that sediment concentrations are influenced by rainfall, land slope, and soil type. When there are floods and high flow events from increased precipitation, suspended sediment transport or sediment within the stream goes up.

The short-term measurable goal for this plan aims to reduce sedimentation through implementation of practices that reduce peak flow rates and increase storage. The desired future condition requires sustained maintenance of these practices to ensure proper functioning and conveyance, aimed at ultimately delisting surface waters from impairment related to sediment.

Priority Issues Addressed

- (A) Excess **sediment loading** as a primary stressor to aquatic life, habitat and recreation.
- (A) Excessive **upland and overland sediment loading** due to various land use practices.
- (A) Need for **increased field management practices** to reduce excessive nutrient and sediment delivery to streams and enhance nutrient cycling

Short-Term Goal

Reduce sediment loading via overland flow/runoff by 9%, or 37,200 tons/year, through implementation of structural and nonstructural practices to reduce peak flow rates and increase headwater storage at priority locations.

- Indicator: tons/year of sediment reduced, as estimated by PTMApp (edge of the field).

Desired Future Condition

All waters support aquatic life and recreation thresholds for sediment and/or turbidity levels.

Photo: Turbid water in the Middle Branch of the Whitewater. Source: Olmsted SWCD

Secondary Outcomes from Meeting Goal

- Added water storage to build climate resiliency
- Nutrient reduction to surface waters
- Groundwater contamination reductions
- Carbon sequestration benefits

Sediment (continued)

Work to be Done

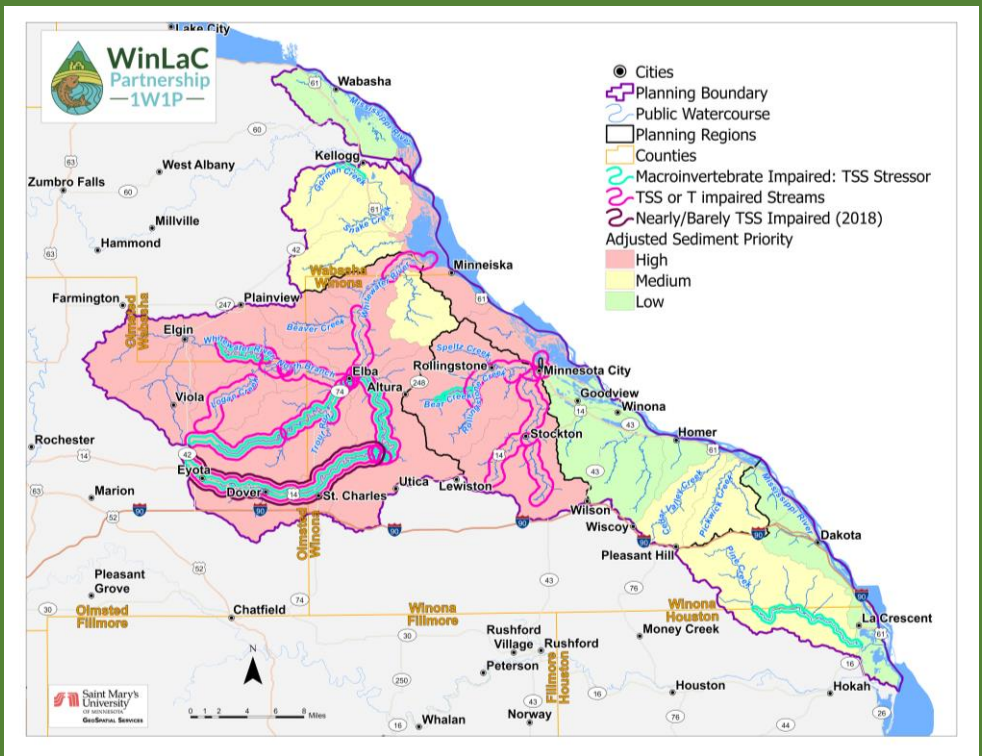
Below are some example actions that can be implemented to make progress toward the sediment measurable goals in the WinLaC watershed. A full list is shown in **Section 5**:

- No tillage or reduced tillage
- Cover crops
- Critical area planting
- Buffers
- Water and sediment control basins
- Forest management plans
- Buffering the forest edge between cropland and forests

Residue management in the WinLaC Watershed.

Where to Focus Work

Actions related to this measurable goal will be preferentially focused in subwatersheds shown as a "High" priority in pink. These watersheds have the highest amount of sediment leaving the land through surface runoff (as estimated by SWAT and PTMApp), and/or contain sediment impaired or stressed streams (TSS = total suspended solids; T = turbidity).



Water Storage

Background

Water storage is broadly defined as slowing water down by increasing the storage area within the watershed that the water needs to flow through. Examples of this might include adding wetlands, re-connecting streams to floodplains, and building infiltration basins and stormwater ponds.

Increasing storage within the watershed can reduce the quantity of water and increase the time for water to reach a stream or river. This reduces the flashiness and flooding potential of a stream or river system, providing water quality and quantity benefits. Slower water movement also decreases the amount of erosion that occurs on the landscape, which means less sediment reaching streams, rivers, and lakes.

This plan's measurable goal for storage aims to add 10,000 acre-feet of storage throughout the area, which would reduce the 2-year storm event runoff volumes by roughly 25%. This storage goal also includes volume to account for annual increases in precipitation resulting from trending changes in weather patterns during the 10-year lifespan of the plan. This goal would be primarily achieved through capital improvement projects (CIPs) and flood control structures, as targeted PTMApp practices alone would not provide sufficient storage to reach the goal (**Appendix G**).

Priority Issue Addressed

- (A) **Increased annual precipitation** and more intense rainfall events and their impact on hydrology, water quality, and infrastructure, and the need to plan for **resiliency.**
- (B) Increased drainage (**tile networks and drainage ditches**) increasing downstream speed and velocity of water and associated sediment/ nutrient delivery to channels and ditches.
- (B) **Flooding** and its associated impact to homes, infrastructure, and natural resources.

Short-Term Goal

Reduce 2-year storm event runoff volumes by **adding 10,000 acre-feet of storage** throughout the planning area.

- Indicator: Acre-feet of storage added.
  - Approximately 167 ace-feet of targeted practices
  - Approximately 9,833 acre-feet from CIPs and flood control structures

Desired Future Condition

All ideal locations have flood control structures installed and desired runoff volume understood and attained.

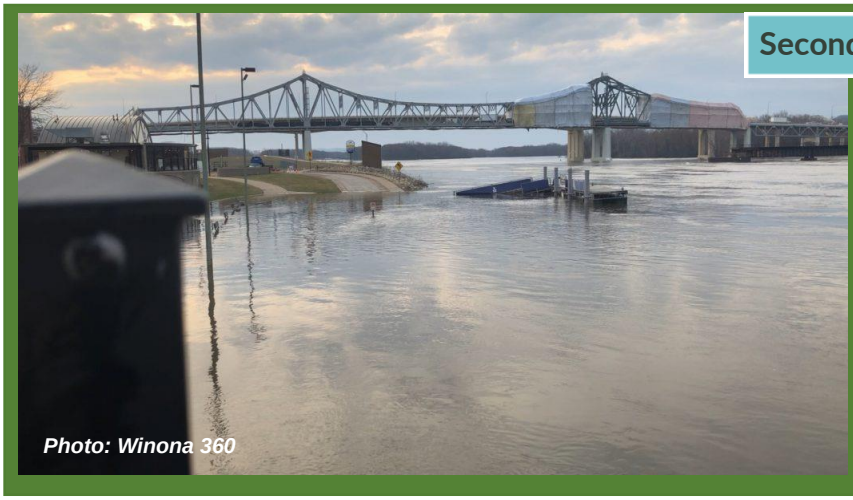


Photo: Winona 360

Secondary Outcomes from Meeting Goal

- Added water storage to build climate resiliency
- Water storage will decease flooding
- Wetland and habitat
- Land protection benefits
- Overland sediment reduction
- Nutrient reduction to surface waters

Water Storage (continued)

Work to be Done

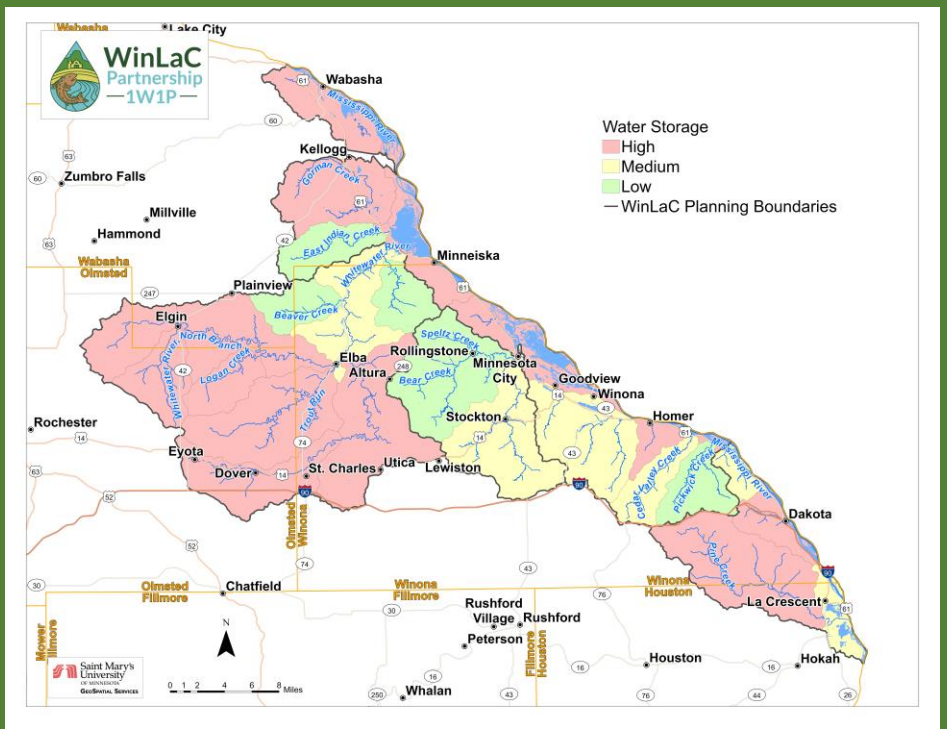
Below are some example actions that can be implemented to address water storage issues in the WinLaC watershed. A full list is shown in **Section 5**:

- Implement flood control structures (e.g., retention dams, stormwater ponds)
- Implement projects to increase headwater storage
- Reconnect or restore disconnected floodplain areas
- Implement soil health practices to increase water storage

Photo: Stormwater pond (MPCA)

Where to Focus Work

Actions related to this measurable goal will be preferentially focused in subwatersheds shown as a "High" priority in pink. High priority subwatersheds in the upland area of the watershed feature a large prominence of altered watercourses. High priority subwatersheds adjacent to the Mississippi River feature a large prominence of riverine, floodplain wetlands that are a focus for protection and restoration efforts related to storing water. La Crescent and Winona are priorities as flooding here would impact a significant number of people.



Streams

Background

Stream channel management and structural integrity is essential in reducing near-channel and in-channel sediment erosion. Stream channel integrity can be promoted by making sure streambanks remain stable and do not slough into the stream or ensuring that peak flows do not increase significantly and cause banks to collapse due to undercutting.

In-channel erosion has been identified as a stream stressor in both the Winona and La Crescent WRAPS reports. The Whitewater River Watershed Assessment of River Stability and Sediment Supply (WARSSS) report states that bank erosion contributes 71% of the total sediment yield in the Whitewater River (DNR, 2018). Healthy streambanks and channels reduce sediment and phosphorus delivery downstream.

Streams and rivers have become increasingly prone to flash flooding and high flows due to the loss of water storage. Water storage throughout the watershed has decreased due to the draining of wetlands, drainage tile in agricultural fields, increased impervious surfaces, and decreased infiltration due to altered land uses. Land alteration, development, and historic sedimentation have disconnected many streams from their floodplains, resulting in steeply incised channels and faster in-channel flow. Without a connection to the floodplain, the streamflow cannot be slowed down.

This plan aims to restore 2 miles of priority stream reaches over the 10-year plan that are currently eroding.

Priority Issue Addressed

(B) Excess sediment **from near-channel and in-channel sources** (floodplains, terraces, and streambanks).

Short-Term Goal

Restore **2 miles** of priority stream reaches.

- Indicator: Miles of stream reaches restored.

Desired Future Condition

All streams are re-connected to floodplains and meeting Index of Biological Integrity scores with in-stream sediment/total suspended solids levels down 45%.

Photo: DNR

Secondary Outcomes from Meeting Goal

- Added water storage to build climate resiliency
- Improved aquatic habitat and aquatic life
- Trout stream enhancements

Streams (continued)

Work to be Done

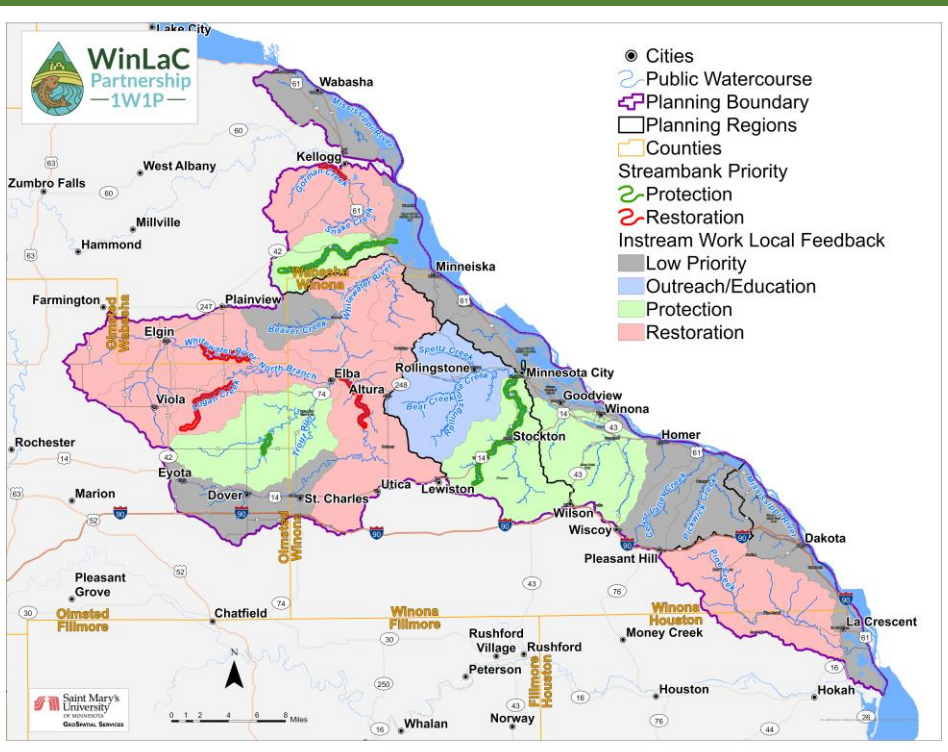
Below are some example actions that can be implemented to address stream erosion issues in the WinLaC watershed. A full list is shown in **Section 5**:

- Reconnect streams/rivers to floodplain
- Stream restoration
- Buffer implementation
- Education and outreach related to streambank erosion

Trout stream bank stabilization project in Houston County.

Where to Focus Work

Local subject matter experts within the WinLaC Partnership identified reaches where they would prioritize habitat projects focusing on stream bank or in-channel habitat improvement. Those reaches are shown on this map. Other areas are emphasized for restoration due to WRAPS data.



Grazing

Background

Grazing is the act of letting livestock roam an area of land that is vegetated with grasses or native prairie. Grazing is an important management practice that can provide multiple benefits to livestock, land management, and soil health.

Research has found that light disturbance of a prairie or grass grazing area is beneficial and creates a healthier and more resilient ecosystem. However, when managed improperly, livestock with direct access to streambanks and near stream channels can create streambank instability and/or erosion, leading to additional sediment contribution to streams. It can also lead to increased bacteria (*E. coli*) loading to surface waters.

Managed grazing provides a timetable and structure to grazing behavior, helping rotate livestock to different areas within the pasture. This extends the disturbance and concentration of disturbance across the grazable area to reduce negative side effects of overgrazing and roaming. This plan's measurable goals focus on increasing managed grazing as a tool within the WinLaC watershed.

Priority Issue Addressed

(B) **Pasture runoff** and need for managed grazing within riparian corridors.

Short-Term Goal

Complete **250 acres of managed grazing projects** over the 10-year plan, with 3 managed grazing projects in riparian areas and 5 livestock restriction projects in riparian areas.

- Indicator: Acres of managed grazing projects.

Desired Future Condition

All active pastures in riparian areas are using managed grazing.

Photo: MPCA

Secondary Outcomes from Meeting Goal

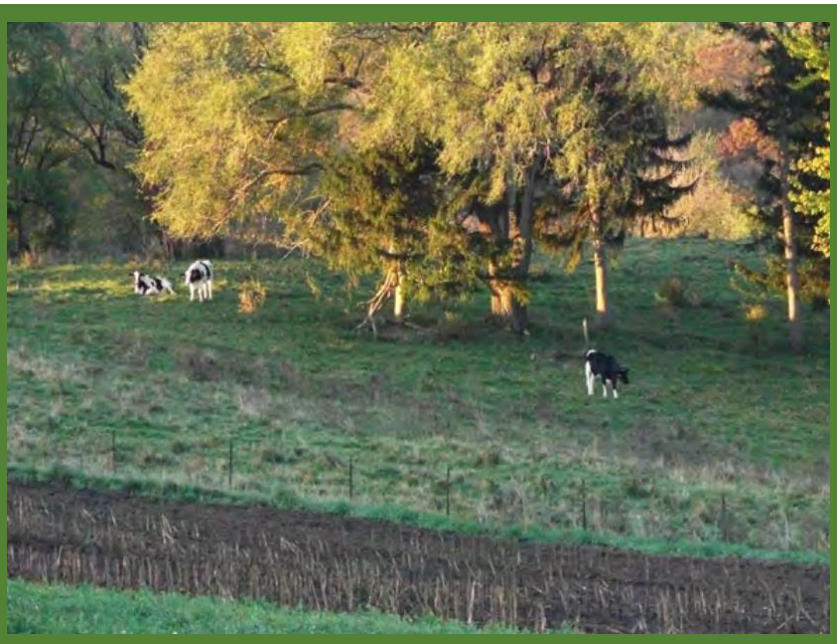
- Reduced streambank erosion
- Reduced bacteria loading to streams
- Increased soil health

Grazing (continued)

Work to be Done

Below are some example actions that can be implemented to make progress toward the grazing measurable goals. A full list is shown in **Section 5**:

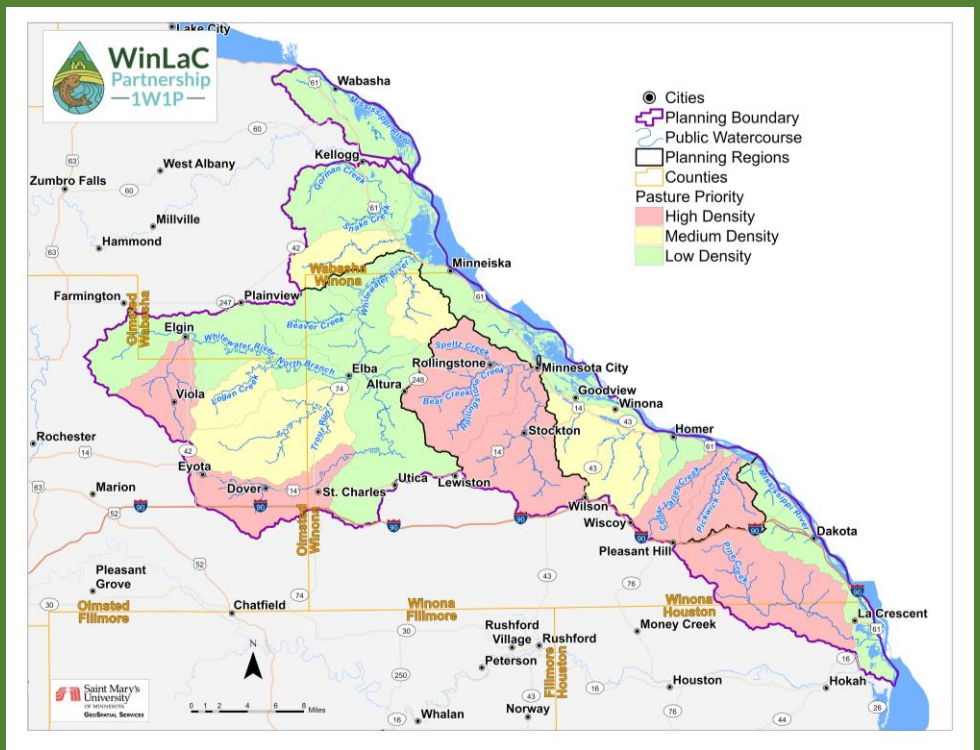
- Create and implement grazing plans
- Locate grazing spaces



Rotational grazing (Photo: MDA).

Where to Focus Work

Actions related to this measurable goal will be preferentially focused in subwatersheds shown as a "High" priority in pink. These watersheds have the highest concentration of perennial streams and public ditches within 100 meters of pastureland.



Bacteria (*E. coli*)

Background

Excessive bacteria (*Escherichia coli* or *E. coli)* in streams is a public health issue and hinders aquatic recreation as it is an indication that pathogenic organisms associated with fecal contamination may be present. Bacterial contamination is caused when fecal matter from humans, wildlife, and domesticated animals is deposited in waterways. While small amounts of this type of contamination are natural and do not cause problems, contamination can reach a level that is dangerous to public health.

Point sources of bacteria pollution such as wastewater treatment facilities (WWTFs) and Confined Animal Feedlot Operations (CAFOs) are regulated by EPA National Pollutant Discharge Elimination System (NPDES) permits. Implementation efforts can assist in managing nonpoint sources of bacteria through bacteria management projects. Bacteria management projects include, but are not limited to, manure management plans, animal waste storage facilities, and feedlot fixes.

There are 17 streams within the watershed that are impaired due to bacteria concentrations. This plan will work with landowners to improve bacteria management and improve Subsurface Sewer Treatment Systems (SSTS) education and promote upgrades to remove streams from the bacteria impairment list.

Priority Issue Addressed

- (B) Continued **high levels of *E. coli*** and its impact on aquatic recreation opportunities despite numerous reduction efforts.

Short-Term Goal

Work with farmers to **implement 80 bacteria management projects** over the 10-year plan, including manure management plans.

- Indicator: Number of bacteria management projects implemented.

Desired Future Condition

All waters support aquatic recreation thresholds for bacteria (*E. coli*) levels.

Photo: MPCA

Secondary Outcomes from Meeting Goal

- SSTS compliance
- Improved grazing management
- Reduced streambank erosion

Bacteria (*E. coli*) (continued)

Work to be Done

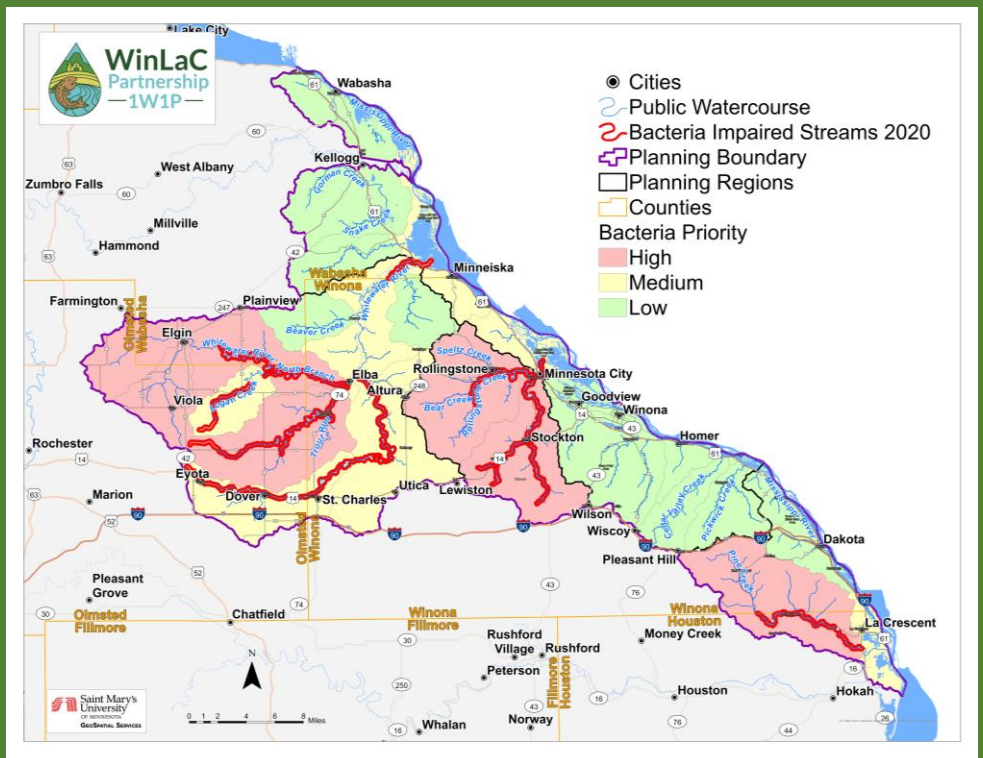
Below are some example actions that can be implemented to make progress toward the bacteria (*E. coli*) measurable goal. A full list is shown in **Section 5**:

- Improve SSTS education
- Manure management plans
- Collaborate with partners to implement feedlot fixes and animal waste storage facilities where needed
- Enforce feedlot compliance

Livestock exclusion and fencing (Photo: MDA).

