

Redwood River

Comprehensive Watershed Management Plan



**CLEAN
WATER
LAND &
LEGACY
AMENDMENT**

March 2026

Photo Credits: Minnesota River Valley National Scenic Byway, Lake Benton, and RCRCA

Acknowledgements

Planning Partnership

Lincoln County
Lyon County
Murray County
Pipestone County
Redwood County
Lincoln SWCD
Lyon SWCD
Pipestone SWCD
Redwood SWCD
Area II Minnesota River Basin Projects (Area II)
Redwood-Cottonwood Rivers Control Area (RCRCA)
City of Marshall
City of Redwood Falls
City of Ghent



Comprehensive Watershed Management Plan

Steering Committee

Dustin Hauschild – Lincoln County
Dale Sterzinger – Lincoln SWCD
John Biren – Lyon County
Blake Giles/Courtney Williams – Lyon SWCD
Sarah Soderholm – Murray County
Kyle Krier – Pipestone County
Nicole Schwalbach – Pipestone SWCD
Nick Brozek – Redwood County
Kurt Mathiowetz and Brian Pfarr – Redwood SWCD
Kerry Netzke – RCRCA / Area II
Dawn Vlaininck – City of Ghent
Jason Anderson – City of Marshall

Jim Doering – City of Redwood Falls
Jeff Kjorness – NRCS Redwood
Kelly Heather – NRCS Lincoln-Lyon-Yellow Medicine
Cheryl Heard – NRCS Murray and Pipestone
John Shea – BWSR
Mark Hiles – BWSR
Kyle Jarcho – DNR
Mike Weckwerth – MPCA
Bryan Spindler – MPCA
Ryan Lemickson – MDA
Amanda Strommer – MDH

Policy Committee

Joe Drietz – Lincoln County

Ron Bunjer – Lincoln SWCD

Tom Andries – Lyon County

Allen Deutz – Lyon SWCD

Jackie Meier – Murray County

Luke Johnson – Pipestone County

Brad Kruisselbrink/Mike Fruechte –
Pipestone SWCD

Rick Wakefield – Redwood County

Ed Carter – Redwood SWCD

Gary Crowley – Area II

Mark Meulebroeck/Larry Anderson - RCRC

Doug Anderson – City of Ghent

Bob Byrnes – City of Marshall

Larry Arentson – City of Redwood Falls

Advisory Committee

Chris Webb – SW Regional Development
Commission

Sean Carmody – Fairview Twp, Lyon Co.

Steve Hess – Livestock Producer

Bob Worth – Corn and Soybean Growers

Jack Christiansen – Lake Benton Lake
Association

Marie Christiansen – Lake Benton Lake
Association

Dawn Kutil – Lake Benton Lake Association

Dean Lueck – Lake Benton Lake Association

Darin Cox – Lake Benton Lake Association

Randy Tholen – Soil Health Coalition

Deb Dirlam – Lower Sioux Indian Community

Jason Overby – Lincoln-Pipestone Rural
Water

Ron Halgerson – Citizen

Jeff Strock – SW Research and Outreach
Center

Jake Gross – US Fish and Wildlife Service

Created in Collaboration With





Table of Contents

1. Executive Summary
2. Land and Water Resources Narrative
3. Priority Issues
4. Measurable Goals
5. Targeted Implementation
6. Implementation Programs
7. Plan Administration

Appendices

- A. Planning Memorandum of Agreement
- B. Responses to 60-Day Notification
- C. Public Survey Responses
- D. Geospatial Subwatershed Prioritization
- E. Carbon Benefits
- F. Total Maximum Daily Load Summary
- G. Altered Hydrology Analysis
- H. PTMApp Implementation Scenario
- I. Local Regulatory Comparison
- J. Local Funding Authorities
- K. Formal Review Comments

Acronyms

1W1P	One Watershed, One Plan
AIS	Aquatic Invasive Species
Area II	Area II Minnesota River Basin Projects
BMP	Best Management Practice
BWSR	Board of Water and Soil Resources
CAFO	Concentrated Animal Feeding Operation
CEC	Contaminant of Emerging Concern
CIP	Capital Improvement Project
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CWMP	Comprehensive Watershed Management Plan
DNR	Minnesota Department of Natural Resources
DWSMA	Drinking Water Supply Management Area
EQIP	Environmental Quality Incentive Program
FSA	Farm Service Agency
GAM	Grants Administration Manual
JPA	Joint Powers Agreement
LGU	Local Government Unit
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MOA	Memorandum of Agreement
MPCA	Minnesota Pollution Control Agency
MS4	Municipal Separate Storm Sewer Systems
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PCBs	Polychlorinated Biphenyls
PFAS	Per- and Polyfluoroalkyl Substances
PTMApp	Prioritize, Target, and Measure Application
RCRCA	Redwood-Cottonwood Rivers Control Area



RIM	Reinvest in Minnesota
RRW	Redwood River Watershed
SNA	Scientific and Natural Area
SSTS	Subsurface Sewage Treatment System
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TNC	The Nature Conservancy
TP	Total Phosphorus
TSS	Total Suspended Solids
UMN	University of Minnesota
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WASCOB	Water and Sediment Control Basin
WBIF	Watershed-Based Implementation Funding
WCA	Wetland Conservation Act
WHAF	Watershed Health Assessment Framework
WPLMN	Watershed Pollutant Load Monitoring Network
WRAPS	Watershed Restoration and Protection Strategy



1. Executive Summary

1. Executive Summary

The Redwood River Watershed (RRW) is located in southwestern Minnesota, with land spanning across the counties of Redwood, Yellow Medicine, Lyon, Lincoln, Pipestone, and Murray. Major cities within RRW include Redwood Falls and Marshall. The watershed area is made up of the drainage area of the Redwood River and its tributaries Coon Creek, Three Mile Creek, Clear Creek, and Ramsey Creek.

The RRW is a host to many outdoor recreational activities including swimming, hunting, and fishing through over 8,000 acres of lakes and thousands of miles of streams. Prior to development, the RRW was covered in tallgrass prairies with natural waterways following the Minnesota River. Now, the landscape is predominantly agricultural, featuring productive cropland with vast networks of ground tile and open ditches to assist in supporting agricultural practices across the watershed.

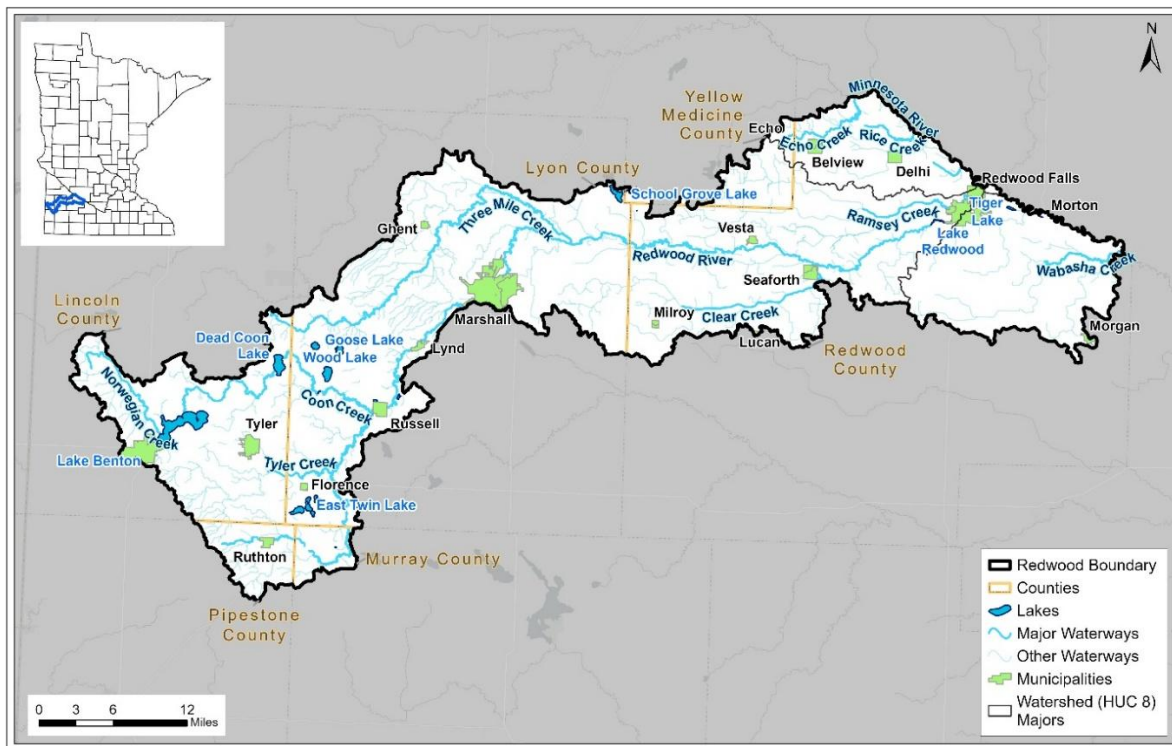


Figure 1-1. RRW Plan Area



Left to Right: Ramsey-Cansayapi Park; Lake Benton; Agricultural Field in Redwood

The Plan

This Redwood River Watershed Comprehensive Watershed Management Plan (CWMP) was developed from 2024-2025 through the Minnesota Board of Water and Soil Resources (BWSR) One Watershed, One Plan (1W1P) program. 1W1P was created to transition water planning in Minnesota to be along watershed boundaries rather than jurisdictional and political ones. This CWMP creates a guiding framework that can be used by its partnering Local Government Units (LGUs) to implement actions and meet shared goals for managing water and natural resources.

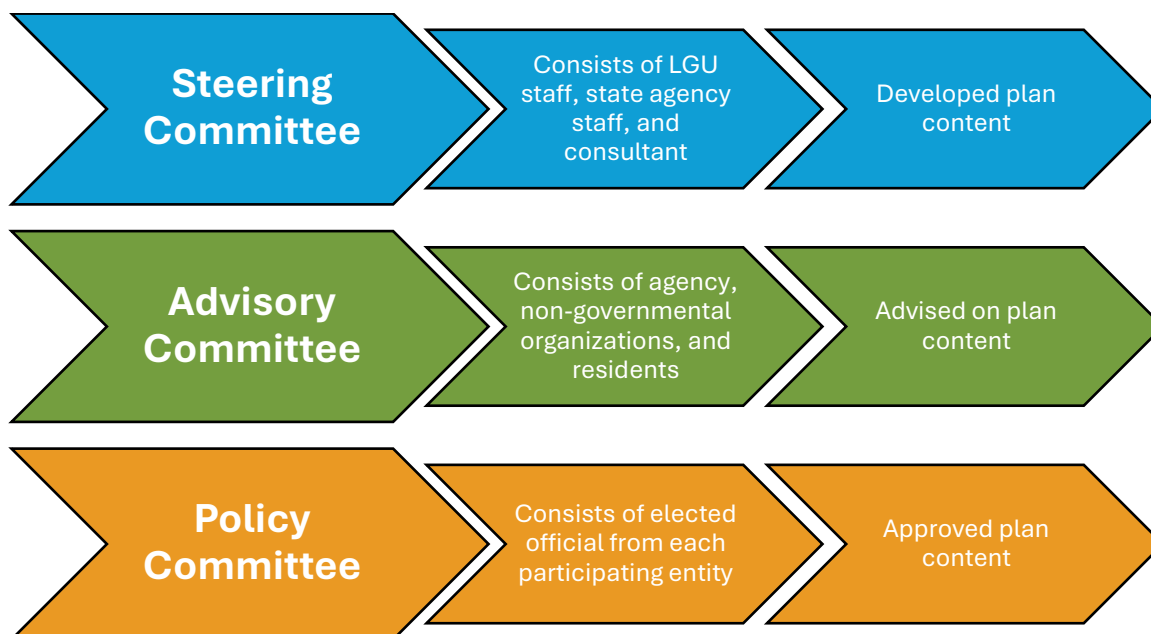
This plan identifies watershed priority issues, sets 10-year measurable goals, and plans specific actions to make progress towards those goals. This CWMP is active from 2026-2035, at which point the issues, goals, and actions will be reevaluated. Progress will be assessed on an annual basis along with a mid-point evaluation.



Comprehensive Watershed Management Plan

Planning Partners

The RRW CWMP planning process began with a planning Memorandum of Agreement (MOA) (Appendix A), between Lincoln County and Soil and Water Conservation District (SWCD), Lyon County and SWCD, Murray County, Pipestone County and SWCD, Redwood County and SWCD, the City of Marshall, the City of Redwood Falls, the City of Ghent, the Redwood-Cottonwood Rivers Control Area (RCRCA) and Area II Minnesota River Basin Projects (Area II). Due to the limited area in the planning boundary, Murray SWCD and Yellow Medicine County and SWCD opted out of the planning process. The planning process was guided through decisions made by three committees: the Steering Committee, the Advisory Committee, and the Policy Committee.

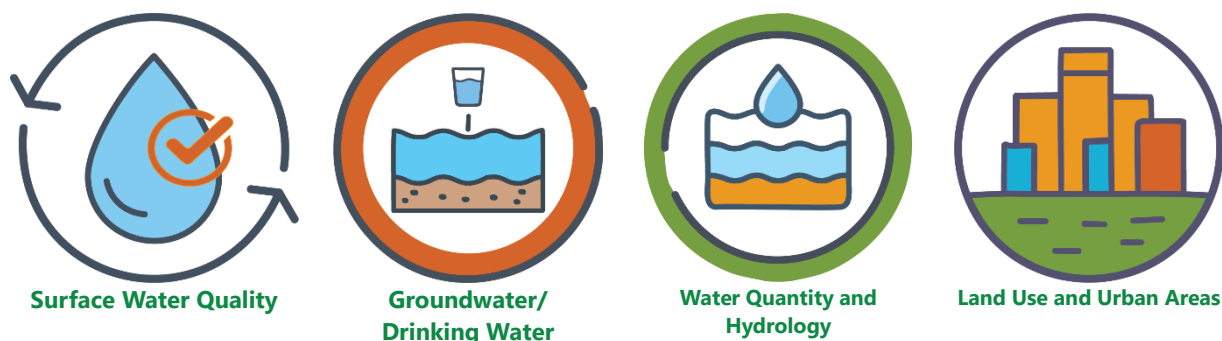


The RRW CWMP will be implemented through RCRCA's Joint Powers Agreement (JPA). Entities involved in the JPA include the counties and SWCDs of Brown, Cottonwood, Lincoln, Lyon, Murray, Pipestone, Redwood and Yellow Medicine. While not part of the JPA, Ghent, Marshall, Redwood Falls, and Area II will work through RCRCA during implementation.

Issues and Goals

Planning partners prioritized starting the planning process off with as much public feedback as possible. As such, three public kickoff events were held in June of 2024 in Lake Benton, Marshall, and Redwood Falls. The events were attended by around 60 community members. At each event, community members learned about the 1WIP process, discussed priority and problem areas in the watershed, and provided feedback on issues that should be the focus of the RRW plan.

Issues impacting natural resources in the RRW were identified by reviewing existing data and reports, soliciting letters from relevant state agencies, and receiving feedback both planning committees and the community from public kickoff events. In total, 13 issues were identified. The identified issues were organized into one of four resource categories, reflecting the resource most affected by that issue. The RRW resource categories are: Surface Water Quality, Groundwater/Drinking Water, Water Quantity and Hydrology, and Land Use and Urban Areas.



Public opinion, state agency and local priority letters, survey results, existing reports, and committee expertise were utilized to develop a list of high, medium, and low priority issues facing the RRW. All high (**Table 1-1**) and medium (**Table 1-2**) priority issues have goals and actions assigned to them in the plan. Low priority issues do not have specific goals and actions addressing them in this plan due to the necessity of limiting goals based on what is achievable. Summaries of low priority issues can be found in **Section 3-Priority Issues**.

Measurable and quantifiable 10-year goals are an essential part of effective watershed planning and resource management. Planning partners developed nine measurable goals to address all high and medium priority issues. They are summarized for high priority issues in **Table 1-1**, and medium priority issues in **Table 1-2**.



Ramsey-Cansayapi Park Swayback Bridge



Camden State Park

Table 1-1: High priority issues and goals for the RRW.

Issue	Issue Statement	10-Year Goal
 Soil Health and Working Lands	There is a need for conservation practices on working lands such as cover crops, perennial cover, reduced tillage, and pasture management, which would improve soil health, decrease upland sediment loss, and increase water storage.	Implement 22,500 acres of soil health practices
 Nutrients and Bacteria	Excess nutrients (phosphorus and nitrogen) delivered to surface waters leads to eutrophication which is a primary stressor to aquatic life.	Reduce total phosphorus loading by 7% (or 13,800 lbs/year) and total nitrogen loading by 7% (or 251,700 lbs/year)
 Protection and Restoration	Protection and restoration of high-recreational use waters and waters that are nearly or barely impaired to benefit aquatic life and recreational opportunities.	Implement 18,000 acres of land in temporary or permanent easements, prioritizing areas contributing to priority resources
 Contamination	Anthropogenic (e.g., nitrate, pesticides) and geogenic (e.g., arsenic, manganese) groundwater contaminants have been detected in some groundwater, posing a health threat through their potential presence in drinking water.	Protect drinking water from contamination by sealing 15 wells per year or 150 over the 10-year plan
 Water Storage/Flooding	The watershed has lost capacity for water storage in the landscape due to land use change and extensive public (103E) drainage, which decreases infiltration, increases stream flow, and can result in excessive flooding. Excess flow can also be a source of increased sediment and nutrients loading.	Add 4,000 ac-ft of temporary or permanent storage to the landscape Restore or create 100 acres of wetlands

Table 1-2: Medium priority issues and goals for the RRW.

Issue	Issue Statement	10-Year Goal
 Bank Erosion	Bank erosion is widespread in streams and rivers from unstable streambanks and high flows, acting as a source of sediment in those waters.	Stabilize or enhance 2,000 feet of streambank and ravines
 Riparian and Shoreline Management	There is a lack of vegetative protection along shoreline, ditches, streams, and rivers, causing an excess of erosion and degrading aquatic habitat.	Improve vegetation on 3,000 feet of riparian streambanks or shoreline
 Groundwater Quantity	Groundwater recharge is impacted by land use changes that have decreased infiltration, threatening future groundwater supplies.	Implement 22,500 acres of soil health practices (Same as Soil Health and Working Lands)
 Barriers to Fish Passage	Barriers such as dams, impoundments, and improperly sized culverts occur throughout the watershed, impeding fish passage.	Address 4 barriers (such as dams, impoundments, and culverts) to fish passage
 Stormwater	Stormwater runoff occurs in urban and rural developed areas, acting as a source of pollutants such as sediment, nutrients, chloride, metals, and debris to receiving surface waters.	Implement stormwater BMPs to treat 25 acres of rural or urban developed land



Twin Lakes County Park

The RRW spans over half a million acres of land that is a part of six different counties. Because of the large area, the issues impacting resources (and importance of those issues) can vary from the western to eastern extents of the watershed. In order to address these issues most effectively, the RRW watershed has been organized into five planning regions to prioritize actions where they are most needed and relevant.



High Recreational Use and Value	Nearly Impaired	Barely Impaired
• Lake Benton • Norwegian Creek • Redwood River • Lower Ramsey Creek • Lake Redwood	• East Twin Lake • Sanderson Lake	• Three Mile Creek • Clear Creek • School Grove Lake

Figure 1-3 visually summarizes how work towards each goal is split amongst the five RRW planning regions. This milestone chart shows the watershed-wide goal on the right, with each bar demonstrating the extent to which progress will be made in a given planning region, following focus area maps. Planning regions that have a larger milestone contribution for a goal indicate that the issue is more prominent in that particular area.

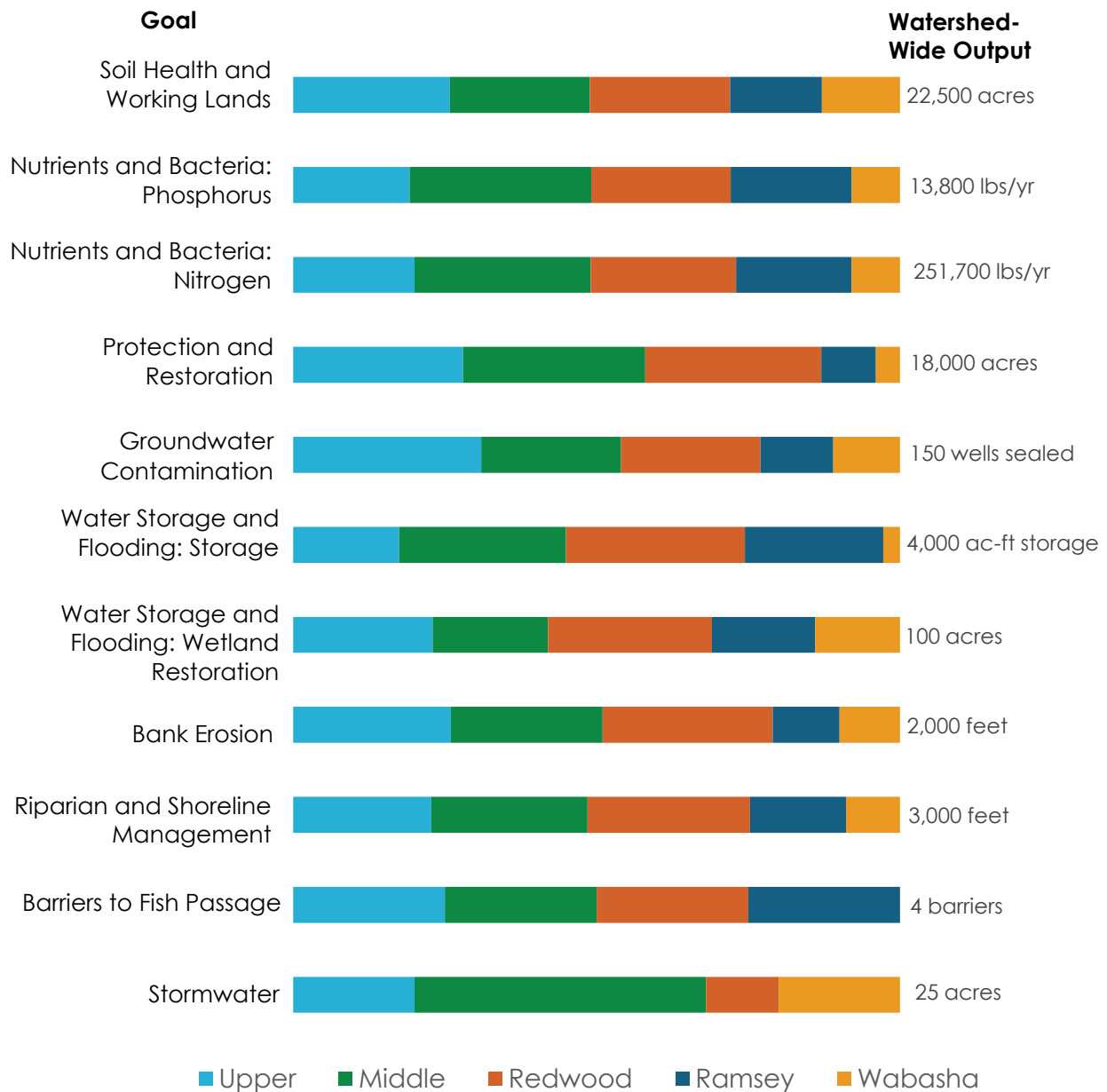


Figure 1-3: Progress towards goals made within planning regions.

Implementation

Progress towards the goals within the plan will be achieved through the implementation of specific actions. These actions are summarized in action tables, which include information about each action's cost, timeline, focus area, implementation responsibility, and the goals they will help achieve. Action tables are organized by implementation programs, as shown in **Figure 1-4**. A full summary of actions can be found in **Section 5 – Targeted Implementation** within action tables at both the watershed-wide and planning region scales.

Figure 1-4: RRW implementation programs with example actions



Implementation Cost and Benefits

Success of progress towards goals within the RRW plan is dependent upon the amount of reliable funding available throughout the duration of the 10-year plan. To create a realistic approach to the number of actions that can be accomplished with the predicted state and local funding, this plan includes an estimated scope of the current projected "Local 10-Year Plan Cost" that will be needed to implement the plan, as seen in **Table 1-3**.



Prairie Marshes Wildlife Management Area

It is recognized that in order to make progress towards the RRW goals, actions will be funded or pursued by partnering entities (e.g., Minnesota Pollution Control Agency [MPCA], Department of Natural Resources [DNR], United States Fish and Wildlife Service [USFWS], The Nature Conservancy [TNC]), federal dollars (e.g. Conservation Reserve Program [CRP], Conservation Reserve Enhancement Program [CREP], or other competitive funding programs. These funds and actions are represented in the action tables as "Partner/Federal 10-year Plan Cost" to account for all the funding needed to implement the goals of this plan. A full scope of implementation funding is illustrated in **Table 1-3**.

Table 1-3: Cost of Implementing the RRW CWMP.

Program	Local 10-Year Plan Cost	Partner/Federal 10-Year Plan Cost
Projects and Practices	\$6,075,000	\$50,560,000
Project Development	\$1,397,000	\$140,000
Technical Assistance	\$1,147,000	\$115,000
Education and Outreach	\$449,000	In-kind staff time
Research and Data Gaps	\$419,000	\$20,000
Local Controls	\$932,000	N/A
Capital Improvements	\$1,700,000	\$800,000
Operations and Maintenance	\$2,215,000	N/A
Plan Administration	\$600,000	N/A
Total:	\$14,934,000	\$51,635,000

Figure 1-5 below shows the value of meeting the plan goals through the implementation actions in this plan.

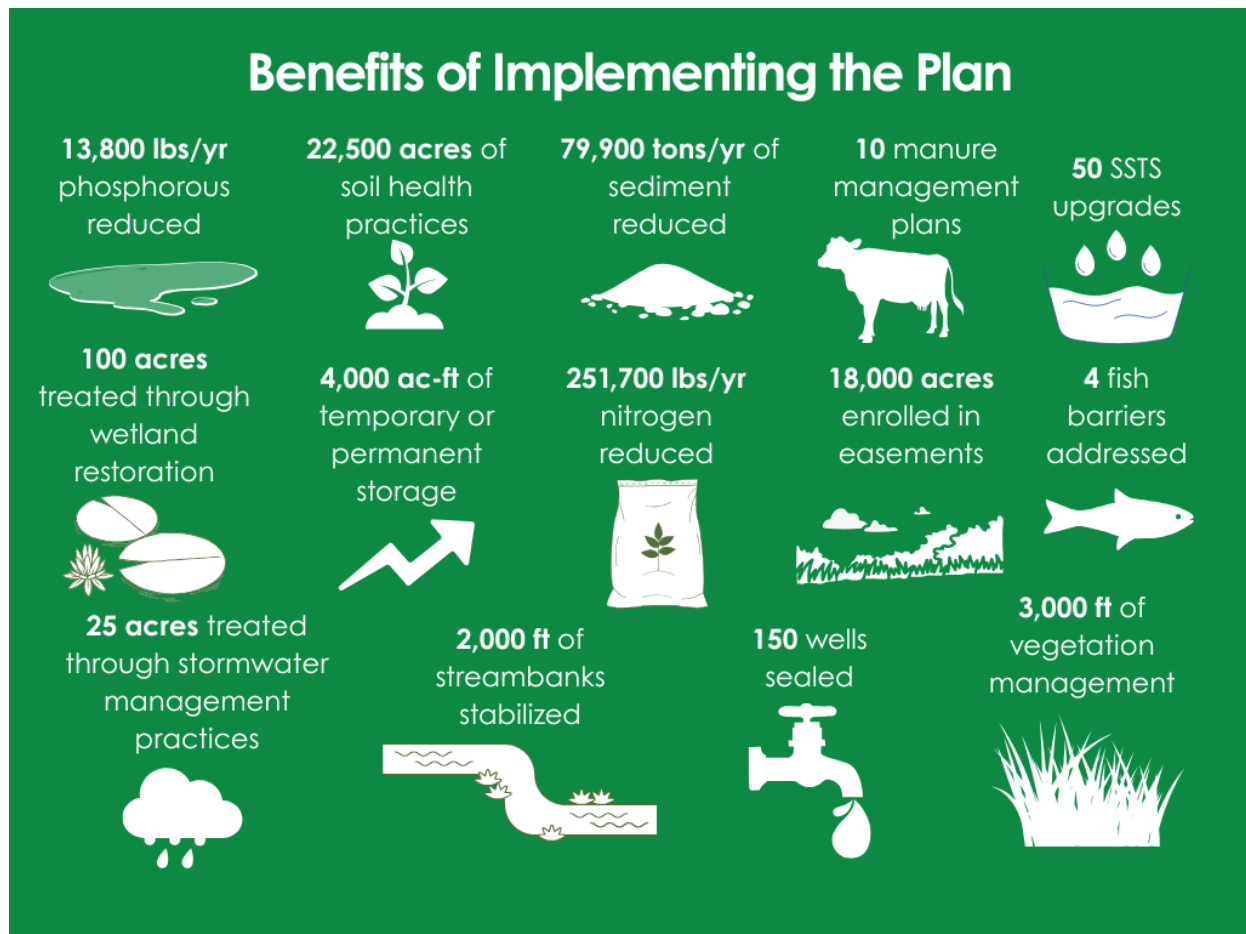


Figure 1-5: Benefits of implementing the RRW CWMP.



2. Land and Water Resources Narrative

2. Land and Water Resources Narrative

Introduction

The RRW, named for the Redwood River that begins near the town of Ruthton and flows into the Minnesota River, spans 563,471 acres across six counties in southwestern Minnesota (**Figure 2-1**). Redwood Falls and Marshall are the largest cities in the watershed. The RRW is one of twelve watersheds that collectively comprise the Minnesota River Basin. The water quality in the Redwood River and its tributaries is not only important for the watershed but for everything downstream, as the Redwood River drains into the Minnesota River, which later flows into the Mississippi River.

The watershed's numerous lakes and streams along with scattered prairie and forest provide ample recreational opportunities for watershed residents and visitors. For planning purposes, the RRW planning area in this CWMP includes additional areas on the eastern side that have not yet been covered in other watershed planning efforts. This includes all or part of small subwatersheds from the Yellow Medicine Watershed (Echo Creek—Minnesota River, Rice Creek, Middle Creek—Minnesota River, and Smith Creek—Minnesota River) and from the Minnesota-River—Mankato Watershed (Crow Creek, Wabasha Creek, County Ditch Number 64, County Ditch Number 109, and City of Morton—Minnesota River) that drain directly into the Minnesota River.

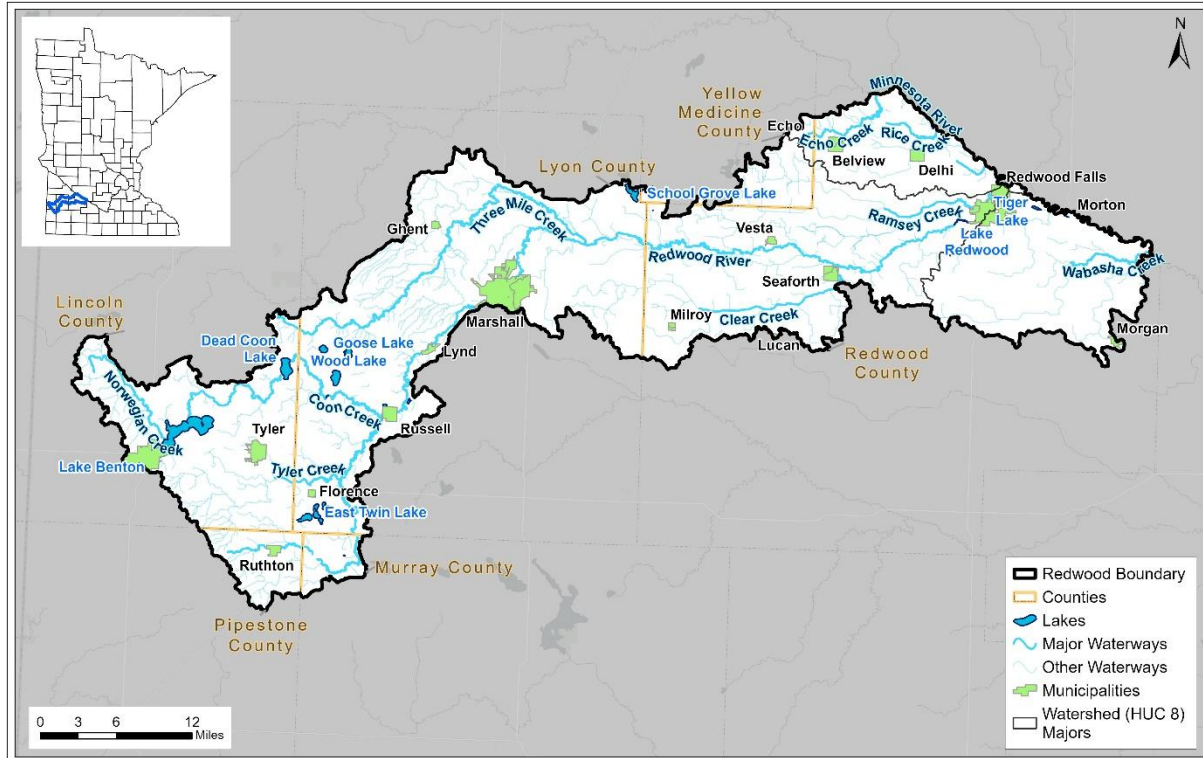


Figure 2-1. Location of the Redwood River Watershed.