Where to Focus Work

Actions related to this measurable goal will be preferentially focused in subwatersheds shown as a "High" priority in pink. These watersheds include bacteria impaired streams or are of elevated importance for bacteria management based on data in the WRAPS.



Trout Streams

Background

Due to the karst topography and natural springs, the region is renowned for its coldwater streams, which support populations of both brook and brown trout that are popular with anglers.

According to the DNR, there are a total of 578 miles of designated trout streams or tributary streams to trout streams within the watershed. This is roughly 10% of all designated trout stream and tributary stream to trout stream miles within Minnesota. Trout anglers produce an economic benefit to the driftless area in excess of a billion dollars every year, making protection of coldwater streams an environmental and economic priority.

Fish kills have been a recent problem in the WinLaC, with large fish kill events occurring in 2015 in South Branch Whitewater, 2019 in Garvin Brook, and 2021 in Trout Valley Creek. While there is no direct goal to reduce fish kills, meeting water quality goals in this plan would reduce the likelihood of future fish kills.

This plan aims to enhance and protect trout fisheries through expansion of existing trout habitat, and prevention of adverse impacts to coldwater streams. This includes mapping springsheds and preventing landowners from building spring-fed ponds. Springsheds currently mapped by the DNR in the WinLaC are shown in **Appendix J**.

Priority Issue Addressed

(B) Enhancement and protection of **trout fisheries** and habitat from adverse conditions.

Short-Term Goal

Five additional springsheds mapped. Protect springs by working with landowners in mapped springsheds and by preventing landowners from building spring-fed ponds.

- Indicator: Number of springsheds mapped.

Desired Future Condition

Trout habitat expanded 25% and engagement with all landowners in mapped springsheds.

Fishing local trout stream

Secondary Outcomes from Meeting Goal

- Groundwater contamination reduction
- Land protection
- Protection of karst features

Trout Streams (continued)

Work to be Done

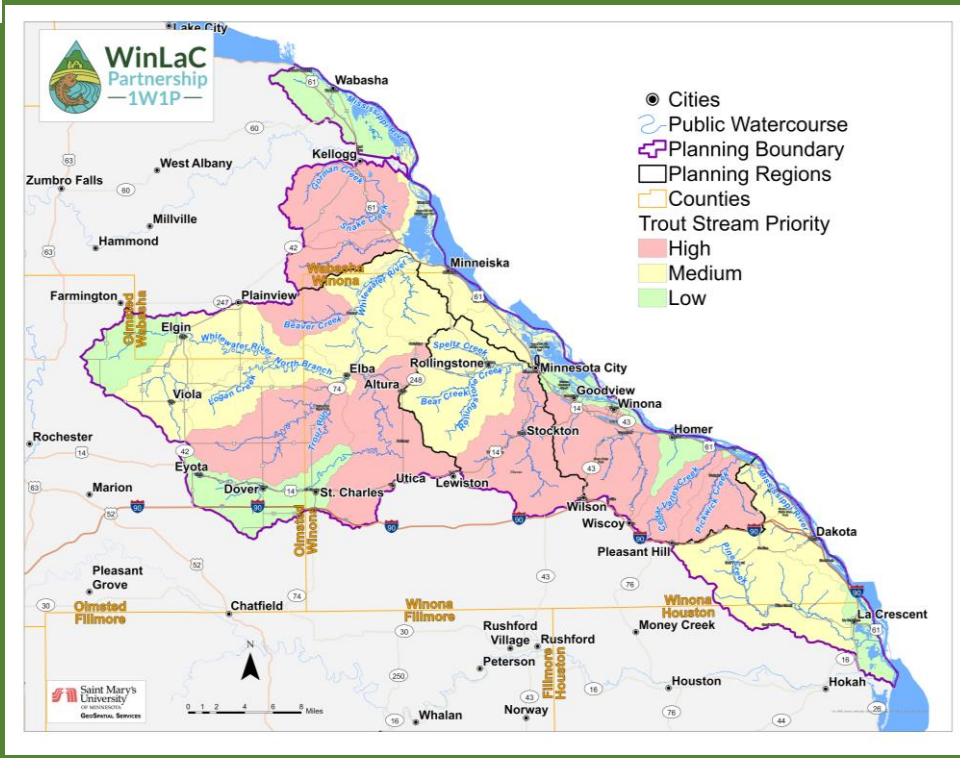
Below are some example actions that can be implemented to make progress toward the trout measurable goals. A full list is shown in **Section 5**:

- Improve and protect shading of streams to limit water temperature
- Reduce runoff and increase infiltration to increase base flow
- Improve understanding of groundwater connectivity to streams
- Expand land protected for trout habitat
- Map springsheds to protect trout populations

Brook trout in the WinLaC Watershed.

Where to Focus Work

Actions related to this measurable goal will be preferentially focused in subwatersheds shown as a "High" priority in pink. These watersheds have the greatest prominence of trout habitat projects and easements.



Aquatic Invasive Species

Background

Aquatic Invasive Species (AIS) are species that are not native to the region, outcompete native species, and take over the environment. This can change the landscape and affect water quality. Removing AIS is time and resource intensive and is not always feasible. The best defense against AIS is to stop the spread and prevent them from entering the waterbody in the first place.

According to the DNR, invasive species have serious consequences for our economy, environment and recreational opportunities in Minnesota.

AIS species within the WinLaC watershed include Eurasian watermilfoil, zebra mussels, flowering rush, faucet snail, bighead carp, grass carp, silver carp, curly-leaf pondweed, rusty crayfish, reed canary grass, non-native phragmites, common carp, and Chinese mystery snails.

Local partners in the WinLaC watershed receive state funding for prevention and management of AIS at the county level. As such, the implementation of County AIS Plans will continue during plan implementation. Goals specific to this plan are to complete an inventory of AIS within the watershed and conduct education to limit future spread.

Priority Issue Addressed

(B) Presence of aquatic invasive species threatening aquatic vegetation and aquatic life.

Short-Term Goal

Complete inventory of where AIS species are throughout entire planning area and **conduct 50 educational events about AIS**.

- Indicator: Inventory completed; Number of educational events conducted.

Desired Future Condition

No new waters added to infested waters list. AIS education included in all schools in planning area.

Photo: DNR

Secondary Outcomes from Meeting Goal

- Improvement of urban waterways
- Reduced nutrient loading in waterbodies

Aquatic Invasive Species (continued)

Work to be Done

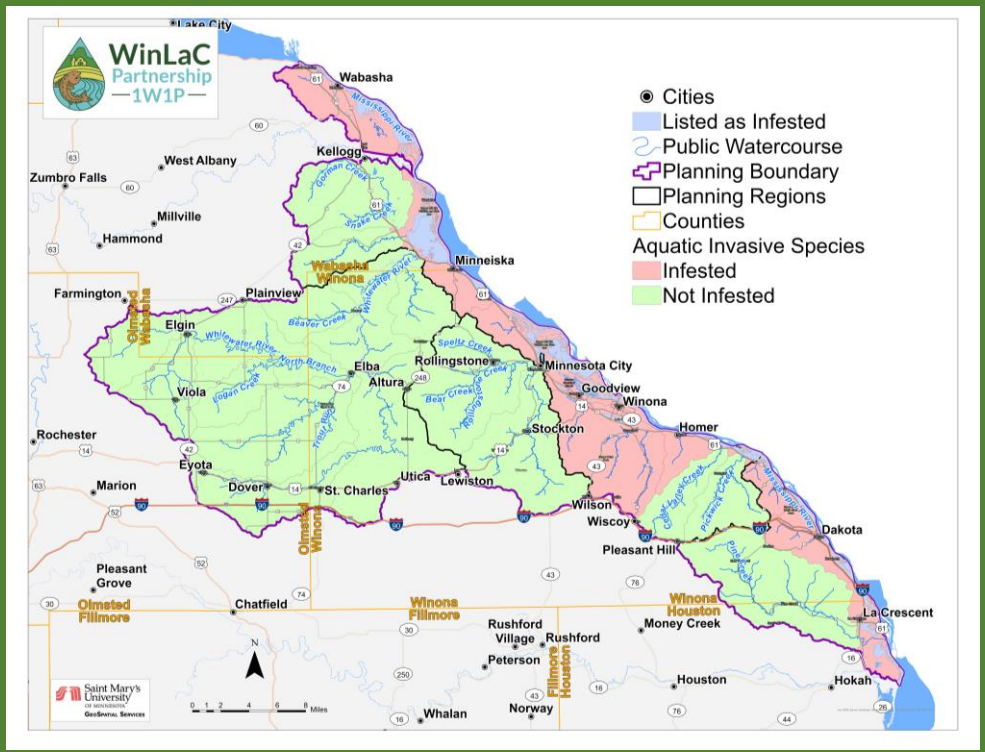
Below are some example actions that can be implemented to make progress toward AIS measurable goals. A full list is shown in **Section 5**:

- Continue to provide education and boat inspection
- Manage existing AIS infestations
- Complete AIS inventory throughout the entire planning area

AIS sign (DNR).

Where to Focus Work

Actions related to this measurable goal will be implemented watershed-wide. Prevention actions will occur in green subwatersheds that are currently not infested, and management actions will occur in pink subwatersheds to control and prevent the spread of waters currently infested with one or more invasives.



Soil Health

Background

Healthy soils provide a multitude of benefits for farmers and downstream watercourses and lakes. Soil health is the capacity of soil to function as a living ecosystem that sustains plants, animals, and humans.

Healthy soils regulate water, filter and buffer pollutants, cycle nutrients, and stabilize plant roots and buildings, and sustain a healthy community of insects, bacteria, and fungi. Soils become susceptible to erosion as they degrade through loss of nutrients, microorganisms, and water holding capacity. Erosion causes sedimentation in fields and downstream.

Regenerative soil health practices such as cover crops, reduced tillage, and rotational grazing improve soil organic matter and structure, carbon storage, and water and nutrient holding capacity. As such, the focus to this plan's short-term goal is to promote and implement these practices to improve resource conditions in the WinLaC watershed.

Priority Issue Addressed

(A) Need for improving **soil health** for carbon sequestration and agricultural productivity.

Short-Term Goal

Promote soil health practices and **implement soil health practices in 9,100 acres.**

- Indicator: Acres of soil health practices implemented.
- Soil health practices can include cover crops, no till/reduced till, nutrient management plans, etc.

Desired Future Condition

Soil health practices assessed for and/or implemented on all agricultural lands.

Photo: Harvested field

Secondary Outcomes from Meeting Goal

- Added water storage to build climate resiliency
- Carbon sequestration benefits
- Overland sediment reduction
- Nutrient reduction to surface waters
- Groundwater contamination reduction

Soil Health (continued)

Work to be Done

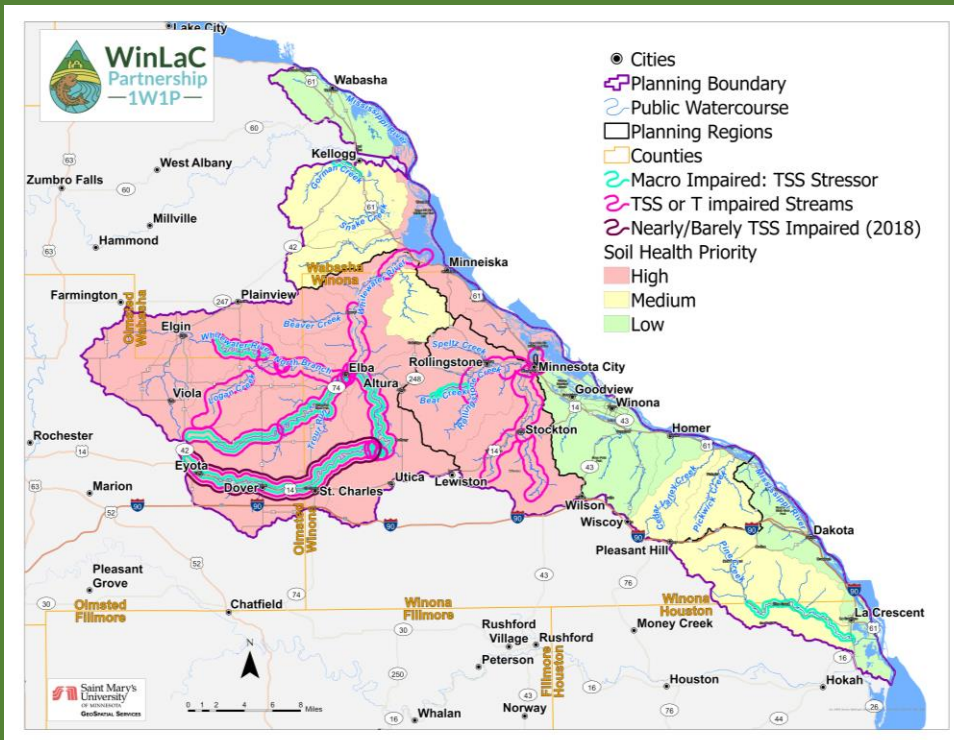
Below are some example actions that can be implemented to make progress toward the soil health measurable goals. A full list is shown in **Section 5**:

- No till or reduced till residue management
- Cover crops
- Perennial crop production and small grains
- Education and outreach to promote soil health practices

Cover crops in Olmsted County.

Where to Focus Work

Actions related to this measurable goal will be preferentially focused in subwatersheds shown as a "High" priority in pink. These watersheds have the highest amount of sediment leaving the land (used as a surrogate for soil) through surface runoff (as estimated by SWAT and PTMApp), and/or contain sediment impaired or stressed streams.



Subsurface Sewer Treatment Systems (SSTS) Upgrades

Background

SSTS are used as an alternate to a wastewater treatment facility when wastewater treatment facilities are not present nearby or if a region has not been plumbed into city water and sanitation yet.

SSTS are designed to treat household waste via a tank and soil treatment area on property. The tank can hold the sewage and solids and the soil treatment area is designed to filter out liquids from the tank. When working correctly, the soil treatment area will filter out pathogens from the SSTS and clean the water before it returns back into the groundwater.

When SSTS systems are not working correctly or have failed, effluent from households can move through the SSTS system and enter the groundwater while still containing pathogens. This is an issue that can affect drinking water on well systems as well as surface and groundwater quality; especially due to the karst geology in the region.

There are an estimated 7,000 SSTS systems in use in Winona and Houston counties alone, of which an estimated half are compliant (MPCA, 2020). This plan will work to improve education and outreach and work to address 10 SSTS compliance issues per year.

Priority Issue Addressed

(A) **Failing or noncompliant septic systems** and their potential for groundwater and surface water contamination.

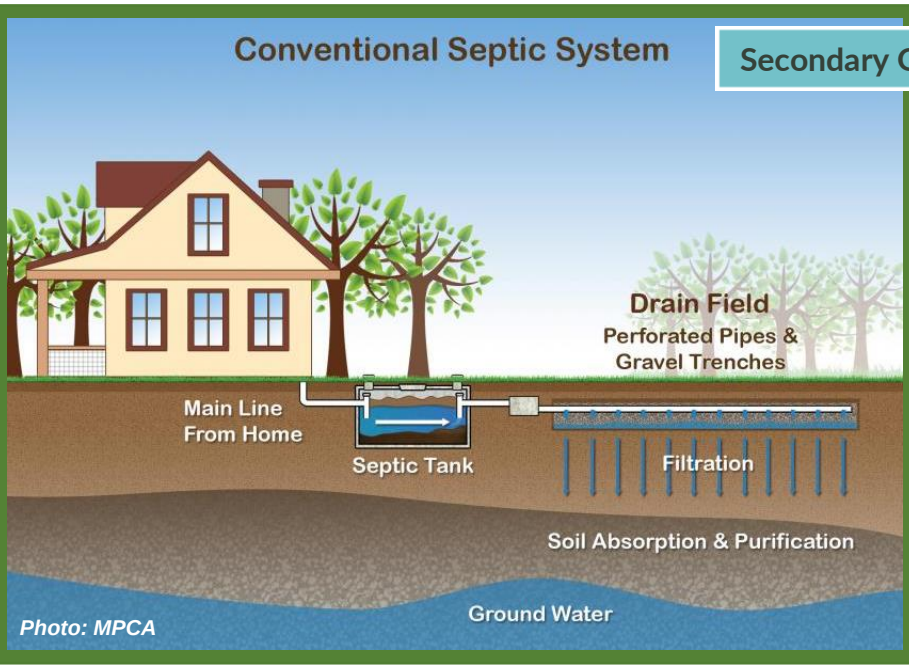
Short-Term Goal

Address **10 SSTS upgrades per year, or 100 over the 10-year plan**, focused on failing systems (excluding SSTS upgrades related to point of sale transactions).

- Indicator: Number of SSTSs upgraded.

Desired Future Condition

All SSTSs are inventoried and in compliance.



Secondary Outcomes from Meeting Goal

- Groundwater and nitrogen contamination reduction

SSTS Upgrades (continued)

Work to be Done

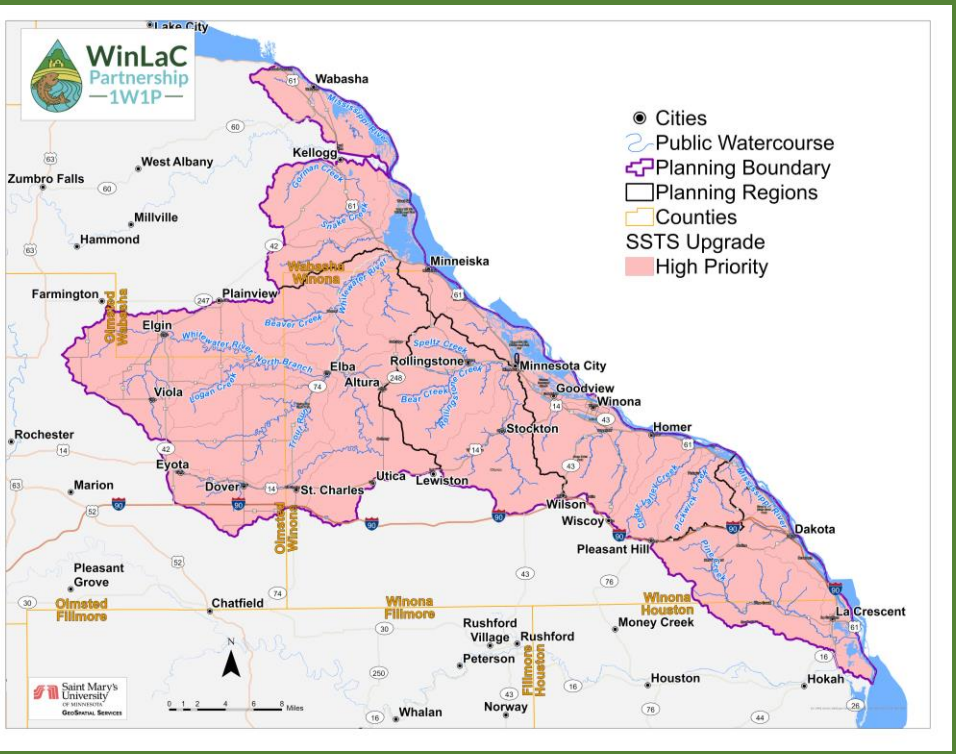
Below are some example actions that can be implemented to make progress toward the SSTS upgrades measurable goals. A full list is shown in **Section 5**:

- Upgrade or replace SSTSs, focused on failing systems
- Education and outreach on septic system maintenance

Upgrading an SSTS system (Photo: MPCA).

Where to Focus Work

Failing or noncompliant SSTSs are a watershed-wide problem. Local knowledge will be used to prioritize SSTS upgrades and replacement watershed-wide, on a case-by-case basis.



Land Protection

Background

Forests, native prairies, and pollinator habitat are critical natural resource assets within the WinLaC that this plan aims to enhance and protect. Enhancement and continued protection or expansion of these features ensures that their benefits continue to be realized and prevents landscape transition to other managed land uses.

Another priority issue that is addressed in this goal is limiting the spread of terrestrial invasive species. Terrestrial invasive species are non-native organisms that cause harm to the environment, the economy, or human health. These species can include plants, birds, worms, insects, and trees. According to the Early Detection and Distribution Mapping System, there are an estimated 275 types of terrestrial invasive species within Winona County alone.

Temporary and permanent land protection programs such as Re-invest in Minnesota (RIM), Conservation Reserve Enhancement Program (CREP), and Conservation Reserve Program (CRP) fund conservation on environmentally sensitive landscapes. Taking marginal, unproductive land out of production and putting it into conservation easements can help reduce erosion and nutrient loss from the landscape, while providing financial benefits to landowners. This plan will work to add 800 new acres to perpetual conservation easement programs over 10 years and 800 acres in temporary protection programs.

Priority Issue Addressed

- (B) Enhancement and long-term protection of **forest, native prairie, and pollinator habitats** and corridors.
- (B) Increased presence of **terrestrial invasive species** and its impact on native plant species.

Short-Term Goal

800 acres of land are protected with new perpetual conservation easements and 800 acres of new enrollments or re-enrollments in temporary protection programs

- Indicator: Acres of land protected

Desired Future Condition

Continued maintenance of RIM/CREP/CRP by private landowners to reduce invasive species pressure and provide excellent wildlife and pollinator habitat. Emphasis to work towards connecting wildlife corridors and floodplain wetlands.

Photo: MPCA

Secondary Outcomes from Meeting Goal

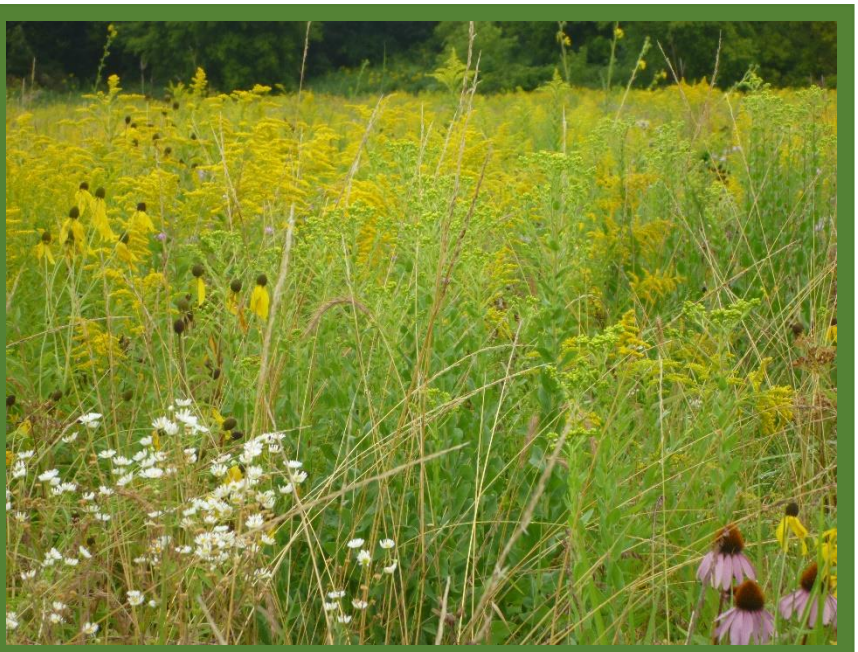
- Added water storage to build climate resiliency
- Carbon sequestration benefits
- Trout habitat enhancement
- Wetland habitat benefits

Land Protection (continued)

Work to be Done

Below are some example actions that can be implemented to make progress toward the land protection measurable goals. A full list is shown in **Section 5**:

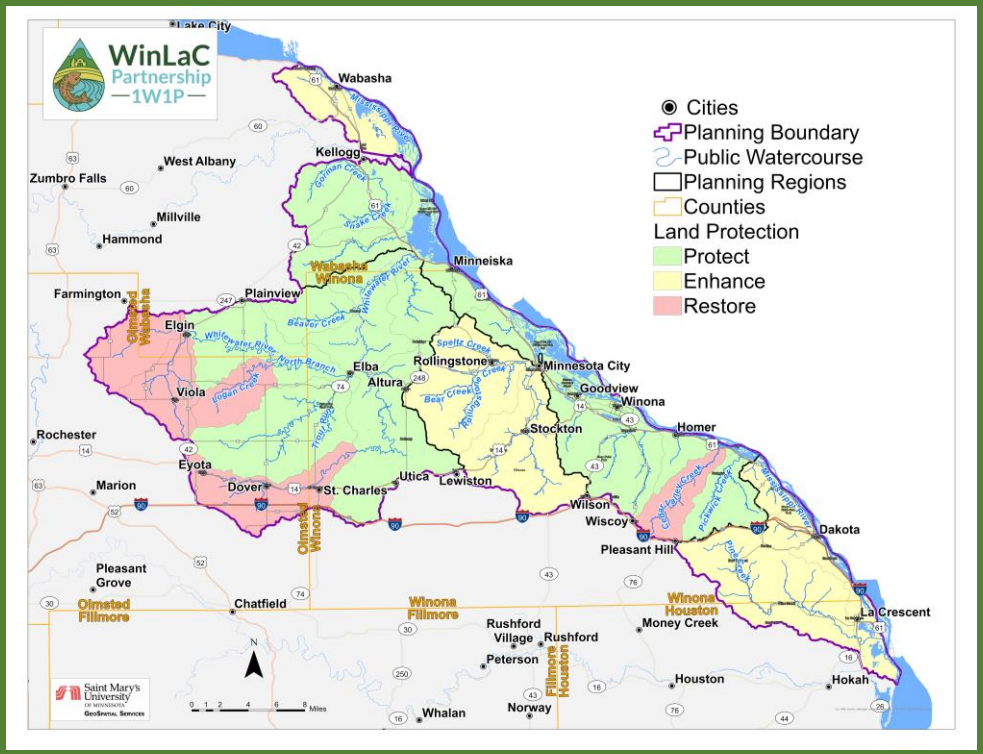
- Native plantings
- Enrolling or re-enrolling land into conservation easements
- Enrolling land in perpetual programs
- Forage/biomass planting



Conservation Reserve Program (CRP) land in Winona County.