People

History

People have made the RRW their home for thousands of years, likely due to its proximity to the Minnesota River. Archeologists found traces of people living in the Minnesota River Valley over 8,000 years ago. The name Redwood is originally derived from the Dakota word *Çaŋsåyapi*, likely referring to the red-osier dogwood shrub and red cedars that grew along the river. The development of railroads through southwestern Minnesota in the late 1800s increased development. The early 1900s saw large efforts in clearing prairie and draining soils to make the land more productive for farming. Throughout the 20th century, the land was increasingly used for mainly corn and soybeans.



Red-osier dogwood shrub
(U of M Extension)

Demographics

The population of the RRW is estimated at around 23,500 people. This estimate is made through adding the 2020 census population of the 15 cities with populations between 14 and 13,600 in the watershed. Other demographics were estimated by averaging county census data by the proportion of the main counties in the RRW (US Census, 2022). **Figure 2-2** shows the education attained and household income of residents in the watershed. About half of the residents make over \$75,000 a year, and 34% have a college degree. As the majority of the land is covered with crops, agriculture is an important part of life. There are about 790 farms in the watershed with an average size of 421 acres (USDA-NASS, 2022).

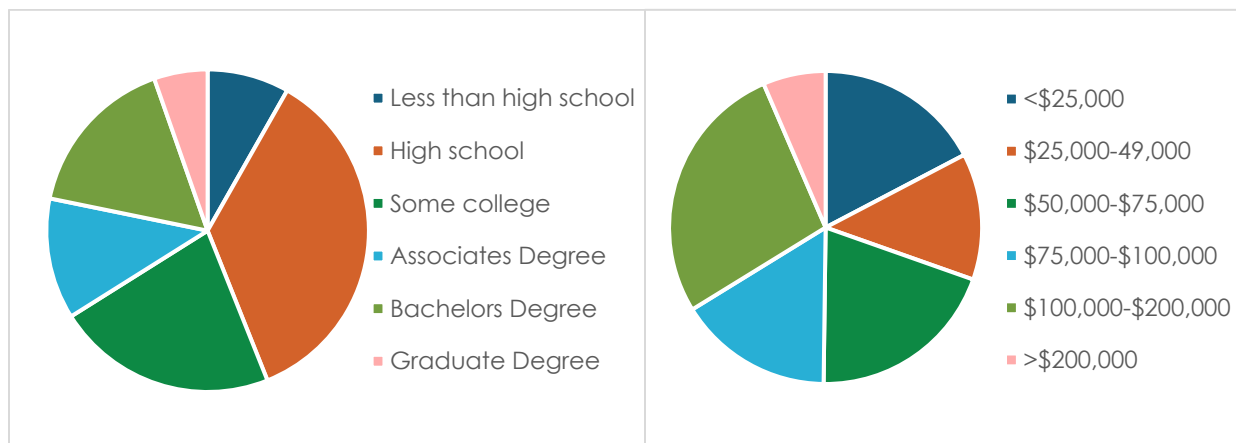


Figure 2-2. Left: Education attained by watershed residents 25 years or older. Right: Estimated household income (US Census, 2022).

The MPCA developed a statewide map of areas of importance for environmental justice. Environmental justice is based on the concept that no group should suffer disproportionate impacts of environmental problems such as contaminated air or water. The MPCA map of environmental justice areas covers 2% of the RRW as an area of importance and a small area of land along the Minnesota River held in trust by the U.S. Government for the benefit of the Lower Sioux Indian Community (**Figure 2-3**) (MPCA, 2023a).

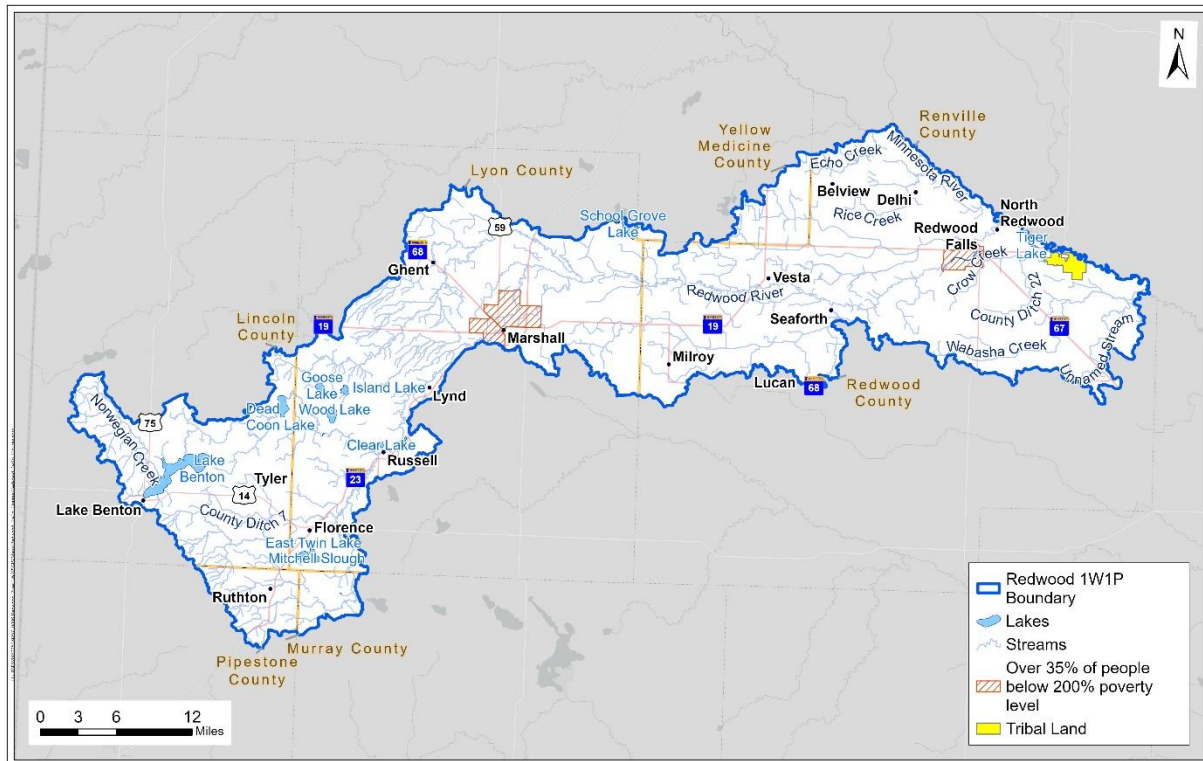


Figure 2-3. MPCA environmental justice areas (as of October 2024).

Land

Topography and Geology

Watershed topography was shaped by glacial advance and retreat, with the most recent being the Des Moines Lobe of the Wisconsin glaciation. The western side of the watershed is covered in the Coteau des Prairies, a flat plateau. There is a supraglacial drift complex in parts of the Coteau des Prairies, while the rest of the watershed is largely till plain with some outwash.

The watershed has a significant elevation drop from the headwaters to the outlet of about 860 feet, with a steep gradient between Russell and Marshall and flatter terrain between Marshall and Redwood (MPCA, 2023b). The Redwood River headwaters begin on the Coteau des Prairies on the western side of the watershed, where the last glacial advance carved out the steep elevation change found between Russell and Marshall (**Figure 2-4**). Rolling moraine ridges of glacial till left on the landscape mark the farthest point of the glacier.

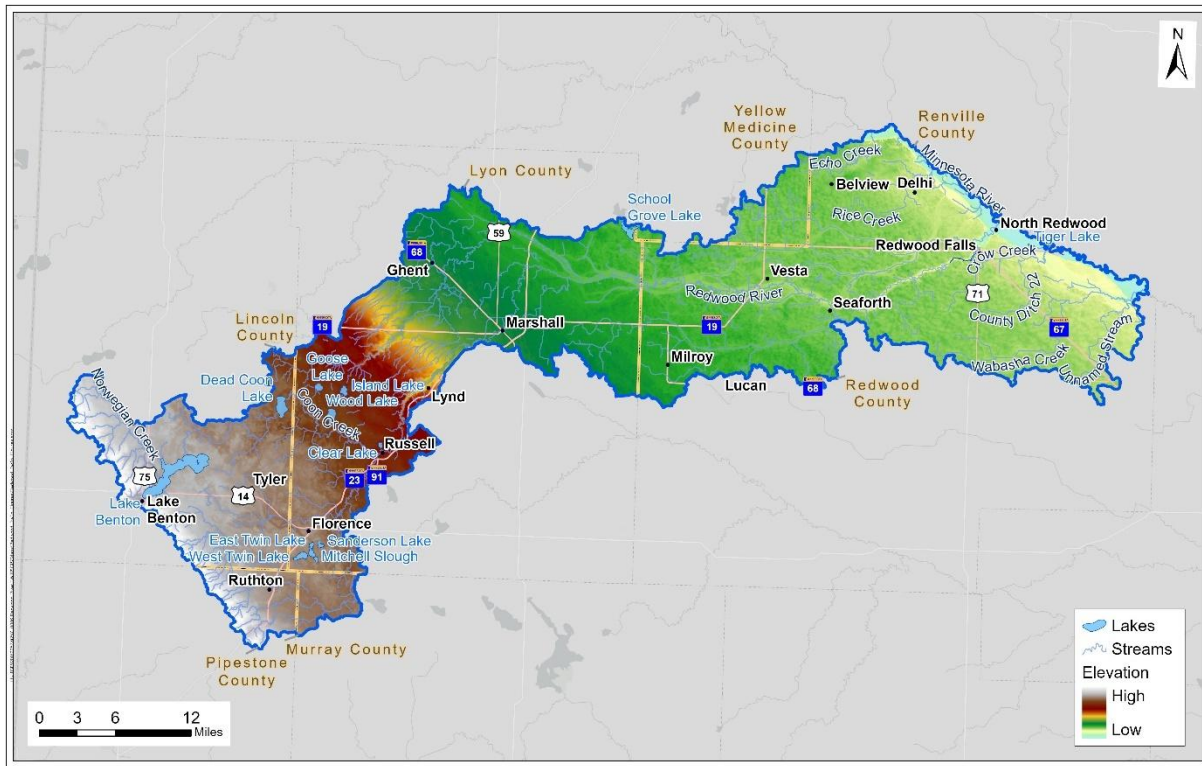


Figure 2-4. Elevation in the RRW.

After the last glacial retreat, the western soils became well-drained, while the eastern side of the watershed developed a more blended drainage capacity with scattered well-drained and poorly drained soils. Historically, prairie covered the landscape. The RRW soil is generally productive due to clay mineralogy and organic matter content. Prairie was cleared, and poorly drained soils were artificially drained to accommodate fields of crops.

Land Use

Agriculture is the predominant land use in the RRW (80% cropland), with developed land as the next largest land use, then wetlands, grasslands, and pasture (Figures 2-5 and 2-6) (USGS, 2021). Only 2% of the watershed is forested. This is starkly different from the tallgrass prairie that covered the land prior to its development. Today, a network of private and public ditch systems comprised of ground tile and open ditches cover the watershed, having drained wetlands, fields, and channelized streams. Subsurface tile drainage has been a common method to drain fields and has become more extensive in the past few decades. Drainage increases production and profitability. To offset the impacts of reduced water storage, infiltration, and habitat, soil health practices are heavily encouraged. Today, county boards are the public drainage authority.

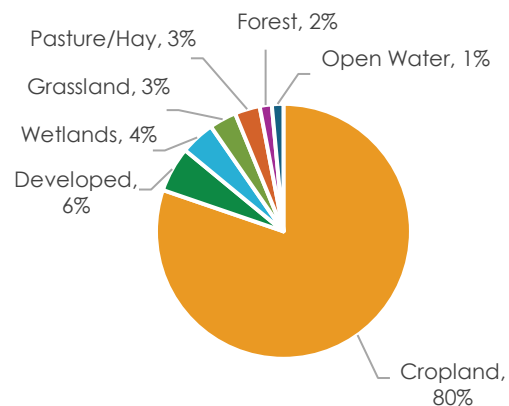


Figure 2-5. Land Use in the RRW.

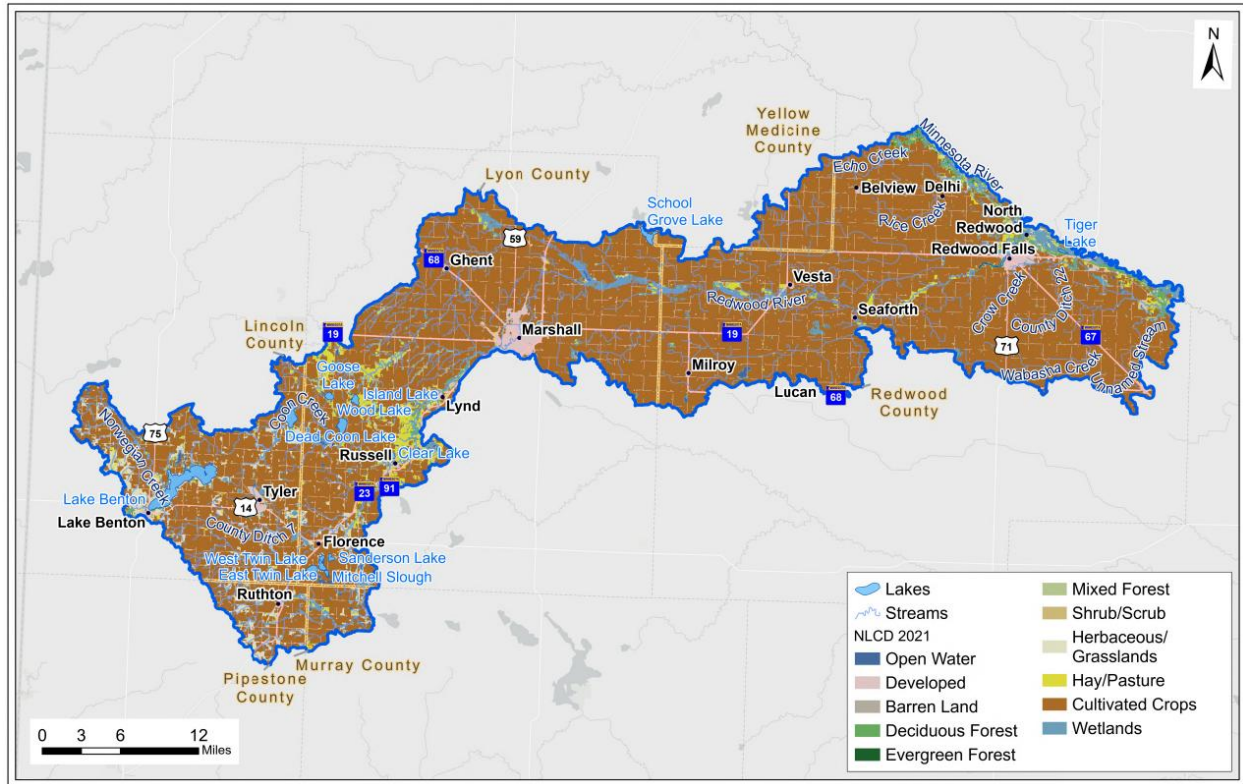
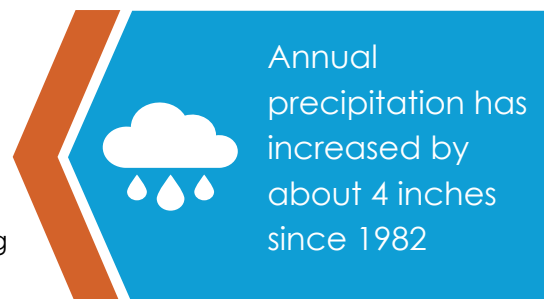


Figure 2-6. Land Use in the RRW.

Early settlers to the watershed recognized the productive capacity of the land, but the role of agriculture in the watershed has changed over the decades. Initially, crops were more diverse and included small grains and hay. Today, the majority of cropland is used to produce corn and soybeans. Not all producers are only farming crops; livestock production is also present in the RRW. As of 2024, there are 447 active feedlots registered with the state, 37 of which are concentrated animal feeding operations (CAFOs) (MPCA, 2024a).

Climate

The climate of the RRW is typical of southwestern Minnesota—hot, humid summers with cold, snowy winters. From 1981-2010, the average annual temperature in the watershed is 44.5 °F and the watershed receives an average amount of rain for Minnesota, about 28 inches per year (DNR, 2017). However, variations in climate extremes are becoming more common and the watershed is experiencing warmer winters, an earlier growing season, and more frequent and extreme precipitation events.



The DNR published the Evaluation of Hydrologic Change Report for the RRW, which found the point of change in the watershed to be 1982. A point of change refers to a point in time in which the hydrology, both precipitation and flow, is notably different prior to and after the point.

Annual precipitation in the RRW has increased by about 4 inches post-1982 (DNR, 2023a). Extreme wet conditions on the Drought Index have increased while extreme drought conditions fell.

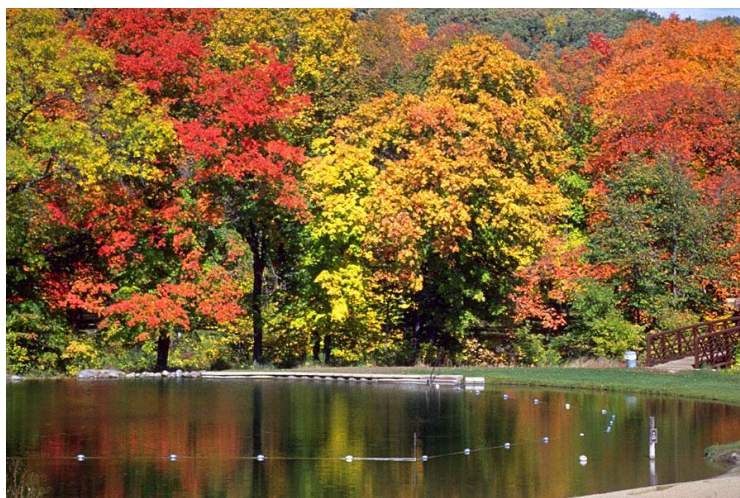
The Redwood River has a United States Geological Survey (USGS) gauge that has been installed over 100 years (Gauge 05316500 near Redwood Falls). Watershed discharge over this time period has increased more than can be explained solely by precipitation, indicating that altered hydrology (drainage, channelized streams, land use conversion) is impacting streamflow.

Habitat

The RRW is in the North Central Glaciated Plains Ecoregion, with the eastern half in the Minnesota River Prairie subsection and the western half in the Coteau Moraines subsection. Much of the vegetation and rare species native to the watershed are gone or remain on small complexes. There are 19 native plant communities and three calcareous fens in the RRW (DNR, 2020). Rare and unique species are typically found in the western side of the watershed and in riparian zones. The remaining isolated fragments of habitat are at risk. It is important to connect native habitats for the movement and range of species. The Minnesota Prairie Plan identified core habitat areas for conservation, along with corridors that connect them. The RRW has three core areas and four corridors, which are important to consider for conservation and protection. The remaining good quality habitat in the RRW is mostly around Lake Benton, the Prairie Coteau Conservation Focus Area, Three Mile Creek, and the Redwood River upstream of Marshall.

Federally listed endangered and threatened species in Lyon and Redwood Counties include the monarch butterfly, northern long-eared bat, tricolored bat, and prairie bush clover (Center for Biological Diversity, n.d.). There are 24 species that are listed as special concern, greatest conservation need, or watch list and are in suspected decline (DNR, 2020).

Camden State Park is a scenic destination near Marshall for watershed residents and visitors. It offers hiking, horseback riding, camping, and fishing. Its riparian forest provides habitat for wildlife, along with the watershed's 52 Wildlife Management Areas spread over nearly 11,000 acres (DNR, 2024). There are two Scientific and Natural Areas (SNAs) in the watershed, Cedar Rock and Cedar Mountain, both along the Minnesota River. An estimated 15,700 acres in the watershed are enrolled in state conservation easements (BWSR, 2025).



Camden State Park (DNR)

Surface Water

The RRW has over a thousand miles of streams and over 8,000 acres of lakes. Many of the watershed's original wetlands were drained. About 1,500 acres of the watershed have been identified as having a high probability (over 80%) of being a restorable wetland (NRRI, 2019). These can be restored to improve water storage, water quality, and provide habitat. Numerous lakes and streams have been classified as impaired by MPCA, meaning they are not supporting their designated uses (**Figure 2-7**). More detail on specific impairments is included in the Lakes and Streams sections below.

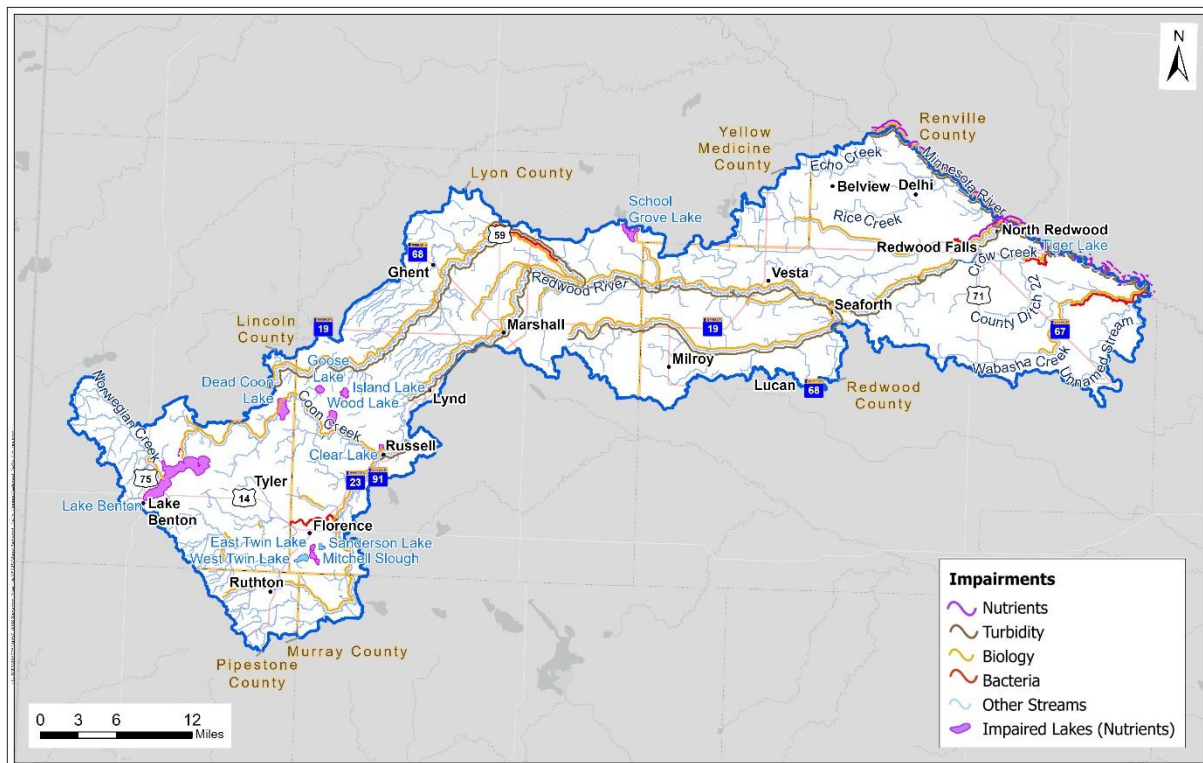
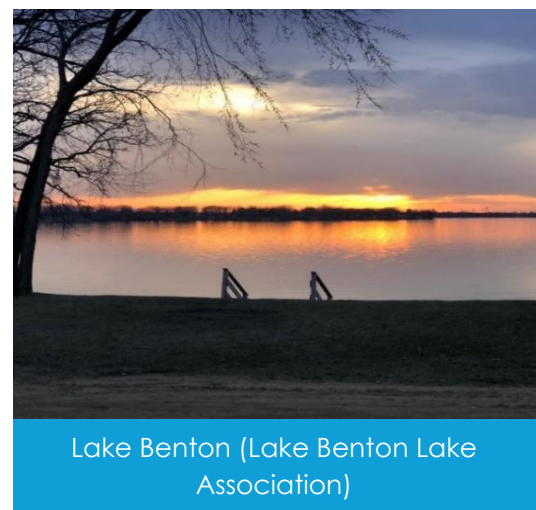


Figure 2-7. Surface water impairments.

Lakes

There are 48 lakes in the RRW on the public waters inventory, which are valued by residents and tourists for fishing, boating, swimming, and recreational enjoyment. Notable lakes include Lake Benton (over 2,600 acres), Dead Coon, Wood, School Grove, and East and West Twin Lakes. The DNR has classified Benton, Highpoint, Schrunck Slough, and Soupir Marsh as lakes of outstanding biological significance due to their support for diverse fish and wildlife populations.

Lake Redwood was created in 1902 to power a grist mill. Years later, hydroelectric power was added to provide



Lake Benton (Lake Benton Lake Association)

a portion of Redwood Falls' electric needs. In 2022, the lake was dredged, increasing its depth from 3 feet to 20 feet and removing 682,880 cubic yards of accumulated sediment. Lake Laura at Walnut Grove is another man-made lake in Redwood County. It was created in 1979 by damming Plum Creek and creating a flood control project that has benefited downstream properties.

There are nine lakes with water quality impairments in the RRW, including aquatic life impairments due to fish bioassessments, aquatic recreation impairments due to nutrients, and aquatic consumption impairments due to mercury in fish tissue (MPCA, 2024b). Six lakes have nutrient impairments, including Lake Benton, Clear Lake, Dead Coon Lake, Goose Lake, Island Lake, and School Grove Lake. Eutrophication is the main stressor to aquatic life in lakes. Half of the lakes in the RRW are shallow lakes, which are susceptible to internal loading. Internal loading releases phosphorus bound in sediments, and modeling done in the RRW found internal loading is a likely factor in five of the six nutrient-impaired lakes (MPCA, 2023b).

Aquatic invasive species are a concern for lake management, as they can disrupt lake habitats and result in undesirable conditions for recreation. Curly leaf pondweed, an invasive aquatic plant, has been found in the watershed. It can grow in dense mats near the shore that outcompete other plants, degrade habitat, and are unpleasant for recreation. Lake Benton has an ongoing treatment program for curly leaf pondweed. Zebra mussels have been found in neighboring watersheds but not yet in the RRW.

Streams

The major river in the watershed, the Redwood River, begins four miles west of Ruthton, where it flows intermittently through Pipestone and Murray Counties and into Lyon County. Between the towns of Russell and Marshall, the river drops off the Coteau des Prairies and descends 300 feet into Camden State Park. As the river flows past Marshall and through Redwood County, portions of it have been channelized and are known as Judicial Ditch 37. As the river approaches Redwood Falls, it enters the woodland valley along the Minnesota River and falls 100 feet over granite rocks in Ramsey Park—Cansayapi Park. It meets the Minnesota River just northeast of Redwood Falls.

The Minnesota River is infested with zebra mussels at the confluence. Cities or counties are responsible for keeping the river free from debris. Major tributaries include Coon Creek, Three Mile Creek, Clear Creek, and Ramsey Creek. The RRW supports two trout streams: Ramsey Creek and a stretch of the Redwood River.

Stream conditions in the RRW have been impacted by altered hydrology and land use changes. Many streams have been channelized and converted into ditches. Post-1982, high stream flows and annual baseflow have increased by over 200% (DNR, 2023a). There are 29 impaired stream reaches in the RRW as of 2024, with impairments and stressors summarized in **Tables 2-1 and 2-2**. The most common impairments are due to benthic macroinvertebrate assessments, fish bioassessments, and fecal coliform. Altered hydrology, lack of habitat, and nitrate are main stressors to aquatic stream life.



Fishing on Lake Redwood (RCRCA)

Table 2-1. Summary of RRW stream impairments (MPCA, 2024b).

Affected Use	Impairment	Number of Stream Reaches
Aquatic Consumption	Mercury in Fish Tissue	11
Aquatic Consumption	Polychlorinated Biphenyls (PCBs) in Fish Tissue	3
Aquatic Life	Benthic Macroinvertebrate Bioassessments	26
Aquatic Life	Chloride	1
Aquatic Life	Chlorpyrifos*	1
Aquatic Life	Fish Bioassessments	16
Aquatic Life	Nutrients	4
Aquatic Life	Total Suspended Solids (TSS)	4
Aquatic Life	Turbidity	9
Aquatic Recreation	Escherichia coli (<i>E. coli</i>)	5
Aquatic Recreation	Fecal Coliform	12
Drinking Water	Nitrate	1
Limited Resource Value	<i>E. Coli</i>	1

*Chlorpyrifos was banned in 2022

Table 2-2. Summary of RRW stream stressors (MPCA, 2024d).

Stressor	Number of Stream Reaches
Dissolved Oxygen	5
Eutrophication	13
Nitrate	15
TSS	8
Habitat	20
Connectivity	8
Altered Hydrology	23

Groundwater

All RRW residents get their drinking water from groundwater, making its quality and quantity vital. Some of this groundwater comes from rural water suppliers or DWSMAs from outside the watershed. Most aquifers are buried sand and gravel, with areas of sandstone bedrock in the center of the watershed. Generally, the watershed has very low to moderate pollution sensitivity, but there is a stretch of high sensitivity along the Minnesota River (**Figure 2-8**). At the time of plan development, there are three Drinking Water Supply Management Areas (DWSMAs) within the watershed (Ruthton, Redwood Falls East, and West) and five along the border (Morgan, Marshall—Marshall Wellfield, Marshall—Dudley Wellfield, and just barely the Lincoln Pipestone Rural Water Supply—Holland and Verdi). The Lincoln Pipestone Rural Water and Marshall DWSMAs have high vulnerability to contamination, Redwood Falls West has moderate vulnerability, and Morgan, Redwood Falls East, and Ruthton have low or very low vulnerability.

Nearly a quarter of the wells tested in the RRW had arsenic concentrations higher than the drinking water standard. Arsenic is a geogenic, or naturally occurring, contaminant in the rocks and soil, and long-term exposure can cause health problems. Nitrate is a groundwater contaminant of concern in Minnesota and can come from fertilizer application or livestock manure. The overall low vulnerability to contamination of the RRW geology helps keep nitrate concentrations low in the RRW compared to others in southern MN, as only 1% of wells tested had nitrate concentrations above the standard (MDH, 2024).

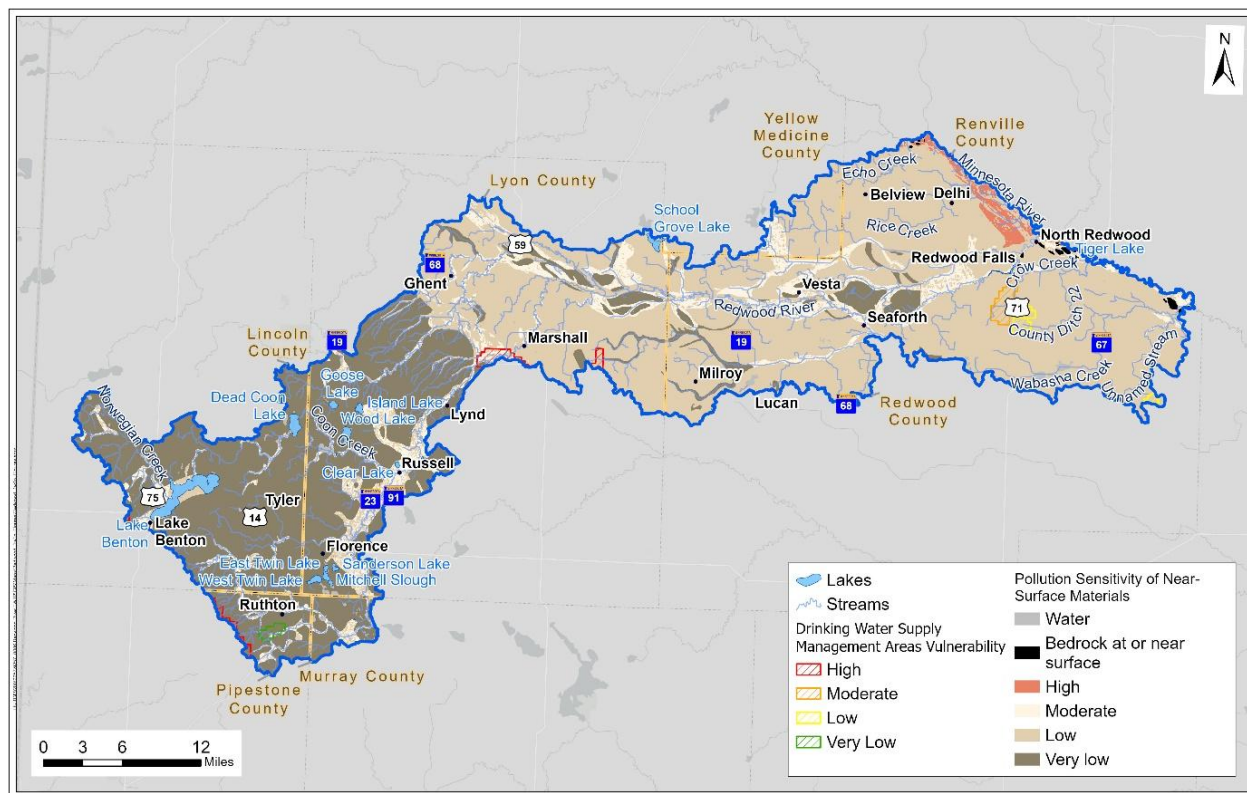


Figure 2-8. DWSMA vulnerability and pollution sensitivity of near-surface materials.

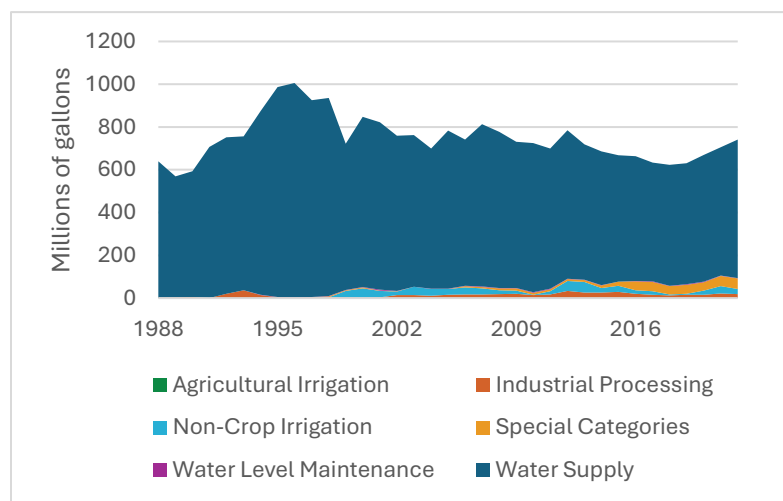


Figure 2-9. RRW groundwater use, 1988-2022. DNR, 2023b.

Groundwater withdrawal over the past few decades peaked in the early 1990s. It is largely used for water supply, with minimal livestock dewatering (special categories in **Figure 2-9**), non-crop irrigation, and industrial processing (DNR, 2023b). 82% of groundwater used in the watershed is from the quaternary buried artesian aquifer (DNR, 2020). Groundwater use is expected to increase in the future, as the need for water at livestock facilities is growing.

Stormwater

Urban areas can be a source of pollutants, including nutrients, heavy metals, sediment, chloride, and bacteria as rain carries contaminants off lawns, driveways, streets, and parking lots into the storm sewer system, where it is eventually discharged in surface waters without treatment. Municipal Separate Storm Sewer Systems (MS4s) are systems of conveyances, such as catch basins and city streets, that collect stormwater and are publicly owned. The RRW has two MS4s: Redwood Falls and Marshall (**Figure 2-10**). Minnesota requires MS4s to obtain a general permit, which details best practices and guidelines for reducing pollutants in stormwater.



Stormwater (UMN Water Resources Center)

In addition to concerns over the pollutant load of stormwater, the volume of stormwater can increase peak flows in receiving streams. Roads, parking lots, and buildings are impervious surfaces where less rain is able to infiltrate into the soil. Instead, it runs off impervious surfaces and can cause a sudden influx of volume to a stream during and after a storm.

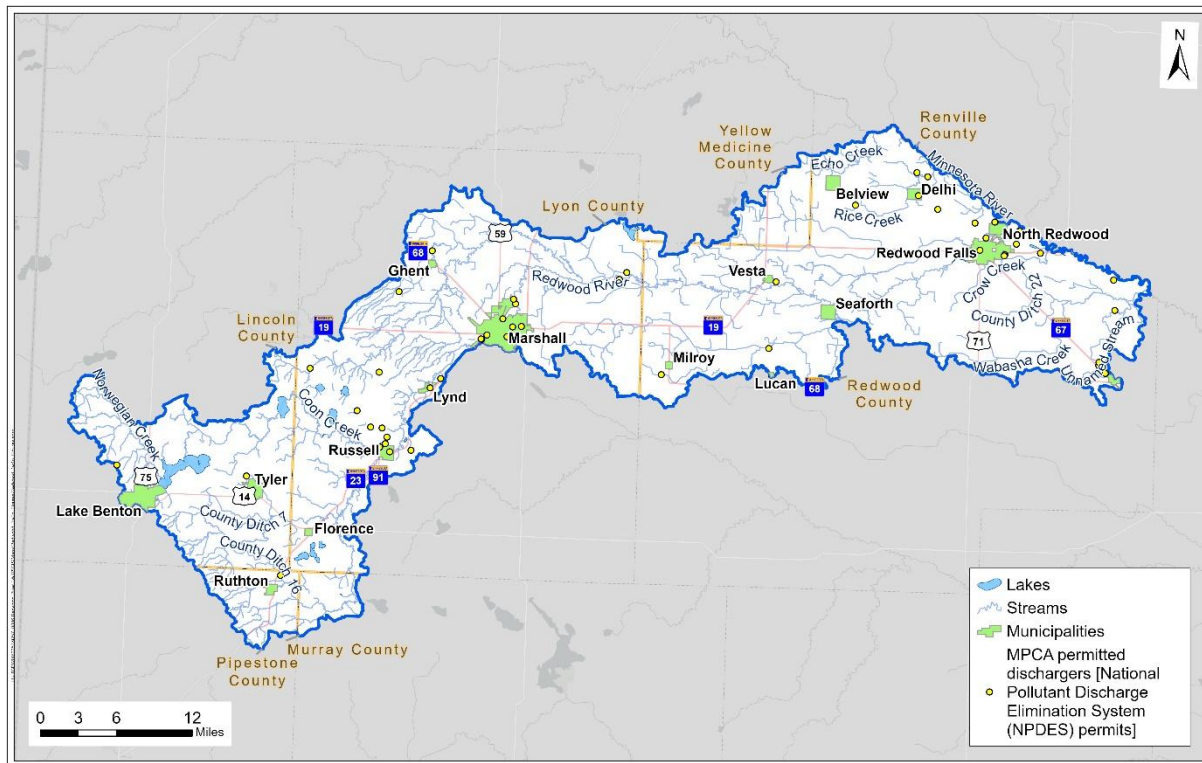


Figure 2-10. Municipalities and NPDES permits.

Future

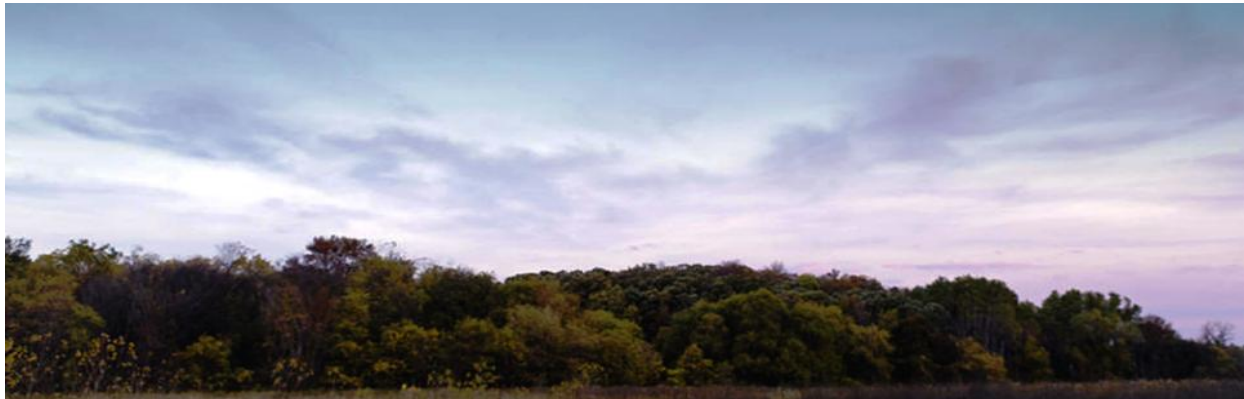
The RRW is home to thousands of people who enjoy its productive land, numerous lakes, and abundant streams. Whether one wishes to hunt, fish, hike, or boat, the RRW offers many outdoor opportunities. As residents in the watershed are heavily reliant on agriculture, it is important to understand how a changing climate can impact the watershed and how resilience to extreme weather can protect natural resources and productive farmland. Protecting the existing natural resources and restoring the impaired resources is a task this CWMP will manage for the following decade.



The background image shows a field of yellow Black-eyed Susans in the foreground, with the sun setting in the distance, creating a warm, golden glow. The sky is a mix of blue and orange. On the right side, there is a decorative graphic consisting of several overlapping, curved bands in shades of green and blue, extending from the top to the bottom of the page.

3. Priority Issues

Section 3. Priority Issues



Sunset at Cedar Mountain. Photo: DNR SNA webpage

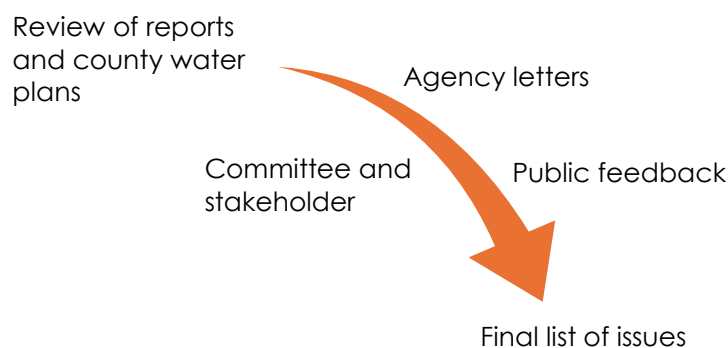
Introduction

Identifying, evaluating, and prioritizing issues is the first step to creating a useful CWMP that sets a path to improve watershed resource conditions. In this section, the process for issue identification and prioritization is explored. The next sections, **Section 4—Measurable Goals** and **Section 5—Targeted Implementation**, summarize where future implementation efforts should be focused, and what can be done to protect or restore natural resources within the RRW.

Issues Identification

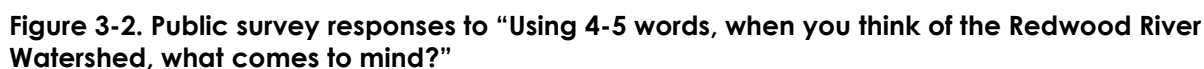
Issues impacting natural resources in the RRW were identified by reviewing existing data and reports, soliciting letters from relevant state agencies, and receiving feedback from watershed stakeholders, including the planning committees and the public. Agency reports included, but are not limited to, the Redwood River Watershed Restoration and Protection Strategy (WRAPS) Report (MPCA, 2023b), Redwood River Watershed Stressor Identification Report (MPCA, 2021), and the Redwood River Watershed Characterization Report (DNR, 2020). Agency letters were received from DNR, BWSR, Minnesota Department of Agriculture (MDA), MPCA, Minnesota Department of Health (MDH), and the City of Marshall, and are included in **Appendix B**.

Figure 3-1. Summary of issue identification process.



ee
in Lake
ned of
and its

Planning partners also used a survey to get additional feedback. The survey was distributed online as well as in person during the kick-off events. In total, 67 responses were received (**Appendix C**). These responses provided insight into what RRW residents value. By a wide margin, the issues identified as most important to the public were pollutants like sediment, nutrients, and bacteria, drinking water protection, bank erosion, and flood damage.



In total, 13 issues were identified. The identified issues were organized into one of four resource categories, reflecting the resource most affected by that issue. The RRW resource categories are: Surface Water Quality, Groundwater/Drinking Water, Water Quantity and Hydrology, and Land Use and Urban Areas.



Planning Regions

As introduced in **Section 2—Land and Water Resources Narrative**, the RRW is a large watershed spanning approximately 563,500 acres across six counties. Because of the large area, the issues impacting resources (and importance of those issues) can change from the western to eastern extents of the watershed.

In recognition of this, local planning partners organized the watershed into five planning regions based on HUC-10 boundaries (**Figure 3-3**). The creation of planning regions keeps the focus on watershed-wide management, but allows issues, goals, and actions to be tailored to the area of the watershed where issues are most prevalent. These planning regions will be referenced throughout the plan.

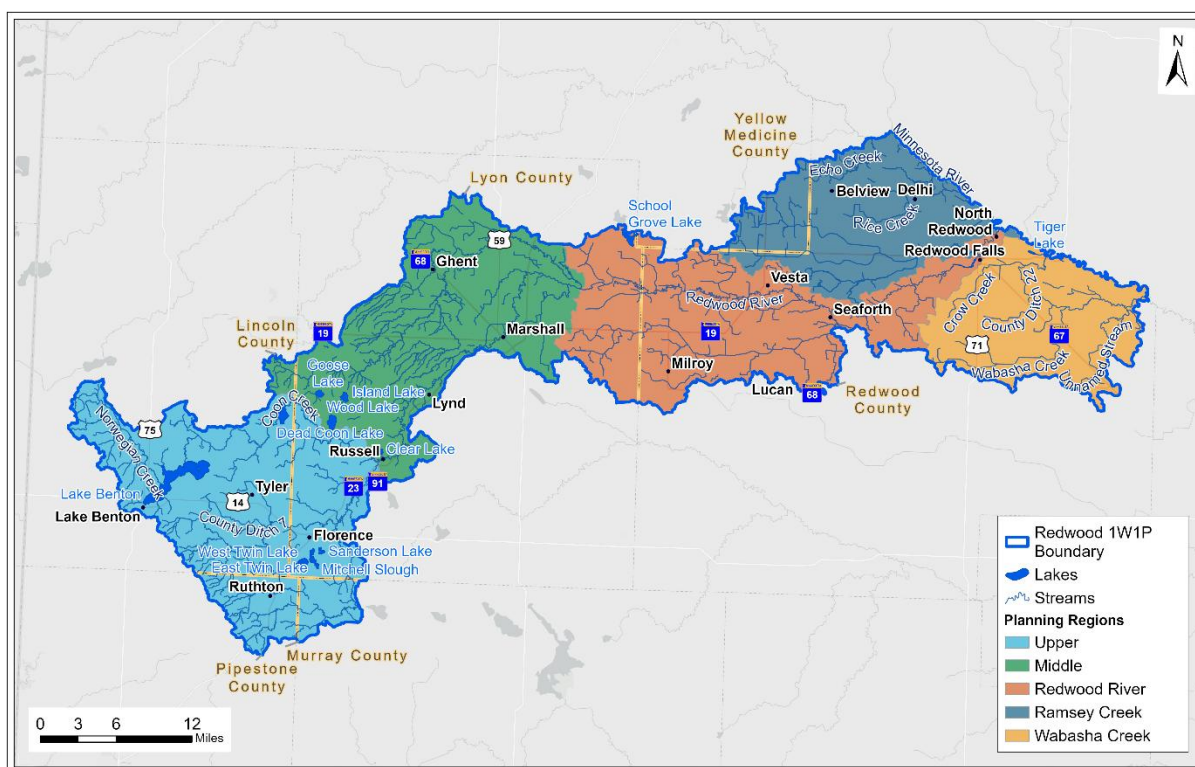


Figure 3-3. Redwood River Watershed planning regions

Prioritization

This plan has a 10-year lifespan. During this timeframe, there may not be enough time and financial resources to adequately address all identified issues. Therefore, the 13 issues were prioritized to determine the primary focus of the plan. Issues were prioritized based on ranking the frequency with which the issue was mentioned in agency reports, local county plans, 60-day letters, and the public survey. Each category ranking was summed for a final ranking. The priority was further revised by the Steering Committee based on planning experience and professional judgement.

Each issue was assigned as either a high, medium, or low priority as defined below:

-  **High:** Primary focus of resources during implementation (staff time and funds)
-  **Medium:** Secondary focus of resources during implementation
-  **Low:** Addressed as opportunities arise

All high and medium issues will have goals and actions in the plan. Low priority issues do not have specific goals and actions addressing them in this plan simply due to the necessity of setting a limited number of goals based on what is achievable. However, this does not mean no progress will be made towards low priority issues, as many actions intended to address high and medium priority issues will have an intended or unintended positive impact on these issues. These are referred to in this plan as stacked benefits of actions. For example, implementing agricultural management practices such as no-till or cover crops can accrue positive benefits for issues such as soil health, water quality, water storage, and carbon sequestration.

Priority Issues

High priority issues are the highest priority issues addressed by this plan (**Table 3-1**). These issues are intended to be addressed first during implementation efforts. As such, they have goals and action items assigned to them in the following plan sections.

Table 3-1. Redwood River Watershed high priority issues.

Resource	Issue	Issue Statement
 Surface Water Quality	Soil Health and Working Lands	There is a need for conservation practices on working lands such as cover crops, perennial cover, reduced tillage, and pasture management, which would improve soil health, decrease upland sediment loss, and increase water storage.
 Surface Water Quality	Nutrients and Bacteria	Excess nutrients (phosphorus and nitrogen) delivered to surface waters leads to eutrophication which is a primary stressor to aquatic life.
 Surface Water Quality	Protection and Restoration	Protection and restoration of high-recreational use waters and waters that are nearly or barely impaired to benefit aquatic life and recreational opportunities.
 Groundwater / Drinking Water	Contamination	Anthropogenic (i.e. nitrate, pesticides) and geogenic (i.e. arsenic, manganese) groundwater contaminants have been detected in some groundwater, posing a health threat through their potential presence in drinking water.
 Water Quantity and Hydrology	Water Storage/Flooding	The watershed has lost capacity for water storage in the landscape due to land use change and extensive public (103E) drainage, which decreases infiltration, increases stream flow, and can result in excessive flooding. Excess flow can also be a source of increased sediment and nutrients loading.

Medium priority issues will also be addressed by this plan (**Table 3-2**). These issues are intended to be addressed as time and money allows. As such, they also have goals and action items assigned to them in the following plan sections.

Table 3-2. Redwood River Watershed medium priority issues.

Resource	Issue	Issue Statement
 Surface Water Quality	Bank Erosion	Bank erosion is widespread in streams and rivers from unstable streambanks and high flows, acting as the source of sediment in those waters.
 Surface Water Quality	Riparian and Shoreline Management	There is a lack of vegetative protection along shoreline, ditches, streams, and rivers, causing an excess of erosion and degrading aquatic habitat.
 Groundwater / Drinking Water	Groundwater Quantity	Groundwater recharge is impacted by land use changes that have decreased infiltration, threatening future groundwater supplies.
 Water Quantity and Hydrology	Barriers to Fish Passage	Barriers such as dams, impoundments, and improperly sized culverts occur throughout the watershed, impeding fish passage.
 Land Use and Urban Areas	Stormwater	Stormwater runoff occurs in urban and rural developed areas, acting as a source of pollutants such as sediment, nutrients, chloride, metals, and debris to receiving surface waters.

Lower Priority Issues

Lower priority issues are those that, while important, do not require immediacy in the way the high and medium priority issues do, or are already being addressed through different plans or funding sources. They may also be addressed through actions focused on other prioritized issues. These issues will not be priorities for this ten-year plan, and therefore will not have prioritized resources, goals, or action items assigned to them. In future plan updates, these issues could be elevated if deemed necessary. Lower priority issues include:

- **Rural drinking water infrastructure** poses a challenge, resulting in rural communities relying on drinking water from outside the watershed.
- **Increased precipitation** and intensity of rain events with a lack of water storage results in excess overland flow, high flows, and flooding.
- **Historical land use conversion** has fragmented habitats, which are valuable for water quality benefits, water storage, and habitat for unique species.

Emerging Issues

Emerging issues are those that are not planned to be directly addressed in implementation or may not be fully understood but are important enough to be recognized. RRW emerging issues include contaminants of emerging concern, chloride, and invasive species.

Contaminants of Emerging Concern

Contaminants of Emerging Concern (CECs) refer to a broad class of compounds found in industrial use, personal care products, pharmaceuticals, and more that have unknown health impacts. Thousands of CECs have been used across industries but without thorough testing on human health or the environmental impact. Now, scientists and policymakers are becoming more concerned over the impact of these.

Per- and Polyfluoroalkyl Substances (PFAS) is one example of a CEC. PFAS are a class of compounds that are gaining attention due to their persistence in the environment (they are called 'forever chemicals') and have links to serious health issues. PFAS were developed for use in fire-fighting materials, cosmetics, and nonstick cookware.

CECs end up in the environment through wastewater effluent, stormwater runoff, and industrial discharge. In Minnesota, CEC presence in lakes was studied and all lakes tested found at least one CEC (MPCA, 2021). Continual research into the impacts of CECs and key compounds to test for in the environment will be an area of study into the future. MPCA tests for PFOS (a type of PFAS) and so far, 26 lakes in the state are impaired due to PFOS, but many lakes and rivers have yet to be tested. MDH tests for select CECs in drinking water sources and informs the public on best ways to reduce exposure to contaminants.

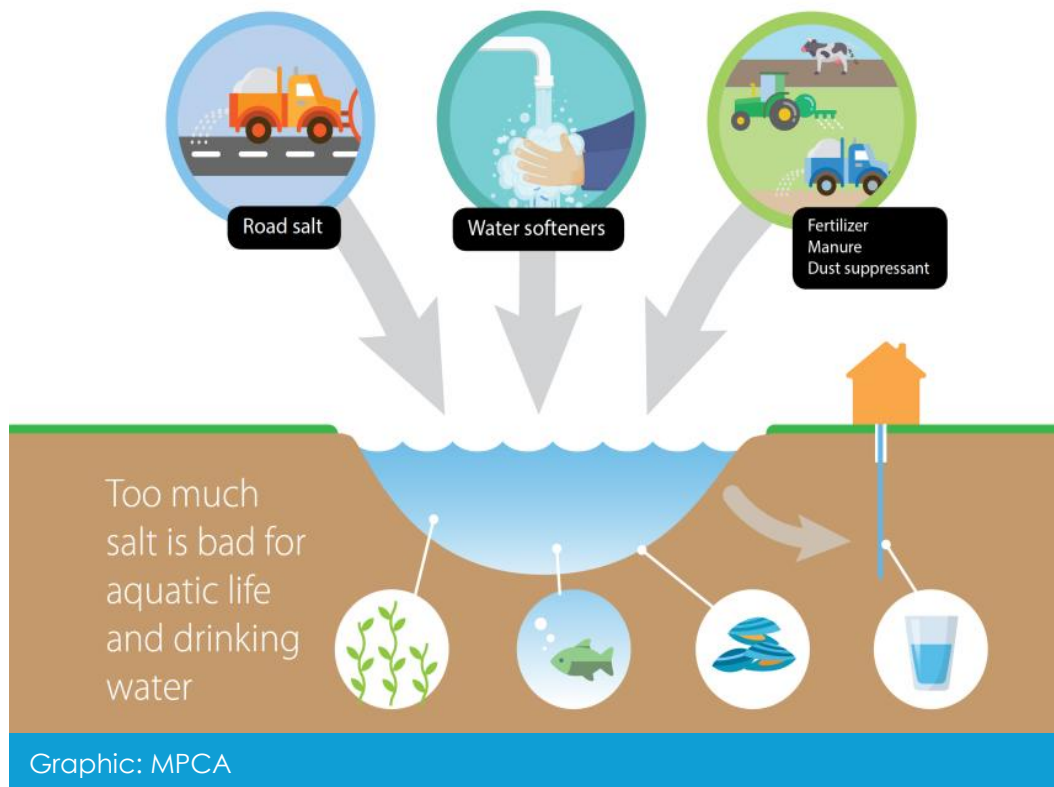
Chloride

The application of sodium chloride (road salt) is done in cold climates for winter safety (roads, streets, parking lots, and sidewalks), as it can act as both an anti-icer and de-icer. However, chloride does not degrade in the environment, resulting in a complex environmental problem. For decades, the salinity of freshwater has been rising. Chloride pollution is partially responsible for this, as millions of tons of salt are applied annually in the United States that ends up in the surface water, soil, or groundwater. Road salt is the biggest source of chloride pollution in Minnesota, but synthetic fertilizers, water softeners, and livestock waste are also a source of chloride.

In Minnesota, there has been a push for increased recognition of the problem and MPCA provides statewide training and resources on chloride reduction. As there is no treatment of chloride in the environment, the best way to decrease chloride pollution is to reduce the amount applied. Road salt is frequently applied at a much greater amount than necessary, and reducing application amounts can make a difference.

MPCA has tested some waters for chloride. In the RRW, the Redwood River is impaired due to chloride from Camden State Park to the confluence of Three Mile Creek. This is largely due to discharge from the wastewater treatment facility in Marshall. The City has hard water, resulting in high water softener use. Marshall Municipal Utilities upgraded the facility in 2021 to reduce hardness, hoping to encourage less use of water softeners, but was still unable to meet permitting requirements. In 2024, EPA approved a variance in recognition that the facility attempted to reduce chloride, but it was not feasible to meet the permit limit. The City has a MPCA grant to help citizens offset the cost of more efficient water softeners.

Salt pollution comes from several sources



Invasive Species

Aquatic and terrestrial invasive species are those that are introduced into a region and outcompete native species, causing environmental, economic, or human health issues. In Minnesota, the DNR is charged with assisting counties in managing invasive species, and counties develop plans to address this issue.

Curly leaf pondweed is an invasive aquatic plant that has been found in the RRW. It can grow in dense mats near the shore that outcompete other plants, degrade habitat, and are unpleasant for recreation. Lake Benton has an ongoing treatment program for curly leaf pondweed. Zebra mussels have been found in neighboring watersheds and as of 2024, were observed within the watershed in East Twin Lake.

Minnesota maintains a list of noxious weeds—plants that affect the environment, livestock, and property—and counties often add their own troublesome species to this list. Lincoln and Yellow Medicine counties include *Cirsium vulgare* (bull thistle) and *Carduus nutans* (musk thistle) on their noxious weed lists. Two additional noteworthy invasive species, *Agrilus planipennis* (emerald ash borer) and *Lymantria dispar* (formerly gypsy moth), are found in Minnesota. Education to the public is critical in preventing the spread of invasive species.

Watershed Streambank Stabilization

Many areas along the Redwood River and its numerous tributaries are prone to streambank erosion. Streambank erosion and other near-channel sources are the largest source of sediment in the RRW (MPCA, 2023b). There are a multitude of variables that create streambank instability issues within the Redwood River corridor.

The Redwood River's higher velocity flows are more controlled in city limits and downstream of Marshall. This is because flows downstream of Marshall are managed by the Corps of Engineers Diversion Project, which creates a more predictable flow within the City of Marshall. This difference in how flows are managed upstream of Marshall versus downstream of Marshall impacts the type of solutions that are possible for managing stream stabilization issues, and how projects may be permitted. Planning partners within the RRW may consider projects and solutions accordingly during implementation efforts.

Solar Farms

Solar farms taking up productive land is an emerging issue that some landowners are growing increasingly concerned over. Solar energy is growing in popularity as the cost of solar continues to decrease. Minnesota has additional need for large solar operations as the state mandated public utilities to provide clean electricity by 2040. Large solar operations require land to place solar panels, and farmland can be a prime location. These solar farms can be an opportunity for farmers to lease land for payments. The increase in solar farms can lead to conflict between producers desire to use land as farmland and solar farms taking land out of production. MDA provides resources for farmers who want to protect their land from solar development (MDA, n.d.).

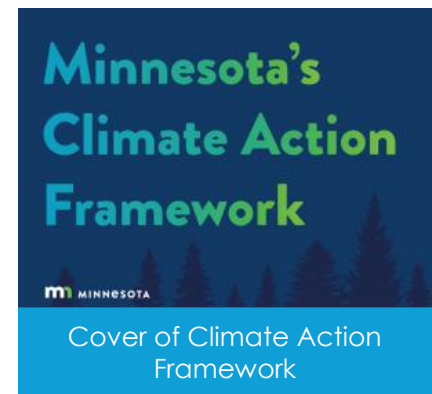
There are environmental considerations for solar farms, including the addition of impervious surfaces that produce stormwater and can erode soils. MPCA recommends panels allow runoff between each array to avoid concentrated runoff and that panels are placed as low as possible to still allow vegetative growth underneath (MPCA, n.d.). Implementation of native plantings and pollinator habitat can also reduce runoff. If panels are more than 10 feet above the ground, BMPs should be implemented to prevent erosion. The disposal of panels as they reach the end of their lifespan is also an issue as they contain toxic material that could leach into groundwater if not properly disposed of. Solar panel recycling is available but is more expensive than disposal.

Planning Lenses

Planning lenses, based on local knowledge and data, are used to summarize and enhance the planning process. The lenses are not issues but instead provide a different perspective to view the issues in the watershed. The RRW planning partners have integrated climate resiliency and environmental justice as lenses for this plan and implementation.

Climate Variability and Resilience

Minnesota has been experiencing variation in precipitation and temperature, with an increase in the annual amount and number of heavy rain events. Additionally, periods of drought are becoming more frequent, as well as an increase in temperature, specifically in winter and at night. With less predictable climate and weather patterns, as well as the increased probability of new issues to emerge within the watershed, climate resiliency is a necessary lens for all issues in this plan. This has an impact on everyone who lives in the watershed, whether on those who enjoy ice fishing on lakes that have less ice cover, on residents that depend on infrastructure built for a different climate, or on producers that grow crops that experience heat stress. In 2022, Minnesota released a statewide Climate Action Framework, a plan to prepare communities for a changing climate and reduce impacts to people. Planning partners considered climate resiliency when drafting this plan. Actions in this CWMP align with the framework goals of Climate-smart Natural and Working Lands and Healthy Lives and Communities.



Environmental Justice

All citizens in the RRW are impacted by water quality and other environmental concerns. These concerns can have economic and social impacts on citizens within the watershed and should be considered during the planning process. Knowledge of the principles of environmental equity in how resources are allocated and how communities can be disproportionately impacted by environmental issues can help address inequities in implementation. MPCA areas of importance for environmental justice (discussed in **Section 2—Land and Water Resources Narrative**) cover 2% of the watershed area. This plan will focus on promoting equity for everyone to have access to clean water and access to the other resources in the watershed.

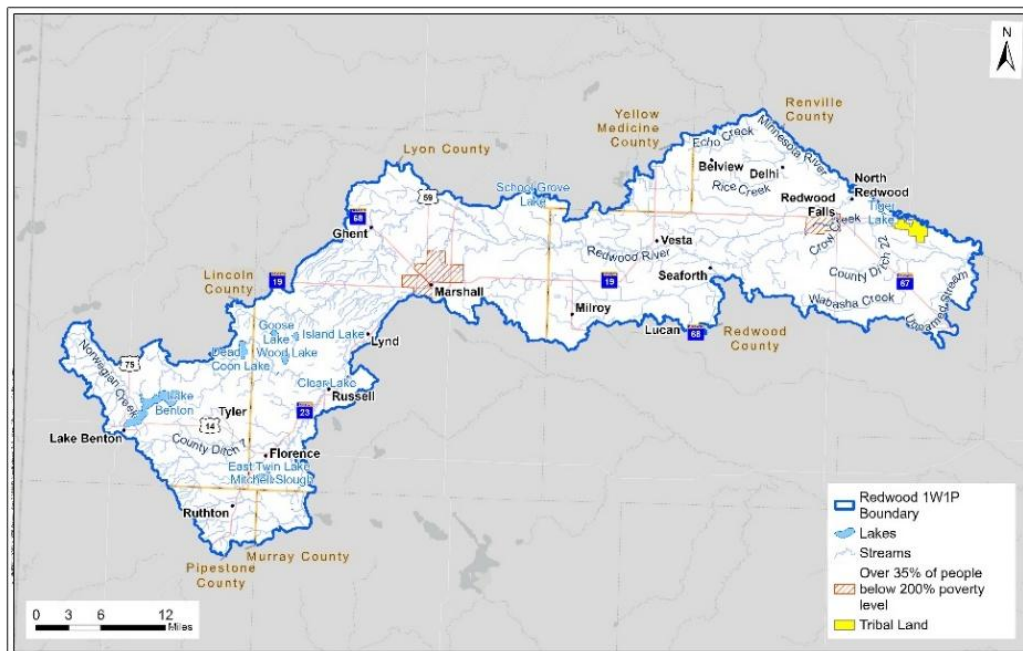


Figure 3-4: MPCA environmental justice areas in the RRW as of October 2024. For a full-sized map, see Figure 2-3.



4. Measurable Goals

4. Measurable Goals

Introduction

The Steering and Advisory Committees developed nine measurable goals to improve resources affected by all high and medium priority issues. Measurable goals include both a short-term goal and a long-term goal. The short-term (10-year) goal is the focus of this plan. This section delves into each of these nine goals in detail. Later, **Section 5—Targeted Implementation** outlines the actions to make progress towards these goals.