Where to Focus Work

Actions related to the protection of land will be focused in subwatersheds identified in green as "Protect." These areas follow Conservation Opportunity Areas or areas of vigilance as characterized in the Mississippi River-Winona Watershed Landscape Stewardship Plan. Land enhancement actions will be focused in areas identified in yellow as "Enhance," again, following priorities established in the Landscape Stewardship Plan.



Wetlands

Background

Wetlands are defined as having soils that are wet above ground or within 12 inches of the surface during the entire growing season and contain plants that are representative of wet soils.

Wetlands act as a sponge on the landscape and provide multiple benefits such as water storage, fish and wildlife habitat, and nutrient and sediment settling since water slows down when moving through it. All these benefits work together to create an ecosystem that positively impacts water quality and helps secure and preserve groundwater supplies. Historically, wetlands have been drained to be used as farmland and urban development.

Conservation easements are voluntary and legally binding agreements that restrict certain activities on a property in the interest of protecting habitat, water quality, and other environmental benefits into perpetuity. Programs like RIM focus on paying landowners to retire marginal land and put it into vegetative cover to benefit habitat and the environment.

This plan will work to protect 100 acres of current wetland areas through easement programs like RIM. This goal also aims to restore 10 acres of previously drained wetland areas.

Priority Issue Addressed

(B) **Loss of natural wetlands**, in particular riparian and backwater floodplain wetlands (Mississippi River Floodplain) and its impact on water quality, flood damage reduction, and wildlife habitat.

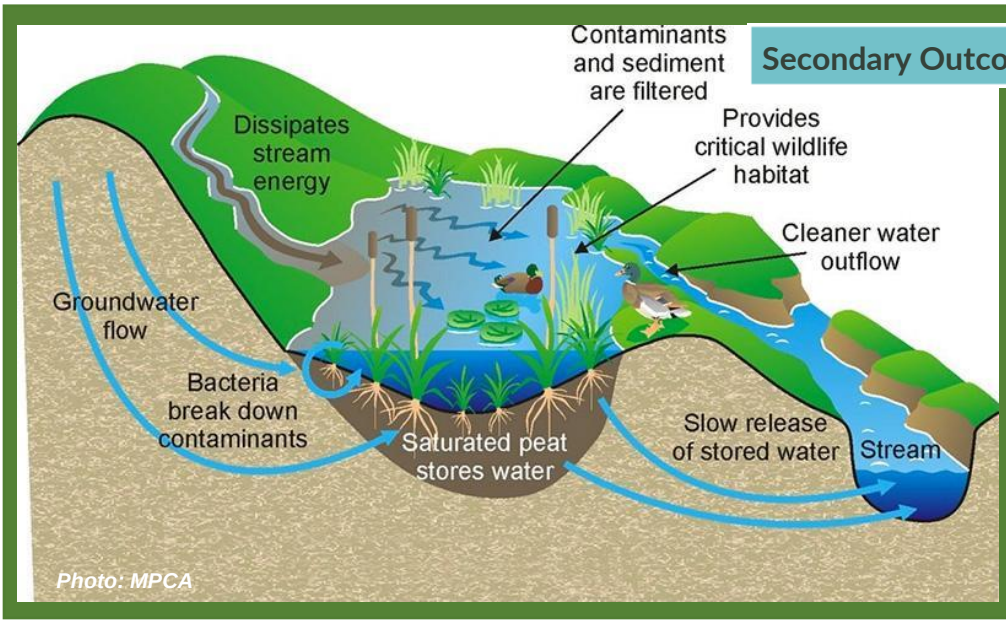
Short-Term Goal

Protect 100 acres of wetlands through RIM and other easement programs and **restore 10 acres of wetlands.**

- Indicator: Acres of wetlands protected or restored

Desired Future Condition

Restore/protect all wetlands that are currently being farmed unproductively.



Secondary Outcomes from Meeting Goal

- Added water storage to build climate resiliency
- Land protection
- Nutrient and sediment reductions
- Groundwater contamination reduction

Wetlands (continued)

Work to be Done

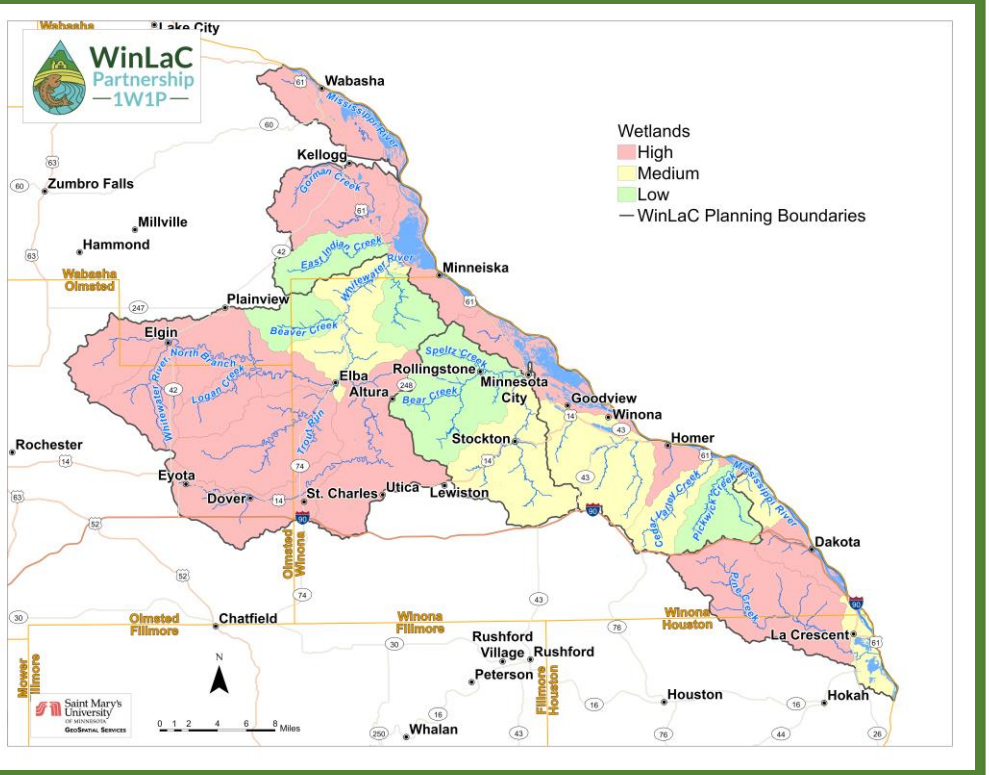
Below are some example actions that can be implemented to make progress toward the wetlands measurable goal. A full list is shown in **Section 5**:

- Enforce the Wetland Conservation Act
- Work on wetland restoration projects with landowners
- Protect current wetlands through RIM and other easement programs

Wetland development project in Olmsted County, 2019.

Where to Focus Work

Actions related to this measurable goal will be preferentially focused in subwatersheds shown as a "High" priority in pink. High priority subwatersheds in the upland area of the watershed feature a large prominence of altered watercourses. High priority subwatersheds adjacent to the Mississippi River feature a large prominence of riverine, floodplain wetlands that are a focus for protection and restoration efforts.



5: Targeted Implementation

WinLaC Partnership —1W1P—

5. Targeted Implementation

Each goal has a corresponding list of actions that will help make progress toward that goal. This section of the plan identifies those actions that will be implemented in the next 10 years to address priority issues and make progress toward measurable goals. Actions were collaboratively brainstormed and vetted for this WinLaC plan from:

Action Table Overview

Actions are organized and summarized into "action tables" that include the following information:

- **Resource**: Identifies if the action is primarily addressing groundwater, surface water, or land use/habitat concerns
- **Primary Goal**: Identifies the goal the action is primarily addressing
- **Output**: How much of the action will be implemented in the 10-year plan
- **Implementation Program**: The program that will fund the action
- **Focus Area**: Priority subwatersheds and resources for implementation
- **Lead**: Lead entities that will oversee implementation, with partners that may assist with funding and efforts
- **Timeline**: Describes when implementation will occur during the 10-year plan
- **Output for Goal Tracking**: Identifies if the output will be used to report progress back on measurable goals
- **Cost**: Estimates the cost of implementing the action (Association for Advancement of Cost Engineering [AACE] Level 5 Estimates)

Actions brainstormed at the city of Winona Waterside Chat.

Each action falls into one of five implementation programs, described below with each program's associated icon (**Figure 5-1**). These programs are described more in **Section 6. Watershed Implementation Programs**.

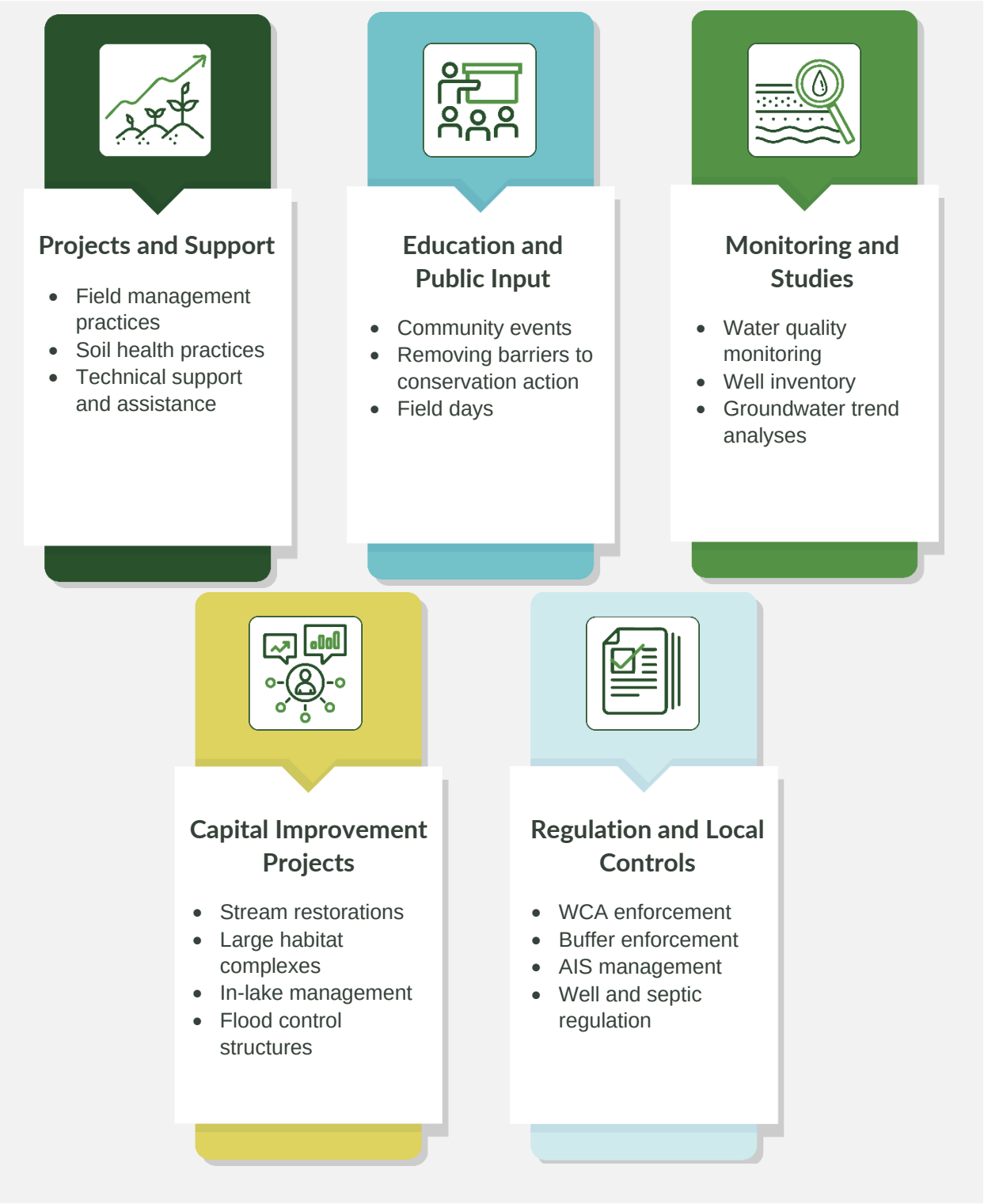


Figure 5-1: Implementation programs for the WinLaC CWMP.

Making progress toward goals is largely dependent on funding, as more actions can be implemented with more funding. As such, this plan recognizes three scaled funding levels (**Figure 5-2**). With an approved CWMP, the WinLaC Partnership is eligible to receive non-competitive Watershed-Based Implementation Funding (WBIF) through BWSR. In recognition of this important source of funding, funding levels are organized in terms of current funding, current funding plus WBIF, and what actions will be pursued with partners or other competitive funding programs. **Actions pursued under Funding Level 2 (Current Funding + WBIF) are the focus of this section.**

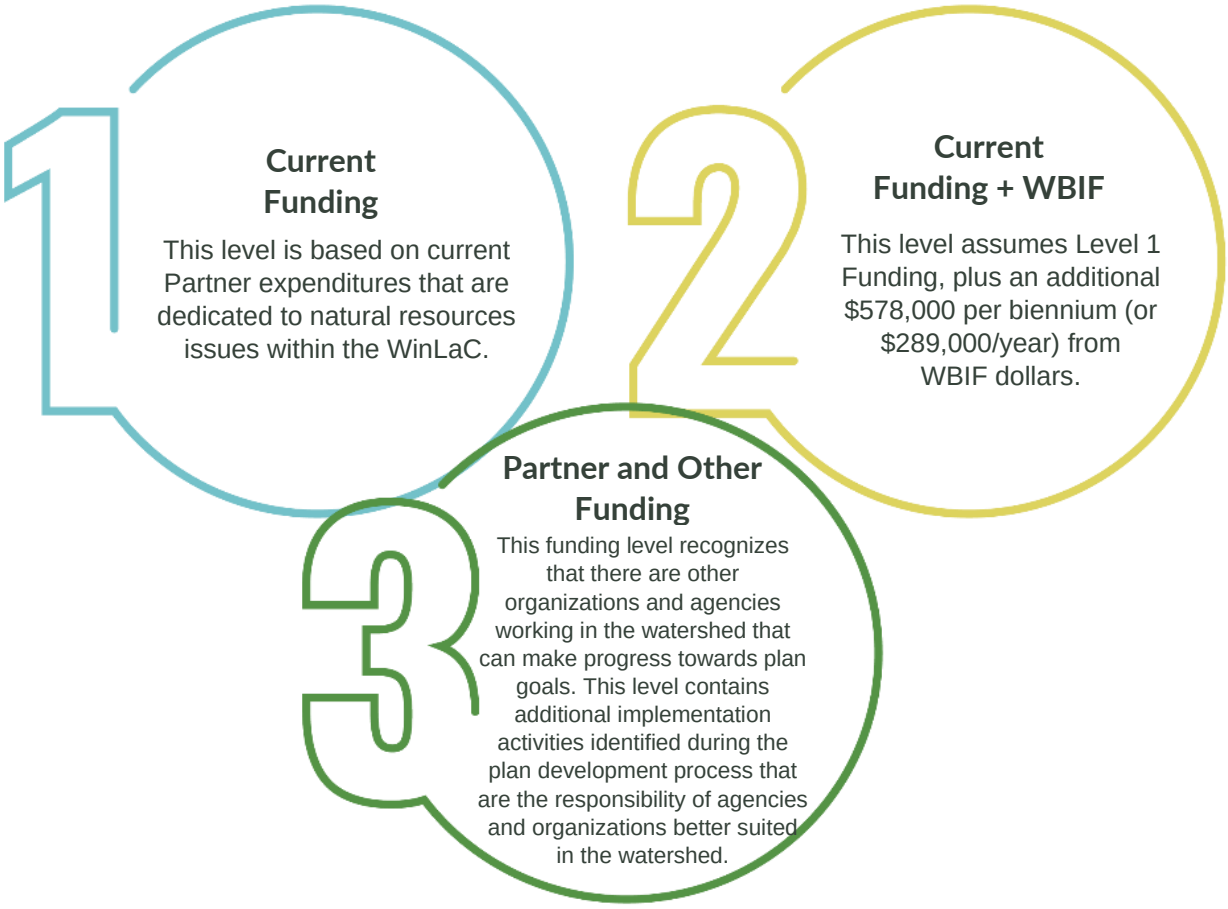


Figure 5-2: Funding Levels for the WinLaC CWMP.

There are five Action Tables included in this plan section, one for each planning region and one for watershed-wide activities:

- Whitewater River Planning Region (**page 5-6**)
- Garvin Brook Planning Region (**page 5-10**)
- Mississippi – La Crescent Planning Region (**page 5-14**)
- Small Tributaries Planning Region (**page 5-18**)
- Watershed-wide (**page 5-22**)

Individual action tables have been created for each planning region due to the different priority issues identified in each planning region. For example, the Whitewater Planning Region contains a higher volume of bacteria impaired streams which support the need for implementation activities focused on mitigating bacteria levels. In contrast, the Small Tributaries Planning Region contains no bacteria impaired streams, thus implementation activities for mitigating bacteria levels is not warranted. By tailoring action tables to each planning region, efforts and funding can be spent efficiently throughout the WinLaC planning area.

There are many actions that will be implemented watershed-wide for consistency and sharing of services. These include actions pertaining to education and public involvement, regulation and local controls, and monitoring efforts. These actions will be addressed watershed-wide, they are contained within the same action table for ease of use and to promote collaborative efforts during implementation.

Planning Region Chapters

Each planning region has its own chapter in the plan, and includes the following components for each resource (groundwater, surface water, and land use/habitat):

- A comprehensive resource map for prioritizing implementation efforts
- A summary of measurable goals and planning region milestones
- A list of goals that will be addressed watershed-wide

Each planning region chapter concludes with the planning region action table, which includes actions for addressing goals regardless of resource. The four planning region components are described next.

Comprehensive Resource Maps

In **Section 4**, each goal is supported by a map that describes where to focus work. As mentioned above, the prominence of priority issues changes from one planning region to the next.

To make implementation decisions easier, each of these maps and their protection/restoration priority rankings were merged into one comprehensive map, both overall and specific to each resource (groundwater, surface water, and land use/habitat). **Figure 5-3** below shows the comprehensive priority map for the entire WinLaC planning area, and shows the subwatersheds that had the highest prominence of priority issues (regardless of resource) in pink.

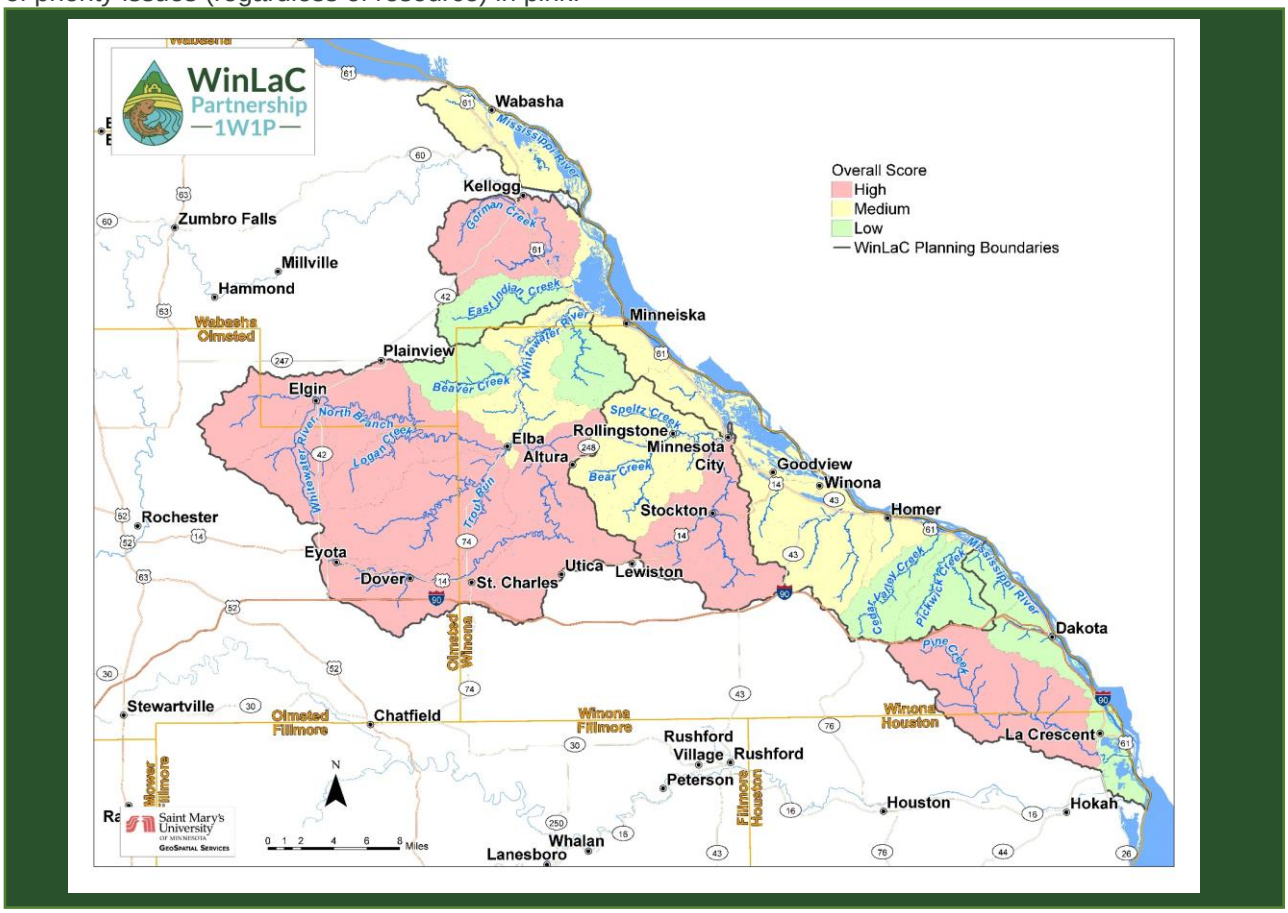


Figure 5-3: Comprehensive ranking map for the WinLaC CWMP.

To address priority issues, local planning committees used this comprehensive map to recommend where funds and efforts should go during implementation. As shown, the Whitewater River Planning Region contains the largest portion of "high" priority subwatersheds. It also is the largest planning region by area. For this reason, the Whitewater River Planning region is allocated 47% of the Projects and Support budget to implement conservation actions, followed by Small Tributaries (28%), Garvin Brook (14%), and finally Mississippi La Crescent (11%). These comprehensive maps are presented in each planning region chapter for each resource (groundwater, surface water, and land use/habitat), and presented as full-page documents in **Appendix F**.

Targeting at a Field-Scale

To make the best use of conservation funding within each planning region, the Partnership needs information pertaining to targeted locations where conservation practices are needed and feasible, the cost of implementation, the estimated water quality benefits, and anticipated progress that implementation of conservation practices will have toward goals. The Prioritize, Target, and Measure Application (PTMApp) was used to provide this information in the plan.

PTMApp estimates existing pollutant loads and water quality benefits for a wide range of conservation practices (full list shown in **Appendix G**). Pollutant loads and water quality benefits are expressed in terms of annual load reductions of sediment, total phosphorus (TP), and total nitrogen (TN) that result from implementing the practice. The practices modeled by PTMApp and included in this plan's action tables were selected to align with voluntary local implementation trends and have the highest cost-benefit ratios for reducing sediment, with benefits measured at the edge of the field. **Costs for these practices are estimated to be double the 2019 EQIP payment rates for each practice and are intended to incorporate costs for technical engineering support; however, local plan partners recognize that there may be additional needs for technical engineering support as part of this plan**. See **Appendix G** for more information regarding PTMApp practices and how they were used to inform implementation and benefits (sediment, TP, and TN) and for maps of field-scale conservation practices.

The numbers, cost, and locations of practices in action tables 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 action tables and supporting maps. These projects will be pursued if environmental and economic benefits are comparable to those identified in action tables.