Short-term Goal

A quantifiable change in a resource or issue over the next 10 years

Long-term Goal

The desired future condition of a resource or issue with no expected timeline

Work Already Done

Rather than starting from scratch, this plan continues the ongoing efforts in watershed planning and management. Landowners as well as local, state, and federal organizations have been working in the watershed and making water quality improvements for decades. The goals established here are built upon previous work done in the watershed. MPCA's Healthier Watersheds tool, which contains eLINK BMP data, provides a snapshot of the achievements completed in the last 20 years (years 2004-2023; MPCA, 2024c):

- Over 60,000 acres of nutrient management practices
- Nearly 60,000 acres of conservation tillage
- Over 13,000 acres of cover crops
- Over 2,000 feet of streambank and shoreline protection
- 144 Water and Sediment Control Basins (WASCOBS)
- 207 Alternative Tile Intakes
- 292 Wells Sealed
- 73 Subsurface Sewage Treatment Systems (SSTS)

It should be noted that these numbers undersell the conservation activity in the watershed in two ways. First, the numbers only reflect the Redwood HUC-8 Watershed, not the additional land area considered in this plan (described in **Section 2—Land and Water Resources Narrative**). Secondly, these numbers only reflect projects implemented through state and local funding programs. In reality, numerous additional projects have been voluntarily completed by landowners working independently to make resource improvements.

Goal Factsheets

Measurable goals for this plan are summarized in the following pages as a series of standalone factsheets. Each factsheet includes background information about the goal and issues it addresses, the short-term goal and desired future condition, stacked benefits, and a focus area map with planning region milestones.



Focus Areas

Specific focus areas for each goal were identified by the Steering and Advisory Committees. The focus areas for each goal were informed by existing geospatial data selected to represent each priority issue (**Appendix D**). Each planning region was allocated a portion of the goal based on the prevalence of these focus areas. These planning region milestones were then combined to form the short-term goal, ensuring that implementation efforts target the areas that will benefit the most. In this way, implementation is guided to focus on specific areas that will most benefit from working towards the goal.



Stacked Benefits

Implementation actions can not only achieve a specific goal but provide additional environmental benefits that improve other resources. On the following pages, these 'stacked benefits' are listed for each goal and estimated when possible. For example, on page 4-13, streambank and shoreline protection will not only stabilize shorelines but reduce sediment and nutrient loading from shoreline erosion, thereby improving local habitat. Carbon sequestration relevant to certain goals is discussed in **Appendix E**.



Ice fishing on Lake Redwood (RCRCA)



Soil Health and Working Lands

Short-term Goal:

Implement 22,500 acres of soil health practices

- ▶ Metric: Acres with implemented practices

Addresses Issues:

- Soil Health and Working Lands
- Nutrients and Bacteria
- Protection and Restoration
- Groundwater Quantity
- Water Storage/Flooding

Stacked Benefits:

- Water storage
- 3,534 metric tons/year carbon sequestration
- 3% reduction in total phosphorus (TP) and total nitrogen (TN) loading
- 8% reduction in sediment loading

Desired Future Condition:

Soil health practices or management efforts have been implemented on all 450,800 acres of agricultural land in the RRW.

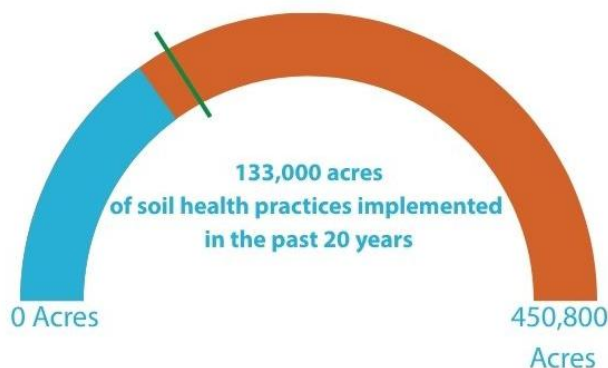
Description

As 86% of the watershed is used for agriculture, managing lands in a sustainable and renewable manner is essential for soil and water resources (USGS, 2021). Soil health is defined as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. Practices that degrade soil health include a lack of crop diversity, soil disturbance, or leaving soil bare. Poor soils are more prone to wind and water erosion, which not only impacts agricultural productivity but also downstream water quality.

Regenerative soil health practices, such as cover crops and no-till, are not only good for the soil but provide multiple benefits, such as reduced nutrient and sediment loading, carbon storage, water storage, and increased groundwater recharge. According to MPCA's Healthier Watersheds, farmers in the Redwood River Watershed have already implemented over 133,000 acres of soil health practices in the last 20 years (60,000 acres of nutrient management practices, 60,000 acres of conservation tillage, and 13,000 acres of cover crops).

There are 450,800 acres of cropland in the watershed. This plan's short-term goal is to implement soil health practices on additional 5% of the watershed's cropland. This translates to implementing an additional 22,500 acres of soil health practices in the watershed.

Short Term Goal: 22,500 acres





Soil Health and Working Lands: Focus Areas and Milestones

Practices to improve soil health and working lands will be prioritized to DWSMAs as well as the high and medium priority areas shown in **Figure 4-1**. These areas contribute the most sediment to the edge of the field, as estimated by the Prioritize, Target, and Measurable Application (PTMApp).

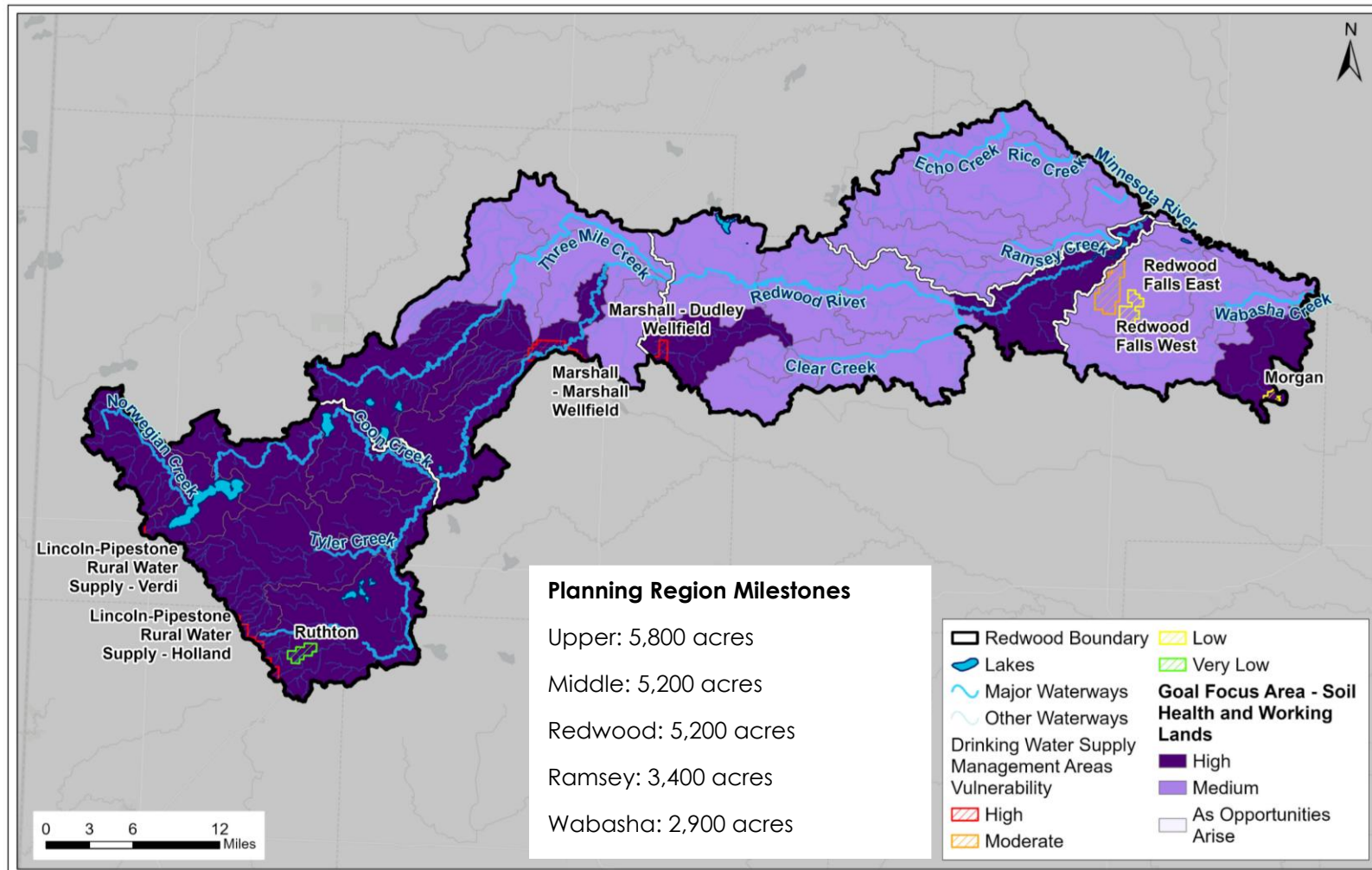


Figure 4-1: Focus areas for soil health and working lands



Nutrients and Bacteria

Description

Short-term Goal:

Reduce TP loading by 7% (or 13,800 pounds/year) and TN loading by 7% (or 251,700 pounds/year)

▶ Metric: Pounds of TP/TN

Addresses Issues:

- Nutrients and Bacteria
- Protection and Restoration
- Soil Health and Working Lands

Stacked Benefits:

- Soil health practices
- Reduced nutrients and improved water and carbon storage
- Reduced algae blooms

Desired Future Condition:

Reduce total phosphorus loading by 40% to meet average TMDL targets for impaired waterbodies (**Appendix F**).

Nutrients and bacteria are water quality issues that community members are most commonly aware of due to undesirable algae blooms on recreational lakes and warnings on water safety. Nutrients refer to total phosphorus (TP) and total nitrogen (TN), which in excess quantities contaminate surface water and groundwater. Excess phosphorus in lakes can lead to the rapid growth of algae, resulting in algae blooms that can produce toxins. Fish kills sometimes result from a decrease of dissolved oxygen in the algae decomposition process.

There are 6 lakes and 2 streams along the Minnesota and Redwood River that are impaired due to an excess of nutrients in the RRW. Modeling found that 59% of the phosphorus load and 92% of the nitrogen load in the watershed are from agricultural lands (MPCA, 2023). Aquatic invasive plants are also known to increase nutrient concentrations through decomposition. Each county manages aquatic invasive species (AIS), and the DNR regulates AIS statewide. Local AIS management can include herbicide application, for which a permit from the DNR is required.

There are 10 streams with bacteria-impaired reaches in the RRW. Bacteria-contaminated waters are a public health issue, as the presence of *E. coli* is an indicator of potential fecal contamination. A source assessment of two bacteria-impaired streams, Redwood River and Clear Creek, estimates that the largest source of bacteria in the watershed is surface-applied manure from livestock (MPCA, 2023b). Additional sources during low-flow conditions could be failing SSTS and grazing in the riparian zone. Practices that address nutrient loading via livestock will also help reduce bacteria.

The short-term goal of reducing TP and TN by 7% was developed from a PTMApp implementation scenario of what is attainable within the 10-year plan. It will be accomplished through structural agricultural BMPs (e.g., grassed waterways, water, and sediment control basins) and soil health practices (e.g., tillage management, cover crops, and nutrient management).



Nutrients and Bacteria: Focus Areas and Milestones

Practices to reduce nutrient and bacteria loading will be prioritized to areas contributing to priority protection and restoration of waterbodies, as well as in the high and medium priority areas shown in **Figure 4-2**. These areas contribute the most nutrients to the edge of the field, as estimated by PTMAApp. Note that Lake Benton is a high priority lake that is also impacted by stormwater entering the lake from the City of Lake Benton.

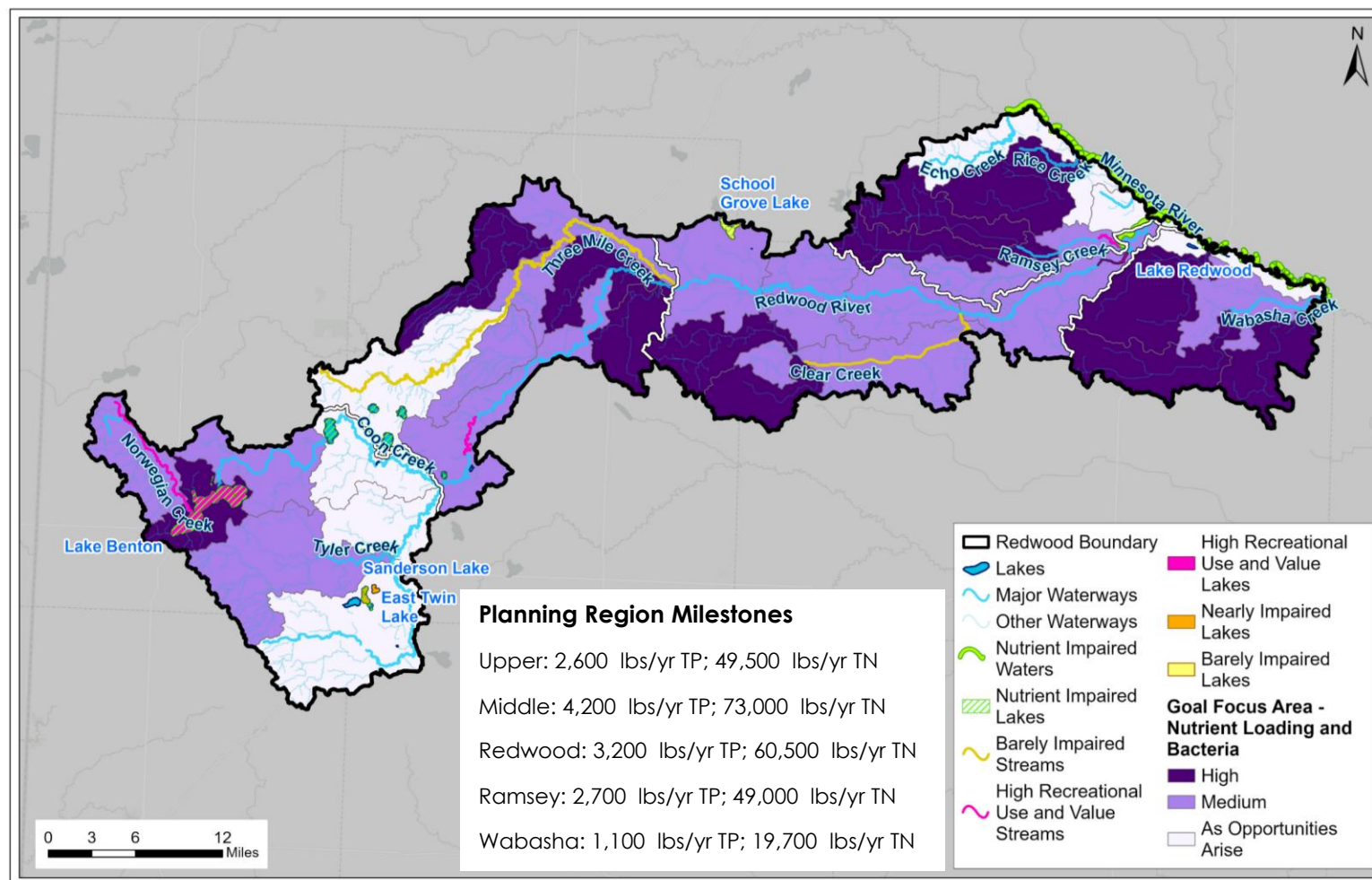


Figure 4-2: Focus areas for addressing nutrients and bacteria



Protection and Restoration

Short-term Goal:

Implement 18,000 acres of land in temporary or permanent easements, prioritizing areas contributing to priority resources

- ▶ Metric: acres enrolled/re-enrolled

Addresses Issues:

- Protection and Restoration
- Groundwater Quantity
- Nutrients and Bacteria

Stacked Benefits:

- Enhanced aquatic and terrestrial habitat
- Reduced shoreline erosion
- Protection of public health into the future
- 20,040 metric tons/year of carbon sequestration

Desired Future Condition:

Surface water quality of high-quality resources is maintained, and priority impaired resources are delisted.

Description

The RRW contains hundreds of stream and river miles with a number of water basins that are home to diverse plants, wildlife, and aquatic organisms. As part of the WRAPS, local and agency staff prioritized streams and rivers for future protection and restoration efforts.

Several waterbodies are priorities for protection and restoration efforts as they have high recreational use and value. These include Lake Benton and the upstream contributing areas, Norwegian Creek, Lake Redwood, and two trout streams (Redwood River near Camden State Park and Lower Ramsey Creek upstream of Ramsey Falls).

Several streams and lakes in the RRW were considered priorities for protection or restoration because they are nearly or barely impaired (i.e., within 30% of water quality standards). Nearly impaired resources include East Twin Lake and Sanderson Lake. Barely impaired resources include Three Mile Creek Reach 564/565/566, Clear Creek Reach 567/568, and School Grove Lake.

This plan's 10-year goal is focused on protecting and restoring these resources through land protection programs, which will be prioritized around these resources. Functional, protected land can support plant and animal species, manage water quality, and store water.



Lake Benton (Lake Benton Chamber of Commerce)



Protection and Restoration: Focus Areas and Milestones

Figure 4-3 shows the lakes and streams prioritized for protection and restoration efforts by local and state agency planning partners. These resources include streams and lakes that are categorized as nearly or barely impaired, as well as high recreational use and value waters.

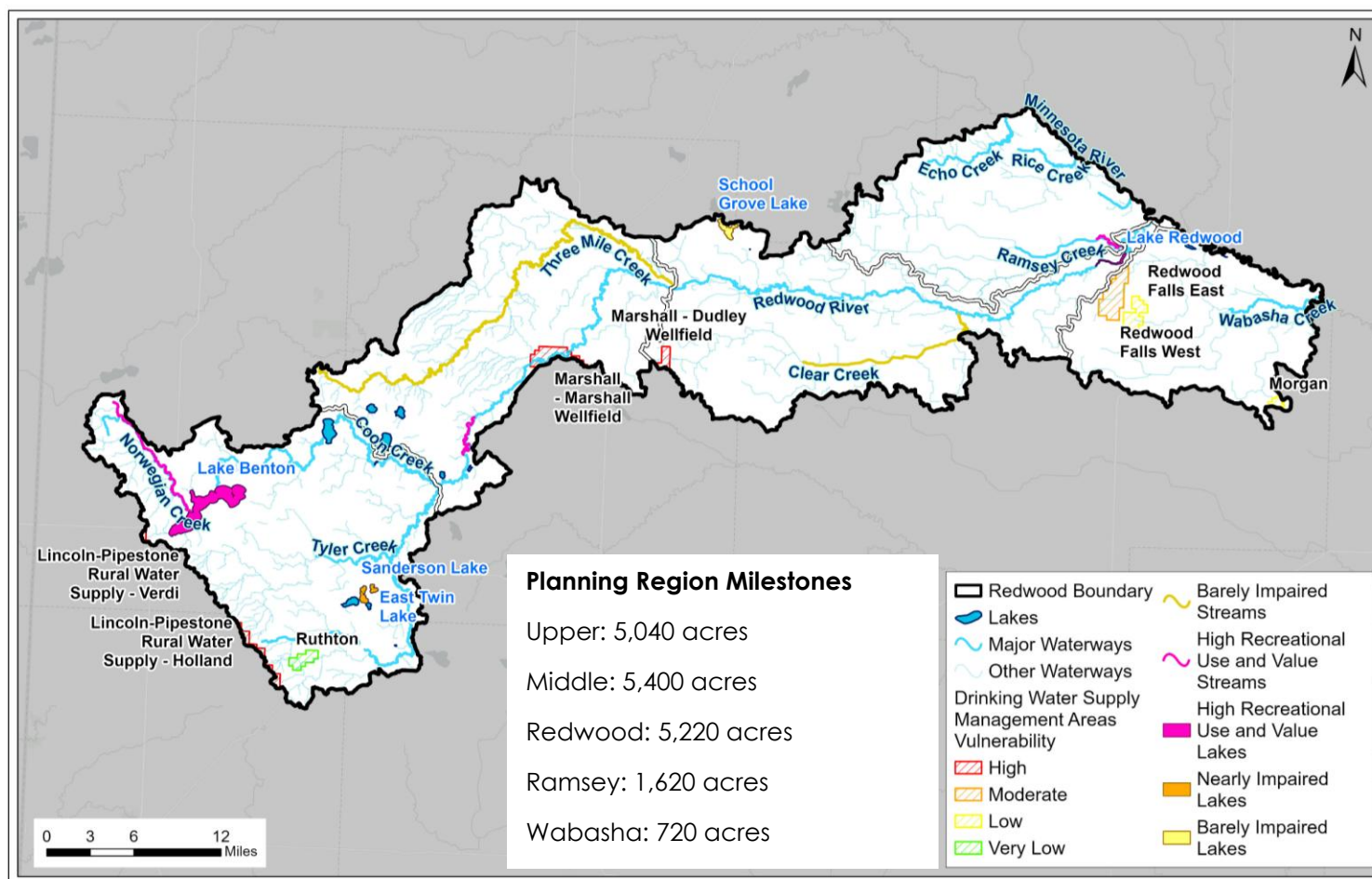


Figure 4-3: Priority protection and restoration waterbodies



Groundwater Contamination

Short-term Goal:

Protect drinking water from contamination by sealing 15 wells per year, or 150 over the 10-year plan.

▶ Metric: Number of wells sealed

Addresses Issues:

- Groundwater Contamination

Stacked Benefits:

- Improved drinking water safety

Desired Future Condition:

All known abandoned wells are sealed.

Description

All residents in the watershed depend on safe groundwater for drinking water, and some drinking water comes from rural water suppliers outside the watershed. The geology of the watershed results in a landscape that is mostly very low or low in vulnerability to groundwater contamination. This means that surface pollutants are not easily able to reach groundwater. However, there is a stretch of highly vulnerable land around the Minnesota River north of Redwood Falls, and the Marshall DWSMAs have high vulnerability to pollution contamination.

Nearly 25% of samples in the RRW had arsenic levels higher than the drinking water standard, but only 1% of samples exceeded the nitrate standard (MDH, 2024). Arsenic is not a human-caused pollutant; it is naturally occurring in rocks and soil. Education and outreach to private well owners are important aspects of addressing groundwater contamination, as wells with unsafe levels of arsenic or other contaminants can be treated through systems such as reverse osmosis.

Throughout Minnesota, there are unused wells that may not be properly sealed. Unused and abandoned wells can serve as conduits from the surface to groundwater. Sealing wells is an objective across the state, and the RRW goal of sealing 15 wells per year will make progress towards decreasing groundwater contamination. This builds upon the work already occurring in the watershed. According to the MPCA Healthier Watersheds, 292 wells have been sealed in the watershed over the last 20 years.



RRW well
(Redwood County
Watershed)



Groundwater Contamination: Focus Areas and Milestones

Actions aimed to reduce groundwater contamination will be focused in DWSMAS as well as high and medium priority areas shown in **Figure 4-4**. These areas have higher pollution sensitivity and a higher prominence of DWSMAS.

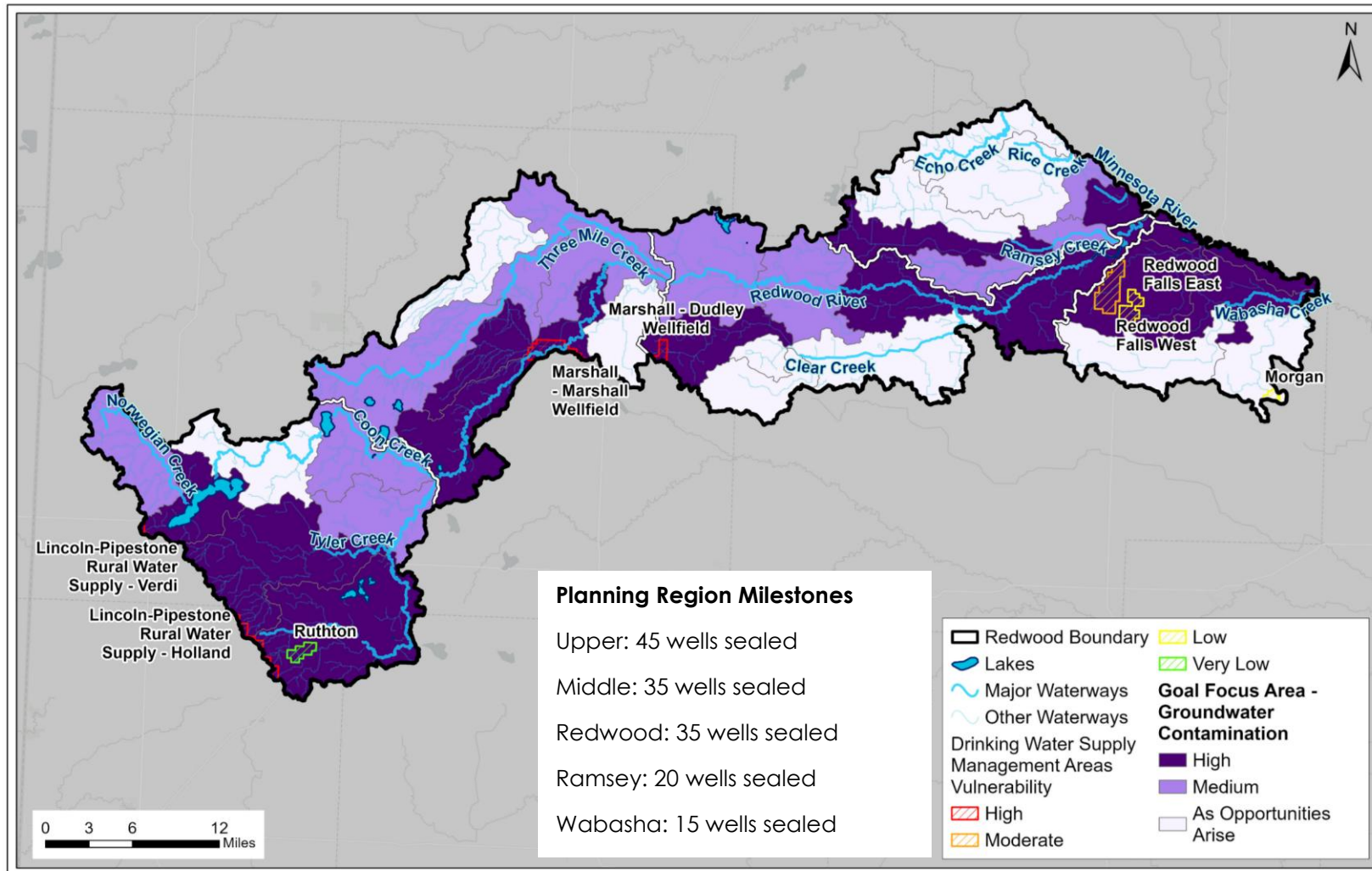


Figure 4-4: Focus areas for preventing groundwater contamination



Water Storage and Flooding

Short-term Goal:

Add 4,000 acre-feet of temporary or permanent storage to the landscape.

Restore or create 100 acres of wetlands.

▶ Metrics: Acre-feet of storage and # acres

Addresses Issues:

- Water Storage and Flooding
- Groundwater Quantity

Stacked Benefits:

- Increases groundwater recharge
- Provides wetland habitat

Desired Future Condition:

Mitigate the impacts of altered hydrology by adding 62,000 acre-feet of storage to the landscape.

Description

The RRW has been experiencing major floods in recent years. Historical land use conversion and drainage of wetlands have greatly reduced the amount of water storage available on the landscape and changed the timing and intensity of downstream peak flows. This, combined with an increase in precipitation and an increase in heavy rains, leads to damaging floods that are environmentally and economically harmful.

The high elevation of the headwaters of the Redwood River and quick drop in elevation are a natural feature of the watershed that make flashy flows more common. However, human-induced changes to the watershed are making high flows and floods more common as less precipitation is able to infiltrate into soil and more is directed through drainage or storm sewers into streams.

This plan seeks to restore 100 acres of wetlands and add 4,000 acre-feet of storage to the landscape. Storage added will be permanent (e.g., ponds) and temporary (e.g., soil health practices, drainage water management). Additional water storage and wetland restorations have numerous benefits, such as reducing nutrient and sediment delivery, providing habitat, increasing groundwater recharge, and decreasing flood intensity, which reduces bank erosion. The desired future condition aims to store 1.32 inches of water across the watershed, mitigating the impacts of altered hydrology in the RRW (**Appendix G**).



Earthen dam constructed on a tributary to the Redwood River (BWSR Snapshot)



Water Storage and Flooding: Focus Area and Milestones

Actions aimed at adding water storage on the landscape will be prioritized to areas shown in **Figure 4-5**. These areas are of local importance in retaining water within the landscape. They are also located upstream of erosive streambanks and help manage flows downstream of the Corps of Engineers Diversion Project in Marshall. Adding water storage will reduce bank erosion downstream.

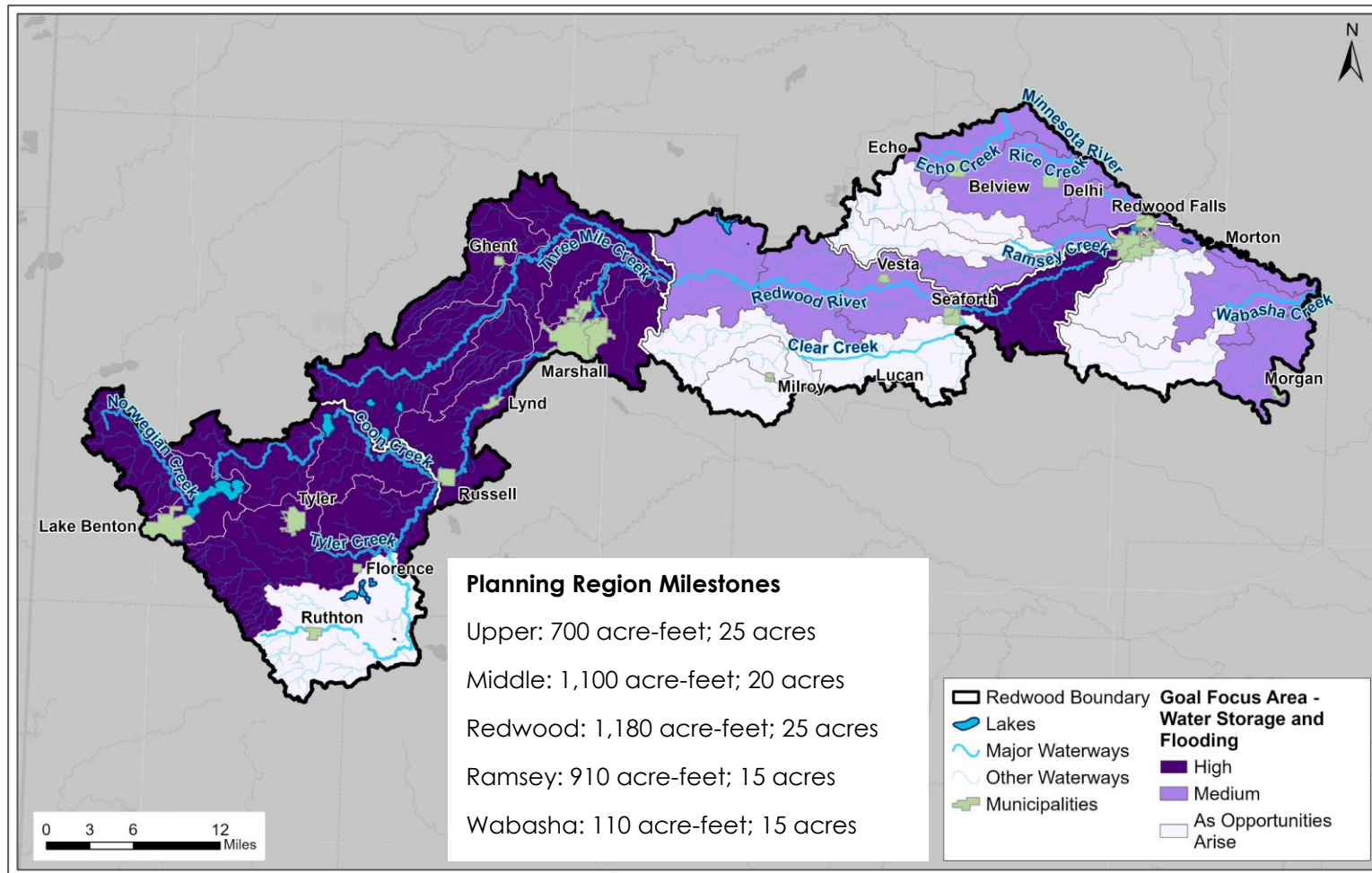


Figure 4-5: Focus areas for storing water on the landscape and restoring wetlands



Bank Erosion

Short-term Goal:

Stabilize or enhance 2,000 feet of streambank and ravines

▶ Metric: Feet of projects

Addresses Issues:

- Bank Erosion
- Riparian and Shoreline Management

Stacked Benefits:

- Improves in-stream habitat
- Reduces phosphorus loading

Desired Future Condition:

All streambanks are stable and do not contribute to excessive erosion.

Description

The Redwood River and its numerous tributaries flow for hundreds of miles through the watershed. Many areas along these rivers and streams suffer from bank erosion. Bank erosion is a factor of flow, bank height, vegetative protection, and floodplain connectivity. Channels that are connected to their adjacent floodplains exhibit less bank erosion than those that contain flows within the channel. Various reaches of the Redwood River are impaired due to TSS and turbidity, which can be partially attributed to unstable stream banks. The largest source of sediment in the RRW is near-channel sources (MPCA, 2023).

Landscape and climate changes in the RRW have resulted in significant alterations to runoff duration and peak discharge to local rivers and streams. High flows are a large cause of bank erosion. The water storage goal described on page 4-11 identifies development of storage areas to reduce impacts from high intensity peak flows, however, while large floods can create significant damage and erosion, changes in flow duration for frequent lower intensity events also represents high erosion potential for destabilization of channel bed and banks. Adding watershed storage will have a host of benefits for all events in the hydrologic regime, including reducing peak flow reduction and moderating changes in duration for the moderate more frequently occurring flows, reducing erosion potential across the board.

The bank erosion-specific goal of 2,000 feet of streambank will make the enhanced sites more resilient to erosion, improve in-stream habitat, and improve water quality through reduced sediment loading. A focus will be on the toe of banks, steep ravines, and natural areas. Natural approaches like toe wood and native plantings can improve floodplain connectivity and provide habitat.



Bank Erosion: Focus Areas and Milestones

Efforts to stabilize and enhance streambanks will be prioritized to high and medium priority areas shown in **Figure 4-6**. These areas have a higher prominence of steep slopes, as characterized by DNR's Watershed Health Assessment Framework (WHAF), or are local priorities for bank erosion efforts.

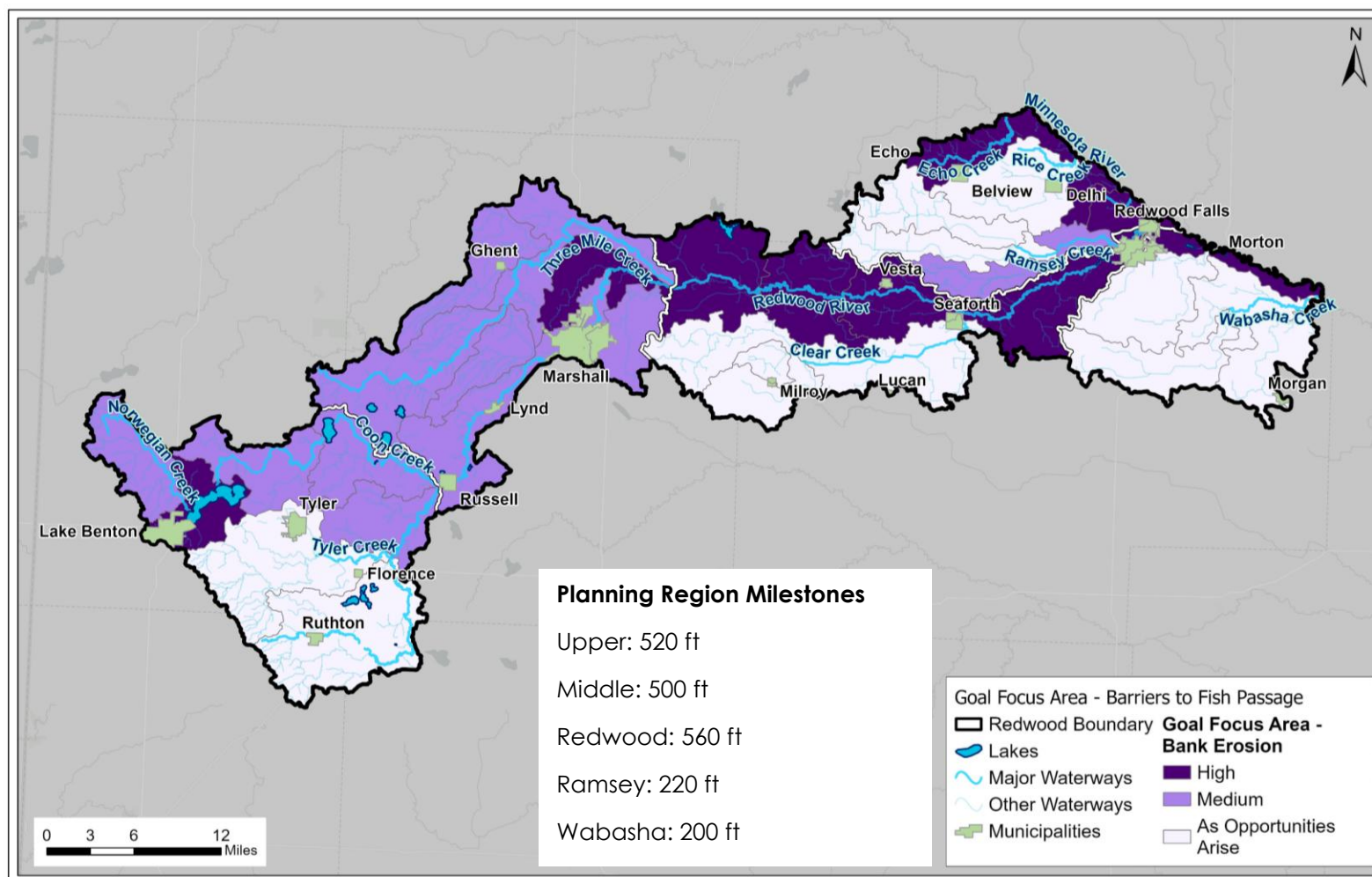


Figure 4-6: Focus areas for addressing streambank erosion



Riparian and Shoreline Management

Short-term Goal:

Improve vegetation on 3,000 linear feet of riparian streambanks or shoreline

▶ Metric: Linear Feet

Addresses Issues:

- Riparian and Shoreline Management
- Bank Erosion

Stacked Benefits:

- Improves in-stream habitat
- Reduces nutrient loading

Desired Future Condition:

No waters are impaired due to aquatic habitat stressors.

Description

Minnesota law requires a minimum of a 30-foot vegetative buffer with an average width of 50 feet on public waters and a 16.5-foot buffer on public ditches. When shorelines lack a buffer, have degraded, or have insufficient vegetation, they are more prone to bank erosion and are less able to filter pollutants from overland runoff.

Riparian vegetation also provides a corridor and habitat for species along the water body, such as pollinators (bees, butterflies, and other insects), birds (eagles, songbirds, and shorebirds), frogs, turtles, and small mammals (otters, mink, and muskrats).

The short-term goal is to improve vegetation on 3,000 feet of streambanks or shoreline. In combination with the bank erosion goal, this will improve sediment loading and habitat, both of which are stressors for RRW streams. This goal will target specific areas in need of an enhanced buffer to improve water quality and habitat, as well as areas of high recreational value. Most buffers in the RRW are in compliance with the buffer law. This goal does not focus on enforcement of the buffer law; rather, it is an opportunity to enhance existing buffers to improve habitat.



Shoreline vegetation along Redwood River (MPCA)



Riparian and Shoreline Management: Focus Areas and Milestones

Efforts to stabilize and enhance streambanks will be prioritized to high and medium priority areas. These areas have a higher prominence of impaired waters with aquatic habitat as a stressor. Priority protection and restoration of waterbodies are also shown.

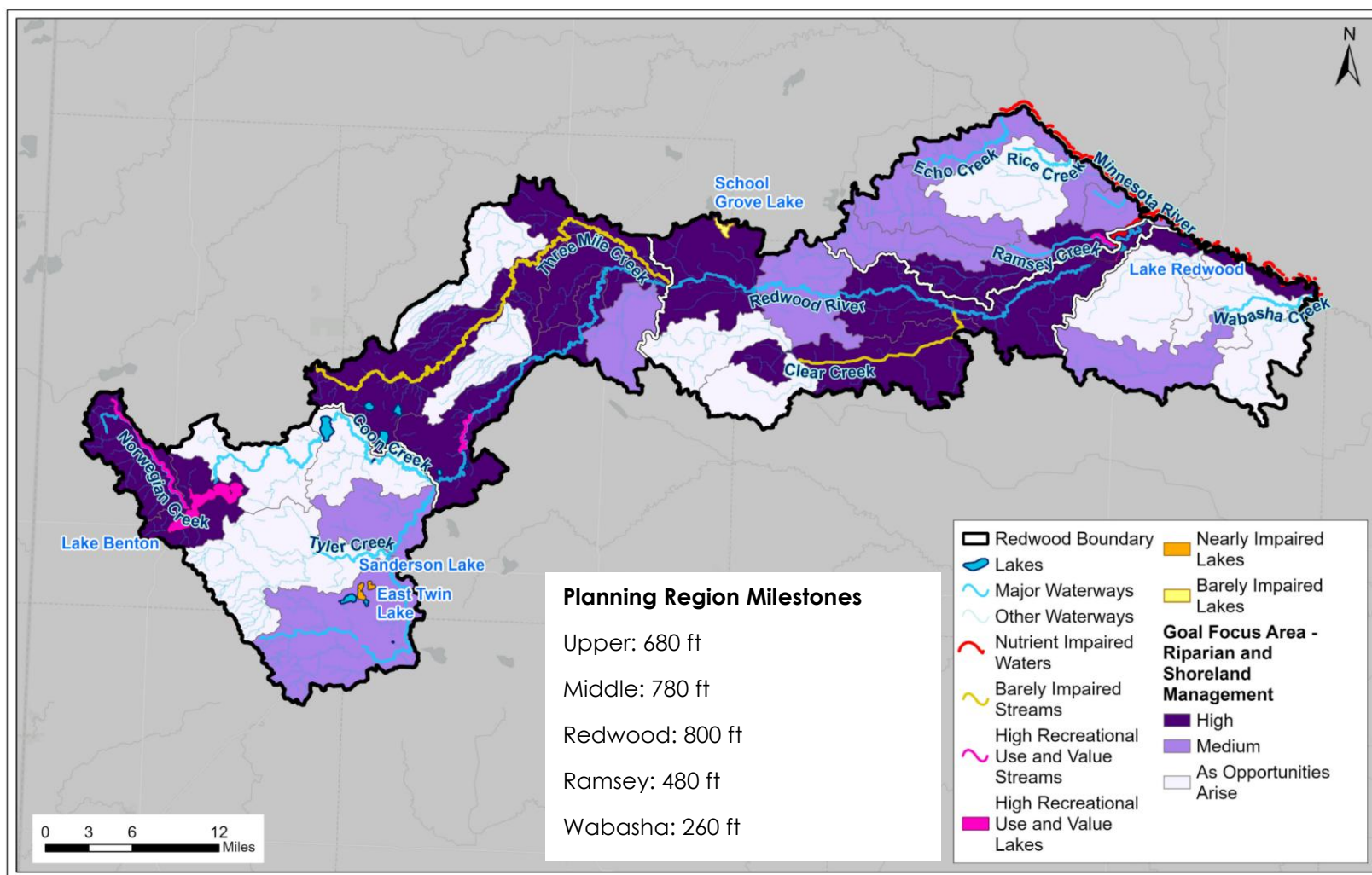


Figure 4-7: Focus areas for managing riparian areas and shoreline



Barriers to Fish Passage

Short-term Goal:

Address 4 barriers (such as dams, impoundments, and culverts) to fish passage.

▶ Metric: Barriers addressed

Addresses Issues:

- Barriers to Fish Passage

Stacked Benefits:

- Improved hydrology
- Flood risk reduction

Desired Future Condition:

All human built barriers to fish passage are addressed.

Description

Stream connectivity refers to how water is connected upstream and downstream, as well as from the channel to the floodplains. One aspect of connectivity is the ability of a stream to allow for fish passage. Fish undergo seasonal migration for reproduction and overwintering, and when they are prevented from migrating, the fish population is impacted, along with other species that depend on fish behavior. For example, mussels, which play an important role in aquatic ecosystems, develop as larvae attached to fish.

Fish passage barriers can be natural (waterfalls or beaver dams) or human built (dams or culverts). Culverts are not inherent barriers but can impede fish passage when they are undersized, sloped (increasing flow passing through), or placed at the wrong elevation where the culvert is above the stream (perched). Twenty barriers to fish passage have been identified in the Redwood River major watershed, along with an additional eight structures that may be barriers (MPCA, 2023). A perched culvert that isn't one of the four barriers being addressed by this goal is in Wabasha Creek Planning Region and may be addressed during implementation if funding allows. Removal of non-natural fish barriers is an opportunity to promote water flow and increase fish diversity.



A culvert that may be a fish barrier
(Stressor Identification Report)



Barriers to Fish Passage: Focus Area and Milestones

Figure 4-8 summarizes the location of dams and/or potential barriers in the RRW as inventoried by the DNR as part of Redwood River (DNR, 2020) and Minnesota River-Mankato (DNR, 2016) watershed characterization reports. Other bridges and culverts inventoried by MnDOT are also shown in pink. These barriers must first be prioritized and then addressed.

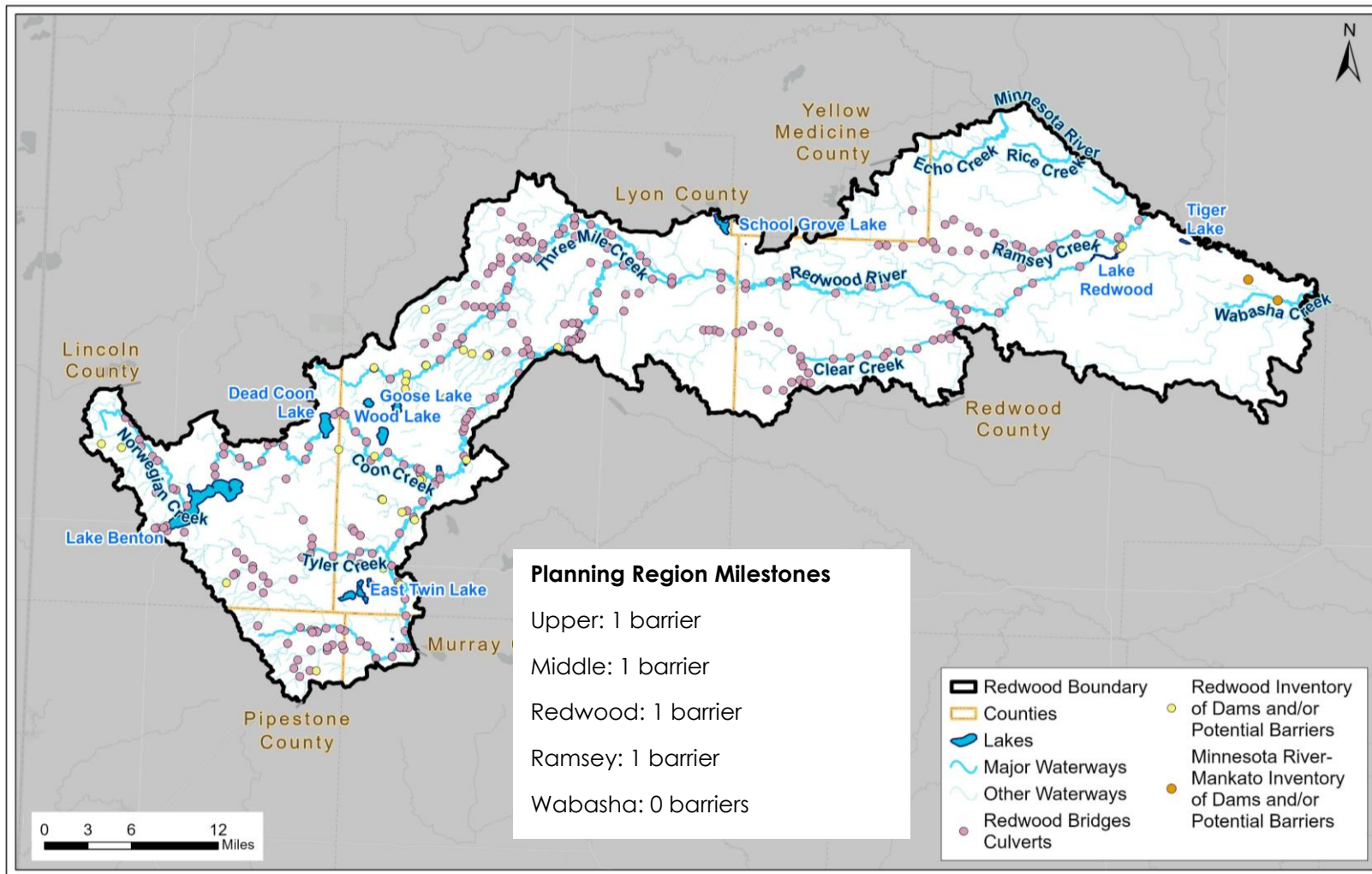


Figure 4-8: Inventoried potential barriers for fish passage



Stormwater

Short-term Goal:

Implement stormwater BMPs to **treat 25 acres** of rural or urban developed land.

- ▶ Metric: Number of BMPs

Addresses Issues:

- Stormwater
- Nutrients and Bacteria
- Protection and Restoration

Stacked Benefits:

- Reduces nutrient loading
- Provides urban water storage

Desired Future Condition:

Stormwater BMPs are implemented wherever possible.

Description

As stormwater runs over pavement and urban areas, it picks up pollutants and transports them to receiving waters. Stormwater is full of fertilizer, metals, bacteria, salt, and other contaminants.

There are 15 municipalities in the RRW, each of which manages stormwater. The RRW also has two MS4 municipalities—Redwood Falls and Marshall. Minnesota requires MS4s to obtain a general permit, which details best practices and guidelines for reducing pollutants in stormwater.

Addressing stormwater quality through BMPs is expected to have numerous benefits, including providing urban water storage and reducing nutrient, sediment, and bacteria loading. Education on the impact of stormwater and how resident practices can affect it is a key part of stormwater management. Landowners can improve stormwater quality by refraining from excessive pesticide/fertilizer application, picking up pet waste, and keeping grass clippings and leaves out of the street. Stormwater BMPs that can be adopted include rain gardens, stormwater ponds, vegetated swales, Adopt-a-Drain, and more.



Stormwater entering a storm drain
(Minnesota Stormwater Manual)



Stormwater: Focus Areas and Milestones

Efforts to treat stormwater runoff will be prioritized to areas contributing to priority protection and restoration resources and high and medium priority areas. These areas have a higher prominence of urban and municipal areas (**Figure 4-9**).

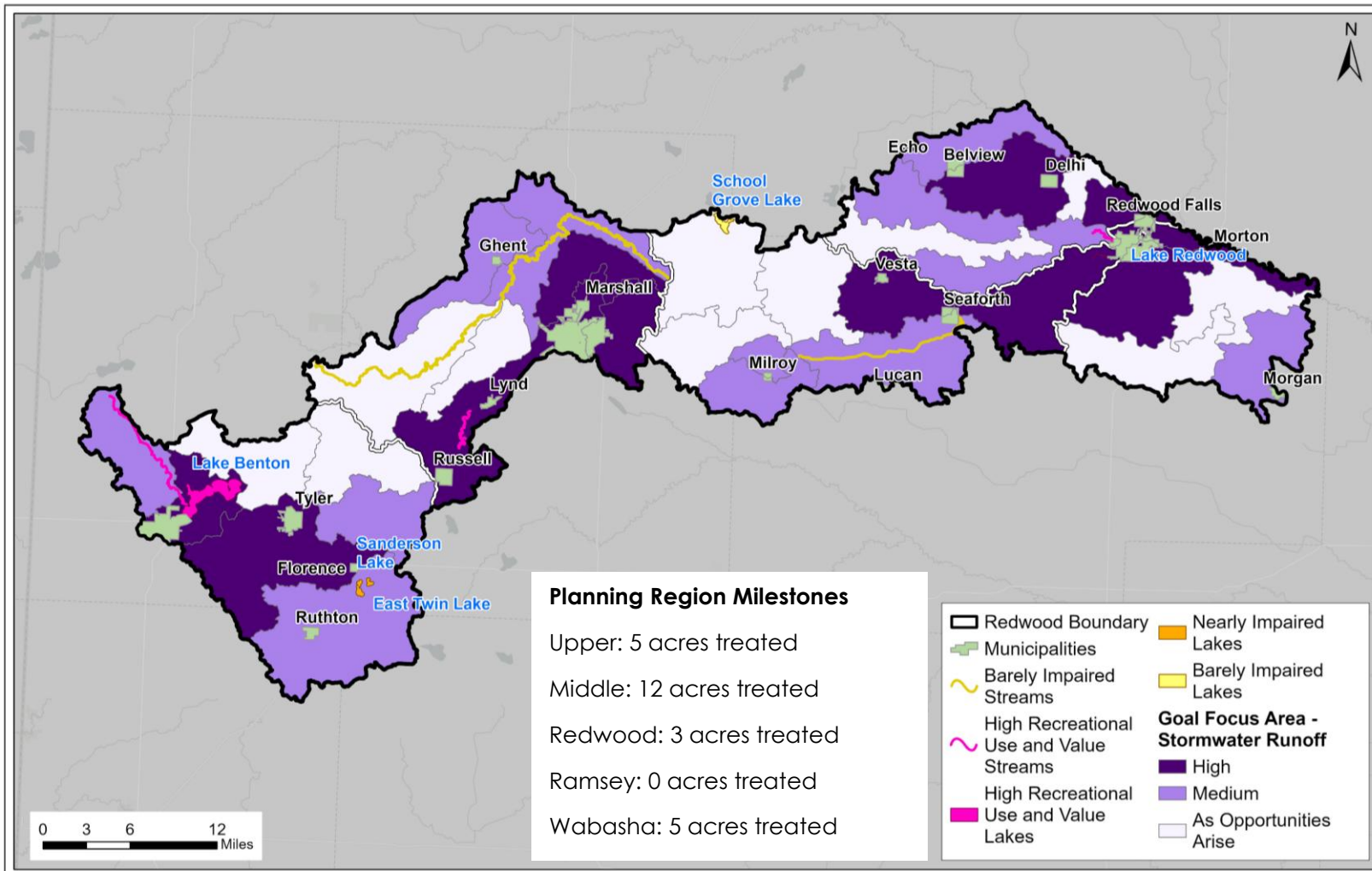


Figure 4-9: Focus areas for addressing stormwater runoff



5. Targeted Implementation

Section 5. Targeted Implementation

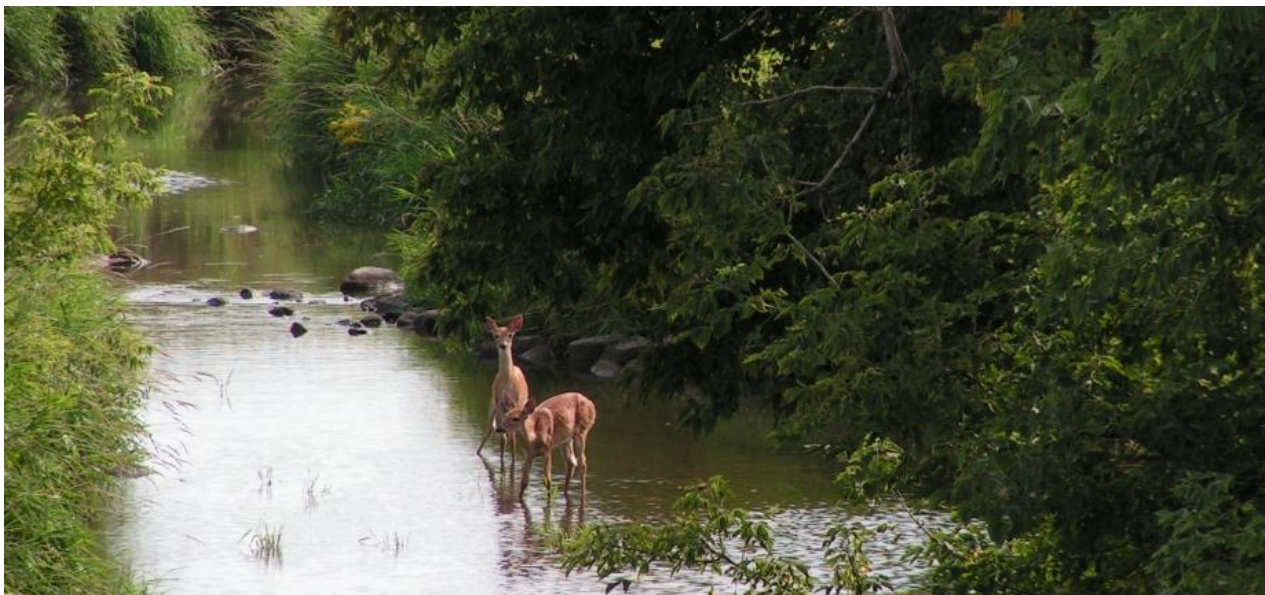
Introduction

This section of the plan describes the actions that will be carried out in the next ten years to address the priority issues in **Section 3 – Priority Issues** and make progress towards measurable goals in **Section 4 – Measurable Goals**. This section contains actions for watershed-wide activities as well as actions at the planning region scale. Each action includes the following information:

- An action description
- Focus area
- Measurable output for tracking purposes
- Which goals are impacted by this action
- The responsible entity for carrying out the action
- An estimated timeframe
- Estimated cost

Actions were developed through a review of goals in the WRAPS report, responses from the 60-day notification of planning, planned actions in neighboring watersheds, and committee input. The action tables include a long list of structural and nonstructural best management practices (BMPs), land protection and restoration, and research and outreach actions that local and state partners will work together to implement. The measurable output of each action, such as the number of acres of a practice or the number of events held, will be tracked by implementation partners.

The high level of detail in the action tables provides guidance for planning activities. The action tables will be referred to during implementation and annual work planning. Progress will be assessed annually (see **Section 7—Plan Administration and Coordination**) with a formal assessment midway through the 10-year plan.



Redwood River (MPCA)

Funding Levels

Making progress toward goals is dependent on many factors. One of these factors is the amount of funding available, as more actions can be implemented with more funding. As such, each action in the action table specifies if it's anticipated to be funded by local or partner/federal sources of funding. Detailed descriptions of local and partner/federal funding sources are provided in **Section 7—Plan Administration and Coordination**.

Currently, the most predictable sources of local funds in the RRW are funds received by SWCDs, counties, RCRCAs, or Area II on an annual basis. During implementation, the RRW will be eligible to receive additional state funding. For example, with this approved and adopted CWMP, the RRW is eligible to receive non-competitive Watershed Based Implementation Funding (WBIF) through BWSR. In recognition of this, an assumed \$500,000 annually has been added to current funding sources to develop a realistic estimate of local and state funds available to implement this plan. This is referred to as Local Implementation Funding.

Local governments in the RRW recognize that to make progress towards all plan goals, some actions will be pursued or funded by partnering entities (e.g., MPCA, DNR, USFWS), federal dollars (e.g., CRP, CREP), or other competitive funding programs. These actions are included in the action tables, highlighting that funding will come from partnering entities, federal, competitive dollars, or partner/federal. It is also acknowledged that some progress towards plan goals will likely be made independently of local implementation efforts through projects and conservation practices done by landowners without local government assistance.



WBIF funds originate from the Clean Water Land and Legacy Amendment



Partnerships to be achieved through WBIF

Implementation Programs

Each action in this plan section will occur through one of five implementation programs: Projects and Practices, Education and Outreach, Research and Data Gaps, Capital Improvements, and Local Controls. **Section 6—Implementation Programs** describes plan programs in greater detail.

Figure 5-1 below summarizes these programs.

Actions in the Projects and Practices program are in a standalone watershed-wide table, and Research and Data Gaps as well as Outreach and Education actions are in another table. Actions within the Projects and Practices program are further divided within planning regions, to better target actions to where they are most needed and effective.



Figure 5-1. RRW Implementation Programs.

Targeting Practices

Given that the RRW overlaps all or portions of six counties and spans over half a million acres, resource issues and needs vary throughout the watershed. This plan is organized on a watershed scale, but Projects and Practices implementation actions are divided amongst five planning regions (see **Figure 3-3**) to target actions to where they are most needed and relevant. Actions were distributed among planning regions based on the prevalence of priority focus areas in the **Section 4—Measurable Goals** focus area maps.

Additionally, each action has a focus area (maps can be referenced in **Section 4—Measurable Goals**) to further narrow down where it will occur. Some actions, such as action EO-5, which involves informing private well owners about testing, have a watershed-wide focus. Many others have a focus area that references the focus area maps in **Section 4—Measurable Goals**. For example, WW-3, manure management, has a Nutrient and Bacteria focus area.

**Upper Redwood River
Planning Region**



**Redwood River
Planning Region**



**Wabasha Creek
Planning Region**



**Middle Redwood River
Planning Region**



**Ramsey Creek
Planning Region**



Prioritize, Target, and Measure Application (PTMApp)



The Prioritize, Target, and Measure Application tool (PTMApp) was used in the RRW to prioritize areas on the landscape that contribute disproportionately large amounts of sediment and nutrients (total phosphorus and total nitrogen), target where on the landscape it is feasible to implement conservation practices, and estimate the cost and benefits of practices that are part of an implementation scenario. Like any model, it has its limitations. PTMApp is well-suited for the RRW as it models agricultural BMPs. It does not provide urban modeling or factor in wind, near-channel, or in-channel erosion.

Detailed information about the RRW PTMApp implementation scenario and maps of field-scale, targeted practices is provided in **Appendix H**. Planning partners in the RRW prioritized practices that reduce sediment loading (at the edge-of-the-field) and practices that align with local implementation trends. PTMApp uses 2019 Environmental Quality Incentives Program (EQIP) practice costs, but local planning partners doubled these costs in PTMApp to account for partial technical support and expected costs.

Actions in this plan's action tables that are informed by PTMApp include Soil Health and Non-Structural Management Practices, Agricultural Conservation, and Multi-Benefit Storage Practices. The cost, load reductions, and acres treated in these action tables are informed by the PTMApp implementation scenario. It is important to understand that the actions planned in this section are ambitious, and while planning partners selected them believing them to be achievable, they are a best-case scenario. Implementation can be impacted by a variety of factors, including the need for voluntary participation, the emergence of new data or practices, the availability of funding, field verification of practices, and the effectiveness of education and outreach efforts. New projects or practices may emerge during the planning timeframe that are not in the action tables. These can be implemented, provided benefits align with plan goals.

Progress Towards Goals

With the watershed spanning over half a million acres, it is important to focus efforts in priority areas in the watershed. The focus areas in **Section 4—Measurable Goals** maps identify the subwatersheds that should be prioritized for each goal.

Figure 5-2 visually summarizes how work towards each goal is divided among the five RRW planning regions. This milestone chart shows the watershed-wide goal on the right. Each bar on the chart represents the level of progress expected to be made in each planning region based on the focus area maps. Planning regions that have a larger milestone contribution for a goal indicate that the issue is more prominent in that particular area.