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 or practices
- Practices/projects ready to implement
- Effectiveness of education and outreach and research initiatives
- Technical feasibility

Goals and Planning Region Milestones

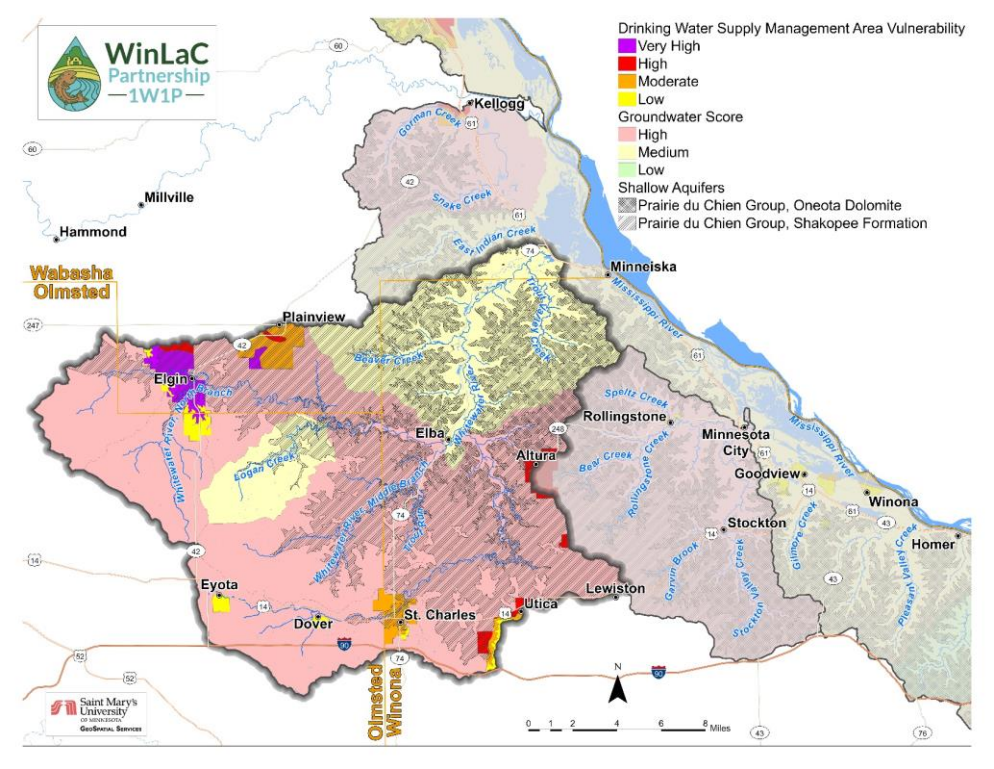
The prominence of priority issues changes by planning region. This is shown visually in the following planning region chapters. Each Priority A and Priority B 10-year measurable goals are shown in a chart and each goal has a milestone that each planning region will aim to meet to make progress toward the watershed-wide goal. Issues that are more important in one planning region will have a larger milestone goal. Milestones and watershed goals shown in the charts on pages 5-6 to 5-20 show a total goal which includes progress from structural and non-structural practices. Actions and outputs to meet goals is broken down by category in each planning region action table.

Whitewater River Planning Region

Groundwater | Surface Water | Land Use/Habitat

Focus Area: Comprehensive Groundwater Priorities

The Whitewater River Planning Region includes seven DWSMAs (Plainview, Altura, Elgin, Eyota, Dover, St. Charles, Utica) and a prominent presence of shallow aquifer systems (Prairie du Chien Group). Implementation activities should preferentially target high priority subwatersheds shown in pink, with highest priority in locations that overlay shallow aquifer resources.



Planning Region Milestones

Below is a summary of WinLaC 10-year measurable goals pertaining to groundwater. Each goal includes a milestone to reach for the Whitewater River Planning Region that will make progress toward the watershed-wide goal. The planning region milestone is shown below in yellow. For issues that are more prominent in the Whitewater River Planning Region, the yellow bar will move further right toward the watershed-wide goal mark (end of the grey bar). The Action Table on **page 5-9** lists actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- Unsealed and Poorly Constructed Wells
- Karst

Whitewater River Planning Region

Groundwater Goals

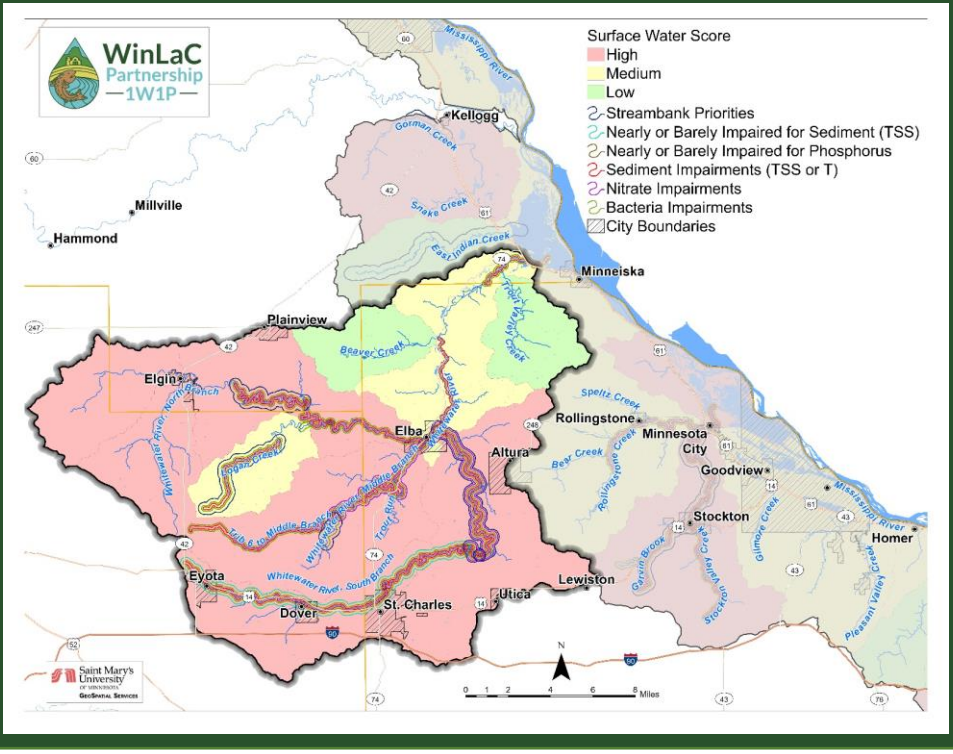
Groundwater (Nitrates) — **200,202** lbs TN/yr — **390,330** lbs TN/yr

Whitewater River Planning Region

Groundwater | **Surface Water** | Land Use/Habitat

Focus Area: Comprehensive Surface Water Priorities

The Whitewater River Planning Region contains many high priority subwatersheds for surface water implementation. The Whitewater River extends the farthest west of all the rivers in the watershed. The river has three branches—the north, middle, and south—which all merge in Elba and continue to the Mississippi River as one stream. Impairments and streambank priorities are shown on the map to the right.



Planning Region Milestones

Below is a summary of WinLaC 10-year measurable goals pertaining to surface water. Each goal includes milestones to reach for the Whitewater River Planning Region that will make progress toward the watershed-wide goal. The planning region milestones are shown below in blue. For issues that are more prominent in the Whitewater River Planning Region, the blue bar will move further right toward the watershed-wide goal mark (end of the grey bar). The Action Table on **page 5-9** lists actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- Water Storage
- Trout Streams
- Aquatic Invasive Species

Whitewater River Planning Region

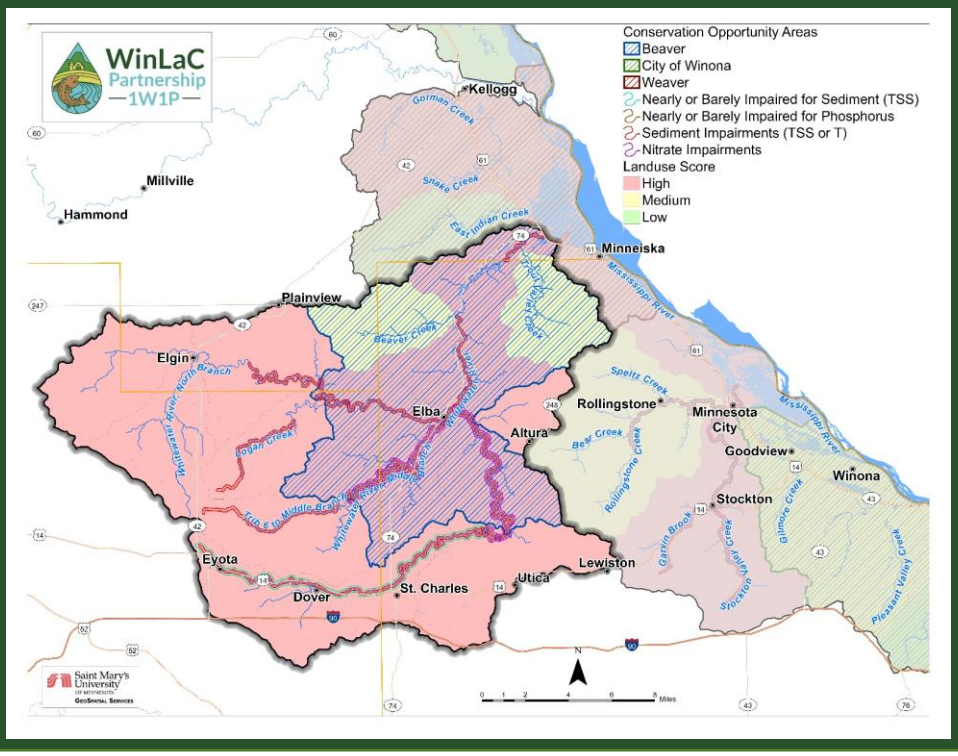
Surface Water Goals

Nutrients (Phosphorus)	**9,018** lbs TP/yr	**17,305** lbs TP/yr
Urban	**10** stormwater projects	**40** projects
Sediment	**18,357** tons sed/yr	**37,157** tons/yr
Streams	**1** mile restored	**2** miles
Grazing	**55** acres managed	**250** acres
Bacteria (E.coli)	**30** bacteria management projects	**80** projects

Whitewater River Planning Region

Focus Area: Comprehensive Land Use/Habitat Priorities

The Whitewater River Planning Region is home to two state parks (Whitewater and Carley), the Beaver Creek Conservation Opportunity Area (COA), and the Whitewater Wildlife Management Area, as characterized in the Landscape Stewardship Plan. These areas are high priorities for protection, with restoration activities important in other high priority subwatersheds.



Planning Region Milestones

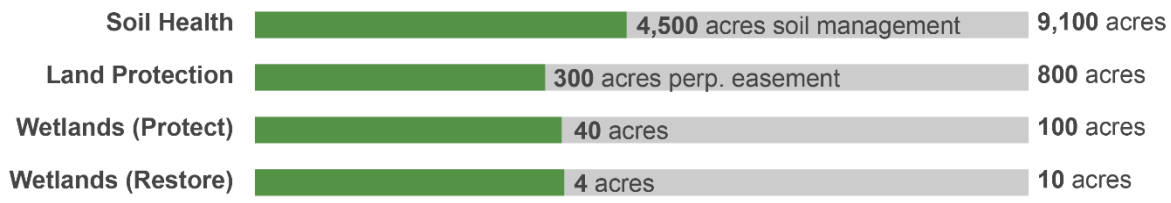
Below is a summary of WinLaC 10-year measurable goals pertaining to land use and habitat. Each goal includes milestones to reach for the Whitewater River Planning Region that will make progress toward the watershed-wide goal. The planning region milestones are shown below in green. For issues that are more prominent in the Whitewater River Planning Region, the green bar will move further right toward the watershed-wide goal mark (end of the grey bar). The Action Table on **page 5-9** lists actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- SSTS Upgrades

Whitewater River Planning Region

Land Use/Habitat Goals



Whitewater River Planning Region Action Table

Resource	Primary Goal	Action	Output	Funding Program	Focus Area	Lead (in bold) and Partners**	Timeline***					Output for Goal Tracking	Funding Level	Estimated 10-Year Cost
							2023-2024	2025-2026	2027-2028	2029-2030	2031-2032			
	Groundwater Contamination and Nitrates	Reduce overland total nitrogen loading and nitrogen loading to groundwater through the implementation of structural conservation practices (e.g., riparian buffer, filtration strip, denitrifying bioreactor, infiltration basin, multistage ditch, grade stabilization, grassed waterway)	1,430 tons/yr sediment 971 lbs/yr TP 26,769 lbs/yr TN*		"High" Groundwater Priority	**SWCD**, NRCS, BWSR, WJPB, SRMCWD	◆	◆	◆	◆	◆	✓	**2**	**$867,000[P]**
		Implement soil health practices (e.g., cover crops, reduced tillage, nutrient and manure management plans)	4,500 acres		"High" Land Use Priority	**SWCD**, NRCS, BWSR, MDA, WJPB	900	900	900	900	900	✗	**2**	**$674,000[P]**
	Nutrients **Sediment**	Reduce overland total nitrogen, total phosphorus, and sediment loading through the implementation of structural conservation practices (e.g., riparian buffer, filtration strip, denitrifying bioreactor, infiltration basin, multistage ditch, grade stabilization, grassed waterway)	See "Groundwater Contamination and Nitrates"		"High" Surface Water Priority; Nutrient and sediment stressed/ impaired streams	**SWCD**, NRCS, BWSR, WJPB, SRMCWD	◆	◆	◆	◆	◆	✓	**2**	**See GW Action**
	Urban	Implement stormwater best management practices (e.g., raingardens, rain barrels, water reuse, low impact design practices)	10 stormwater practices		City boundaries	**Cities**, Counties, SWCD, BWSR	2	2	2	2	2	✗	**2**	**$75,000**
	Water Storage	Implement projects to increase headwater storage and/or reduce peak flow rates and sediment loading at priority locations (e.g., WASCOBS)	22 practices		"High" Surface Water Priority	**SWCD**, NRCS, BWSR, DNR, SRMCWD	4	5	5	4	4	✓	**2**	**$198,000[P]**
	Water Storage	Implement flood control structures (e.g., retention dams, stormwater ponds)	2 flood control structures		"High" Surface Water Priority	**SWCD**, Cities, NRCS, BWSR, DNR, WJPB, SRMCWD	-	-	1	1	-	✓	**2**	**$70,000**
	Streams	Provide support to landowners to maintain and/or enhance shorelines and streambanks; enhancement or repair of buffers (e.g., enhanced buffers; willow staking)	1 mile maintained/ enhanced		Streambank Priority	**SWCD, Counties,** NRCS, BWSR, TU, DNR, WJPB	-	0.25	0.25	0.25	0.25	✓	**2 and 3**	**$50,000 + Partner Funding**
	Grazing	Implement managed grazing projects, (e.g., prescribed grazing in riparian areas, livestock restriction projects, forage and biomass planting)	55 acres in managed grazing projects		"High" Surface Water Priority	**SWCD**, NRCS, BWSR, MDA, WJPB	11	11	11	11	11	✓	**2**	**$55,000**
	Bacteria	Implement bacteria management practices (e.g., manure management plans). Collaborate with partners to implement animal waste storage facilities, and feedlot fixes.	30 bacteria management practices		Bacteria impaired streams	**SWCD**, **NRCS**, BWSR, MDA, MPCA	6	6	6	6	6	✓	**2 and 3**	**$60,000+ Partner Funding**
	Soil Health	Implement soil health practices (e.g., cover crops, reduced tillage, nutrient management plans)	See "Groundwater Contamination and Nitrates"		"High" Land Use Priority	**SWCD**, NRCS, BWSR, MDA	900	900	900	900	900	✓	**2**	**See GW Action**
	Land protection	Promote vegetative management and encourage pollinator planting within native vegetation restoration (e.g., critical area planting)	341 acres		"High" Land Use Priority	**SWCD**, NRCS, BWSR	68	69	68	68	68	✗	**2**	**$200,000[P]**
	Land protection	Provide financial assistance to assist landowners in developing Woodland Stewardship Plans	75 Woodland Stewardship Plans		Conservation Opportunity Areas	**SWCD**, **DNR,** NRCS, BWSR, USFS	15	15	15	15	15	✗	**2**	**$56,000**
	Land protection	Protect land and vegetative cover through temporary protection programs (e.g., CRP)	300 acres enrolled or re-enrolled		"High" Land Use Priority	**SWCD**, NRCS, BWSR	60	60	60	60	60	✓	**2**	**$150,000**
	Land protection	Protect land and implement permanent vegetative cover through perpetual conservation easements (e.g., RIM)	300 acres		Conservation Opportunity Areas	**SWCD**, NRCS, BWSR, USFWS	60	60	60	60	60	✓	**3**	**Level 3: Partner Funding**
	Wetlands	Restore wetlands	4 acres		"High" Land Use Priority	**SWCD**, NRCS, BWSR	-	1	1	1	1	✓	**2 and 3**	**$35,000 + Partner Funding**
	Wetlands	Protect wetlands through easement programs including but not limited to RIM	40 acres		"High" Land Use Priority	**SWCD**, NRCS, BWSR	-	10	10	10	10	✓	**2 and 3**	**$35,000 + Partner Funding**
All		Investigate opportunities for shared engineering staff resources to provide expertise to landowners interested in conservation	Annual partner discussion		N/A	**SWCD, Counties, Cities**	1	1	1	1	1	✗	**2**	**$15,000**

**These outputs are smaller than those in the milestone charts because they are only showing reductions from this action's practices, and do not include progress made by other structural or management practices.*
*** See page 6-7 for guidance on permitting*
**** Timeline numbers have the same units as the output column*
[P] Denotes cost and output informed by PTMApp (see Appendix G).
◆ = action planned for biennium ✓ *= action output directly used to track measurable goal*

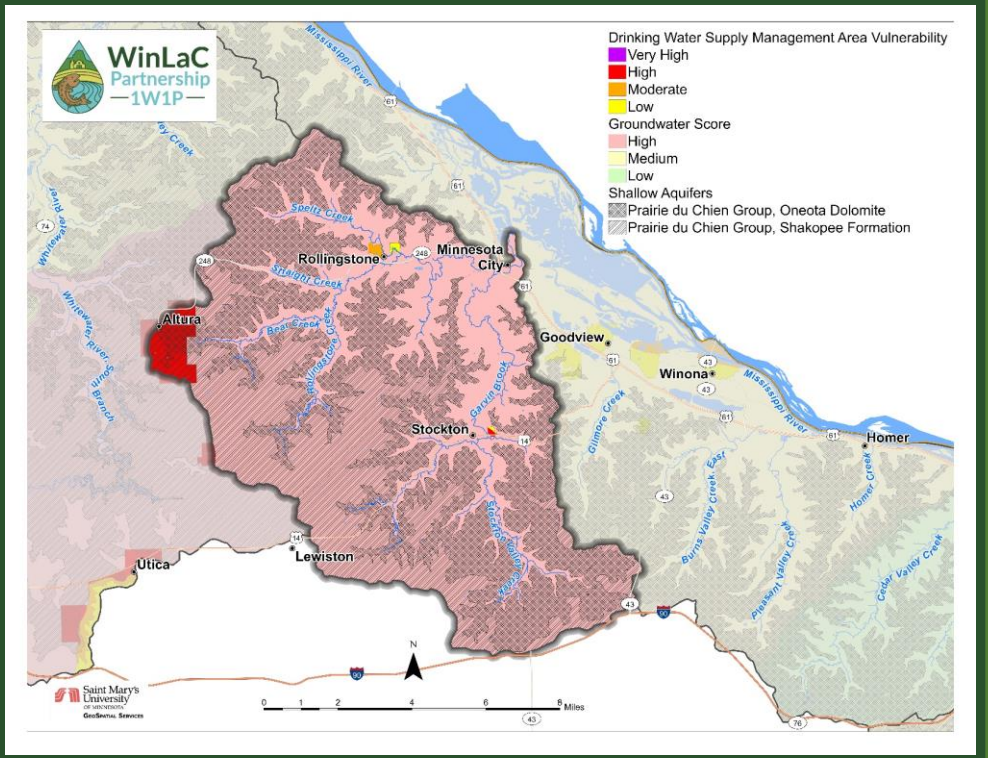
10-Year Costs **$2,540,000**

Garvin Brook Planning Region

Groundwater | Surface Water | Land Use/Habitat

Focus Area: Comprehensive Groundwater Priorities

The Garvin Brook Planning Region contains two HUC-12 subwatersheds, both of which are a high priority for groundwater implementation. This planning region also includes four DWSMAs (Altura, Rollingstone East and West, and Stockton) and a prominent presence of shallow aquifer systems (Prairie du Chien Group). Implementation activities should preferentially target shallow aquifer resources.



Planning Region Milestones

Below is a summary of WinLaC 10-year measurable goals pertaining to groundwater. Each goal includes a milestone to reach in the Garvin Brook Planning Region that will make progress toward the watershed-wide goal. The planning region milestone is shown below in yellow. For issues that are more prominent in the Garvin Brook Planning Region, the yellow bar will move further right toward the watershed wide goal mark (end of the grey bar). The Action Table on **page 5-13** lists actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- Unsealed and Poorly Constructed Wells
- Karst

Garvin Brook Planning Region

Groundwater Goals

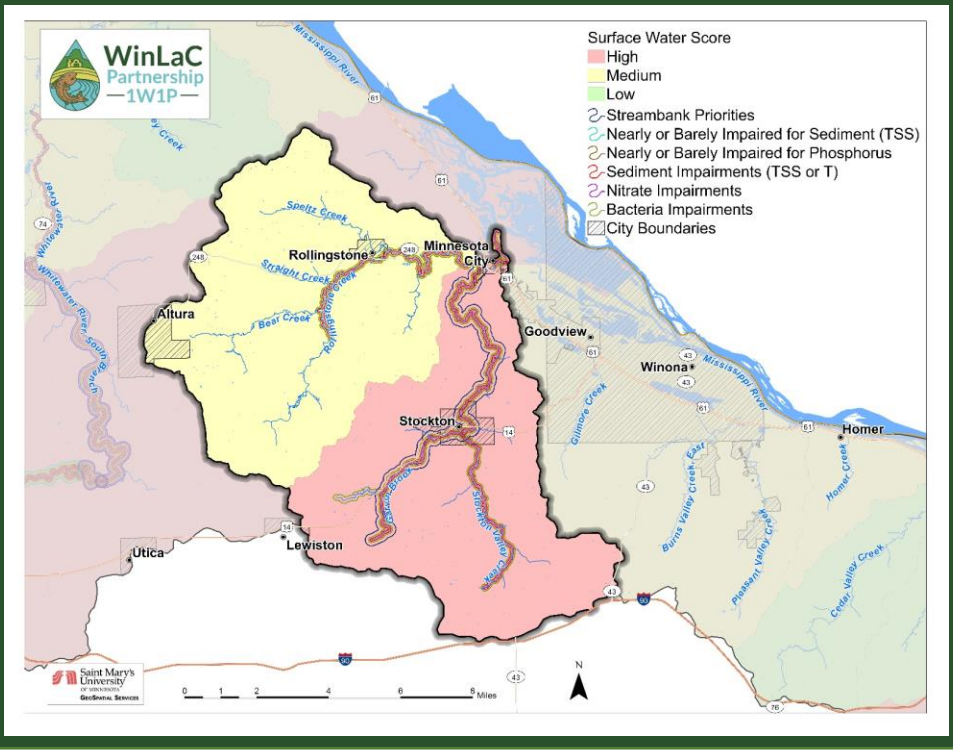
Groundwater (Nitrates) **50,869** lbs TN/yr — **390,330** lbs TN/yr

Garvin Brook Planning Region

Groundwater | **Surface Water** | Land Use/Habitat

Focus Area: Comprehensive Surface Water Priorities

The Garvin Brook Planning Region contains one high and one medium priority subwatershed for surface water implementation. The planning region drains 63,000 acres to the Mississippi River. Impairments and streambank priorities are shown on the map to the right.



Planning Region Milestones

Below is a summary of WinLaC 10-year measurable goals pertaining to surface water. Each goal includes milestones to reach in the Garvin Brook Planning Region that will make progress toward the watershed-wide goal. The planning region milestones are shown below in blue. For issues that are more prominent in the Garvin Brook Planning Region, the blue bar will move further right toward the watershed wide goal mark (end of the grey bar). The Action Table on **page 5-13** lists actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- Water Storage
- Trout Streams
- Aquatic Invasive Species

Garvin Brook Planning Region

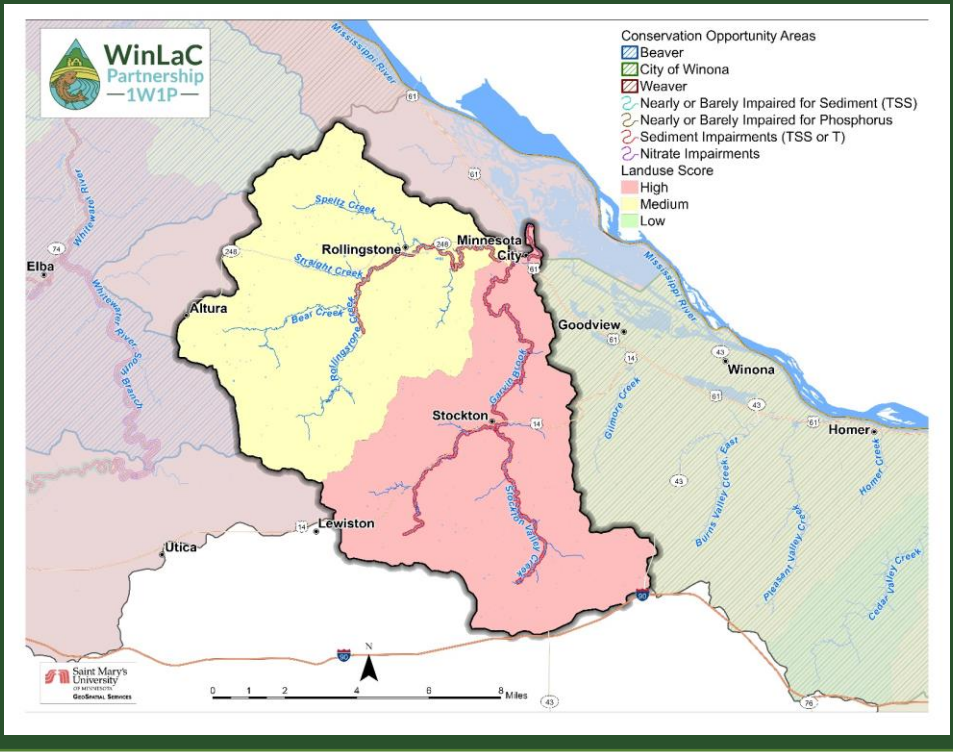
Surface Water Goals

Nutrients (Phosphorus)	**2,311** lbs TP/yr	**17,305** lbs TP/yr
Urban	**3** stormwater projects	**40** projects
Sediment	**6,059** tons sed/yr	**37,157** tons/yr
Streams	**0.50** mile restored	**2** miles
Grazing	**85** acres managed	**250** acres
Bacteria (E.coli)	**25** bacteria management projects	**80** projects

Garvin Brook Planning Region

Focus Area: Comprehensive Land Use / Habitat Priorities

The subwatersheds within the Garvin Brook Planning Region are characterized for enhancement in the Landscape Stewardship Plan. Focus for these activities should begin in the high priority subwatershed.



Planning Region Milestones

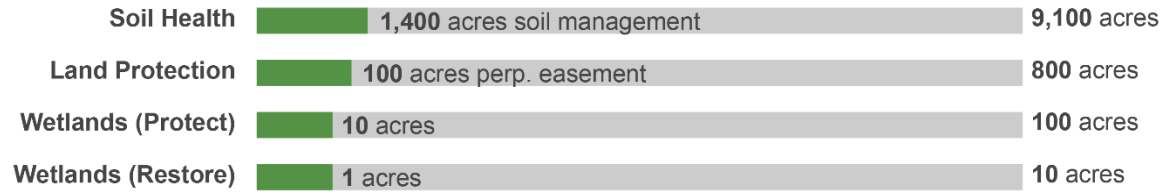
Below is a summary of WinLaC 10-year measurable goals pertaining to land use and habitat. Each goal includes milestones to reach in the Garvin Brook Planning Region that will make progress toward the watershed-wide goal. The planning region milestones are shown below in green. For issues that are more prominent in the Garvin Brook Planning Region, the green bar will move further right toward the watershed wide goal mark (end of the grey bar). The Action Table on **page 5-13** lists the actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- SSTS Upgrades

Garvin Brook Planning Region

Land Use/Habitat Goals



Garvin Brook Planning Region Action Table

Resource	Primary Goal	Action	Output	Funding Program	Focus Area	Lead (in bold) and Partners**	Timeline***					Output for Goal Tracking	Funding Level	Estimated 10-Year Cost
							2023-2024	2025-2026	2027-2028	2029-2030	2031-2032			
	Groundwater Contamination and Nitrates	Reduce overland total nitrogen loading and nitrogen loading to groundwater through the implementation of structural conservation practices (e.g., riparian buffer, filtration strip, infiltration basin, grade stabilization, grassed waterway)	512 tons/yr. sediment 242 lbs/yr TP 6,098 lbs/yr TN*		"High" Groundwater Priority	**SWCD**, NRCS, BWSR, SRMCWD	◆	◆	◆	◆	◆	✓	**2**	**$147,000[P]**
		Implement soil health practices (e.g., cover crops, reduced tillage, nutrient and manure management plans)	1,400 acres		"High" Groundwater Priority	**SWCD**, NRCS, BWSR, MDA	280	280	280	280	280	✗	**2**	**$209,000[P]**
	Nutrients **Sediment**	Reduce overland total nitrogen, total phosphorus, and sediment loading through the implementation of structural conservation practices (e.g., riparian buffer, filtration strip, infiltration basin, grade stabilization, grassed waterway)	See "Groundwater Contamination and Nitrates"		"High" Surface Water Priority; Nutrient and sediment stressed/impaired streams	**SWCD**, NRCS, BWSR, SRMCWD	◆	◆	◆	◆	◆	✓	**2**	**See GW Action**
	Urban	Implement stormwater best management practices (e.g., raingardens, rain barrels, water reuse, low impact design practices)	3 stormwater practices		City boundaries	**Cities**, Counties, SWCD, BWSR	-	1	-	1	1	✗	**2**	**$23,000**
	Water Storage	Implement projects to increase headwater storage and/or reduce peak flow rates and sediment loading at priority locations (e.g., WASCOBS)	7 practices		"High" Surface Water Priority	**SWCD**, NRCS, BWSR, DNR, SRMCWD	1	1	2	2	1	✓	**2**	**$63,000[P]**
	Water Storage	Implement flood control structures (e.g., retention dams, stormwater ponds)	1 flood control structure		"High" Surface Water Priority	**SWCD**, Cities, NRCS, BWSR, DNR, SRMCWD	-	-	1	-	-	✓	**2**	**$35,000**
	Streams	Provide support to landowners to maintain and/or enhance shorelines and streambanks; enhancement or repair of buffers (e.g., enhanced buffers; willow staking)	0.5 mile maintained/enhanced		Streambank Priority	**SWCD, Counties,** NRCS, BWSR, TU, DNR	-	-	0.25	0.25	-	✓	**2 and 3**	**$25,000 + Partner Funding**
	Grazing	Implement managed grazing projects, (e.g., prescribed grazing in riparian areas, livestock restriction projects, forage and biomass planting)	85 acres in managed grazing projects		"High" Surface Water Priority	**SWCD**, NRCS, BWSR, MDA	17	17	17	17	17	✓	**2**	**$85,000**
	Bacteria	Implement bacteria management practices (e.g., manure management plans). Collaborate with partners to implement animal waste storage facilities, and feedlot fixes.	25 bacteria management practices		Bacteria impaired streams	**SWCD**, **NRCS**, BWSR, MDA, MPCA	5	5	5	5	5	✓	**2 and 3**	**$50,000+ Partner Funding**
	Soil Health	Implement soil health practices (e.g., cover crops, reduced tillage, nutrient management plans)	See "Groundwater Contamination and Nitrates"		"High" Land Use Priority	**SWCD**, NRCS, BWSR, MDA	280	280	280	280	280	✓	**2**	**See GW Action**
	Land protection	Promote vegetative management and encourage pollinator planting within native vegetation restoration (e.g., critical area planting)	109 acres		"High" Land Use Priority	**SWCD**, NRCS, BWSR	21	22	22	22	22	✗	**2**	**$64,000[P]**
	Land protection	Provide financial assistance to assist landowners in developing Woodland Stewardship Plans	25 Woodland Stewardship Plans		Conservation Opportunity Areas	**SWCD**, **DNR,** NRCS, BWSR, USFS	5	5	5	5	5	✗	**2**	**$19,000**
	Land protection	Protect land and vegetative cover through temporary protection programs (e.g., CRP)	100 acres enrolled or re-enrolled		"High" Land Use Priority	**SWCD**, NRCS, BWSR	20	20	20	20	20	✓	**2**	**$50,000**
	Land protection	Protect land and implement permanent vegetative cover through perpetual conservation easements (e.g., RIM)	100 acres		Conservation Opportunity Areas	**SWCD**, NRCS, BWSR, USFWS	20	20	20	20	20	✓	**3**	**Level 3: Partner Funding**
	Wetlands	Restore wetlands	1 acre		"High" Land Use Priority	**SWCD**, NRCS, BWSR	-	-	-	-	1	✓	**2 and 3**	**$28,000 + Partner Funding**
	Wetlands	Protect wetlands through easement programs including but not limited to RIM	10 acres		"High" Land Use Priority	**SWCD**, NRCS, BWSR	-	5	-	-	5	✓	**2 and 3**	**$28,000 + Partner Funding**
All		Investigate opportunities for shared engineering staff resources to provide expertise to landowners interested in conservation	Annual partner discussion		N/A	**SWCD, Counties, Cities**	1	1	1	1	1	✗	**2**	**$5,000**

These outputs are smaller than those in the milestone charts because they are only showing reductions from this action's practices, and do not include progress made by other structural or management practices.

*** See page 6-7 for guidance on permitting*

**** Timeline numbers have the same units as the output column.*

[P] *Denotes cost and output informed by PTMApp (see Appendix G).*

◆ *= action planned for biennium* ✓ *= action output directly used to track measurable goal*

10-Year Costs **$831,000**

Mississippi River – La Crescent Planning Region

Groundwater | Surface Water | Land Use/Habitat

Focus Area: Comprehensive Groundwater Priorities

The Mississippi River – La Crescent Planning Region contains two HUC-12 subwatersheds, one a low and one a medium priority for groundwater implementation. The La Crescent includes two DWSMAs (La Crescent 3 and La Crescent Central) and a moderate presence of shallow aquifer systems (Prairie du Chien Group). Implementation activities should preferentially target shallow aquifer resources.

Planning Region Milestones

Below is a summary of WinLaC 10-year measurable goals pertaining to groundwater. Each goal includes a milestone to reach in the Mississippi River – La Crescent Planning Region that will make progress toward the watershed-wide goal. The planning region milestone is shown below in yellow. For issues that are more prominent in the La Crescent Planning Region, the yellow bar will move further right toward the watershed wide goal mark (end of the grey bar). The Action Table on **page 5-17** lists actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- Unsealed and Poorly Constructed Wells
- Karst

La Crescent Planning Region

Groundwater Goals

Groundwater (Nitrates) — **43,097** lbs TN/yr — **390,330** lbs TN/yr

Mississippi River – La Crescent Planning Region

Groundwater | **Surface Water** | Land Use/Habitat

Focus Area: Comprehensive Surface Water Priorities

The Mississippi River – La Crescent Planning Region contains one high and one low priority subwatershed for surface water implementation. The planning region drains 60,500 acres to the Mississippi River. Impairments and streambank priorities are shown on the map to the right.

Planning Region Milestones

Below is a summary of WinLaC 10-year measurable goals pertaining to surface water. Each goal includes milestones to reach in the Mississippi River – La Crescent Planning Region that will make progress toward the watershed-wide goal. The planning region milestones are shown below in blue. For issues that are more prominent in the La Crescent Planning Region, the blue bar will move further right toward the watershed wide goal mark (end of the grey bar). The Action Table on **page 5-17** lists the actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- Water Storage
- Trout Streams
- Aquatic Invasive Species

La Crescent Planning Region

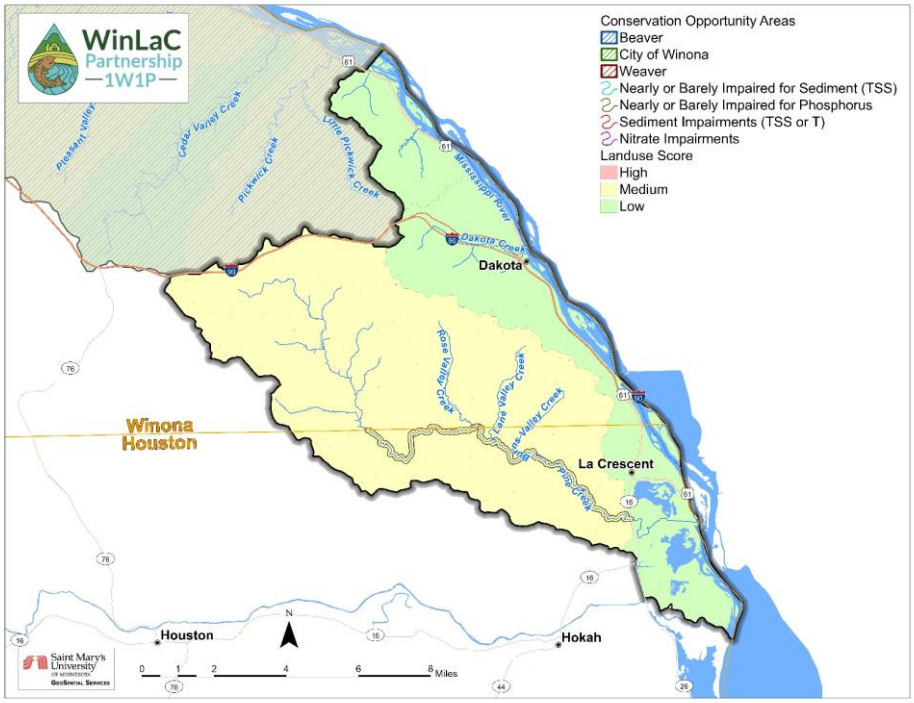
Surface Water Goals

Nutrients (Phosphorus)	**1,924** lbs TP/yr	**17,305** lbs TP/yr
Urban	**7** stormwater projects	**40** projects
Sediment	**3,772** tons sed/yr	**37,157** tons/yr
Streams	**0.25** mile restored	**2** miles
Grazing	**55** acres managed	**250** acres
Bacteria (E.coli)	**20** bacteria management projects	**80** projects

Mississippi River – La Crescent Planning Region

Focus Area: Comprehensive Land Use / Habitat Priorities

The Mississippi River – La Crescent Planning Region is home to the Great River Bluffs State Park. The subwatersheds within the La Crescent Planning Region are characterized for enhancement in the Landscape Stewardship Plan. Focus for these activities should begin in the medium priority subwatershed.



Planning Region Milestones

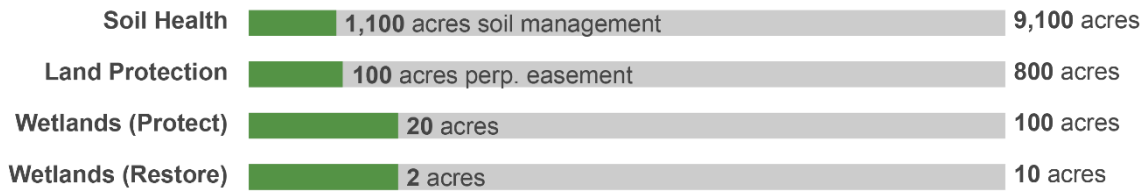
Below is a summary of WinLaC 10-year measurable goals pertaining to land use and habitat. Each goal includes milestones to reach in the Mississippi River – La Crescent Planning Region that will make progress toward the watershed-wide goal. The planning region milestones are shown below in green. For issues that are more prominent in the La Crescent Planning Region, the green bar will move further right toward the watershed wide goal mark (end of the grey bar). The Action Table on **page 5-17** lists the actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- SSTS Upgrades

La Crescent Planning Region

Land Use/Habitat Goals



Mississippi River – La Crescent Planning Region Action Table

Resource	Primary Goal	Action	Output	Funding Program	Focus Area	Lead (in bold) and Partners**	Timeline***					Output for Goal Tracking	Funding Level	Estimated 10-Year Cost
							2023-2024	2025-2026	2027-2028	2029-2030	2031-2032			
	Groundwater Contamination and Nitrates	Reduce overland total nitrogen loading and nitrogen loading to groundwater through the implementation of structural conservation practices (e.g., riparian buffer, filtration strip, grade stabilization, grassed waterway)	100 tons/yr. sediment 66 lbs/yr TP 1,558 lbs/yr TN*		"High" Groundwater Priority	**SWCD**, NRCS, BWSR, SRMCWD	◆	◆	◆	◆	◆	✓	**2**	**$67,000[P]**
		Implement soil health practices (e.g., cover crops, reduced tillage, nutrient and manure management plans)	1,100 acres		"High" Groundwater Priority	**SWCD**, NRCS, BWSR, MDA	220	220	220	220	220	✗	**2**	**$170,000[P]**
	Nutrients **Sediment**	Reduce overland total nitrogen, total phosphorus, and sediment loading through the implementation of structural conservation practices (e.g., riparian buffer, filtration strip, grade stabilization, grassed waterway)	See "Groundwater Contamination and Nitrates"		"High" Surface Water Priority; Nutrient and sediment stressed/impaired streams	**SWCD**, NRCS, BWSR, SRMCWD	◆	◆	◆	◆	◆	✓	**2**	**See GW Action**
	Urban	Implement stormwater best management practices (e.g., raingardens, rain barrels, water reuse, low impact design practices)	7 stormwater practices		City boundaries	**Cities**, Counties, SWCD, BWSR	1	1	1	2	2	✗	**2**	**$53,000**
	Water Storage	Implement projects to increase headwater storage and/or reduce peak flow rates and sediment loading at priority locations (e.g., WASCOBS)	5 practices		"High" Surface Water Priority	**SWCD**, NRCS, BWSR, DNR, SRMCWD	1	1	1	1	1	✓	**2**	**$45,000[P]**
	Water Storage	Implement flood control structures (e.g., retention dams, stormwater ponds)	1 flood control structure		"High" Surface Water Priority	**SWCD**, Cities, NRCS, BWSR, DNR, SRMCWD	-	-	1	-	-	✓	**2**	**$70,000**
	Streams	Provide support to landowners to maintain and/or enhance shorelines and streambanks; enhancement or repair of buffers (e.g., enhanced buffers; willow staking)	0.25 mile maintained/enhanced		Streambank Priority	**SWCD, Counties,** NRCS, BWSR, TU, DNR	-	-	-	0.25	-	✓	**2 and 3**	**$13,000 + Partner Funding**
	Grazing	Implement managed grazing projects, (e.g., prescribed grazing in riparian areas, livestock restriction projects, forage and biomass planting)	55 acres in managed grazing projects		"High" Surface Water Priority	**SWCD**, NRCS, BWSR, MDA	11	11	11	11	11	✓	**2**	**$55,000**
	Bacteria	Implement bacteria management practices (e.g., manure management plans). Collaborate with partners to implement animal waste storage facilities, and feedlot fixes.	20 bacteria management practices		Bacteria impaired streams	**SWCD**, **NRCS**, BWSR, MDA, MPCA	4	4	4	4	4	✓	**2 and 3**	**$40,000+ Partner Funding**
	Soil Health	Implement soil health practices (e.g., cover crops, reduced tillage, nutrient management plans)	See "Groundwater Contamination and Nitrates"		"High" Land Use Priority	**SWCD**, NRCS, BWSR, MDA	220	220	220	220	220	✓	**2**	**See GW Action**
	Land protection	Promote vegetative management and encourage pollinator planting within native vegetation restoration (e.g., critical area planting)	71 acres		"High" Land Use Priority	**SWCD**, NRCS, BWSR	14	14	15	14	14	✗	**2**	**$41,000[P]**
	Land protection	Provide financial assistance to assist landowners in developing Woodland Stewardship Plans	50 Woodland Stewardship Plans		Conservation Opportunity Areas	**SWCD**, **DNR,** NRCS, BWSR, USFS	10	10	10	10	10	✗	**2**	**$38,000**
	Land protection	Protect land and vegetative cover through temporary protection programs (e.g., CRP)	100 acres enrolled or re-enrolled		"High" Land Use Priority	**SWCD**, NRCS, BWSR	20	20	20	20	20	✓	**2**	**$50,000**
	Land protection	Protect land and implement permanent vegetative cover through perpetual conservation easements (e.g., RIM)	100 acres		Conservation Opportunity Areas	**SWCD**, NRCS, BWSR, USFWS	20	20	20	20	20	✓	**3**	**Level 3: Partner Funding**
	Wetlands	Restore wetlands	2 acres		"High" Land Use Priority	**SWCD**, NRCS, BWSR	-	1	1	-	-	✓	**2 and 3**	**$6,000 + Partner Funding**
	Wetlands	Protect wetlands through easement programs including but not limited to RIM	20 acres		"High" Land Use Priority	**SWCD**, NRCS, BWSR	-	10	-	-	10	✓	**2 and 3**	**$6,000 + Partner Funding**
All		Investigate opportunities for shared engineering staff resources to provide expertise to landowners interested in conservation	Annual partner discussion		N/A	**SWCD, Counties, Cities**	1	1	1	1	1	✗	**2**	**$10,000**

**These outputs are smaller than those in the milestone charts because they are only showing reductions from only this action's practices, and do not include progress made by other structural or management practices.*
*** See page 6-7 for guidance on permitting*
**** Timeline numbers have the same units as the output column.*
[P] Denotes cost and output informed by PTMApp (see Appendix G).
◆ = action planned for biennium ✓ *= action output directly used to track measurable goal*

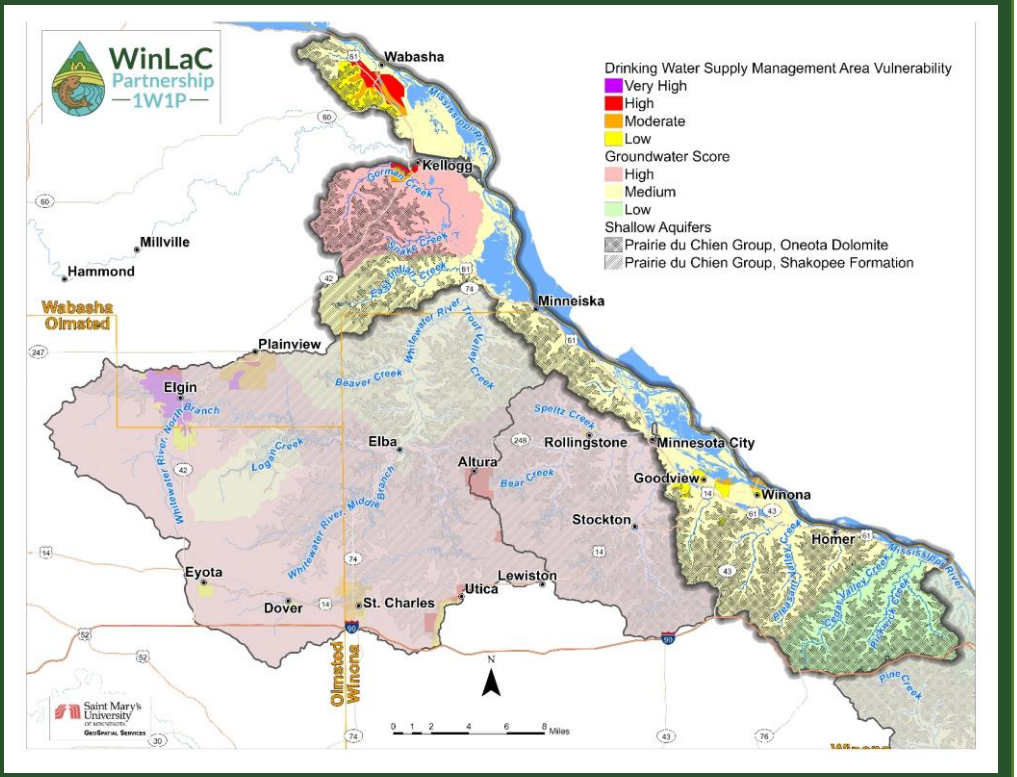
10-Year Costs **$664,000**

Small Tributaries Planning Region

Groundwater | Surface Water | Land Use/Habitat

Focus Area: Comprehensive Groundwater Priorities

The Small Tributaries Planning Region includes seven DWSMAs (Wabasha, Kellogg, Goodview Central, Goodview South, Winona SW, Winona W, and Winona- Levee Park) and a prominent presence of shallow aquifer systems (Prairie du Chien Group). Implementation activities should preferentially target high priority subwatersheds shown in pink, with highest priority in locations that overlay shallow aquifer resources.



Planning Region Milestones

Below is a summary of WinLaC 10-year measurable goals pertaining to groundwater. Each goal includes a milestone to reach in the Small Tributaries Planning Region that will make progress toward the watershed-wide goal. The planning region milestone is shown below in yellow. For issues that are more prominent in the Small Tributaries Planning Region, the yellow bar will move further toward the watershed wide goal mark (end of the grey bar). The Action Table on **page 5-21** lists the actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- Unsealed and Poorly Constructed Wells
- Karst

Small Tributaries Planning Region

Groundwater Goals

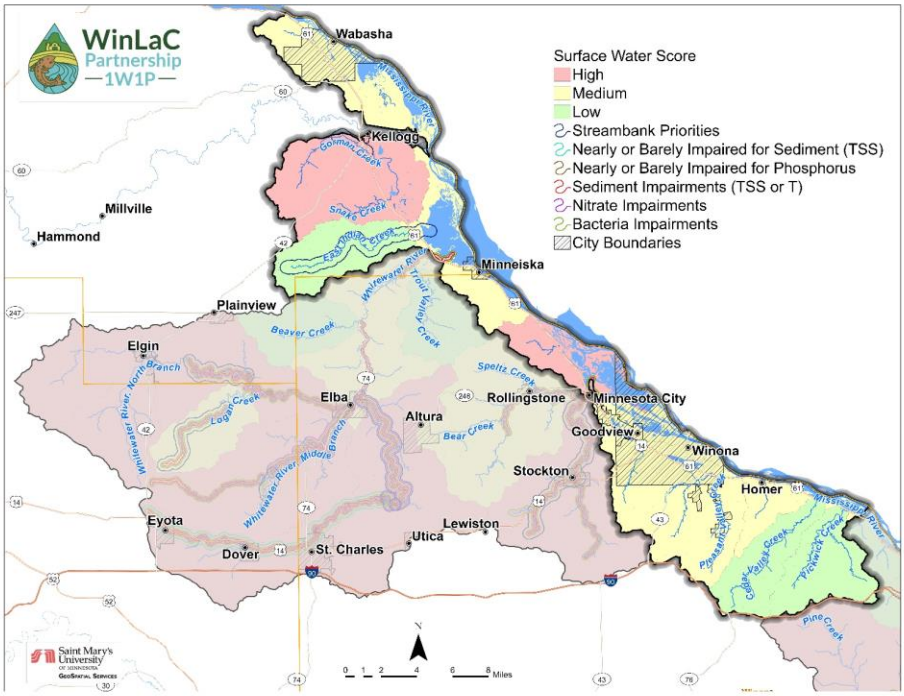
Groundwater (Nitrates) — **96,163** lbs TN/yr — **390,330** lbs TN/yr

Small Tributaries Planning Region

Groundwater | **Surface Water** | Land Use/Habitat

Focus Area: Comprehensive Surface Water Priorities

The Small Tributaries Planning Region contains many smaller streams and rivers that drain from the WinLaC plan area to the Mississippi River. It also includes Lake Winona. There is one high priority subwatershed for surface water implementation that includes the city of Winona. Impairments and streambank priorities are shown on the map to the right.