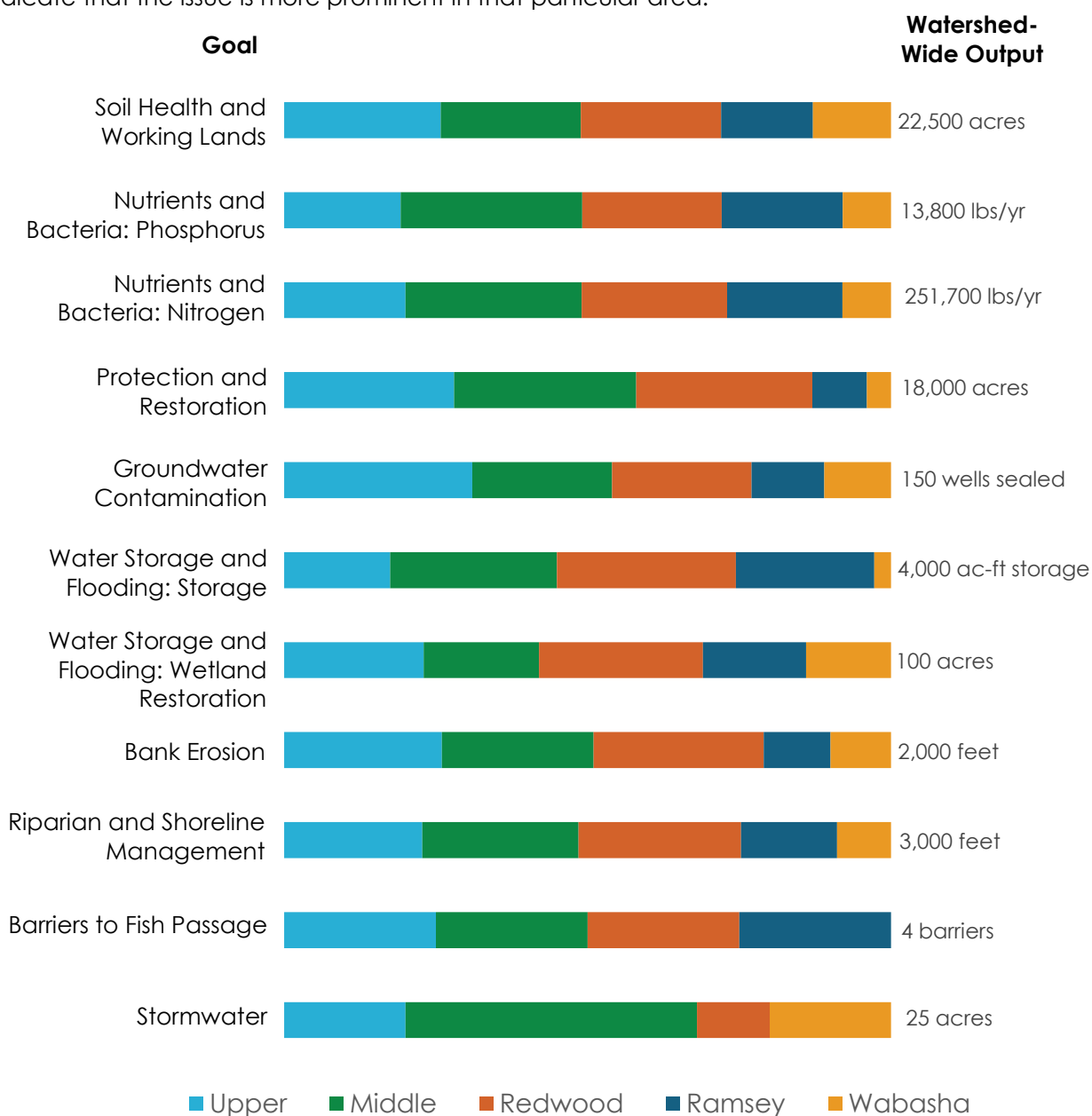


Figure 5-2. Progress towards goals made within planning regions. Note that water storage includes both temporary and permanent storage.

Projects and Practices: Watershed-Wide Summary

ID	Action	Focus Area	10-Year Output	Soil Health & Lands	Nutrients & Bacteria	Protection & Restoration	Groundwater Contamination	Stormwater	Bank Erosion	Riparian & Shoreline	Water Storage & Flooding	Barriers to Fish Passage	Responsible Entity	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	10-Year Local Cost	Partner/Federal Cost
WW-1	Soil Health and Non-Structural Management Practices Cover crops, conservation tillage, perennial cover, nutrient management, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	22,500 acres 41,800 tons/yr sediment 5,200 lbs/yr TP 101,300 lbs/yr TN	D	D	I	I		I		I		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$2,017,560	\$1,345,040
WW-2	Agricultural Conservation and Multi-Benefit Storage Practices Grassed waterways, grade stabilizations, groundwater recharge conservation practices, wetland creation, side water inlets, WASCOBs, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	46,200 acres 38,100 tons/yr sediment 8,600 lbs/yr TP 150,400 lbs/yr TN 4,000 ac-ft storage	D	D	I	I		I		D		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$2,562,500	N/A
WW-3	Manure Management Manage livestock access to streams, rotational grazing, pasture water supply, feedlot BMPs	Nutrient and Bacteria Focus Areas	10 plans		I		I						SWCD (lead), MPCA, Counties, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$75,000	N/A
WW-4	Address septic systems Provide cost share to address non-compliant SSTs, prioritizing those that are a threat to public health and in low-income households	Nutrient and Bacteria Focus Areas, DWSMAs	50 systems addressed		I		I						Counties (leads), MPCA, BWSR	✓	✓	✓	✓	✓	\$50,000	\$750,000
WW-5	Land Protection Enroll or re-enroll land in temporary or permanent habitat easements (CREP, CRP, RIM, etc.).	Priority Resources, DWSMAs	1,800 acres locally incentivized (18,000 total)	I	I	D	I		I	I	I		SWCD (lead), NRCS, BWSR, DNR	✓	✓	✓	✓	✓	\$90,000	\$45,000,000
WW-6	Seal Wells Seal unused or abandoned wells and provide cost-share to owners	Groundwater Contamination Focus Areas, DWSMAs	150 wells sealed				D						Counties (lead), SWCD, Cities, MDH, BWSR	✓	✓	✓	✓	✓	\$150,000	N/A
WW-7	Streambanks and Ravines Stabilization	Bank Erosion Focus Areas	2,000 linear ft		I				D	I			SWCD (lead), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$400,000	\$266,000
WW-8	Riparian and Shoreline Vegetative Management Critical area planting, native plantings, enhanced buffers	Riparian and Shoreline Focus Areas	3,000 ft		I				I	D			SWCD (lead), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$300,000	\$399,000
WW-9	Fish barriers Address connectivity and fish passage barriers	Watershed-wide	4 barriers									D	DNR (lead), MPCA, SWCD, County Highway Departments	✓	✓	✓	✓		\$80,000	\$800,000
WW-10	Stormwater Management Practices Rain barrels, vegetated swales, infiltration gardens, ponds, sediment basins, etc. May be partnered with stream projects.	Urban and Rural Developed Areas	25 acres treated		I		I	D			I		SWCD (lead), Cities, NRCS, BWSR, MPCA, DNR, Counties	✓	✓	✓	✓	✓	\$250,000	N/A
WW-11	Wetland Restoration Provide incentives or cost-share for wetland or oxbow restoration, with a focus on restoring floodplain connectivity	Water Storage and Flooding Focus Areas	100 acres cost-share / incentivized		I	I			I		D		DNR (lead), Counties, SWCD	✓	✓	✓	✓	✓	\$100,000	\$2,000,000
Total:																			\$6,075,060	\$50,560,040

D = directly addresses goal, I = indirectly addresses goal

Research and Data Cap Actions (R) and Education and Outreach Actions (EO)

ID	Action	Focus Area	10-Year Output	Soil Health & Lands	Nutrients & Bacteria	Protection & Restoration	Groundwater Contamination	Stormwater	Bank Erosion	Riparian & Shoreline Management	Water Storage & Flooding	Barriers to Fish Passage	Responsible Entity	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	10-Year Local Cost
R-1	Continue and expand surface water monitoring throughout the watershed, with extra emphasis to include WRAPS update	Watershed-Wide	TBD	I	I	I	I	I	I	I	I	I	Counties (leads), SWCD, MPCA, DNR	✓	✓	✓	✓	✓	\$159,000
R-2	Complete model or analysis to identify the best water storage opportunities	Watershed-Wide	1 study completed					I			I		Counties and SWCD (leads), DNR			✓			\$50,000
R-3	Complete Geologic Atlas in Lincoln, Lyon, and Redwood Counties	Watershed-Wide	3 atlases completed				I						DNR	✓	✓	✓			\$0
R-4	Conduct multipurpose drainage management planning	Watershed-Wide	5 plans completed	I	I			I	I				Counties (leads), SWCD, DNR	✓	✓	✓	✓	✓	\$60,000
R-5	Priority lake feasibility study	Priority Resources	2 studies		I								SWCD (lead), Counties, DNR	✓	✓				\$150,000
EO-1	Continue and expand watershed education and outreach programming in each jurisdictional area	Watershed-Wide	TBD	I	I	I	I	I	I	I	I	I	SWCD and Counties (leads), NRCS, BWSR, DNR, MDA, MPCA	✓	✓	✓	✓	✓	\$1,098,000
EO-2	Host field days or demonstration plots to promote agricultural and soil health BMPs, multi-benefit projects, and bacteria management practices	Watershed-Wide	10 events or plots	I	I	I					I		SWCD (lead), NRCS, BWSR, MDA, MPCA, UMN	✓	✓	✓	✓	✓	\$50,000
EO-3	Inform landowners of cost-share and incentive opportunities	Watershed-Wide	2 newsletters / fliers created	I	I	I	I	I	I	I	I		SWCD and NRCS (leads), BWSR, DNR, FSA						\$15,000
EO-4	Inform residents in riparian areas and lakeshore owners about enhancement practices, BMPs, and cost-share opportunities.	Priority Resources	Mailings distributed to landowners on Lake Benton and Lake Redwood		I				I	I	I		Counties (leads), DNR, SWCD, NRCS, BWSR	✓		✓		✓	\$20,000
EO-5	Inform private well owners of local drinking water quality and educate them on well testing. Host a well testing clinic or outreach event for arsenic, lead, manganese, nitrate, and/or bacteria. Educate and test for agricultural contaminants (glyphosate, atrazine, etc.)	Watershed-Wide	1 clinic or event per year				I						Counties and SWCD (leads), MDH	✓	✓	✓	✓	✓	\$10,000
EO-6	Educate residents on rural water supplies and encourage residents and businesses to engage in water conservation practices	Watershed-Wide	Mailings distributed to landowners and businesses				I						Counties and SWCD (leads), Cities, MDH, DNR		✓		✓		\$10,000
EO-7	Inform feedlot producers about Minnesota Agricultural Water Quality Certification Program	Watershed-Wide	30 feedlot producers enrolled	I	I			I					SWCD and MDA (leads)	✓	✓	✓	✓	✓	\$10,000
EO-8	Provide education to urban / developed area residents on stormwater BMPs, including cost-share	Cities	5 events hosted		I			I					SWCD and Cities (leads), DNR, MPCA	✓	✓	✓	✓	✓	\$10,000
EO-9	Advise or incentivize small cities to implement a stormwater base fee on their local water utility bills to allow for project completion	Small Cities	Meeting as needed		I			I					Cities (leads), MPCA	✓					\$0
Research and Data Gaps Total:																			\$419,000
Education and Outreach Total:																			\$1,223,000

D = directly addresses goal, I = indirectly addresses goal

Capital Improvement Projects (CIPs)

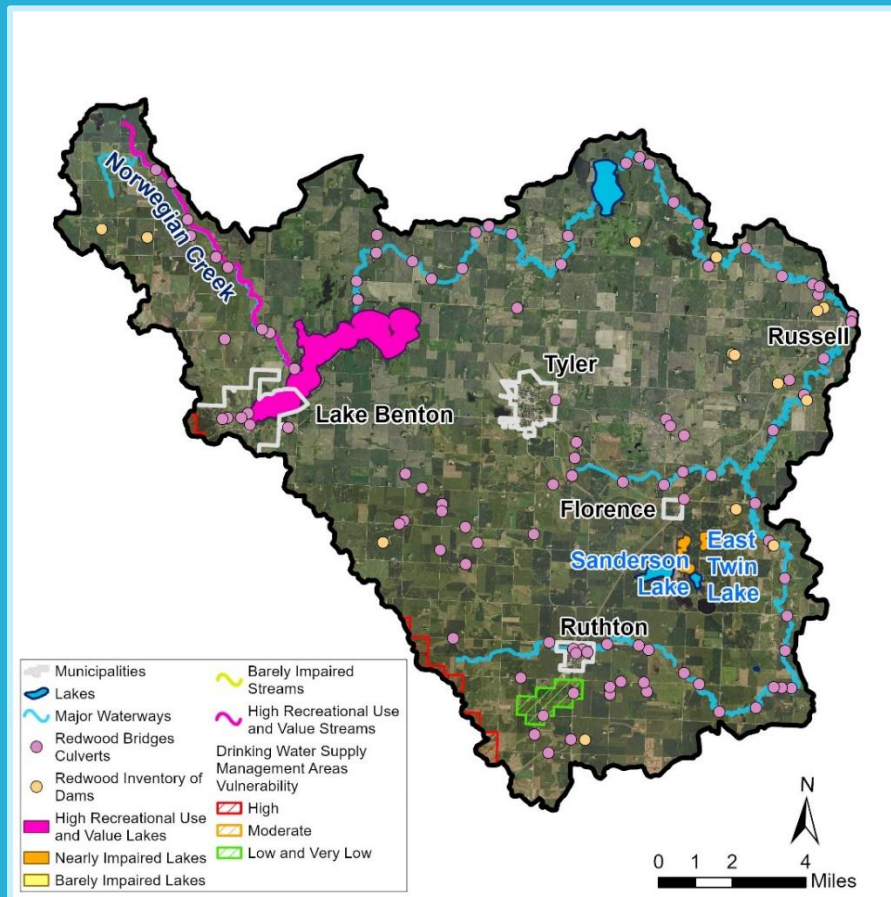
ID	Action	Lead Entity	Implementation Source	Timeline (Start and End)	Status	Soil Health & Lands	Nutrients & Bacteria	Protection & Restoration	Groundwater Contamination	Stormwater	Bank Erosion	Riparian & Shoreline Management	Water Storage & Flooding	Barriers to Fish Passage	Total Cost (Local and Partner/Federal)
CIP-1	Lake Benton Shoreline Stabilization Stabilization of 500 linear feet; 10 ft tall wall on the northwest corner of Lake Benton	County	Lake Association	TBD-2035	Preliminary		I	I				I			\$350,000
CIP-2	Redwood County Road Culvert Replacement Bridge project aimed at reducing water quality and hydrology impacts of a current county road	County	Committee Feedback	2027-2030	Preliminary								I	I	\$250,000
CIP-3	Reconnection of Redwood River Phase 1: Implementation of five 100-ft projects Phase 2: Reconnect lower Redwood River through Marshall using sheet piles with riffle systems	DNR, City, County, Landowner	Committee Feedback	Phase 1:2026 Phase 2: 2028 at earliest	Phase 1: Pilot project proposed and funding being considered Phase 2: DNR has public design		I	I		I	I	I	I		Phase 1: Total Cost \$250,000 Phase 2: \$400,000
CIP-4	Small City Stormwater Construction Projects With overall infrastructure projects	USDA, City	Committee Feedback	TBD-2035	Preliminary		I			I			I		\$1,000,000
CIP-5	Lake Benton Improvement projects Phase 1: Filtration improvements to restore/enhance drainage in cattail fields Phase 2: Elevated walkway with educational signage to highlight importance of wetlands near the lake Phase 3: Two stabilization projects, from the fishing pier to the boat launch and from the fishing pier to the highway	DNR, City, Private Entity	DNR, Sportsman Club, Lake Benton Historical Society, Christiansen Foundation	2026	Preliminary		I	I		I		I			\$250,000

D = directly addresses goal; I = indirectly addresses goal



Planning Region Profile

Upper Redwood River



The Upper Redwood River Planning Region is known for the recreational opportunities on Lake Benton. It contains...

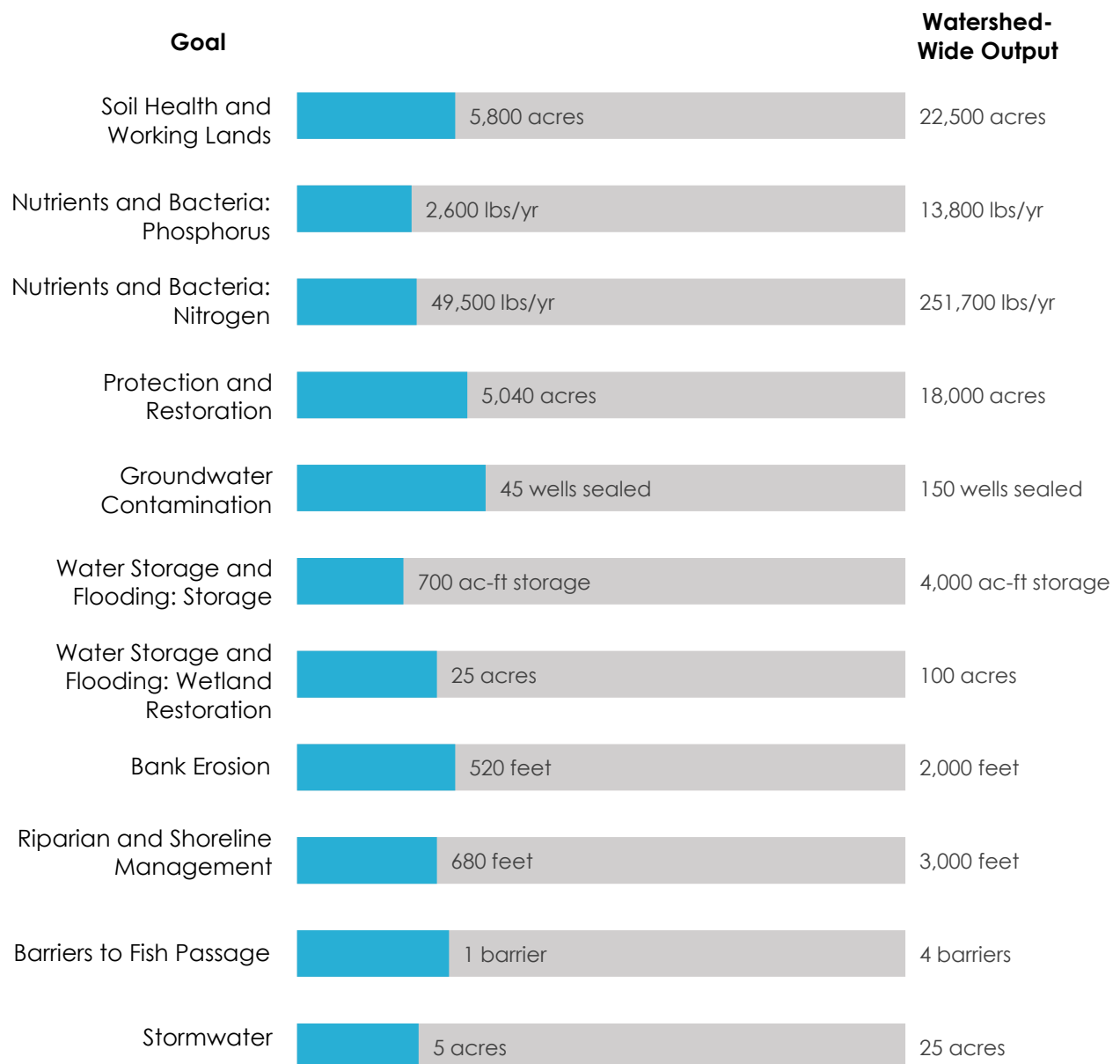
... more varied land cover than other regions, including scattered grasslands and wetlands

... the cities of Lake Benton, Tyler, Florence, and Ruthton

... East and West Twin Lakes, Lake Benton, and Dead Coon Lake

Upper Redwood River Planning Region Milestones

Actions in the Upper Redwood Planning Region will make progress towards the nine measurable goals in **Section 4**. In the Upper Redwood Planning Region, a large portion of the Groundwater and Protection and Restoration goals will be achieved.





Upper Redwood River Planning Region: Projects and Practices

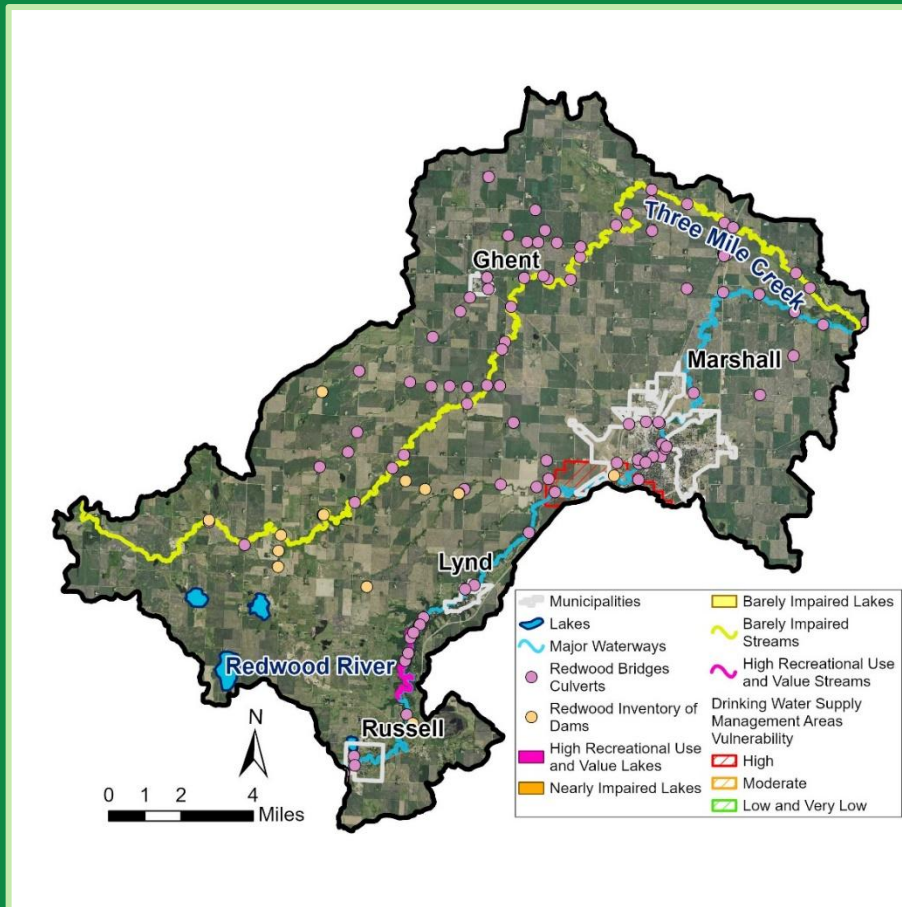
ID	Action	Focus Area	10-Year Output	Soil Health & Lands	Nutrients & Bacteria	Protection & Restoration	Groundwater Contamination	Stormwater	Bank Erosion	Riparian & Shoreline Management	Water Storage & Flooding	Barriers to Fish Passage	Responsible Entity	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	10-Year Local Cost (Partner / Federal 10-Year Cost)
UR-1	Soil Health and Non-Structural Management Practices Cover crops, conservation tillage, perennial cover, nutrient management, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	5,800 acres 5,900 tons/yr sediment 1,300 lbs/yr TP 26,100 lbs/yr TN	D	D	I	I		I		I		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$522,720 (\$348,480)
UR-2	Agricultural Conservation and Multi-Benefit Storage Practices Grassed waterways, grade stabilizations, groundwater recharge conservation practices, wetland creation, side water inlets, WASCOBs, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	6,600 acres 10,400 tons/yr sediment 1,300 lbs/yr TP 23,400 lbs/yr TN 700 ac-ft storage	D	D	I	I		I		D		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$665,700
UR-3	Manure Management Manage livestock access to streams, rotational grazing, pasture water supply, feedlot BMPs	Nutrient and Bacteria Focus Areas	2 plans		I		I						SWCD (lead), MPCA, Counties, NRCS, BWSR, MDA	✓					\$15,000
UR-4	Address septic systems Provide cost share to address non-compliant SSTs, prioritizing those that are a threat to public health and in low-income households	Nutrient and Bacteria Focus Areas, DWSMAs	8 systems addressed		I		I						Counties (leads), MPCA, BWSR	✓	✓	✓	✓	✓	\$8,000 (\$120,000)
UR-5	Land Protection Enroll or re-enroll land in temporary or permanent habitat easements (CREP, CRP, RIM, etc.).	Priority Resources, DWSMAs	504 acres locally incentivized (5,040 total)	I	I	D	I		I	I	I		SWCD (lead), NRCS, BWSR, DNR	✓	✓	✓	✓	✓	\$25,500 (\$12,600,000)
UR-6	Seal Wells Seal unused or abandoned wells and provide cost-share to owners	Groundwater Contamination Focus Areas, DWSMAs	45 wells sealed				D						Counties (leads), SWCD, Cities, MDH, BWSR	✓	✓	✓	✓	✓	\$45,000
UR-7	Streambanks and Ravines Stabilization	Bank Erosion Focus Areas	520 linear ft		I				D	I			SWCD (lead), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$104,000 (\$69,160)
UR-8	Riparian and Shoreline Vegetative Management Critical area planting, native plantings, enhanced buffers	Riparian and Shoreline Focus Areas	680 ft		I				I	D			SWCD (lead), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$68,000 (\$90,440)
UR-9	Fish barriers Address connectivity and fish passage barriers	Watershed-wide	1 barrier									D	DNR (lead), MPCA, SWCD, County Highway Departments	✓					\$20,000 (\$200,000)
UR-10	Stormwater Management Practices Rain barrels, vegetated swales, infiltration gardens, ponds, sediment basins, etc. May be partnered with stream projects.	Urban and Rural Developed Areas	5 acres treated		I		I	D			I		SWCD (lead), Cities, NRCS, BWSR, MPCA, DNR, Counties, Townships	✓	✓	✓	✓	✓	\$50,000
UR-11	Wetland Restoration Provide incentives or cost-share for wetland or oxbow restoration, with a focus on restoring floodplain connectivity	Water Storage and Flooding Focus Areas	25 acres cost-share / incentivized		I	I			I		D		DNR (lead), Counties, SWCD	✓	✓	✓	✓	✓	\$25,000 (\$500,000)
Local: \$1,548,920 Partner: \$13,928,080																			

D = directly addresses goal; I = indirectly addresses goal



Planning Region Profile

Middle Redwood River



The Middle Redwood River Planning Region is known for Camden State Park and the development around Marshall. It contains...

... Camden State Park

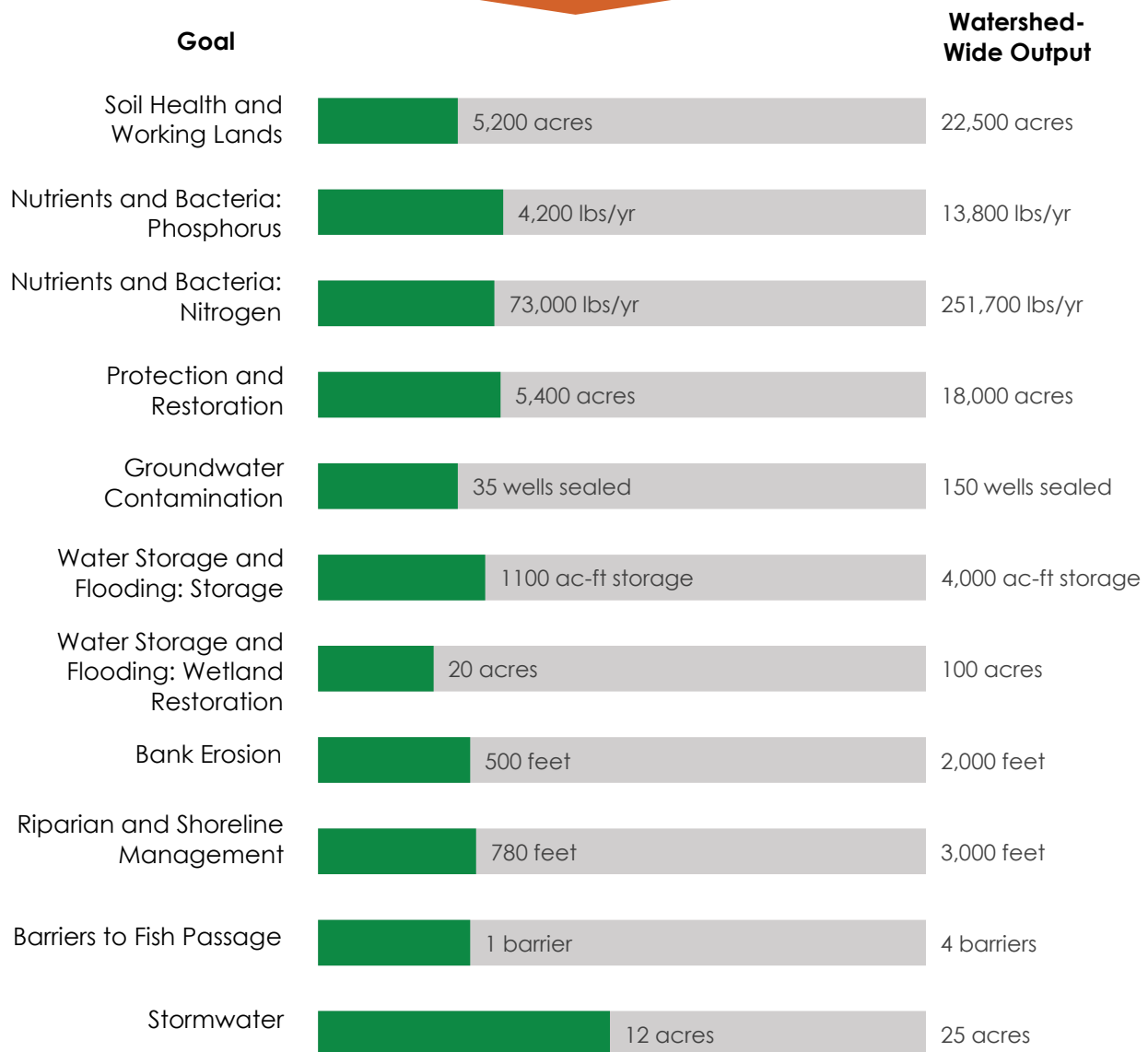
... Goose Lake, Island Lake, Wood Lake, Clear Lake, and Brawner Lake

... the cities of Russell, Marshall, Lynd, and Ghent

... numerous tributary streams, including Three Mile Creek

Middle Redwood River Planning Region Milestones

Actions in the Middle Redwood Planning Region will make progress towards the nine measurable goals in **Section 4**. In the Middle Redwood Planning Region, a large share of the Nutrients and Bacteria, Protection and Restoration, and Stormwater goals will be achieved. Stormwater practices will be a focus here due to the presence of Marshall.





Middle Redwood River Planning Region: Projects and Practices

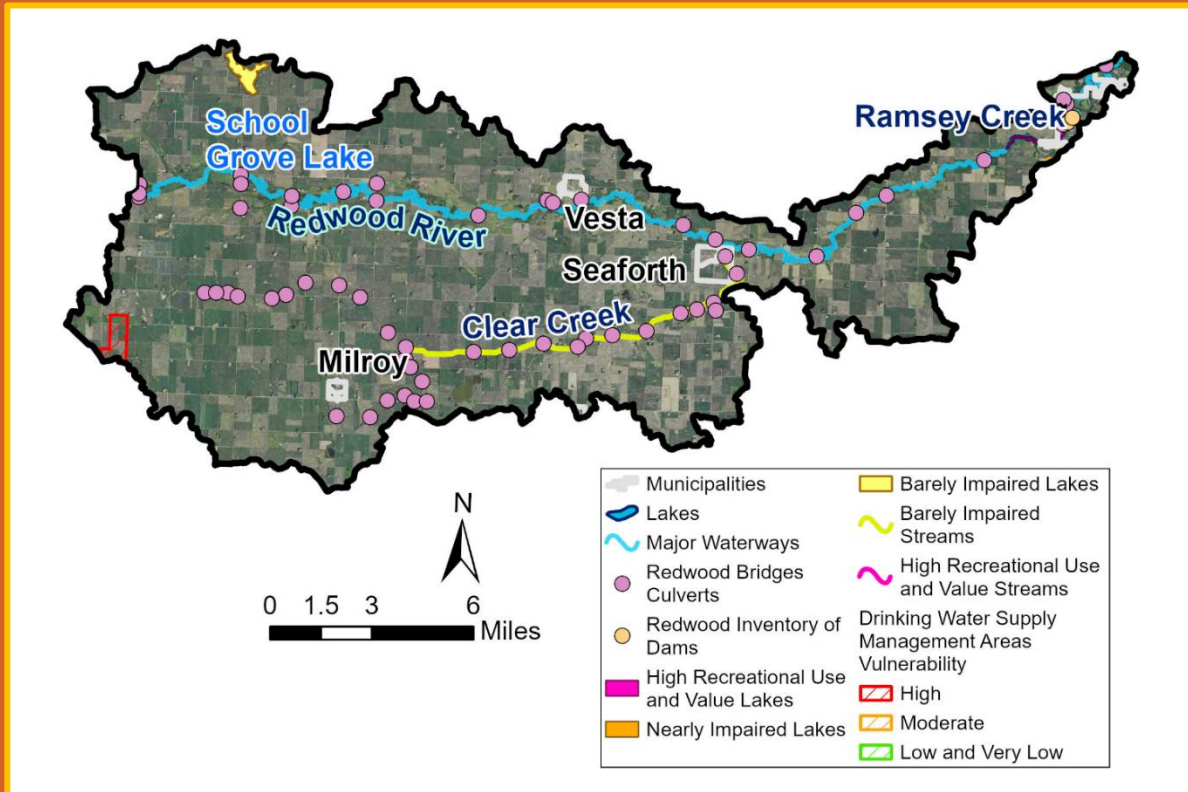
ID	Action	Focus Area	10-Year Output	Soil Health & Lands	Nutrients & Bacteria	Protection & Restoration	Groundwater Contamination	Stormwater	Bank Erosion	Riparian & Shoreline Management	Water Storage & Flooding	Barriers to Fish Passage	Responsible Entity	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	10-Year Local Cost (Partner / Federal 10-Year Cost)
MR-1	Soil Health and Non-Structural Management Practices Cover crops, conservation tillage, perennial cover, nutrient management, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	5,200 acres 16,100 tons/yr sediment 1,200 lbs/yr TP 23,100 lbs/yr TN	D	D	I	I		I		I		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$465,000 (\$310,000)
MR-2	Agricultural Conservation and Multi-Benefit Storage Practices Grassed waterways, grade stabilizations, groundwater recharge conservation practices, wetland creation, side water inlets, WASCOBs, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	17,400 acres 15,500 tons/yr sediment 3,000 lbs/yr TP 49,900 lbs/yr TN 1,100 ac-ft storage	D	D	I	I		I		D		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$584,300
MR-3	Manure Management Manage livestock access to streams, rotational grazing, pasture water supply, feedlot BMPs	Nutrient and Bacteria Focus Areas	2 plans		I		I						SWCD (lead), MPCA, Counties, NRCS, BWSR, MDA		✓				\$15,000
MR-4	Address septic systems Provide cost share to address non-compliant SSTs, prioritizing those that are a threat to public health and in low-income households	Nutrient and Bacteria Focus Areas, DWSMAs	12 systems addressed		I		I						Counties (leads), MPCA, BWSR	✓	✓	✓	✓	✓	\$12,000 (\$180,000)
MR-5	Land Protection Enroll or re-enroll land in temporary or permanent habitat easements (CREP, CRP, RIM, etc.).	Priority Resources, DWSMAs	540 acres locally incentivized (5,400 total)	I	I	D	I		I	I	I		SWCD (leads), NRCS, BWSR, DNR	✓	✓	✓	✓	✓	\$27,000 (\$13,500,000)
MR-6	Seal Wells Seal unused or abandoned wells and provide cost-share to owners	Groundwater Contamination Focus Areas, DWSMAs	35 wells sealed				D						Counties (leads), SWCD, Cities, MDH, BWSR	✓	✓	✓	✓	✓	\$35,000
MR-7	Streambanks and Ravines Stabilization	Bank Erosion Focus Areas	500 linear ft		I				D	I			SWCD (lead), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$100,000 (\$66,500)
MR-8	Riparian and Shoreline Vegetative Management Critical area planting, native plantings, enhanced buffers	Riparian and Shoreline Focus Areas	780 ft		I				I	D			SWCD (lead), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$78,000 (\$103,740)
MR-9	Fish barriers Address connectivity and fish passage barriers	Watershed-wide	1 barrier									D	DNR (lead), MPCA, SWCD, County Highway Departments		✓				\$20,000 (\$200,000)
MR-10	Stormwater Management Practices Rain barrels, vegetated swales, infiltration gardens, ponds, sediment basins, etc. May be partnered with stream projects.	Urban and Rural Developed Areas, Marshall DWSMA	12 acres treated		I		I	D			I		SWCD (lead), Cities, NRCS, BWSR, MPCA, DNR, Counties, Townships	✓	✓	✓	✓	✓	\$120,000
MR-11	Wetland Restoration Provide incentives or cost-share for wetland or oxbow restoration, with a focus on restoring floodplain connectivity	Water Storage and Flooding Focus Areas	20 acres cost-share / incentivized		I	I			I		D		DNR (lead), Counties, SWCD	✓	✓	✓	✓	✓	\$20,000 (\$400,000)
Local: \$1,406,300 Partner: \$14,760,240																			

D = directly addresses goal; I = indirectly addresses goal



Planning Region Profile

Redwood River



The Redwood River Planning Region is known for Lake Redwood and development around Redwood Falls. It contains...

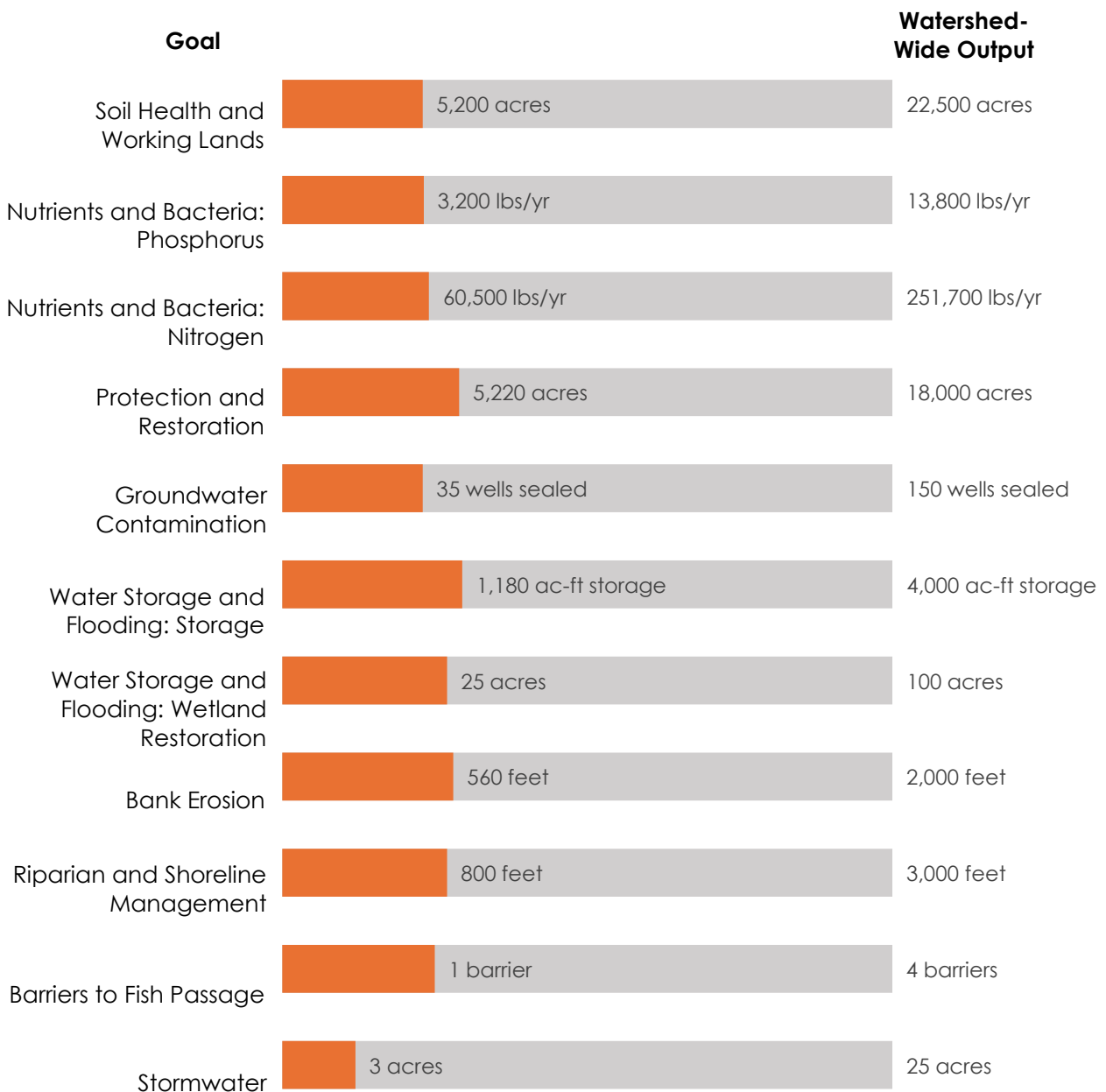
... riparian wetlands around the Redwood River

... the cities of Milroy, Vesta, Lucan, Seaforth, and Redwood Falls

... School Grove Lake, Lake Redwood, and Clear Creek

Redwood River Planning Region Milestones

Actions in the Redwood River Planning Region will make progress towards all measurable goals. In the Redwood River Planning Region, a large share of the Water Storage and Flooding and Protection and Restoration goals will be achieved.

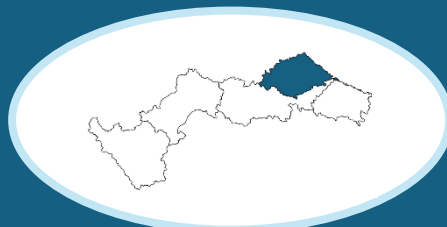




Redwood River Planning Region: Projects and Practices

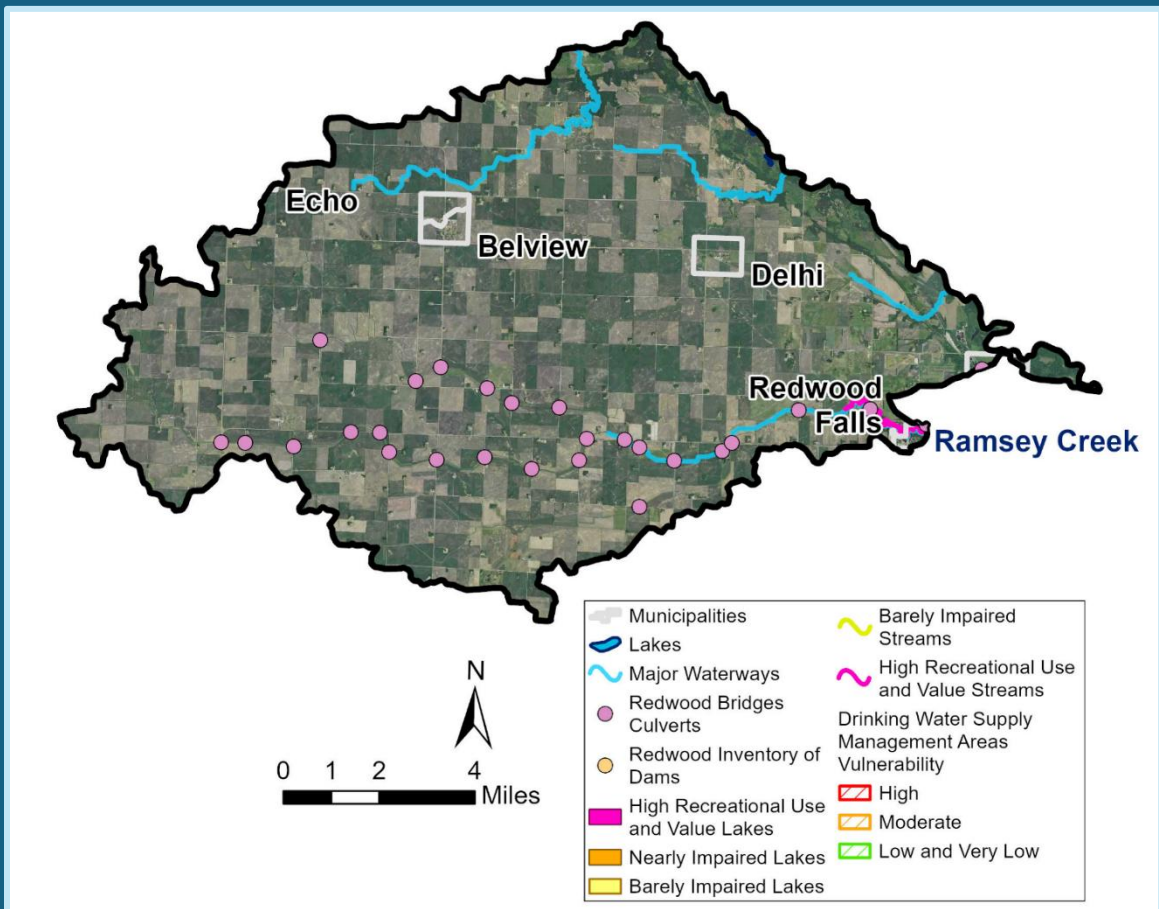
ID	Action	Focus Area	10-Year Output	Soil Health & Lands	Nutrients & Bacteria	Protection & Restoration	Groundwater Contamination	Stormwater	Bank Erosion	Riparian & Shoreline Management	Water Storage & Flooding	Barriers to Fish Passage	Responsible Entity	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	10-Year Local Cost (Partner / Federal 10-Year Cost)
RR-1	Soil Health and Non-Structural Management Practices Cover crops, conservation tillage, perennial cover, nutrient management, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	5,200 acres 7,900 tons/yr sediment 1,200 lbs/yr TP 23,700 lbs/yr TN	D	D	I	I		I		I		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$464,640 (\$309,760)
RR-2	Agricultural Conservation and Multi-Benefit Storage Practices Grassed waterways, grade stabilizations, groundwater recharge conservation practices, wetland creation, side water inlets, WASCOBs, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	10,300 acres 6,000 tons/yr sediment 2,000 lbs/yr TP 36,800 lbs/yr TN 1,180 ac-ft storage	D	D	I	I		I		D		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$591,800
RR-3	Manure Management Manage livestock access to streams, rotational grazing, pasture water supply, feedlot BMPs	Nutrient and Bacteria Focus Areas	2 plans		I		I						SWCD (lead), MPCA, Counties, NRCS, BWSR, MDA			✓			\$15,000
RR-4	Address septic systems Provide cost share to address non-compliant SSTs, prioritizing those that are a threat to public health and in low-income households	Nutrient and Bacteria Focus Areas, DWSMAs	10 systems addressed		I		I						Counties (leads), MPCA, BWSR	✓	✓	✓	✓	✓	\$10,000 (\$165,000)
RR-5	Land Protection Enroll or re-enroll land in temporary or permanent habitat easements (CREP, CRP, RIM, etc.).	Priority Resources, DWSMAs	522 acres locally incentivized (5,220 total)	I	I	D	I		I	I	I		SWCD (leads), NRCS, BWSR, DNR	✓	✓	✓	✓	✓	\$26,000 (\$13,050,000)
RR-6	Seal Wells Seal unused or abandoned wells and provide cost-share to owners	Groundwater Contamination Focus Areas, DWSMAs	35 wells sealed				D						Counties (leads), SWCD, Cities, MDH, BWSR	✓	✓	✓	✓	✓	\$35,000
RR-7	Streambanks and Ravines Stabilization	Bank Erosion Focus Areas	560 linear ft		I				D	I			SWCD (lead), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$112,000 (\$74,480)
RR-8	Riparian and Shoreline Vegetative Management Critical area planting, native plantings, enhanced buffers	Riparian and Shoreline Focus Areas	800 ft		I				I	D			SWCD (lead), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$80,000 (\$106,400)
RR-9	Fish barriers Address connectivity and fish passage barriers	Watershed-wide	1 barrier									D	DNR (lead), MPCA, SWCD, County Highway Departments			✓			\$20,000 (\$200,000)
RR-10	Stormwater Management Practices Rain barrels, vegetated swales, infiltration gardens, ponds, sediment basins, etc. May be partnered with stream projects.	Urban and Rural Developed Areas	3 acres treated		I		I	D			I		SWCD (lead), Cities, NRCS, BWSR, MPCA, DNR, Counties, Townships	✓	✓	✓	✓	✓	\$30,000
RR-11	Wetland Restoration Provide incentives or cost-share for wetland or oxbow restoration, with a focus on restoring floodplain connectivity	Water Storage and Flooding Focus Areas	25 acres cost-share / incentivized		I	I			I		D		DNR (lead), Counties, SWCD	✓	✓	✓	✓	✓	\$25,000 (\$500,000)
Local: \$1,409,440 Partner: \$14,405,640																			

D = directly addresses goal; I = indirectly addresses goal



Planning Region Profile

Ramsey Creek



The Ramsey Creek Planning Region named for Ramsey Creek, which drains to the Redwood River. It contains...

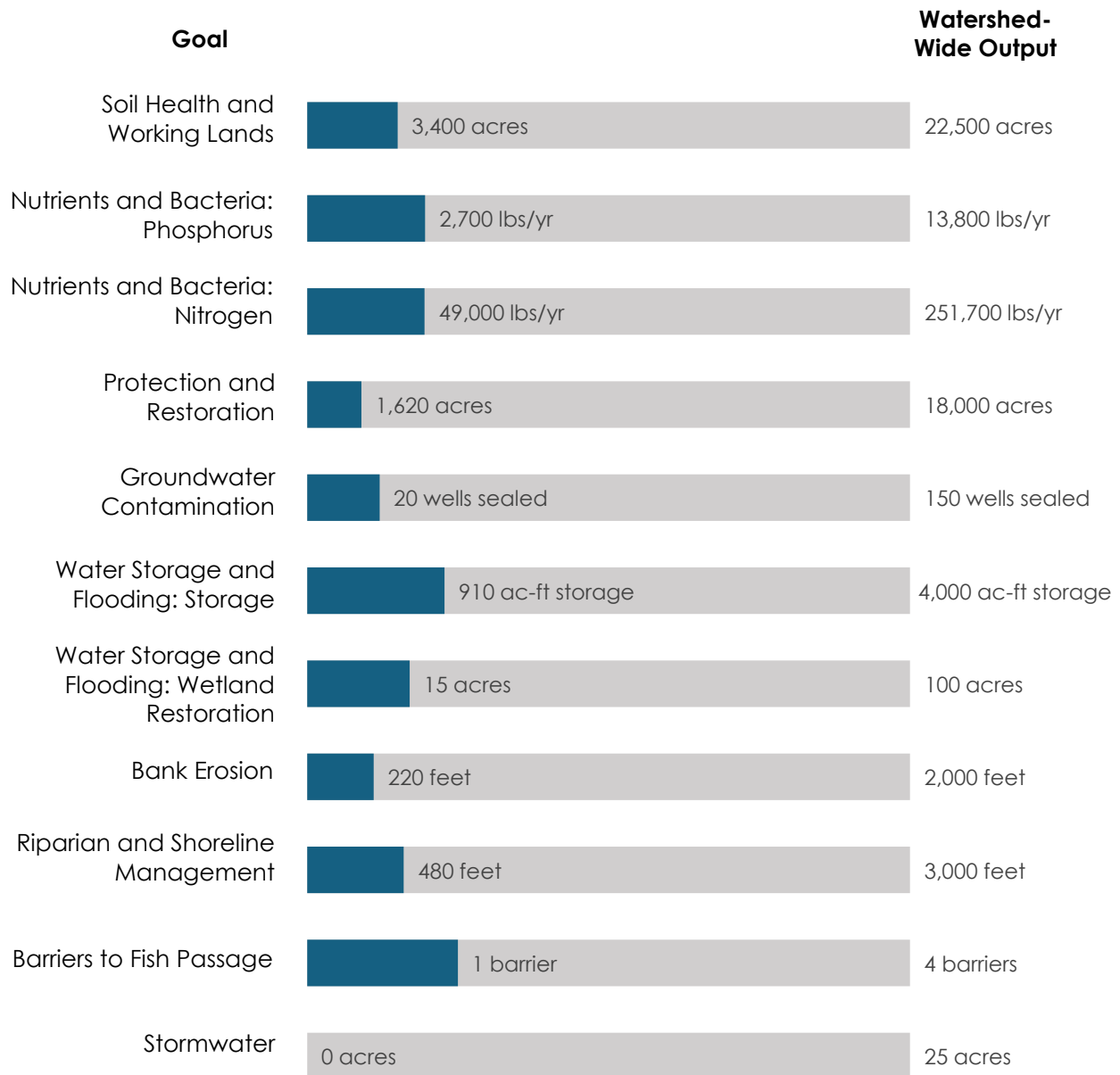
... Rice Creek, Ramsey Creek, Camp Pope Creek, Echo Creek lakes

... the cities of Belview and Delhi

... land on the west side of the Minnesota River, upstream from Redwood Falls

Ramsey Creek Planning Region Milestones

Actions in the Ramsey Creek Planning Region will make progress towards the measurable goals in **Section 4**. Less work will be done here than in the three Redwood River Planning Regions, but progress towards each goal aside from stormwater will be made.

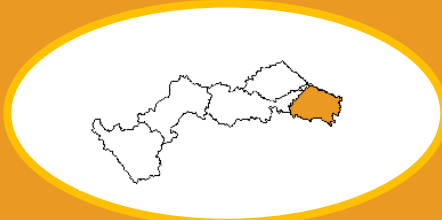




Ramsey Creek Planning Region: Projects and Practices

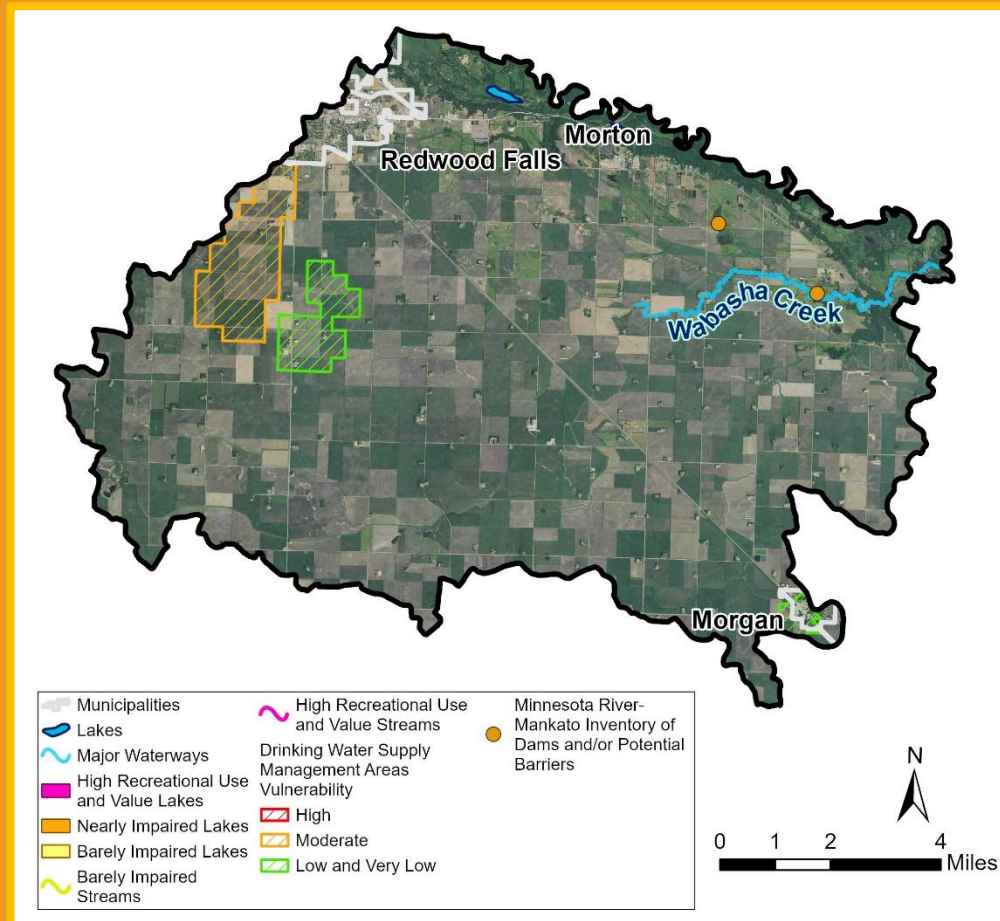
ID	Action	Focus Area	10-Year Output	Soil Health & Lands	Nutrients & Bacteria	Protection & Restoration	Groundwater Contamination	Stormwater	Bank Erosion	Riparian & Shoreline Management	Water Storage & Flooding	Barriers to Fish Passage	Responsible Entity	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	10-Year Local Cost (Partner / Federal 10-Year Cost)
RC-1	Soil Health and Non-Structural Management Practices Cover crops, conservation tillage, perennial cover, nutrient management, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	3,400 acres 5,800 tons/yr sediment 800 lbs/yr TP 15,300 lbs/yr TN	D	D	I	I		I		I		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$303,540 (\$202,360)
RC-2	Agricultural Conservation and Multi-Benefit Storage Practices Grassed waterways, grade stabilizations, groundwater recharge conservation practices, wetland creation, side water inlets, WASCOBs, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	10,100 acres 4,500 tons/yr sediment 1,900 lbs/yr TP 33,700 lbs/yr TN 910 ac-ft storage	D	D	I	I		I		D		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$387,800
RC-3	Manure Management Manage livestock access to streams, rotational grazing, pasture water supply, feedlot BMPs	Nutrient and Bacteria Focus Areas	2 plans		I		I						SWCD (lead), MPCA, Counties, NRCS, BWSR, MDA				✓		\$15,000
RC-4	Address septic systems Provide cost share to address non-compliant SSTs, prioritizing those that are a threat to public health and in low-income households	Nutrient and Bacteria Focus Areas, DWSMAs	10 systems addressed		I		I						Counties (leads), MPCA, BWSR	✓	✓	✓	✓	✓	\$10,000 (\$142,500)
RC-5	Land Protection Enroll or re-enroll land in temporary or permanent habitat easements (CREP, CRP, RIM, etc.).	Priority Resources, DWSMAs	162 acres locally incentivized (1,620 total)	I	I	D	I		I	I	I		SWCD (lead), NRCS, BWSR, DNR	✓	✓	✓	✓	✓	\$8,000 (\$4,050,000)
RC-6	Seal Wells Seal unused or abandoned wells and provide cost-share to owners	Groundwater Contamination Focus Areas, DWSMAs	20 wells sealed				D						Counties (leads), SWCD, Cities, MDH, BWSR	✓	✓	✓	✓	✓	\$20,000
RC-7	Streambanks and Ravines Stabilization	Bank Erosion Focus Areas	220 linear ft		I				D	I			SWCD (leads), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$44,000 (\$29,260)
RC-8	Riparian and Shoreline Vegetative Management Critical area planting, native plantings, enhanced buffers	Riparian and Shoreline Focus Areas	480 ft		I				I	D			SWCD (leads), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$48,000 (\$63,840)
RC-9	Fish barriers Address connectivity and fish passage barriers	Watershed-wide	1 barrier									D	DNR (leads), MPCA, SWCD, County Highway Departments				✓		\$20,000 (\$200,000)
RC-10	Stormwater Management Practices Rain barrels, vegetated swales, infiltration gardens, ponds, sediment basins, etc. May be partnered with stream projects.	N/A	0 acres treated		I		I	D			I		N/A						N/A
RC-11	Wetland Restoration Provide incentives or cost-share for wetland or oxbow restoration, with a focus on restoring floodplain connectivity	Water Storage and Flooding Focus Areas	15 acres cost-share / incentivized		I	I			I		D		DNR (leads), Counties, SWCD	✓	✓	✓	✓	✓	\$15,000 (\$300,000)
Local: \$871,340 Partner: \$4,987,960																			

D = directly addresses goal; I = indirectly addresses goal



Planning Region Profile

Wabasha Creek



The Wabasha Creek Planning Region is the easternmost planning region. It contains...

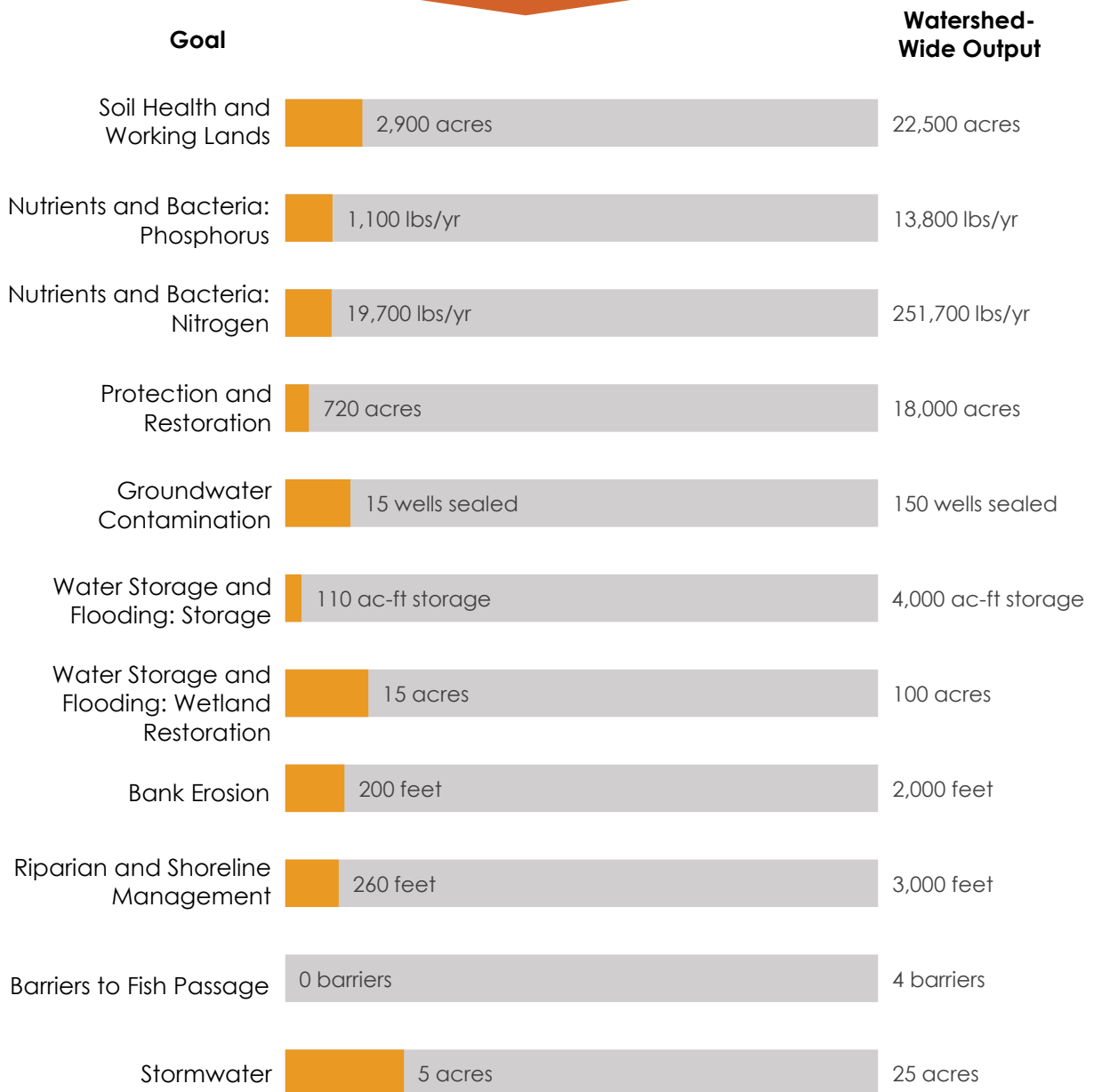
... part of the cities of Morgan and Redwood Falls

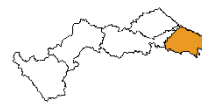
... Tiger Lake, Crow Creek, and Wabasha Creek

... land along the western side of the Minnesota River downstream of Redwood Falls

Wabasha Creek Planning Region Milestones

Actions in the Wabasha Creek Planning Region will make progress towards the measurable goals in **Section 4**. Less work will be done here than in the three Redwood River Planning Regions, but progress towards each goal aside from Barriers to Fish Passage will be made. A perched culvert may be addressed during implementation. More progress towards the stormwater goal than any other goals will be made in Wabasha Creek, due to the presence of Redwood Falls.





Wabasha Creek Planning Region: Projects and Practices

ID	Action	Focus Area	10-Year Output	Soil Health & Lands	Nutrients & Bacteria	Protection & Restoration	Groundwater Contamination	Stormwater	Bank Erosion	Riparian & Shoreline Management	Water Storage & Flooding	Barriers to Fish Passage	Responsible Entity	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	10-Year Local Cost (Partner / Federal 10-Year Cost)
WC-1	Soil Health and Non-Structural Management Practices Cover crops, conservation tillage, perennial cover, nutrient management, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	2,900 acres 6,100 tons/yr sediment 700 lbs/yr TP 13,100 lbs/yr TN	D	D	I	I		I		I		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$261,660 (\$174,440)
WC-2	Agricultural Conservation and Multi-Benefit Storage Practices Grassed waterways, grade stabilizations, groundwater recharge conservation practices, wetland creation, side water inlets, WASCOBs, etc.	Soil Health and Working Lands, Nutrient and Bacteria Focus Areas, DWSMAs	1,800 acres 1,700 tons/yr sediment 400 lbs/yr TP 6,600 lbs/yr TN 110 ac-ft storage	D	D	I	I		I		D		SWCD (lead), NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$332,900
WC-3	Manure Management Manage livestock access to streams, rotational grazing, pasture water supply, feedlot BMPs	Nutrient and Bacteria Focus Areas	2 plans		I		I						SWCD (lead), MPCA, Counties, NRCS, BWSR, MDA					✓	\$15,000
WC-4	Address septic systems Provide cost share to address non-compliant SSTs, prioritizing those that are a threat to public health and in low-income households	Nutrient and Bacteria Focus Areas, DWSMAs	10 systems addressed		I		I						Counties (leads), MPCA, BWSR	✓	✓	✓	✓	✓	\$10,000 (\$142,500)
WC-5	Land Protection Enroll or re-enroll land in temporary or permanent habitat easements (CREP, CRP, RIM, etc.).	Priority Resources, DWSMAs	72 acres locally incentivized (720 total)	I	I	D	I		I	I	I		SWCD (lead), NRCS, BWSR, DNR	✓	✓	✓	✓	✓	\$3,500 (\$1,800,000)
WC-6	Seal Wells Seal unused or abandoned wells and provide cost-share to owners	Groundwater Contamination Focus Areas, DWSMAs	15 wells sealed				D						Counties (leads), SWCD, Cities, MDH, BWSR	✓	✓	✓	✓	✓	\$15,000
WC-7	Streambanks and Ravines Stabilization	Bank Erosion Focus Areas	200 linear ft		I				D	I			SWCD (lead), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$40,000 (\$26,600)
WC-8	Riparian and Shoreline Vegetative Management Critical area planting, native plantings, enhanced buffers	Riparian and Shoreline Focus Areas	260 ft		I				I	D			SWCD (lead), DNR, NRCS, BWSR, MDA	✓	✓	✓	✓	✓	\$26,000 (\$34,580)
WC-9	Fish barriers Address connectivity and fish passage barriers	N/A	0 barriers									D	N/A						N/A
WC-10	Stormwater Management Practices Rain barrels, vegetated swales, infiltration gardens, ponds, sediment basins, etc. May be partnered with stream projects.	Urban and Rural Developed Areas	5 acres treated		I		I	D			I		SWCD (lead), Cities, NRCS, BWSR, MPCA, DNR, Counties, Townships	✓	✓	✓	✓	✓	\$50,000
WC-11	Wetland Restoration Provide incentives or cost-share for wetland or oxbow restoration, with a focus on restoring floodplain connectivity	Water Storage and Flooding Focus Areas	15 acres cost-share / incentivized		I	I			I		D		DNR (lead), Counties, SWCD	✓	✓	✓	✓	✓	\$15,000 (\$300,000)
Local: \$769,060 Partner: \$2,478,120																			

D = directly addresses goal; I = indirectly addresses goal

Funding Implementation

Each action table includes a sum of the estimated cost of each action. A summary of the total plan cost, organized by implementation program, is shown in **Table 5-1**. Costs for implementing all the actions in the plan are shown as both local costs as well as partner and federal costs.