Planning Region Milestones

Below is a summary of WinLaC 10-year measurable goals pertaining to surface water. Each goal includes milestones to reach in the Small Tributaries Planning Region that will make progress toward the watershed-wide goal. The planning region milestones are shown below in blue. For issues that are more prominent in the Small Tributaries Planning Region, the blue bar will move further toward the watershed wide goal mark (end of the grey bar). The Action Table on **page 5-21** lists the actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- Water Storage
- Trout Streams
- Aquatic Invasive Species

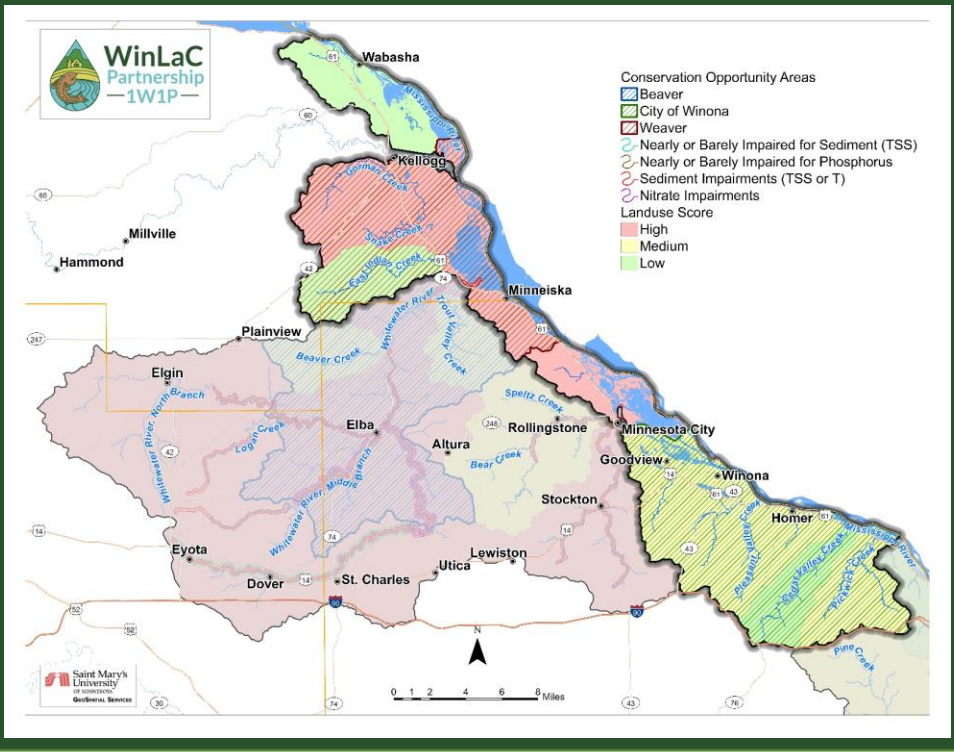
Small Tributaries Planning Region
Surface Water Goals

Nutrients (Phosphorus)	**4,051** lbs TP/yr	**17,305** lbs TP/yr
Urban	**20** stormwater projects	**40** projects
Sediment	**8,970** tons sed/yr	**37,157** tons/yr
Streams	**0.25** mile restored	**2** miles
Grazing	**55** acres managed	**250** acres
Bacteria (E.coli)	**5** bacteria management projects	**80** projects

Small Tributaries Planning Region

Focus Area: Comprehensive Land Use / Habitat Priorities

The Small Tributaries Planning Region is home to the Weaver and Winona Conservation Opportunity Areas (COAs), as characterized in the Landscape Stewardship Plan. These areas are high priorities for protection.



Planning Region Milestones

Below is a summary of WinLaC 10-year measurable goals pertaining to land use and habitat. Each goal includes milestones to reach in the Small Tributaries Planning Region that will make progress toward the watershed-wide goal. The planning region milestones are shown below in green. For issues that are more prominent in the Small Tributaries Planning Region, the green bar will move further toward the watershed wide goal mark (end of the grey bar). The Action Table on **page 5-21** lists the actions to accomplish these milestones.

See **Watershed-wide Action Table** (**page 5-23**) for Actions Addressing:

- SSTS Upgrades

Small Tributaries Planning Region

Land Use/Habitat Goals

Soil Health	**2,100** acres soil management	**9,100** acres
Land Protection	**300** acres perp. easement	**800** acres
Wetlands (Protect)	**30** acres	**100** acres
Wetlands (Restore)	**3** acres	**10** acres

Small Tributaries Planning Region Action Table

Resource	Primary Goal	Action	Output	Funding Program	Focus Area	Lead (in bold) and Partners**	Timeline***					Output for Goal Tracking	Funding Level	Estimated 10-Year Cost
							2023-2024	2025-2026	2027-2028	2029-2030	2031-2032			
	Groundwater Contamination and Nitrates	Reduce overland total nitrogen loading and nitrogen loading to groundwater through the implementation of structural conservation practices (e.g., riparian buffer, filtration strip, infiltration basin, grade stabilization, grassed waterway)	587 tons/yr. sediment 581 lbs/yr TP 14,582 lbs/yr TN*		"High" Groundwater Priority	**SWCD**, NRCS, BWSR, SRMCWD	◆	◆	◆	◆	◆	✓	**2**	**$317,000[P]**
		Implement soil health practices (e.g., cover crops, reduced tillage, nutrient and manure management plans)	2,100 acres		"High" Groundwater Priority	**SWCD**, NRCS, BWSR, MDA	420	420	420	420	420		**2**	**$317,000[P]**
	Nutrients **Sediment**	Reduce overland total nitrogen, total phosphorus, and sediment loading through the implementation of structural conservation practices (e.g., riparian buffer, filtration strip, infiltration basin, grade stabilization, grassed waterway)	See "Groundwater Contamination and Nitrates"		"High" Surface Water Priority; Nutrient and sediment stressed/impaired streams	**SWCD**, NRCS, BWSR, SRMCWD	◆	◆	◆	◆	◆	✓	**2**	**See GW Action**
	Urban	Implement stormwater best management practices (e.g., raingardens, rain barrels, water reuse, low impact design practices)	20 stormwater practices		City boundaries	**Cities**, **HLW,** Counties, SWCD, BWSR	4	4	4	4	4		**2**	**$150,000**
	Water Storage	Implement projects to increase headwater storage and/or reduce peak flow rates and sediment loading at priority locations (e.g., WASCOBS)	12 practices		"High" Surface Water Priority	**SWCD**, NRCS, BWSR, DNR, SRMCWD	2	4	2	2	2	✓	**2**	**$108,000[P]**
	Water Storage	Implement flood control structures (e.g., retention dams, stormwater ponds)	2 flood control structures		"High" Surface Water Priority	**SWCD**, Cities, NRCS, BWSR, DNR, SRMCWD	-	1	1	-	-	✓	**2**	**$70,000**
	Streams	Provide support to landowners to maintain and/or enhance shorelines and streambanks; enhancement or repair of buffers (e.g., enhanced buffers; willow staking)	0.25 mile maintained/enhanced		Streambank Priority	**SWCD, Counties,** NRCS, BWSR, TU, DNR	-	-	-	0.25	-	✓	**2 and 3**	**$13,000 + Partner Funding**
	Grazing	Implement managed grazing projects, (e.g., prescribed grazing in riparian areas, livestock restriction projects, forage and biomass planting)	55 acres in managed grazing projects		"High" Surface Water Priority	**SWCD**, NRCS, BWSR, MDA	11	11	11	11	11	✓	**2**	**$55,000**
	Bacteria	Implement bacteria management practices (e.g., manure management plans). Collaborate with partners to implement animal waste storage facilities, and feedlot fixes.	5 bacteria management practices		Bacteria impaired streams	**SWCD**, **NRCS**, BWSR, MDA, MPCA	1	1	1	1	1	✓	**2 and 3**	**$10,000+ Partner Funding**
	Soil Health	Implement soil health practices (e.g., cover crops, reduced tillage, nutrient management plans)	See "Groundwater Contamination and Nitrates"		"High" Land Use Priority	**SWCD**, NRCS, BWSR, MDA	420	420	420	420	420	✓	**2**	**See GW Action**
	Land protection	Promote vegetative management and encourage pollinator planting within native vegetation restoration (e.g., critical area planting)	186 acres		"High" Land Use Priority	**SWCD**, HLW, NRCS, BWSR	37	37	38	37	37		**2**	**$109,000[P]**
	Land protection	Provide financial assistance to assist landowners in developing Woodland Stewardship Plans	75 Woodland Stewardship Plans		Conservation Opportunity Areas	**SWCD**, **DNR,** NRCS, BWSR, USFS	15	15	15	15	15		**2**	**$56,000**
	Land protection	Protect land and vegetative cover through temporary protection programs (e.g., CRP)	300 acres enrolled or re-enrolled		"High" Land Use Priority	**SWCD**, NRCS, BWSR	60	60	60	60	60	✓	**2**	**$150,000**
	Land protection	Protect land and implement permanent vegetative cover through perpetual conservation easements (e.g., RIM)	300 acres		Conservation Opportunity Areas	**SWCD**, NRCS, BWSR, USFWS	60	60	60	60	60	✓	**3**	**Partner Funding**
	Wetlands	Restore wetlands	3 acres		"High" Land Use Priority	**SWCD**, NRCS, BWSR	-	1	1	1	-	✓	**2 and 3**	**$45,000 + Partner Funding**
	Wetlands	Protect wetlands through easement programs including but not limited to RIM	30 acres		"High" Land Use Priority	**SWCD**, NRCS, BWSR	-	15	-	-	15	✓	**2 and 3**	**$45,000 + Partner Funding**
All		Investigate opportunities for shared engineering staff resources to provide expertise to landowners interested in conservation	Annual partner discussion		N/A	**SWCD, Counties, Cities**	1	1	1	1	1		**2**	**$10,000**

*These outputs are smaller than those in the milestone charts because they are only showing reductions from only this action's practices, and do not include progress made by other structural or management practices.
** See page 6-7 for guidance on permitting
*** Timeline numbers have the same units as the output column.
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◆ = action planned for biennium ✓ = action output directly used to track measurable goal

10-Year Costs $1,455,000

Watershed-wide Actions

Actions in the following programs are implemented watershed-wide. This allows for flexibility during implementation and promotes consistency and collaboration in implementation efforts throughout the plan area. Actions funded by these programs are summarized in tables on the following pages.

Education and Public Input

- Community events
- Removing barriers to conservation action
- Field days

See Page 5-23

Monitoring and Studies

- Water quality monitoring
- Well inventory
- Groundwater trend analyses

See Page 5-23

Capital Improvement Projects

- Stream restorations
- Large habitat complexes
- In-lake management
- Flood control structures

See Page 5-27

Regulation and Local Controls

- WCA enforcement
- Buffer enforcement
- AIS management
- Well and septic regulation

See Page 5-23

Watershed-wide Action Table

Resource	Primary Goal	Action	Output	Funding Program	Focus Area	Lead (in bold) and Partners*	Timeline					Output for Goal Tracking	Funding Level	Estimated 10-Year Cost**
							2023-2024	2025-2026	2027-2028	2029-2030	2031-2032			
	Groundwater Contamination and Nitrates	Provide outreach opportunities to all communities with MDH approved Wellhead Protection Plans (WPPs). BMP technical assistance for all public water suppliers (PWS) in moderate and highly vulnerable DWSMAs.	1 news article or digital communication per year		"High" Groundwater Priority, WPPs, PWS, DWSMAs	**County, Cities, SWCD, MDH**	◆	◆	◆	◆	◆	✕	**2**	**$5,000**
	Groundwater Contamination and Nitrates	Provide all private well owners located in groundwater priority areas access to well testing programs and education	1 well testing workshop per year		"High" Groundwater Priority	**County, SWCD**, MDH	◆	◆	◆	◆	◆	✕	**2**	**$20,000**
	Groundwater Contamination and Nitrates	Project development to direct future monitoring on other contaminants of concern in groundwater, which can include sealing wells	Project development report completed		"High" Groundwater Priority	**County**, Cities, SWCD, MDH, DNR		◆				✕	**2**	**$10,000**
	Groundwater Contamination and Nitrates	For private wells and public systems with elevated nitrates (average concentrations > 3 ppm over the last 10 years in groundwater priority areas), establish nitrate-nitrogen trends and identify wells/areas with chronically high nitrate concentrations relative to maximum contaminant level (MCL).	Trend analysis completed		"High" Groundwater Priority	**County, SWCD, MDH, DNR**		◆				✕	**2**	**$10,000**
	Groundwater Contamination and Nitrates	Provide education on water conservation practices that can be adopted in people's homes and businesses.	1 digital communication or flyer per year		Watershed-wide	**County, Cities,** MDH, DNR	◆	◆	◆	◆	◆	✕	**2**	**$5,000**
	Unsealed and Poorly Constructed Wells	Provide financial assistance to seal abandoned or unused private and public wells as a means of reducing risk of *E. coli* and other contamination to groundwater	100 wells sealed		Watershed-wide	**County, SWCD**, MDH	◆	◆	◆	◆	◆	✓	**2**	**$100,000**
	Unsealed and Poorly Constructed Wells	Reduce risk to public health from wells through education and outreach regarding proper construction, maintenance, and sealing/abandonment of wells.	1 news article or digital communication per year		Watershed-wide	**County, SWCD**, MDH	◆	◆	◆	◆	◆	✕	**2**	**$5,000**
	Unsealed and Poorly Constructed Wells	Promote and where possible, fund private well water upgrades and improvements that impact health, including water treatment systems for contaminants of emerging concerns (e.g., radium, arsenic).	7 upgrades or improvements per year		Watershed-wide	**County**, SWCD	◆	◆	◆	◆	◆	✕	**3**	**Partner Funding**
	Unsealed and Poorly Constructed Wells	Inventory abandoned wells throughout watershed	1 inventory completed		Watershed-wide	**County**, Cities, MPCA, MDH	◆	◆				✕	**2**	**$20,000**
	Karst	Provide education workshops to landowners about karst features and means to prevent groundwater contamination	1 workshop per year		"High" Groundwater Priority	**County**, SWCD, DNR, MPCA, MDH	◆	◆	◆	◆	◆	✓	**2**	**$20,000**
	Karst	Conduct a regulatory review of karst local controls and identify opportunities for creating consistency between counties	Review completed and meeting		"High" Groundwater Priority	**County, SWCD, Cities**	◆	◆				✕	**2**	**$5,000**

Table continued on following page

Resource	Primary Goal	Action	Output	Funding Program	Focus Area	Lead (in bold) and Partners*	Timeline					Output for Goal Tracking	Funding Level	Estimated 10-Year Cost**
							2023-2024	2025-2026	2027-2028	2029-2030	2031-2032			
	Nutrients	Work with private forest management and help landowners manage their private land	Annual forestry day, development of local forestry team		"High" Surface Water Priority	**SWCD, County, DNR**	◆	◆	◆	◆	◆		**2**	**$5,000**
	Nutrients	Host contractor field days for erosion control practices	1 field day per year		"High" Surface Water Priority	**SWCD**, County, BWSR, MDA	◆	◆	◆	◆	◆	✕	**2**	**$15,000**
	Urban	Promote salt application awareness and training for businesses, vendors, and community members to promote chloride management and public safety	3 smart salting trainings held per year		"High" Surface Water Priority	**Cities, MPCA**, SWCD, County	◆	◆	◆	◆	◆	✕	**2**	**$5,000**
	Urban	Hold workshops for building rain gardens, caring for new trees and tree ID, wetland delineation and species identification	1 workshop per year		"High" Surface Water Priority	**Cities**, SWCD, County	◆	◆	◆	◆	◆	✕	**2**	**$10,000**
	Urban	Encourage replacement of concrete and asphalt with pervious pavement	5,000 sq. feet replaced		"High" Surface Water Priority	**Cities**, SWCD, County		◆	◆	◆	◆	✕	**2**	**$10,000**
	Urban	Collaborate with municipalities and partners to expand street sweeping efforts within urban areas	15 miles of additional lane miles swept, 3 of participating cities		"High" Surface Water Priority	**Cities**, SWCD, County	◆	◆	◆	◆	◆	✕	**2**	**$20,000**
	Urban	Continue and expand public education efforts related to urban stormwater management (e.g., painting decals by storm drains and "Adopt a Drain" programs, promoting ordinances for phosphorus fertilizers, promoting proper lawn and clipping management, implementing educational signage by rain gardens)	5 public education events held, 50 attendees to events		"High" Surface Water Priority	**Cities**, SWCD, County	◆	◆	◆	◆	◆	✕	**2**	**$20,000**
	Urban	Continue and expand chloride monitoring and management	18 chloride monitoring sites or samples taken, 64 chloride data points		"High" Surface Water Priority	**Cities, MPCA**, SWCD, County	◆	◆	◆	◆	◆	✕	**2**	**$20,000**
	Sediment	Using modeling, identify site-specific locations and complete feasibility analyses where needed for practices aimed at reducing erosion	Feasibility analysis(es) completed		"High" Surface Water Priority	**SWCD**, County, DNR, BWSR, MPCA	◆	◆				✕	**2**	**$150,000**
	Water Storage	Using modeling, identify site-specific locations and complete feasibility analyses where needed for practices aimed at storing water on the land	Feasibility analysis(es) completed		"High" Surface Water Priority	**SWCD**, County, DNR, MPCA, BWSR	◆	◆				✕	**2**	**$150,000**
	Water Storage	Using existing data and models, model the current precipitation related to climate change to predict likely risks related to erosion and flooding, and work proactively to mitigate these risks/minimize damage and costs of future flood events	H&H model completed		Watershed-wide	**SWCD**, County, Cities, DNR, MPCA, BWSR	◆	◆	◆	◆	◆	✕	**2**	**$100,000**
	Water Storage	Where applicable, promote drainage management and multipurpose drainage management projects through existing programs	One written communication over 10-year plan		Watershed-wide	**SWCD, County**		◆				✕	**2**	**$2,000**

Table continued on following page

Resource	Primary Goal	Action	Output	Funding Program	Focus Area	Lead (in bold) and Partners*	Timeline					Output for Goal Tracking	Funding Level	Estimated 10-Year Cost**
							2023-2024	2025-2026	2027-2028	2029-2030	2031-2032			
	Streams	Collaborate with partners (e.g., DNR, TU) to identify problem stream erosion sites	Feasibility analysis(es) completed		"High" Surface Water Priority	**SWCD, County**, DNR, TU		◆	◆	◆	◆	✗	**2**	**$50,000**
	Streams	Continue to develop and discuss tools and information needed to reduce the risk of fish kills	At least 1 regional meeting per year		Trout Stream Priority Subwatersheds	**MPCA,** DNR, MDA, MDH, County (Emergency Management), SWCDs	◆	◆	◆	◆	◆	✗	**3**	**Partner Funding**
	Streams	Work with the DNR Central Region clean water staff to conduct subwatershed sediment sourcing studies and implement projects to address in-channel loading	Annual meeting		Watershed-wide	**DNR,** SWCD, County	◆	◆	◆	◆	◆	✗	**2**	**$5,000**
	Trout streams	Protect springs by working with landowners in mapped springsheds and by preventing landowners from building spring-fed ponds.	5 landowner meetings		"High" Surface Water Priority	**SWCD**, County, NRCS, DNR	◆	◆	◆	◆	◆	✗	**2**	**$5,000**
	Trout streams	Map springsheds to protect trout populations	5 springsheds mapped		"High" Surface Water Priority	**MGS, TU**, DNR, SWCD, County	◆	◆	◆	◆	◆	✓	**3**	**Partner Funding**
	AIS	Manage aquatic invasive species, including carp and curly leaf pond weed removal	Aquatic invasive species plan		"High" Surface Water Priority	**SWCD, County**, Cities, DNR	◆	◆	◆	◆	◆	✗	**2**	**$25,000**
	AIS	Complete educational events about AIS to prevent further spread	50 events completed		"High" Surface Water Priority	**SWCD, County**, Cities, DNR	◆	◆	◆	◆	◆	✓	**2**	**$50,000**
	AIS	Complete AIS inventory throughout the entire planning area to determine what AIS species are where	1 inventory completed		"High" Surface Water Priority	**DNR**, SWCD, County	◆	◆	◆	◆	◆	✓	**2**	**$50,000**
	Soil Health	Promote perennial crop production and crop rotations that include small grains	2 educational and outreach events per year to promote and evaluate soil health practices		"High" Land Use/Habitat Priority	**SWCD**, County, BWSR, MDA	◆	◆	◆	◆	◆	✗	**2**	**$10,000**
	Soil Health	Promote implementation of soil health practices			"High" Land Use/Habitat Priority	**SWCD**, County, BWSR, MDA	◆	◆	◆	◆	◆	✗	**2**	**$10,000**
	Soil Health	Use analyses to evaluate the benefits of cover crops			"High" Land Use/Habitat Priority	**SWCD**, County, BWSR, MDA, U of M, MOSH	◆	◆	◆	◆	◆	✗	**2**	**$5,000**
	SSTS Upgrades	Provide financial assistance for upgrading or replacing SSTSs, focused on failing systems (not for point of sale)	100 SSTSs upgraded or replaced		Watershed-wide	**MPCA**, County, SWCD	◆	◆	◆	◆	◆	✓	**3**	**Partner Funding ($2,500,000)**
	SSTS Upgrades	Develop inventory of non-functioning and/or non-compliant SSTS systems and establish ranking criteria to prioritize SSTS projects	1 inventory completed		Watershed-wide	**MPCA**, County, SWCD			◆		◆	✗	**2**	**$20,000**
	Land protection	Encourage protection of Decorah Edge influenced areas	2 events that target landowners for education		"High" Land Use/Habitat Priority	**County, SWCD, Cities**		◆		◆		✗	**2**	**$6,000**
	Land protection	Provide cost share for forestry management, invasive species management, and prairie management	1 project funded every other year		"High" Land Use/Habitat Priority	**SWCD**, DNR, MDA	◆	◆	◆	◆	◆	✗	**2**	**$40,000**

Table continued on following page

Resource	Primary Goal	Action	Output	Funding Program	Focus Area	Lead (in bold) and Partners*	Timeline					Output for Goal Tracking	Funding Level	Estimated 10-Year Cost**
							2023-2024	2025-2026	2027-2028	2029-2030	2031-2032			
	Land protection	Promote forestry management, invasive species management, and prairie management through education and outreach events	1 workshop per year		"High" Land Use/Habitat Priority	**SWCD**, Cities, DNR, MDA	◆	◆	◆	◆	◆	✕	**2**	**$10,000**
	Land protection	Promote programs (e.g., CWMA and EQIP) to target invasive species management and removal	1 news article or digital communication per year		"High" Land Use/Habitat Priority	**SWCD**, DNR, MDA	◆	◆	◆	◆	◆	✕	**2**	**$5,000**
	Land protection	Partner with MLT, TNC and other organizations to provide landowners opportunities for protection and enhancement of natural areas.	Annual outreach to TNC or MLT		"High" Land Use/Habitat Priority	**County, SWCD**, MLT, TNC, DNR	◆	◆	◆	◆	◆	✕	**2**	**$10,000**
	Land protection	Develop a program to permanently protect bluffland areas (e.g., RIM)	1 program developed		"High" Land Use/Habitat Priority	**County, SWCD,** BWSR		◆				✕	**2**	**$50,000**
	Land protection	Create management plan with MDA to manage terrestrial invasive species and strengthen MDA's ability to target with Conservation Corps	1 management plan created		"High" Land Use/Habitat Priority	**County, SWCD, Cities, MDA**		◆	◆			✕	**2**	**$50,000**
	All	Continue administration of local regulations including feedlot, shoreland management, SSTS, etc. (see **Table 6.3** on page 6-7)	Ongoing program administration		Watershed-wide	**SWCD, County, Cities**	◆	◆	◆	◆	◆	✕	**2**	**$3,184,000**
	All	Continue and expand surface water monitoring efforts to understand water quality, trends, and impacts of conservation action	Ongoing program administration		Watershed-wide	**SWCD, County, Cities, MPCA**	◆	◆	◆	◆	◆	✕	**2**	**$233,000**
	All	Continue and expand watershed education and outreach programming in each jurisdictional area	Ongoing program administration		Watershed-wide	**SWCD, County, Cities**	◆	◆	◆	◆	◆	✕	**2**	**$713,000**
	All	Develop a community-sourced map for resource management concerns, and update regularly	1 community source map created and regularly updated		Watershed-wide	**SWCD, County, Cities**	◆	◆	◆	◆	◆	✕	**2**	**$20,000**
	All	Continue to monitor and test for forever chemicals	Ongoing program administration		Watershed-wide	**SWCD, MPCA, MDH, Cities**	◆	◆	◆	◆	◆	✕	**2**	**$20,000**
	All	Provide outreach events to landowners about the economic and environmental benefits of conservation action (e.g., cover crops, nutrient management, forest management)	2 outreach events per year		Watershed-wide	**SWCD**, BWSR, MDA	◆	◆	◆	◆	◆	✕	**2**	**$30,000**
	All	Provide education and outreach about the WinLaC CWMP implementation at on-going community events (e.g., county fairs)	4 events per year		Watershed-wide	**County, SWCD**	◆	◆	◆	◆	◆	✕	**2**	**$5,000**
	All	Hold stewardship events like stream clean ups, tree planting, shoreline restoration, etc.	2 events per year		Watershed-wide	**Cities, SWCD, County**	◆	◆	◆	◆	◆	✕	**2**	**$10,000**
	All	Participate in existing community events (like block parties) through interactive educational booths	4 events per year		Watershed-wide	**SWCD, County**, BWSR, MDA	◆	◆	◆	◆	◆	✕	**2**	**$15,000**
	All	Develop different strategies for incentivizing conservation action to landowners, such as cover crop seed distribution programs and farm credits for conservation	Strategy developed and implemented		Watershed-wide	**SWCD, County,** BWSR, MDA	◆	◆	◆	◆	◆	✕	**2**	**$15,000**

Table continued on following page

Resource	Primary Goal	Action	Output	Funding Program	Focus Area	Lead (in bold) and Partners*	Timeline					Output for Goal Tracking	Funding Level	Estimated 10-Year Cost**
							2023-2024	2025-2026	2027-2028	2029-2030	2031-2032			
	All	Continue and expand virtual engagement within the community for non-point source pollution management	2 virtual communications per year		Watershed-wide	**County, SWCD, Cities**	◆	◆	◆	◆	◆		**2**	**$5,000**
	All	Understand factors that led to adoption of new agricultural or conservation practices	Survey completed on landowners who participated in WBIF practices		Watershed-wide	**County, SWCD**			◆				**2**	**$10,000**
	All	Review local ordinances and regulations related to karst, nutrients, and stormwater within the four WinLaC counties for similarities, gaps, and opportunities for shared services	Discussion with local partners		"High" Surface Water and Groundwater Priority	**SWCD, County, Cities**	◆	◆		◆			**2**	**$10,000**

Education and Public Involvement 10-Year Total	$1,031,000
Monitoring and Studies 10-Year Total	$958,000
Regulation and Local Controls 10-Year Total	$3,389,000

**See page 6-7 for guidance on permitting*

*** Costs estimated by the local planning committees based on available information at the time*

◆ *= action planned for biennium* *= action output directly used to track measurable goal*

Capital Improvement Projects

For purposes of this plan, a capital improvement project is defined as a major, non-recurring expenditure for the construction, repair, retrofit, or increased utility or function of physical facilities, infrastructure, or environmental features. To be considered a capital improvement, a project must have an anticipated cost of at least $250,000.

Resource	Primary Goal	Capital Improvement Project	Description	Lead Entity	Information Source	Years (Start / End)	Status	Estimated Cost*
	Urban	Urban stormwater	Stormwater CIP could include street sweeper purchase for La Crescent or Winona, technology for MS4s to improve stormwater program (digitizing software), Green Infrastructure implementation (pervious surface installation, lawn to perennial, rain barrels)	City of La Crescent and City of Winona	Existing Stormwater Programs	2023-2032	Preplanning	**$260,000**
	Urban	Urban stormwater filtration in Winona	Stormwater treatment for Phosphorus at Lake Winona and Mississippi River	City of Winona	Lake Winona Water Quality Improvement Plan	2026/2028	Preplanning	**$1,600,000**
	Urban	Lake Winona	Implement methods to manage phosphorus in Lake Winona	City of Winona	Lake Winona Water Quality Improvement Plan	2024	Unfunded	**$1,100,000**
	Urban	West Lake Winona Pre-treatment infiltration Basins	Install basins to low areas of West Lake Park in Winona to intercept storm water from street storm sewers before it enters the lake.	City of Winona	Grant applications in 2022	2024	Unfunded	**$520,000**
	Urban	Urban drainage ditches	Reconstruct/upgrade/repair urban drainage ditches to accommodate peak water flows	Cities	Communications with city administrators	2023-2032	Unfunded	**$250,000**
	Water Storage	Stormwater retention ponds	Construct additional, or repair / clean out stormwater retention ponds to increase holding capacity for increasing intensity storm events	Cities	Communications with city administrators	2023-2032	Unfunded	**$250,000**
	Water Storage	Maintenance of existing WASCOBs and ponds	Hundreds of sediment retention structures exist in the WinLaC watershed. It is assumed that many of them are no longer operating as originally installed due to lack of clean out/maintenance. This CIP would develop a process for identifying existing retention structures, assessing their current operational status, and providing financial support for clean out and other maintenance.	WinLaC SWCDs	LiDAR, Local knowledge, SWCD inventory of practices	2023/2028	Preplanning	**$250,000**
	Water Storage	Large scale water storage	CIP would scope areas in the WinLaC where large scale water storage could be implemented. Could span over multiple landowners & will likely include easements.	SWCDs	Could reference CIPs done in Cedar River Watershed.	2023/2030	Preplanning	**$500,000**
	Water Storage	Large 410s (grade stabilization or flood control)	Multiple possible locations for large grade stabilization structures or flood control structures.	Root SWCD	Topographic maps	N/A	Unfunded, site investigation needed	**$250,000**
	Water Storage	Stockton Flood Control	Upland water storage and floodplain restoration upstream of Stockton, MN	SRMCWD and Winona SWCD	SRMCWD	2023/2032	On-going	**$250,000**
	Water Storage	Pickwick Flood Control	Upland water storage and floodplain restoration upstream of Pickwick, MN	Winona SWCD and Winona County	TBD	2023/2032	On-going	**$250,000**
	Water Storage	Gilmore Creek Flood Control	Bringing dike in Winona up to USACE certification standards.	City of Winona	USACE and City of Winona study	2024	Awaiting funding	**$2,500,000**
	Streams	Pine Creek Streambank	Multiple streambank projects on private and City of LaCrescent property off of County Rd 6	Root SWCD	Field visits	N/A	Unfunded	**$250,000**
	Streams	North Fork Whitewater	This is a streambank restoration project – ranking high with MDNR. Easement funding is needed to help secure the acreage on two properties for the project footprint under a drainage or other easement to get the project started.	Olmsted SWCD/MDNR	Landowner led 2017-2020, MDNR project priority, LSOHC grant application.	2025	On-going	**$1,400,000**
	Streams	North Fork Whitewater tributary	North Fork Whitewater Tributary has 1000 ft of eroded stream along 65th St NE affecting road inslope. The stream is incised with eroded banks. Work with the township and DNR is planned for an engineered restoration design and future funding source.	Viola Township, DNR, SWCD	Viola Township	2024	Unfunded	**$200,000**
	Streams	Whitewater restoration at Elgin	This would be a streambank restoration project on a DNR fishing easement in the City of Elgin. Additionally, the City seeks to acquire and make improvements on adjacent property.	DNR/SWCD	DNR	2025-2028	Unfunded	**$200,000**

** Estimated cost based on best available information at the time*

Implementation Plan Summary

Below are estimated costs for implementing actions in the plan for Funding Level 2 (**Table 5-1**). The Projects and Support cost over 10 years for each planning region (displayed in the 4 planning region action tables above) comes to $2,540,000 for Whitewater River Planning River, $831,000 for Garvin Brooks Planning Region, $664,000 for Mississippi River-La Crescent planning Region, and $1,455,000 for Small Tributaries Planning Region. The watershed-wide costs are also included for the operations and maintenance of natural and artificial waterways at or near their current levels and for plan administration and administrative costs related to implementation. This plan assumes local, state, and/or federal fiscal support remains unchanged, as summarized in **Section 7. Plan Administration and Coordination**.

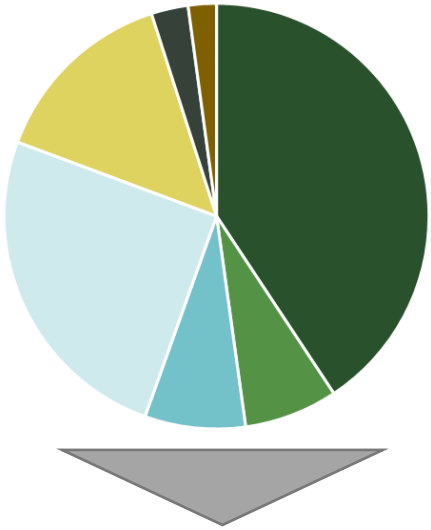


Table 5-1: Cost of implementing Funding Level 2 of the WinLaC CWMP.

Program	10-Year Estimated Cost
Projects and Support	$5,490,000
Monitoring and Studies	$958,000
Education and Public Involvement	$1,031,000
Regulation and Local Controls	$3,389,000
Capital Improvement Projects	$1,934,000
Operations and Maintenance	$378,000
Plan Administration	$289,000
Total Level 2 10-Year Cost	**$13,469,000**

6: Plan Implementation Programs

WinLaC Partnership —1W1P—

6. Watershed Implementation Programs

This plan establishes five main implementation programs, shown visually in **Figure 6-1** with some example action items that each program may fund. These programs fund the actions in **Section 5. Targeted Implementation** and are briefly described in the following pages.

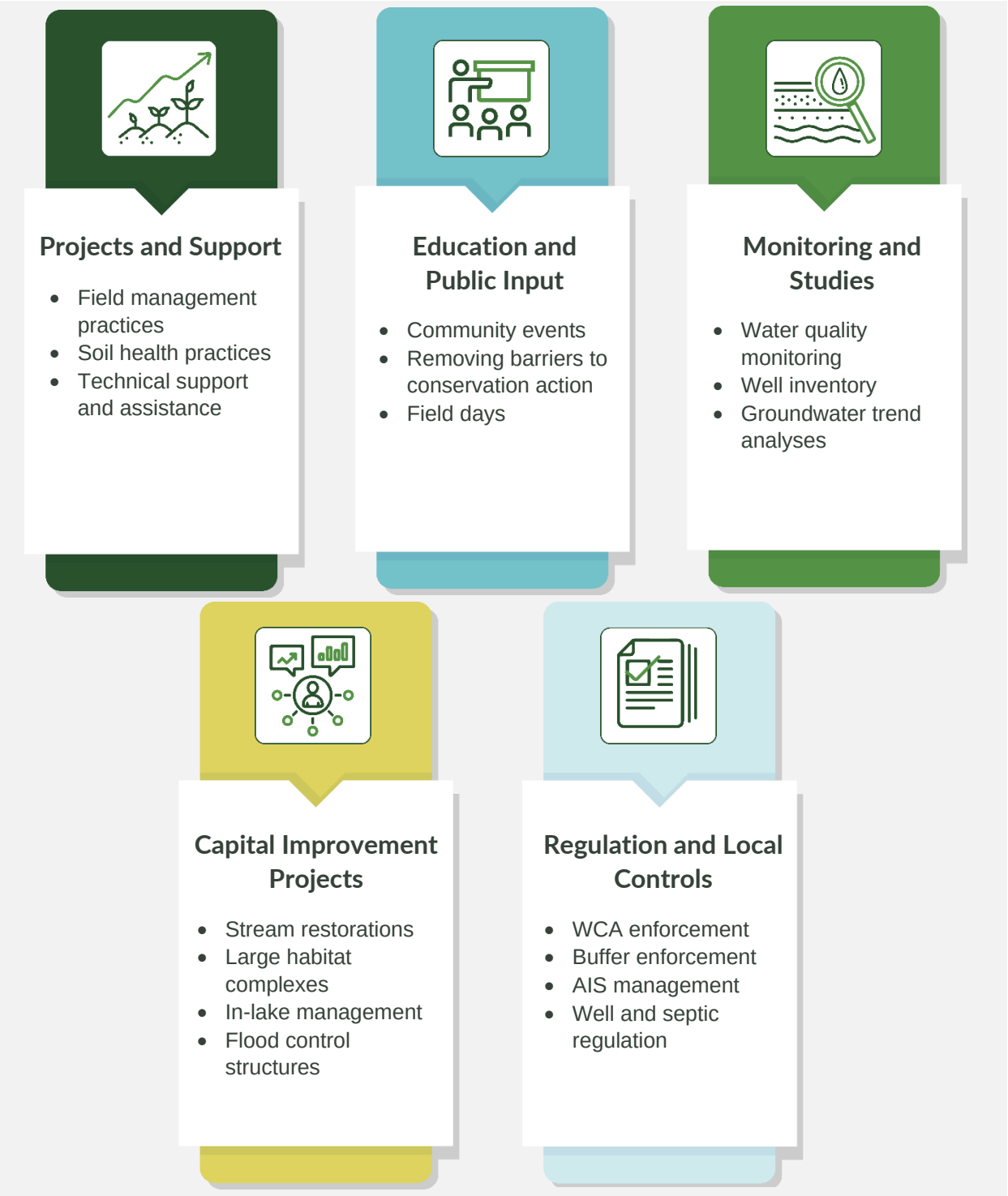


Figure 6-1: Summary of WinLaC implementation programs with example action items.

Projects and Support

The Projects and Support Program funds actions pertaining to the planning, design, and implementation of conservation practices on the landscape. It also funds or incentivizes the protection of land. The program assists landowners in implementing voluntary and mandatory actions through financial incentive, technical assistance, tax exemption, conservation easement, or land acquisition, and is funded by local, state, and federal dollars.

During implementation, local planning partners will create a scoring system and policy document for prioritizing for funding and the amount of funding available for each project. Preferential funding will be given to projects in higher priority areas that provide multi-benefit, while also considering other factors related to voluntary conservation.

Cost-Share of Conservation Practices

Conservation practices can be structural (i.e., grassed waterways, grade stabilization structure) or nonstructural (i.e., nutrient management, conservation tillage). The WinLaC Partnership intends to incentivize implementation of these practices through cost-share. Cost-share programs financially assist landowner(s) with the cost of installing a conservation practice that accrues natural resource benefits. Several cost-share programs are available at the local, state, and federal level that assist landowners in paying for conservation practices.

During and after installation, regular on-site inspections and maintenance will ensure continued function and success of the practice. Detailed records, notes, and photos related to the practice should be included with each project's Operations and Maintenance Plan. Most conservation practices implemented will have an effective life of 10-15 years, meaning the landowner is required to maintain the practice for that length of time. According to the BWSR Grants Administration Manual (GAM), site inspections are recommended to be conducted during year 1, 3, and 9 after implementation.

Land Protection

Land protection programs serve to maintain existing acres of the watershed enrolled in temporary set-aside programs or land rental or obtain additional perpetual easements. This plan recognizes that there are many state, federal, and partner funded and other land protection programs of value in the WinLaC watershed. An example of a frequently used program in the watershed is Conservation Reserve Program, or CRP.

CRP is a land conservation program administered by Farm Service Agency (FSA). In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. Contracts for land enrolled in CRP are 10-15 years in length. Land enrolled in this and similar protection programs produce numerous environmental benefits. For example, converting row cropped lands with conventional tilling methods to perennial grasslands using programs such as CRP typically reduce runoff and erosion (Gilley et al., 1997).

CRP land in the WinLaC watershed.

Education and Public Involvement

Implementation of actions in this plan is mostly voluntary and requires willing landowner participation. As such, public education and involvement are essential for successful implementation. The Education and Public Involvement program funds actions to increase engagement and understanding and address conservation barriers.

This program builds on a foundation of engagement activities already occurring in the WinLaC watershed through individual partners. This work is expected to continue during plan implementation.

Example engagement activities include:

- Watershed citizen summits and neighborhood action groups
- Farmer-led councils
- Tabling at events such as county fairs
- River paddling events and stream and pasture walks
- "Smarter Together" website
- Volunteer well monitoring program
- Nitrate screening for private well owners
- Social media short videos
- Other virtual engagement such as StoryMaps and surveying for feedback
- Local engagement with Trout Unlimited
- Local engagement with Pheasants Forever (funded a position at Root River SWCD)
- Soil health field days
- Agricultural best management practice demonstrations
- Community involvement projects (stream clean-ups, rain garden installation, and maintenance)
- Annual forestry day

Field day educational events in the WinLaC watershed.

Monitoring and Studies

The Monitoring and Studies program funds actions that close data gaps to allow for more informed and effective implementation. The program also funds ongoing monitoring efforts aimed at tracking resource conditions and impacts of conservation action.

Currently, a wide variety of monitoring is carried out by multiple state government and local organizations (**Table 6-1**). These existing data helped determine the current conditions for surface water, groundwater, and habitat in this plan and developed a starting point for measuring goals. These monitoring activities will continue during plan implementation, with little expansion under WBIF due to policies for use of the funds. However, the WinLaC Partnership will continue to communicate future monitoring needs to agency partners that lead respective efforts.

Table 6-1: Summary of ongoing water quality and quantity monitoring programs. RS = rivers and streams, L = lakes, W = wetlands, and GW = groundwater (Source: BWSR).

Parameters	MPCA	DNR	MDH	MDA	Local Partners
Nutrients	RS, L, W	RS, L		RS, GW	RS, GW, L
Suspended Solids	RS, L, W	RS		RS	RS
Productivity (Chlorophyll)	RS, L	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			RS
Algal Toxins	L				
Invasive Species		RS, L			RS, L, W
Fish Contaminants	RS, L	L	RS, L		
Chlorides	RS, L, W	RS	RS, L, GW		
Sulfates	RS, L, W	RS, L	RS, L, GW		

As summarized in **Table 6-1**, ongoing surface water monitoring programs are led by local and state entities. Between the MPCA, local entities, and citizens (through the MPCA's Volunteer Water Monitoring Program), over 95 sites in the WinLaC watershed were monitored for use in the assessment of waters during the Assessment Phase of the watershed approach. Other agencies responsible for stream gaging in the watershed are MPCA, DNR, MDA, and the federal USGS. Five stream gaging stations serve as Watershed Pollutant Load Monitoring Network (WPLMN) sites that are benchmark monitoring sites for MPCA. Results from these networks and other ongoing tracking and monitoring programs can be used to document measurable water quality and quantity changes resulting from implementation activities (**Table 6-2**).

Table 6-2: Using data to track progress toward resource improvement and plan goals.

Level	Description	WinLaC CWMP Application
Tracking	The number of practices done or acres or practice will be tracked.	Outputs in Action Table. Projects will be tracked and reported in eLINK during implementation.
Estimating	Using lower resolution calculators and tools to give a sense of the collective impacts of projects.	PTMApp results.
Modeling	Incorporating landscape factors and project information to predict future conditions.	HSPF for La Crescent Watershed.
Measuring	Using field-collected information to assess the condition of the water.	Lake monitoring, pollutant load monitoring, network stream monitoring.

Ongoing monitoring efforts also track groundwater supply quantity and quality trends. Current programs include Public Water Supplier Monitoring, MPCA's Ambient Groundwater Monitoring Program, Volunteer Nitrate Well Monitoring Network, DNR high-capacity permitting program, and the DNR Observation Well Network. These programs have provided valuable information but are not yet extensive enough to fully assess the state of groundwater in the region.

Participating LGUs recognize that project funds are extremely limited, and that requests for information, tracking, evaluation, and assessment are activities that require staff time and office resources, decreasing the amount of funds available for projects. Outside of projects funded through watershed-based implementation funds, each LGU will be responsible for providing assessment, tracking, evaluation, and reporting data for their own organization's activities. The Research and Assessments Program will be collaborative (especially where efforts cross administrative boundaries), with Partnership entities sharing services wherever possible.

Whitewater State Park.

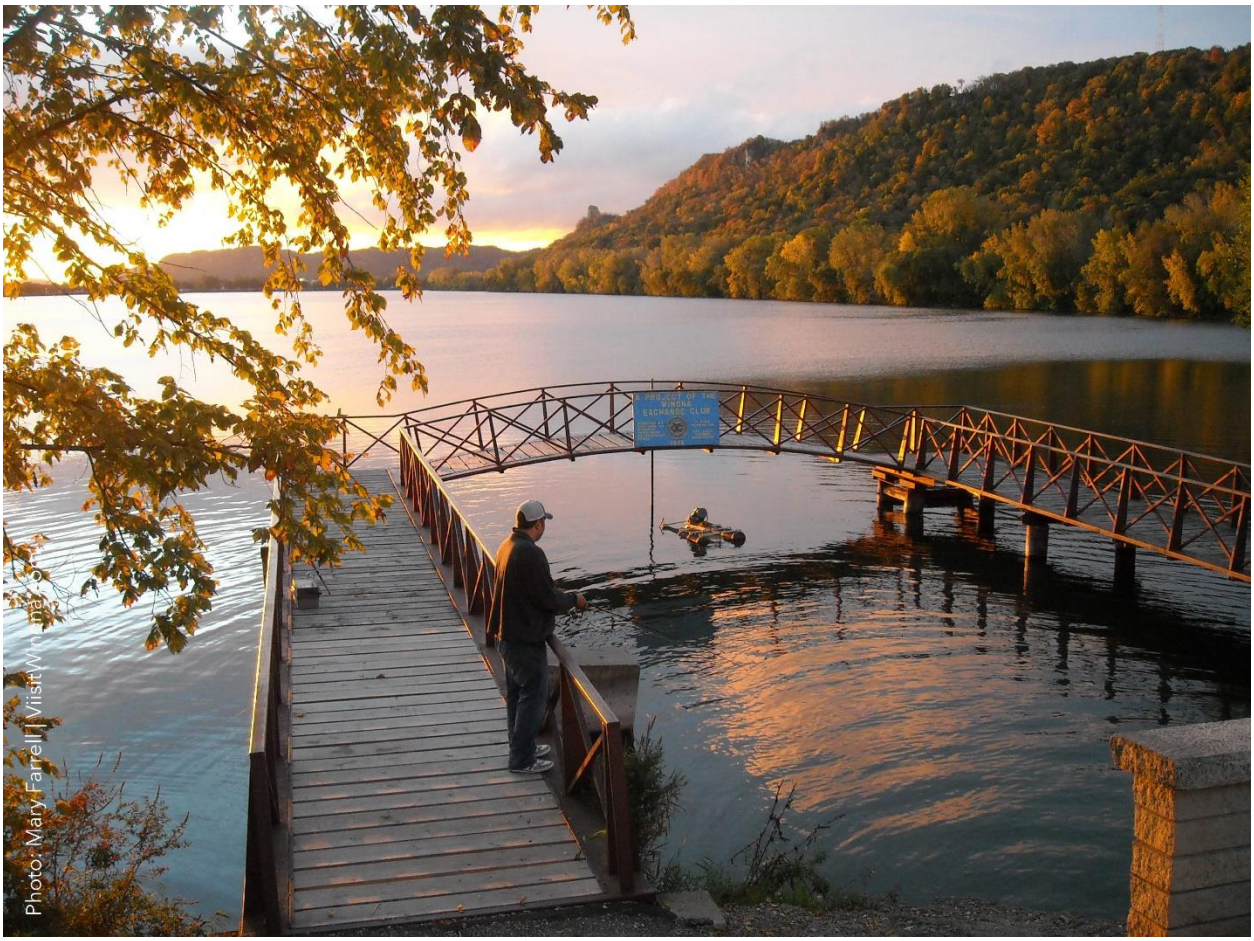
Capital Improvement Projects

A capital improvement is defined as a major non-recurring expenditure for the construction; repair; retrofit; or increased utility or function of physical facilities, infrastructure, or environmental features. The life expectancy of these projects is generally at least 25 years. Some capital improvements are beyond the 'normal' financial means of the Partnership, often exceeding $250,000, and are unlikely to get constructed without external funding.

Proposed capital improvements are shown in **Section 5. Targeted Implementation** (summarized on page 5-27). Members of the Policy Committee or the Partnership's individual and representative Boards may discuss the means and methods for funding new capital improvements with potential funding partners. Capital improvement projects (CIPs) completed through this plan will be operated and maintained by the owner of the project for its lifespan.

Operations and Maintenance

Entities within the plan area are engaged in the inspection, operation, and maintenance of CIPs, stormwater infrastructure, public works, facilities, and natural and artificial watercourses. Operation and maintenance of natural watercourses, legal drainage systems, impoundments, and small dams will continue under the regular operations and maintenance plans of the entities that have jurisdiction over these systems.



Fishing on Lake Winona.

Regulation and Local Controls

Many plan issues can be addressed in part through the administration of statutory responsibilities and local ordinances. In many cases, local ordinances have been adopted to conform to (or exceed) the standards and requirements of the state statutes (**Table 6-3**). The responsibility for implementing these programs will remain with the respective counties or appointed LGUs. If a project or activity impacts DNR protected waters, it needs a permit. This can be determined and applied for with the MNDNR permitting and reporting system (https://www.dnr.state.mn.us/mpars/index.html). Projects that fall under the jurisdiction of the Minnesota Wetland Conservation Act or Section 404 of the Clean Water Act can be applied for through BWSR's Joint Application Form found here: (https://bwsr.state.mn.us/joint-application-form).

Counties, SWCDs, the City of Winona, and the watershed district will meet when applicable to discuss ordinances and notify each other of proposed ordinance amendments. These entities will also review similarities and differences in local regulatory administration to identify local successes and identify changes needed to make progress towards goals outlined in this plan.

Table 6-3: Statutory responsibilities and local ordinances with responsible entity for administration.

Responsible Entity	Shoreland Management	Floodplain Management	Feedlots	Buffers	Aquatic Invasive Species	Wetland Conservation Act	Construction Erosion Control	Comp / Landuse Plans	Well Program	Subsurface Sewage Treatment System	Solid Waste Management	Hazard Management	Soil Loss
Houston Co.	X	X	X	E	-	X	X	X	X	X	X	X	-
Olmsted Co.	X	X	PCA	E	X	-	X	X	X	X	X	X	X
Wabasha Co.	X	X	PCA	E	-	-	X	X	X	X	X	X	-
Winona Co.	X	X	X	E	X	X	X	X	X	X	X	X	X
Olmsted SWCD	X	-	-	C	-	X	-	-	X	-	-	-	-

Continued on next page

Table 6-3 continued

Responsible Entity	Shoreland Management	Floodplain Management	Feedlots	Buffers	Aquatic Invasive Species	Wetland Conservation Act	Construction Erosion Control	Comp / Landuse Plans	Well Program	Subsurface Sewage Treatment System	Solid Waste Management	Hazard Management	Soil Loss
Root River SWCD	X	-	-	C	X	-	-	-	X	-	-	-	-
Wabasha SWCD	X	-	-	C	X	X	-	-	X	-	-	-	-
Winona SWCD	X	-	-	C	X	X	-	-	X	-	-	-	-
City of Winona	X	X	-	-	-	X	X	X	X	-	-	X	-
Stockton Rollingstone WD	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Entity responsible for administration; E = Enforcement; C = Compliance

Shoreland Management

The Minnesota Legislature has delegated responsibility to LGUs to regulate the subdivision, use, and development of shorelands along public waters to preserve and enhance the quality of surface waters, conserve the economic and natural environmental values of shorelands, and provide for the wise use of waters and related land resources. This statute is administered and enforced through ordinances in all counties within WinLaC.

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

Floodplain Management

Floodplain zoning regulations aim to minimize loss of life and property, disruption of commerce and governmental services, extraordinary public expenditure for public protection and relief, and interruption of transportation and communication. To do this, these regulations are intended to guide development in the floodplain in a way that is consistent with the magnitude of these threats. The DNR and FEMA are in the process of updating floodplain maps on a county basis. Current flood maps can be found on the DNR website at https://www.dnr.state.mn.us/waters/watermgmt_section/floodplain/access-flood-maps.html.

Floodplain zoning regulations are enforced through floodplain ordinances for all counties in the WinLaC and is also enforced by the City of Winona.

- Regulations: Minnesota Statutes 103F, 104, 394

Feedlots

Feedlot rules, regulations, and programs were established under MN Rules 7020 to govern the collection, transportation, storage, processing, and land application of animal manure and other livestock operation wastes. The program is administered through the MPCA, but local counties may accept delegation of this authority up until a feedlot becomes a confined animal feedlot operation at which point the MPCA becomes the regulatory agent. Houston and Winona counties have accepted this delegation and administer the rule through their feedlot ordinance and zoning ordinances.

- Regulations: Minnesota Rules, Chapter 7020

Buffers

The Riparian Protection and Water Quality Practices statute (Minnesota Statute 103F.48, commonly referred to as the Buffer Law) requires a 50-foot average continuous buffer of perennial vegetation with a 30-foot minimum width along all public waters and a 16.5-foot minimum width continuous buffer of perennial vegetation along all public drainage systems. While SWCDs are responsible for determining compliance with the Buffer Law (and assisting landowners), the enforcement of the law is the responsibility of the county, except for Olmsted County, which did not elect to locally enforce the Buffer Law (enforcement by BWSR instead).

In most situations, landowners have the option of working with their SWCD or watershed district to determine if other alternative practices aimed at protecting water quality can be used in lieu of (or in combination with) a buffer. Winona County has an ordinance requiring a strict 50ft along all public waters. An average of 50ft with widths as narrow as 30 or alternative practices are not allowed. Buffer regulations do not apply to MS4 communities such as Winona and La Crescent.

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

Aquatic Invasive Species

Aquatic invasive species can cause ecological and economic damage to water resources. The DNR has regulatory authority over aquatic plants and animals. Permits are required by the public for transporting and treating invasive species. In Olmsted and Wabasha counties, the County oversees aquatic invasive species programs, whereas in Houston and Winona counties, the SWCD fills that role.

Wetland Conservation Act

The Minnesota Legislature passed the Wetland Conservation Act (WCA) of 1991 to achieve no net loss of, increase the quantity, quality, and biological diversity of, and avoid direct or indirect impacts to Minnesota's wetlands. LGUs are responsible for administering, regulating, and educating landowners on WCA. The SWCD serves as the WCA LGU for Wabasha and Olmsted counties.

- Regulations: Minnesota Rules, Chapter 8420

Construction Erosion Control

Temporary construction erosion control is the practice of preventing and/or reducing the movement of sediment from a site during construction. Projects disturbing one acre or more of land will require a National Pollutant Discharge Elimination System (NPDES) Permit from the MPCA. All counties in the WinLaC and the City of Winona have regulations within their local ordinances that address construction erosion control.

- Regulations: Minnesota Rules, Chapter 7090

Comprehensive or Land Use Plans

Counties and municipalities within the WinLaC are responsible for land use planning, which is administered through local zoning ordinances. Comprehensive or land use plans have been adopted by the LGUs within the watershed. From a regulatory perspective, land and resource management may overlap with the local government entities listed below. Therefore, meeting goals and strategies of local planning may also involve other governmental or non-governmental entities. LGUs within the WinLaC that have comprehensive and/or land use plans are provided in **Table 6-4**. Please note this is not intended to be all-inclusive.

Table 6-4: Local Comprehensive or Land Use Management Plans in the WinLaC.

Local Governmental Unit	Comprehensive or Land Use Management Plan
Houston County	Houston County Comprehensive Land Use Plan (Adopted December 2008)
Olmsted County	Olmsted County General Land Use Plan (Adopted March 25, 2014, updated 2022)
Wabasha County	Comprehensive Land Use Plan for Wabasha County, MN (Adopted August 4, 1998)
Winona County	Winona County Comprehensive Plan Update (Adopted November 25, 2014)
City of Winona	City of Winona Comprehensive Plan (Adopted August 2007)

Wellhead Protection

The Minnesota Department of Health (MDH) administers the state wellhead protection rule that sets standards for safe drinking water. Municipalities within the watersheds have completed wellhead protection (WHP) plans. The cities of Elgin, La Crescent, Wabasha, Altura, Stockton, Rollingstone, St. Charles, Winona, Dover, Eyota, and Goodview have either completed, or are in the process of completing WHP Plans.

- Regulations: Minnesota Rules, Chapter 4720.5100 – 4720.5590; Minnesota Rules, Chapter 4725

Subsurface Sewage Treatment Systems

The Subsurface Sewage Treatment System (SSTS) Program is administered by the MPCA to protect public health and the environment. SSTS Ordinances are adopted and enforced at the county level to meet state requirements. All counties in the WinLaC administer Minnesota Rules Chapters 7080 through 7083 for SSTSs through ordinances.

- Regulations: Minnesota Rules, Chapters 7080 through 7083

Solid Waste Management

Minnesota's Waste Management Act has been in place since 1980 and establishes criteria for managing all types of solid waste, including mixed municipal solid waste, construction and demolition waste, and industrial waste. To receive annual grant funding to assist in implementing waste management programs, each county must have an MPCA-approved Solid Waste Management Plan. All Counties in the plan area have approved plans. Counties can also adopt Solid Waste Ordinances to use as a supplement in enforcing MPCA Rules.

- Regulations: Minnesota Statutes 115A, 400

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. Extreme weather events and infrastructure resilience play a part in hazard management. These requirements direct the State to administer cost-sharing. Hazard mitigation local emergency management departments are deployed in each of the contributing counties within the plan area, as well as the City of Winona.

- Regulations: Minnesota Statute 12

Soil Loss

Olmsted and Winona are two of only five counties in Minnesota that have local soil loss ordinances. These ordinances specify the technical and administrative procedures required to control soil loss and erosion.

Conservation Action and Climate Resiliency

Resilience is the ability of a system to experience change but not be negatively affected. Resilience can be both social and ecological (MGLP, 2021). Local organizations and regulation build social resilience. Ecological resilience includes changing land use patterns to more perennial cover, water retention, and fixing past hydrological alterations. For example, improving soil health and protecting wildlife habitat provides resilience to increasing precipitation trends.

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

- Actions funded by the Regulation and Local Controls, and
- Education and outreach activities.

Ecological resilience programs and action include:

- Wildlife and habitat protection,
- Soil and forest management practices,
- Wetland protection and restoration, and
- Urban and rural stormwater retention.

Native rain garden

7: Plan Administration and Coordination

WinLaC Partnership —1W1P—

7. Plan Administration and Coordination

The WinLaC CWMP will be implemented through a Collaborative Joint Powers Agreement between the following entities:

- The counties of Houston, Olmsted, Wabasha, Winona,
- The Root River, Olmsted, Wabasha, Winona Soil and Water Conservation Districts (SWCDs),
- The City of Winona, and
- Stockton-Rollingstone-Minnesota City Watershed District (SRMCWD).

The entities implementing the plan will be collectively referred to as the WinLaC Partnership. Individual local government units, governed separately by their respective boards, are individually responsible for their roles implementing this plan.

Decision-Making and Staffing

Implementation of the WinLaC Partnership will require increased capacity, funding, and coordination. Successful implementation will depend on continuing and building on partnerships in the watershed with landowners, planning partners, state agencies, and organizations.

At least two committees serve this plan during implementation:

- **Policy Committee:** Comprised of elected and appointed board members (one City of Winona Council person, one SRMCWD manager, and one County Commissioner and SWCD Board Supervisor form each of the four participating counties); and
- **Planning Work Group:** Comprised of local SWCD, county, city, and watershed district staff (with their respective alternates) and lead state agency staff (as needed), with regular input and coordination from state agencies and local stakeholders.

Table 7-1 outlines the probable roles and functions of these committees during implementation. Expectations are that the roles of each committee will shift and change focus during implementation. Fiscal and administrative duties may be assigned to a member LGU through a Policy Committee decision as outlined in the formal agreement. The Planning Work Group will annually determine local responsibilities for annual work planning and will approve the fiscal agent.

Table 7-1: Roles and functions of committees during implementation.

Committee Name	Primary Implementation Roles
Policy Committee	• Recommend work plan • Review and confirm priority issue recommendations • Recommend plan amendments • Recommend assessments as needed • The Policy Committee will appoint one of its Partners to act as Fiscal that will oversee agreements and contracts on behalf of the WinLaC Partnership
Planning Work Group	• Review the status of available implementation funds from plan participants • Review opportunities for collaborative grants • Review work plan and adjust as needed • Review reports submitted to BWSR as required • Biennial review and confirmation of priority issues • Prepare plan amendments • Implement the Action Tables

Table continued on next page

Table 7-1 continued

Committee Name	Primary Implementation Roles
Local Fiscal and Administrative Agent	• Convene committee meetings • Prepare and submit grant applications/funding requests • Prepare work plan • Compile results for annual assessment

Collaboration

Collaboration Between Planning Partners

Technical Services Area 7

Planning partners in the WinLaC have a long history of collaboration. An example of this is the Southeastern Soil and Water Conservation District Technical Service Area 7 (SE SWCD TSA 7). The SE SWCD TSA 7 is an entity created by 11 SWCDs. The TSA is a critical component of the local conservation delivery system for conservation on private lands, with the associated benefits to water quality, wildlife habitat, agricultural productivity, and sustainability. TSA staff provide technical assistance to and through member SWCDs, in cooperation with the USDA NRCS, BWSR and other local, state, and federal government units.

Although collaboration informally and formally is encouraged, mandatory participation is not required by this plan. Local governmental units who adopt this plan can choose whether to approve and participate in future formal implementation agreements. The benefits of successful collaboration between planning partners include consistent implementation of actions watershed-wide, increased likelihood of funding, and resource efficiencies gained, ultimately resulting in more water quality benefits. The Partnership will pursue opportunities for collaboration with fellow planning partners to gain administrative and program efficiencies, pursue collaborative grants, and provide technical assistance. This includes, but is not limited to, exploring opportunities for a shared engineering position, soil health technician, or nutrient management technician to assist with implementing this plan. The Partnership will also review similarities and differences in local regulatory administration in order to identify successes, as well as future changes needed to reach goals outlined in this plan. However, there are costs associated with collaboration, for example, increased meeting and travel time; increased tracking, assessment, evaluation, and reporting requirements; a decrease of efficiency when actions must be coordinated in concert with 10 separately governed organizations; and possible increases to project completion timelines.

Collaboration with Other Units of Government

The Partnership will continue coordination and cooperation with other governmental units. This cooperation and coordination occur both at the local level and at the state/federal level. At the state/federal level, coordination between the Partnership and agencies such as BWSR, US Army Corps of Engineers, DNR, MDH, MDA, and the MPCA are mandated through legislative and permit requirements. Local coordination between the Partnership and comparable units of government, such as municipalities, city councils, township boards, county boards, are a practical necessity to facilitate watershed-wide activities. Intergovernmental coordination and communication is essential for the Partnership to perform its required functions. The Partnership will continue to foster an environment that enhances coordination and cooperation to the maximum extent possible throughout plan implementation.

Collaboration with Others

Plan partners expect to continue and build on existing collaboration with others, including non-governmental organizations, while implementing this plan. Many of these existing collaborations are aimed to increase habitat and recreational opportunities within the plan area, while providing education and outreach opportunities.

Funding

This section describes how the plan will be funded. As introduced in **Section 5. Targeted Implementation**, this plan includes three funding levels. The estimated annual cost for each funding level is summarized in **Table 7-2**.

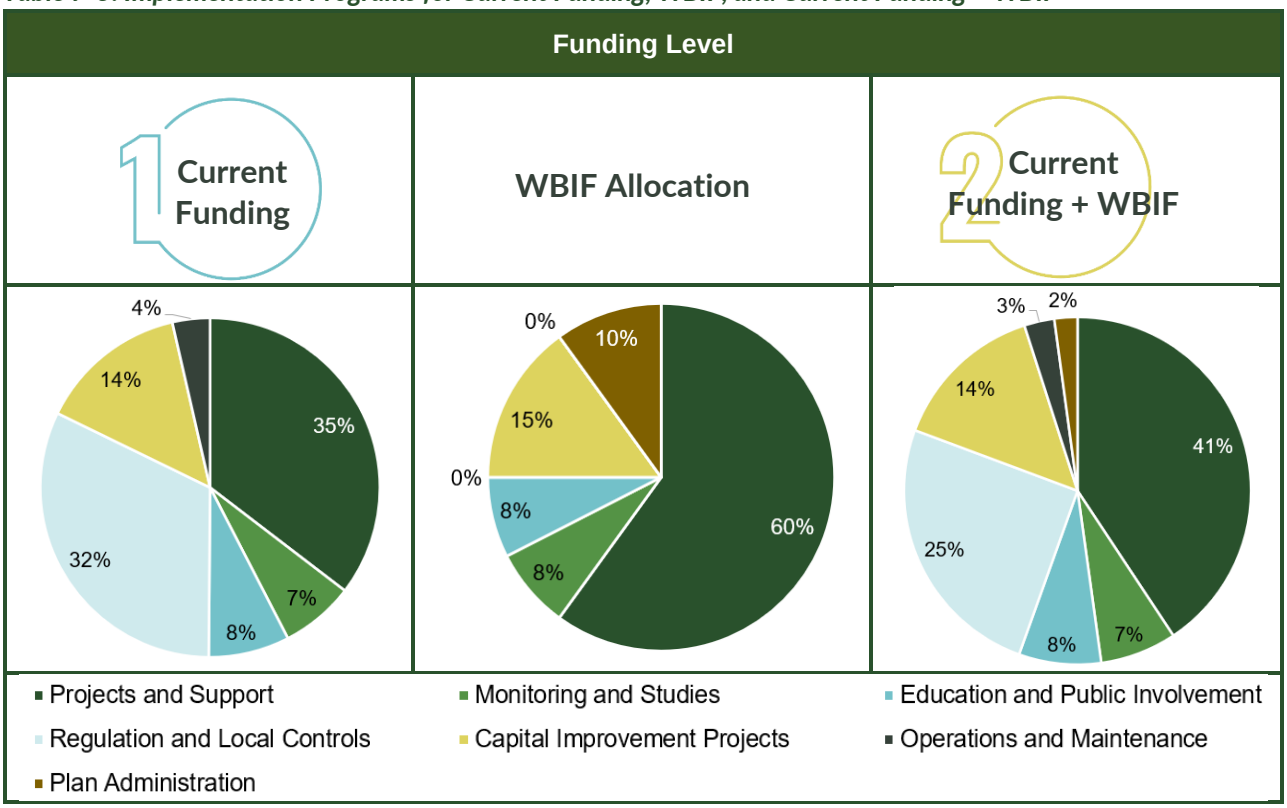
Table 7-2: Annual cost for WinLaC CWMP funding levels.

Funding Level			
	1 Current Funding	2 Current Funding + WBIF	3 Partner and Other Funding
Est. Annual	$1,056,200	$1,345,200	*Dependent on Partner and Grant Funding Availability*
Est. 10-Year	$10,562,000	$13,452,000	

The estimated annual costs for Funding Level 1 are based on current expenditures by each partner in the plan area. This estimation was derived from available land and water resource funds for each of the members of the Partnership and accounting for the percentage of each county's land area in the watershed. Level 1 funding includes local, state, and federal funding, as explained in the following sections. Funding Level 2 is current funding plus Watershed-Based Implementation Funding (WBIF) that will be available upon completion of this plan (estimated $290,000/ year). Funding Level 3 includes other partners and funding sources that make progress toward plan goals, but are not administered by planning partners (counties, SWCDs, the City, and the WD). Examples of this partner funding includes CRP, RIM, NRCS Regional Conservation Partnership Program (RCPP), and the Lessard-Sams Outdoor Heritage Council (LSOHC) funds.

Table 7-3 below shows how implementation programs are funded within this plan under Funding Level 1 and Level 2. Planning partners elected to use 60% of their WBIF in implementation of Projects and Support, with 15% of funding going toward Capital Improvement Projects. This plan recognizes the overlap between these two critical programs, where structural and non-structural projects are commonly implemented to support larger Capital Improvement Projects.

Table 7-3: Implementation Programs for Current Funding, WBIF, and Current Funding + WBIF



Local Funding

An estimated 47% of Funding Level 1 comes from local funding. Local funding is defined as money derived from either the local property tax base or in-kind services of any personnel funded from the local tax base. Examples include local levy, county allocations, and local match dollars (see Local Funding Authorities in **Appendix H**).

Local funds will be used for locally focused programs where opportunities for state and federal funding are lacking. These funds will also be used for matching grants.

State Funding

An estimated 53% of Funding Level 1 comes from state funding. State funding includes all funds derived from the State tax base. Examples of state funding include conservation delivery, state cost share, Natural Resources Block Grants, Clean Water Funds (CWF), and SWCD Local Capacity Grants.

A fiscal agent on behalf of the Partnership will apply as an entity for collaborative grants, which may be competitive or non-competitive. The assumption is that future base support for implementation will be provided to the WinLaC watershed as non-competitive WBIF grants. Where the purpose of an implementation program 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.

Federal Funding

Federal funding includes all funds derived from the Federal tax base. For example, this includes programs such as EQIP and CRP. Partnerships with federal agencies are an important resource for ensuring implementation success. An opportunity may exist to leverage state dollars through some form

of federal 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 conservation practices, while the FSA may provide land-retirement program funds such as CRP.

Additional Funding Sources

Current programs and funding (Level 1) will not be enough to implement the full action table. As such, the success of implementing the plan will depend on collaboratively sought competitive state, federal, and private grant dollars, and increased capacity.

Plan participants may pursue grant opportunities collaboratively or individually to fund the action table's implementation. Within the tables, actions are assigned implementation programs. **Table 7-4** shows the most used state and federal grants for executing the actions described by this plan cross-referenced to plan implementation programs, thereby showing potential sources of revenue for implementation.

Table 7-4: Implementation programs and related funding sources for the WinLaC watershed. Note: List is not all-inclusive.

Program / Grant		Primary Assistance Type	Projects & Support	Capital Improvement Projects	Monitoring & Studies	Education and Public Involvement
Federal Programs / Grants						
NRCS	Conservation Innovation Grant (CIG)	Financial	•			
	Conservation Stewardship Program (CSP)	Financial	•			
	Environmental Quality Incentives Program (EQIP)	Financial	•			
	Agricultural Conservation Easement Program (ACEP)	Easement	•			
FSA	Conservation Reserve Program (CRP)	Financial	•			
	Farmable Wetlands Program (FWP)	Financial	•			
	Grasslands Reserve Program (GRP)	Financial	•			
	Wetland Reserve Program (WRP)	Easement	•	•		
FSA/ USDA/ NRWA	Source Water Protection Program (SWPP)	Technical				•
USFWS	Partners for Fish and Wildlife Program	Financial/ Technical	•			
FEMA	Hazard Mitigation Grant Program (HMGP)	Financial	•	•		
	Pre-Disaster Mitigation (PDM)	Financial	•	•		
	Flood Mitigation Assistance (FMA)	Financial	•	•		
	Risk Mapping, Assessment, and Planning	Technical	•	•		
EPA	Water Pollution Control Program Grants (Section 106)	Financial				•
	State Revolving Fund (SRF)	Loan	•			
	Drinking Water State Revolving Fund (DWSRF)	Loan	•			
	Section 319 Grant Program	Financial	•		•	•

Table continued on next page

Table 7-4 continued

Program / Grant		Primary Assistance Type	Projects & Support	Capital Improvement Projects	Monitoring & Studies	Education and Public Involvement
NACD	Technical Assistance Grants	Financial/ Technical	•	•	•	•
State Programs / Grants						
LSOHF	Lessard-Sams Outdoor Heritage Fund (LSOHF)	Financial	•	•	•	•
DNR	Aquatic Invasive Species Control Grant Program	Financial/ Technical	•		•	•
	Conservation Partners Legacy Grant Program	Financial	•	•		
	Pheasant Habitat Improvement Program (PHIP)	Financial	•			
	Flood Hazard Mitigation Grant Assistance	Financial	•	•	•	•
	Forest Stewardship Program	Technical	•			•
	Groundwater Atlas Program	Technical			•	
	Aquatic Management Area Program	Acquisitions	•			
	Wetland Tax Exemption Program	Financial	•			
BWSR	Clean Water Fund Grants	Financial	•	•		•
	Erosion Control and Water Management Program	Financial	•			
	SWCD Local Capacity Funding	Financial	•		•	•
	Natural Resources Block Grant (NRBG)	Financial	•			•
	Reinvest in Minnesota (RIM)	Financial	•	•		•
MPCA	Surface Water Assessment Grants (SWAG)	Financial			•	•
	Clean Water Partnership	Loan	•			
MDH	Source Water Protection Grant Program	Financial	•	•	•	•
	Accelerated Implementation Grant	Financial			•	
	Public and Private Well Sealing Grant Program	Financial	•		•	
MDA	Agriculture BMP Loan Program	Financial	•			
	Nutrient Management Initiative (NMI)	Technical/ Financial	•		•	•
	Minnesota Agricultural Water Quality Certification Program	Financial	•			•
Other Funding Sources						
Pheasants Forever		Financial/ Technical	•	•	•	•
Trout Unlimited		Financial/ Technical	•	•	•	•
The Nature Conservancy		Financial	•	•	•	•
Minnesota Land Trust		Financial	•	•	•	•

Several non-governmental funding sources may also provide technical assistance and fiscal resources to implement actions. This plan should be provided to all non-governmental organizations as a means of exploring opportunities to fund specific actions. Private sector companies, including those specifically engaged in agribusiness, are often overlooked as a potential source of funding for implementation. Some agribusiness companies are providing technical or financial implementation support because they are interested in agricultural sustainability and carbon market benefits. This plan could be used to explore if resource benefits have monetary value and therefore, could be funded from the private sector.

Work Planning

Local Work Plan

Work planning is envisioned to align priority issues, funds, and roles and responsibilities for implementation. A work plan will be developed by the Local Fiscal/Administrative Agent based on information within the action tables. The work plan will be reviewed by the Planning Work Group annually and adjusted to align with grant requests and changes identified through self-assessments. The work plan will then be presented as needed to the Policy Committee. The Policy Committee will approve the work plan. The intent of these work plans will be to maintain collaborative progress toward implementing the plan.

Kings and Queens Bluff Natural Area

State Funding Request

The Planning Work Group will collaboratively develop, review, and submit a biennial watershed-based implementation funding request from this plan to BWSR based on the work plan. This request will be submitted to and ultimately approved by the Policy Committee before submittal it to BWSR. Biennial requests will be developed based on information in the action tables and any adjustments made through self-assessments.

Assessment, Evaluation, and Reporting

Assessments

The Planning Work Group will use a tracking system to document annual progress. Each year, the Planning Work Group will provide the Policy Committee with an update on the progress of the plan's implementation through a partnership assessment. During this update, feedback will be solicited from local boards and the Policy Committee. This feedback will be presented by the Local Fiscal/Administrative Agent to the Policy Committee in order to set the coming year's priorities for achieving the plan's goals and to decide on the direction for collaborative grant submittals.

Five-year Evaluation

This plan has a 10-year life cycle beginning in 2023. To meet statutory requirements, this plan will be updated and/or revised every 10 years. Over the course of the plan life cycle, progress towards reaching goals and completing the implementation schedule may vary. In addition, new issues may emerge and/or new monitoring data, models, or research may become available. As such, in 2027-28 and at every 5-year midpoint of a plan life cycle, an evaluation will be done to determine if the current course of action is sufficient to reach the goals of the plan or if a change is necessary. Feedback local boards and the policy committee during the annual progress update will be documented and incorporated into 5-year evaluations.

Reporting

LGUs currently have a variety of reporting requirements related to their activities, programs, and grants. Other reporting requirements are required by state statute, such as watershed district annual reporting and buffer reports. A number of these reporting requirements will remain the LGUs' responsibility. However, reporting related to grants and programs developed collaboratively and administered under this plan (including WBIF) may be reported by the Local Fiscal/Administrative Agent appointed to represent the partnership. In addition to annual reports, the Local Fiscal/Administrative Agent may also develop a State of the Watershed Report. This brief report will document progress toward reaching goals and action tables. It will also describe any new emerging issues or priorities. The information needed to annually update the State of the Watershed Report will be developed through the evaluation process.

Plan Amendments

The WinLaC CWMP is effective through 2033. Activities described in this plan are voluntary and are meant to allow flexibility in implementation. An amendment will not be required for addition or substitution of any of the actions and projects if those changes will still produce outcomes that are consistent with achieving plan goals. This provision for flexibility includes changes to the activities except for capital improvement projects.

While this plan is in effect, it is likely that new data giving a better understanding of watershed issues and solutions will be generated. 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. While plan amendments may be proposed by any agency, person, or local government, the plan amendment process shall be initiated only by the Policy Committee and will proceed according to the procedure described in State statute.

Garvin Heights Overlook.