Table 5-1. Summary of implementation cost.

Program	Local 10-Year Plan Cost	Partner/Federal 10-Year Plan Cost
Projects and Practices	\$6,075,000	\$50,560,000
Project Development	\$1,397,000	\$140,000
Technical Assistance	\$1,147,000	\$115,000
Education and Outreach	\$449,000	In-kind staff time
Research and Data Gaps	\$419,000	\$20,000
Local Controls	\$932,000	N/A
Capital Improvements	\$1,700,000	\$800,000
Operations and Maintenance	\$2,215,000	N/A
Plan Administration	\$600,000	N/A
Total:	\$14,934,000	\$51,635,000

The RRW Partnership anticipates a Local Implementation Funding budget of \$1,452,800 annually, or \$14,528,000 over the 10-year plan (for more details, see **Section 7—Plan Administration and Coordination**). **This means that to meet plan goals, the RRW Partnership estimates needing an additional \$40,600 per year, or \$406,000 over the 10-year plan.**



Soil Health Discussion (Redwood SWCD)

Additional funding support can come from federal and partner dollars, an estimate of which is already listed as needed for certain actions. The more federal funding that is received, the more work that can be done in the RRW. Historically, the RRW has received around \$1.7 million per year through federal Natural Resources Conservation Service (NRCS) spending. Political and economic climates drive this contribution, and planning partners should be aware that this funding stream fluctuates.

Implementation Summary

As shown through the Progress Towards Goals section of each action table, the actions are planned to directly or indirectly address the plan priority issues and implementation goals identified in **Sections 3 and 4**. An overview of the plan benefits and the goals and actions these benefits are connected to is displayed in **Table 5-2**. Planning partners acknowledge that these benefits are bold yet achievable. Partner collaboration and funding will be essential, especially for enrolling land in easements and addressing septic systems.

Table 5-2. Summary of implementation benefits.

Goal	Plan Benefits (Goal Metric / Action Output)	Example Action(s)
Soil Health and Working Lands	22,500 acres soil health practices; 79,900 tons/year sediment reduced	Soil Health and Non-Structural Management Practices; Agricultural Conservation and Multi-Benefit Storage Practices
Nutrients and Bacteria	13,800 lbs/year phosphorus reduced	Soil Health and Non-Structural Management Practices; Agricultural Conservation and Multi-Benefit Storage Practices
Nutrients and Bacteria	251,700 lbs/year nitrogen reduced	Soil Health and Non-Structural Management Practices; Agricultural Conservation and Multi-Benefit Storage Practices
Water Storage and Flooding	4,000 acre-feet of temporary or permanent storage	Agricultural Conservation and Multi-Benefit Storage Practices; Wetland Restoration
Water Storage and Flooding	100 acres treated	Wetland Restoration
Nutrients and Bacteria	10 manure management plans	Manure Management
Nutrients and Bacteria	50 SSTS upgrades	Address Septic Systems
Protection and Restoration	18,000 acres enrolled in easements	Land Protection
Groundwater Contamination	150 wells sealed	Seal Wells
Bank Erosion	2,000 feet stabilization	Streambanks and Ravine Stabilization
Riparian and Shoreline Management	3,000 feet vegetation management	Riparian and Shoreline Vegetation Management
Barriers to Fish Passage	4 barriers	Fish Barriers
Stormwater	25 acres treated	Stormwater Management Practices

A photograph of a dirt path winding through a grassy field towards a line of trees under a clear sky. The path is light brown and leads from the bottom center towards the middle ground. The field is covered in green and yellow grass. In the background, there is a dense line of green trees. The sky is a clear, pale blue. On the right side of the image, there is a decorative graphic consisting of two overlapping curved bands, one light green and one teal, which frame the title text.

6. Implementation Programs

6. Implementation Programs

This plan and its action tables will be implemented through five implementation programs: Projects and Practices, Education and Outreach, Research and Data Gaps, Capital Improvements, and Local Controls (**Figure 6-1**). These programs are summarized visually below and will be further discussed throughout this plan section.



Figure 6-1. Redwood River Watershed CWMP Implementation Programs

Projects and Practices



The Projects and Practices Implementation Program deals with actions related to the planning, design, and implementation of BMPs. It also provides cost-share or conservation incentives for the protection of land. The program assists landowners in implementing voluntary actions through cost share, financial assistance, 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 decision-making processes, such as a ranking and scoring sheet that ranks best projects based on priority location and benefits to resources. This method can then be used to rank and select projects and practices for funding. A grant policy document will also be developed to specify funding categories and how much funding practices may receive. This will be completed in conjunction with the local Policy Committee. Funding will be preferentially given to projects and practices identified within the action tables and in priority areas.



Photo Credit: Redwood SWCD

Cost-Share Programs

Cost-share programs are available at the local, state, and federal level to financially assist landowners with the cost of installing a project or practice that accrues natural resource benefits. Projects and practices can be structural (e.g., grassed waterways, controlled drainage) or nonstructural (e.g., nutrient management, conservation tillage).

Operation and maintenance of cost-share projects will be required, as regular on-site inspections and maintenance will ensure the project's continued function and success. BWSR's recommended inspection plans, according to the Grants Administration Manual (GAM), include a conservation practice with a minimum effective life of 10 years. With this practice, inspections are recommended after certified completion at the end of years 1, 3, and 9. Operation and maintenance will be the responsibility of the project owner.

Land Protection

Land protection programs maintain existing acres within the watershed through temporary set-aside programs or land rental. Land protection can be temporary or permanent easements. There are many state-, federal-, partner-funded, and other perpetual easements of value in the plan area. One example of a temporary protection program is CRP.

CRP is a temporary 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 CRP and similar protection programs produces numerous environmental benefits including a reduction in runoff, erosion, and nutrients.



Soybean harvest (Redwood County)

Education and Outreach



Implementation of actions in this plan is voluntary and requires willing landowner participation. As such, public participation and engagement are essential for successful implementation. The Education and Outreach Implementation Program funds actions to increase engagement, understanding, and address conservation barriers. The program builds on a foundation of engagement activities already occurring in the watershed through individual partners. This work is expected to continue during plan implementation.

Examples of education and outreach efforts include:

- Youth engagement
 - Earth Day events
 - 4-H camps
 - Ecology Bus and classroom outreach
 - Environmental fairs
 - 5th grade agricultural day at Gilfillan Estate
- Landowner engagement
 - Field days
 - Demonstrations
 - Workshops tailored to landowners, e.g., lakeshore stabilization, and drinking water testing
 - County fair booths
 - Farmfest
- Direct mailings and social media posts



Photo credit: Redwood SWCD

Research and Data Gaps



The Research and Data Gaps 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 in response to conservation action.

Currently, a variety of monitoring programs are carried out by multiple government and local organization levels (**Table 6-1**). Data from monitoring efforts are essential in understanding current conditions and developing goals for surface water, groundwater, and habitat for this plan.

Table 6-1: Summary of ongoing water quality and quantity monitoring programs.

Key: RS = Rivers and Streams, L = Lakes, W = Wetlands, and GW = Groundwater

Parameters	MPCA	DNR	MDH	MDA	County, SWCD
Nutrients	RS, L, W	RS, L		RS, GW	RS, GW, L
Suspended Solids	RS, L, W	RS			RS
Productivity	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, GW		RS, GW	RS
Algal Toxins	L				
Invasive Species		RS, L			L
Fish Contaminants	RS, L	L			
Chlorides	RS, L, W	RS	RS, L, GW	GW	
Sulfates	RS, L, W	RS, L	RS, L, GW		

Source: BWSR

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 Citizen Lake Monitoring Program and Citizen Stream Monitoring Program), streams and lakes throughout the RRW were monitored and findings were shared in the Redwood River Watershed WRAPS report. Other agencies responsible for stream gauging in the watershed include MPCA, DNR, MDA, and the federal USGS. Three Watershed Pollutant Load Monitoring Network (WPLMN) sites within the RRW serve as 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**).

Ongoing monitoring efforts also track groundwater supply quantity and quality trends. Current programs include Public Water Supplier Monitoring, MDA's township testing, MPCA's Ambient Groundwater Monitoring Program, 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.

Examples of research and data gap actions that will be pursued as part of this plan include:

- Mapping the 10-year floodplain
- Creation of septic and abandoned well inventories
- Completing a microbial source assessment study
- Studying stormwater runoff entering rivers

A full list of research and data gap actions is included in **Section 5—Targeted Implementation**.

Table 6-2: Data levels used to track implementation progress.

Level	Description	RRW Application
 Tracking	Tracking the number of practices or acres treated by actions.	Outputs to track are listed for each action in the action tables. Projects funded by BWSR will be reported in eLINK.
 Estimating	Using lower resolution calculators and tools to give a sense of the collective impacts of projects.	PTMApp
 Modeling	Incorporating landscape factors and project information to predict future conditions.	PTMApp
 Measuring	Using field-collected information to assess the condition of the water.	WRAPS Cycle 2 in 2027.
 Proving	Having enough data to compare with standards and decide if a resource is improved.	MPCA impaired waters list update in 2026, 2028, 2030, 2032. Implementation partner annual work planning.



Redwood River near Russell (RCRCA)

Capital Improvements



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 be constructed without external funding.

Proposed capital improvements are shown in **Section 5—Targeted Implementation**. 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. Signage for completed projects is encouraged to acknowledge larger projects and funding sources to the public.

As highlighted throughout this plan, public drainage systems are prevalent throughout much of the plan area. Drainage authorities help coordinate the implementation of the action tables to make progress towards plan goals. Based on this arrangement, drainage authorities could access implementation funds to adopt drainage actions in the action tables during 103D and 103E processes and procedures when the opportunity arises within the planning area. 103B.335 (a special taxing district) also allows for these types of projects.

Operations and Maintenance

Entities within the plan area are engaged in the inspection, operation, and maintenance of CIPs, stormwater infrastructure, public works, facilities, natural and artificial watercourses, and legal drainage systems. The 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.

Local Controls



Some plan issues can be addressed in part through local ordinances and administration of statutory responsibilities. In many cases, local ordinances have been adopted to conform to, or exceed, the standards and requirements of the state statutes. The responsibility for implementing these programs will remain with the respective counties or appointed LGUs.

Participating counties are encouraged to meet and discuss ordinances and notify each other of proposed ordinance amendments. These entities may also review local ordinances that are most relevant to the plan's issues, goals, and actions. They will look for similarities and differences in local regulatory administration to identify local successes and identify future changes needed to make progress towards goals. A comparison of how local ordinances are used to administer statutory responsibilities most relevant to the issues, goals, and actions in this plan is provided in **Appendix I**.

Aquatic Invasive Species

The spread of Aquatic Invasive Species (AIS) can be reduced by management and education. The DNR is in charge of AIS enforcement. Counties receive grants for AIS programs and SWCDs partner with counties for AIS outreach and education programs.

Buffers

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

Construction Erosion Control

Temporary construction erosion control is the practice of preventing and/or reducing the movement of sediment from a site during construction. All construction projects should follow construction BMPs, but projects disturbing one acre or more of land will require a National Pollutant Discharge Elimination System (NPDES) Permit and Stormwater Pollution Prevention Plan from the MPCA.

Comprehensive Land Use Plans

Counties are responsible for land use planning, which is administered through local zoning ordinances. Each county and several cities have adopted comprehensive land use plans. Many LGUs in the watershed overlap in land and resource management, resulting in the need for shared goals and strategies. A sample of comprehensive land use plans in the watershed is listed in **Table 6-3**.

Table 6-3: Example list of local comprehensive land use plans.

LGU	Comprehensive Land Use Plan
Lincoln County	Lincoln County Comprehensive Plan (2018)
Lyon County	Lyon County Comprehensive Plan (2002)
Murray County	Murray County Comprehensive Plan (2025)
Pipestone County	Pipestone County Comprehensive Plan (2004)
Redwood County	Redwood County Comprehensive Plan (2007)
Yellow Medicine County	Yellow Medicine County Comprehensive Plan (2016)

Feedlots

MPCA rules govern the collection, transportation, storage, processing, and land application of animal manure and other livestock operation wastes. The MPCA administers the feedlot program in Redwood County. Lincoln, Lyon, Murray, and Pipestone Counties are delegated to administer the MPCA feedlot program.

Floodplain Management

Floodplain zoning regulations manage development in the floodplain to minimize loss of life and property, disruption to government services and the local economy, and interruption of transportation. The DNR has current flood maps on their website. All RRW counties have floodplain ordinances.

Hazard Management

Hazard mitigation may be defined as any action taken to eliminate or reduce the future risk to human life and property from natural and human-caused hazards. Climate change adaptation also plays a part in hazard management. These requirements direct the state to administer cost-sharing. Each County has a Hazard Mitigation Plan.

Public Drainage Systems

Minnesota Drainage Law (Statute 103E) enables multiple landowners to collectively construct, improve, and repair drainage systems across property boundaries and governmental boundaries. These drainage systems can be open ditches and/or subsurface tile. Drainage systems have their own laws and requirements that the Drainage Authority must uphold. These ditches are managed by the Drainage Authority for the benefit of the landowners. Drainage Authorities maintain the public drainage systems (tile drainage and ditches) and repair failing drainage systems when necessary. Drainage Authorities should follow criteria outlined in Statute §103E.015 for early consideration and coordination of multipurpose drainage management.

Shoreland Management

Minnesota has shoreland management rules that are administered by the DNR. LGUs are required to have land use controls that protect shorelands along lakes and rivers, and they can adopt stricter ordinances than the state's, if desired. Each county in the RRW has approved shoreland management ordinances.

Subsurface Sewage Treatment Systems

Each county has SSTS ordinances. SSTS are often noncompliant with ordinances or failing to treat waste. Maintenance and upgrades of SSTS will be important for reducing bacteria and nutrient loads. Low-interest loans and low-income grants are available from the county for replacements or upgrades.



Solid Waste Management

Counties in the watershed jointly created a 10-year plan for managing solid waste. Solid waste management in Minnesota is managed at the county level and includes programs related to mixed municipal solid waste, industrial waste, and non-landfill programs such as recycling to include paper, plastics, metal, tires, electronics, appliances, and other recyclable items.

Wellhead Protection

The purpose of the Wellhead Protection Program is to prevent contamination of public drinking water supplies by identifying water supply recharge areas and implementing management practices for potential pollution sources found within those areas. MDH is responsible for statewide administration. The program has since expanded to conduct Source Water Assessments and Surface Water Intake Protection Plans for public water supply systems that rely on surface water as a drinking water source.

Wetland Conservation Act

The Minnesota Legislature passed the Wetland Conservation Act (WCA) in 1991, which requires no net loss of wetlands. It aims to increase the quantity and quality of wetlands that provide numerous ecological and economic benefits to Minnesotans. LGUs are responsible for administering the WCA, which includes regulating and educating landowners. The SWCD is the WCA LGU for all plan counties.

Wastewater Treatment

Managing wastewater is an important aspect of urban communities. There are 19 permitted facilities discharging wastewater in the RRW. Municipal wastewater treatment is the responsibility of the city or county owner, but MPCA regulates NPDES discharges from permitted facilities.

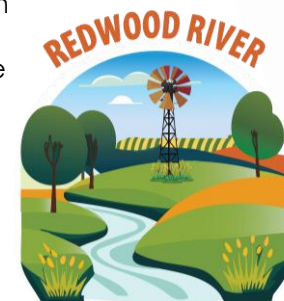


7. Plan Administration and Coordination

7. Plan Administration and Coordination

The RRW CWMP will be implemented through RCRCA's JPA. Entities involved in the JPA include the counties and SWCDs of Brown, Cottonwood, Lincoln, Lyon, Murray, Pipestone, Redwood and Yellow Medicine. While not part of the JPA, Ghent, Marshall, Redwood Falls, and Area II will work through RCRCA during implementation.

While the roles of each implementation partner are outlined initially in this section, it is the ultimate responsibility of LGUs to fill their roles in plan implementation based on established bylaws. The roles of the Partnership, how the plan will be funded, and the assessment process are explained in this section.



Comprehensive Watershed Management Plan

Decision Making

Implementation of the RRW CWMP will require increased capacity, 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.

Two committees serve this plan during implementation:

- Policy Committee: As established in the JPA Agreement, the Policy Committee is comprised of elected and appointed board members from the SWCDs and counties.
- Steering Committee: Comprised of local staff from the JPA Agreement (with their respective alternates) and state agencies, with input from local stakeholders.

Figure 7-1 outlines the probable roles and functions of these committees during implementation. The roles of each committee are expected to 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 Steering Committee will annually revisit the responsibilities for annual work planning and serving as the fiscal agent and/ or coordinator.

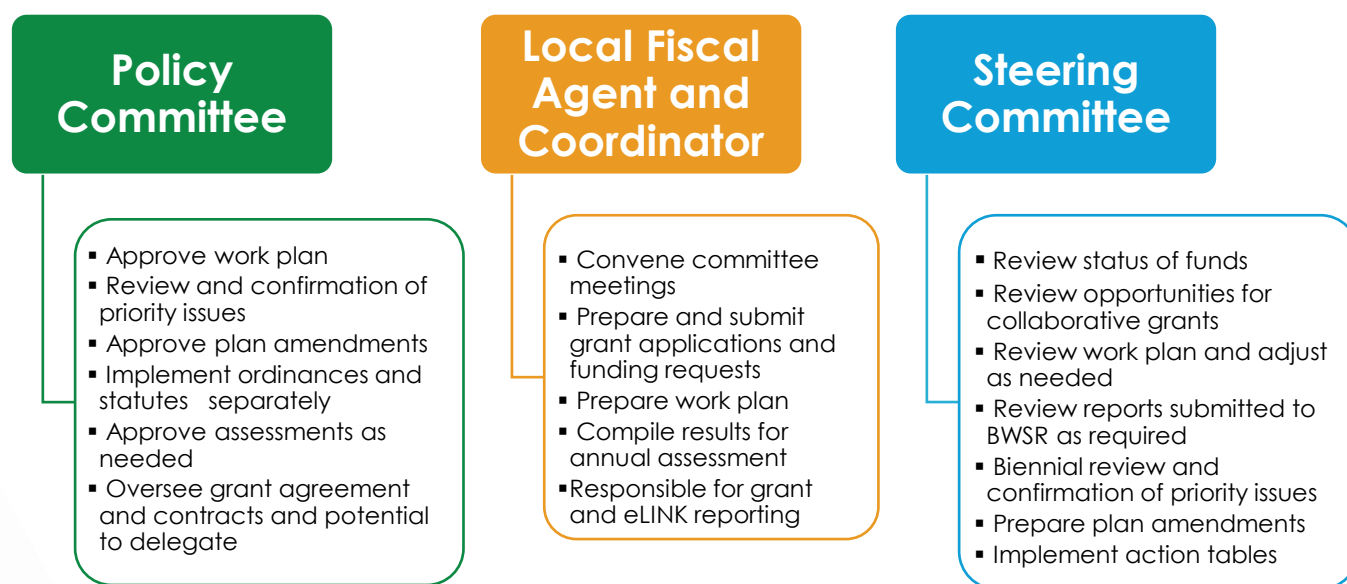


Figure 7-1: Roles for RRW CWMP Implementation.

Collaboration

Between Planning Partners

Although collaboration, both informal and formal, is encouraged, mandatory participation is not required by this plan. LGUs who adopt this RRW can choose whether to approve or participate in future formal implementation agreements. The benefits of successful collaboration between planning partners will ultimately result in additional water quality benefits, including consistent implementation of actions watershed-wide, increased likelihood of funding, and resource efficiencies gained.

The Partnership will pursue opportunities for collaboration with fellow planning partners to gain administrative and program efficiencies, pursue collaborative grants, and provide technical assistance. The Partnership will also review similarities and differences in local regulatory administration to identify successes as well as future changes needed to make progress towards the 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 in efficiency when actions must be coordinated in concert with 15 separately governed organizations, and possible increases to project completion timelines.

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, and county boards are a practical necessity to facilitate watershed-wide activities. Intergovernmental coordination and communication are 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.

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

As introduced this plan recognizes and includes three funding levels (**Table 7-1**).

Table 7-1: Funding Overview.

Type	Estimated Annual Average	Estimated 10-Year Total
Baseline	\$952,700	\$9,527,000
Local Implementation Funding	\$1,452,800	\$14,528,000
Partner/Federal Funding	\$5,163,500	\$51,635,000

Baseline funding is based on the estimated annual revenue and expenditures for plan participants combined and allocated to the plan area based on the percentage of each county's land area in the watershed. **Table 7-2** summarizes the amount of funding that is assumed to continue during plan implementation as part of baseline funds from local and state sources. Federal sources of funding from NRCS, such as the Environmental Quality Incentives Program (EQIP) and CRP, are not included in baseline funding estimates.

Table 7-2: Estimated sources of baseline funding for the RRW CWMP. Dollars are for 10 years and are estimated from the historical baseline.

Implementation Program	Local	State	Total
Projects and Practices	\$425,000	\$3,887,000	\$4,312,000
Research and Data Gaps	\$0	\$294,000	\$294,000
Education and Outreach	\$6,000	\$318,000	\$324,000
Local Controls	\$168,000	\$764,000	\$932,000
Capital Improvements	\$300,000	\$1,150,000	\$1,450,000
Operations and Maintenance	\$215,000	\$2,000,000	\$2,215,000
Total	\$1,114,000	\$8,413,000	\$9,527,000

Federal funding with variable annual amount

Local Funding

Local revenue 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 J**).

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

State Funding

State funding includes all funds derived from the state tax base. Examples of state funding include conservation delivery, soil health cost share, state cost share program, Clean Water Funds, and SWCD local capacity services. WBIF is also anticipated to be a large source of state funding during implementation.

The planning Partnership may 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 RRW 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. Federal funding, like EQIP and CRP, are important components of implementing this plan, but are not calculated as part of the baseline estimate. 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, as summarized in **Section 5- Targeted Implementation** the NRCS will likely provide support for agricultural conservation practices, while the FSA may provide land-retirement program funds such as CRP.

Additional Funding

The Local Implementation Funding budget is not enough to implement the action tables. 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 implementation. Within the action table, actions are assigned implementation programs. **Table 7-3** 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.

Several non-governmental funding sources may also provide technical assistance and fiscal resources to implement the plan. 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 whether the resource benefits arising from implementation have monetary value and therefore provide access to funding from the private sector.

Table 7-3: Example federal funding sources for the RRW. Note: List is not all-inclusive.

Organization	Program/Grant	Primary Assistance	Projects and Practices	CIPs	Research and Data Gaps	Ed. and Outreach
NRCS	Conservation Innovation Grant (CIG)	Financial	•			
NRCS	Conservation Stewardship Program (CSP)	Financial	•			
NRCS	Regional Conservation Partnership Program (RCPP)	Financial	•	•		
NRCS	Environmental Quality Incentives Program (EQIP)	Financial	•			
NRCS	Agricultural Conservation Easement Program (ACEP)	Easement	•			
FSA	Conservation Reserve Program (CRP)	Easement	•	•		
FSA	Farmable Wetlands Program (FWP)	Easement	•			
FSA	Grasslands Reserve Program (GRP)	Easement	•			
FSA	Wetland Reserve Program (WRP)	Easement	•	•		
FSA/ USDA	Source Water Protection Program (SWPP)	Technical				•
USFWS	Partners for Fish and Wildlife Program	Financial/ Technical	•			
USFWS	Grassland Easements (Working Lands)	Financial/ Technical	•			
USFWS	Wetland Easements (Working Lands)	Financial/ Technical	•			
FEMA	Hazard Mitigation Grant Program (HMGP)	Financial	•	•		
FEMA	Pre-Disaster Mitigation (PDM)	Financial	•	•		
FEMA	Flood Mitigation Assistance (FMA)	Financial	•	•		
FEMA	Risk Mapping, Assessment, and Planning	Technical	•	•		
EPA	Water Pollution Control Program Grants (Section 106)	Financial				•
EPA	State Revolving Fund (SRF)	Loan	•			
EPA	Drinking Water State Revolving Fund (DWSRF)	Loan	•			
EPA	Section 319 Grant Program	Financial	•		•	•
NACD	Technical Assistance Grants	Financial/ Technical	•	•	•	•

Table 7-4: Example state funding sources for the RRW. Note: List is not all-inclusive.

Organization	Program / Grant	Primary Assistance	Projects and Practices	CIPs	Research and Data Gaps	Ed. and Outreach
LSOHF	Lessard-Sams Outdoor Heritage Fund (LSOHF)	Financial	•	•	•	•
DNR	Aquatic Invasive Species Control Grant Program	Financial/ Technical	•			•
DNR	Conservation Partners Legacy Grant Program	Financial	•	•		
DNR	Pheasant Habitat Improvement Program (PHIP)	Financial	•			
DNR	Flood Hazard Mitigation Grant Assistance	Financial	•	•	•	•
DNR	Forest Stewardship Program	Technical	•			
DNR	Aquatic Management Area Program	Acquisitions	•			
DNR	Wetland Tax Exemption Program	Financial	•			
BWSR	Clean Water Fund Competitive Grants	Financial	•	•		•
BWSR	Conservation Contract Program	Financial	•			
BWSR	Natural Resources Block Grant (NRBG)	Financial	•			•
BWSR	Reinvest in Minnesota (RIM)	Financial	•	•		•
BWSR	Watershed Based Implementation Funding (WBIF)	Financial	•		•	•
MPCA	Surface Water Assessment Grants (SWAG)	Financial			•	•
MPCA	Clean Water Partnership	Loan	•	•		
MPCA	WRAPS Clean Water Fund	Technical			•	•
MDH	Source Water Protection Grant Program	Financial	•	•	•	•
MDH	Public and Private Well Sealing Grant Program	Financial	•		•	
MDA	Agriculture BMP Loan Program	Financial	•			
MDA	Minnesota Agricultural Water Quality Certification Program	Financial / Technical	•			•
MDA	Nutrient Management Initiative (NMI)	Financial	•			•
MDA	Soil Health Financial Assistance Program Grant	Financial	•			

Table 7-5: Example other funding sources for the RRW. Note: List is not all-inclusive.

Program / Grant	Primary Assistance	Projects and Practices	CIPs	Research and Data Gaps	Ed. and Outreach
Pheasants Forever	Financial/ Technical	•	•	•	•
Ducks Unlimited	Financial/ Technical	•	•	•	•
The Nature Conservancy	Financial	•	•	•	•
Minnesota Land Trust	Financial	•	•	•	•

Plan participants may pursue grant opportunities collaboratively or individually to fund the action table's implementation. Four example collaborative partner grant opportunities (relevant as of 2024) are presented on the following page and are intended to demonstrate how plan goals and actions can connect to these opportunities. Grants are available at the time of plan writing but may be subject to change over the course of this plan.

Soil Health Grants

BWSR has Clean Water Fund and delivery grants to support soil health practices for SWCDs, municipalities, and counties.

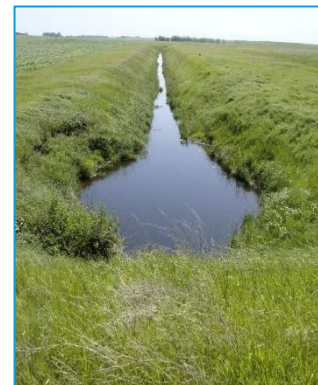
- These grants directly connect to the Nutrients and Bacteria as well as Soil Health and Working Lands goals and actions.



Water Quality and Storage Grant

The Water Quality and Storage Grant Program is a program through BWSR, through which municipalities, SWCDs, or joint powers with a water management plan may receive funding for water storage projects.

- These grants directly connect to Water Storage and Flooding goal and actions.



Climate Resiliency



MPCA has climate-planning grants for communities to improve stormwater or wastewater system resilience, reduce flood risk, and adapt community services, ordinances, or spaces.

- These grants directly connect to Water Storage and Flooding and Stormwater goal and actions.

1W1P RIM Reserve

BWSR expanded the RIM conservation easement program to create a subset of the program that specifically is for easements that contribute to 1W1P plan goals.

- These grants directly connect to Restoration and Protection goal and actions.



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 fiscal agent and/or coordinator based on the action tables. The work plan will be reviewed by the Steering Committee annually and adjusted to align with grant requests and changes identified through self-assessments. In addition, new issues may emerge and/or new monitoring data, models, or research may become available. Refer to each watershed's WRAPS report. The work plan will then be presented as needed to the Policy Committee. The intent of these work plans will be to maintain collaborative progress toward completing the action tables.

State Funding Request

The Steering Committee will collaboratively develop, review, and submit a WBIF funding request to BWSR. This request will be submitted to and ultimately approved by the Policy Committee before submitting it to BWSR. The request will be developed based on information in the action tables and any adjustments made through self-assessments.

Assessments

The Steering Committee will provide the Policy Committee with an annual update on the progress of the plan's implementation. During this annual review process, feedback will be solicited from the boards and Policy Committee. This feedback will be presented by the fiscal agent and/or coordinator to the Policy Committee to set the coming year's priorities for achieving the plan's goals and to decide on the direction for collaborative grant submittals. In addition, this feedback will be documented and incorporated into annual and five-year evaluations.

Mid-Point Evaluation

This plan has a 10-year life cycle beginning in 2026. 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, at every 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.

Reporting

LGUs currently have a variety of reporting requirements related to their activities, programs, and grants or have those that are required by statute. 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 fiscal agent and/or coordinator. The fiscal agent and/or coordinator is responsible for submitting all required reports and completing annual reporting requirements for this plan as required by state law and policy.

Plan Amendments

The CWMP is effective through 2036 per the BWSR order approving it. Activities described in this plan are voluntary, not prescriptive, and are meant to allow flexibility in implementation. Amendments to this plan will follow the most current BWSR 1W1P Operating Procedures. This provision for flexibility includes changes to the activities.

During the time this plan is in effect, it is likely that new data giving a better understanding of watershed issues and solutions will be generated. 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. Amendments may be proposed by member local government units. If revisions are required or requested, the plan amendment initiation process will follow JPA bylaws.

References Cited

- Board of Water and Soil Resources (BWSR). 2025. State Funded Conservation Easements (RIM Reserve). Accessed from MN Geospatial Commons July 2025.
- Department of Natural Resources (DNR). 2017. Watershed Context Report, Redwood River.
- Department of Natural Resources (DNR). 2020. Redwood River Watershed Characterization Report
- Department of Natural Resources (DNR). 2023a. Redwood River Evaluation of Hydrologic Change
- Department of Natural Resources (DNR). 2023b. Water Use Data. Available at: https://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/wateruse.html
- Department of Natural Resources (DNR). 2024. Publicly Accessible State Wildlife Management Areas. Accessed from MN Geospatial Commons April 2024.
- Natural Resources Research Institute (NRRI). 2019. At the University of Minnesota Duluth. Restorable Wetland Index.
- Center for Biological Diversity. n.d. Threatened and Endangered Species by County. Available at: https://www.biologicaldiversity.org/programs/population_and_sustainability/T_and_E_map/
- Minnesota Department of Health (MDH). 2024. *Initial Comment Letter- Redwood River Watershed Planning Project*. Delivered to HEI 12 June 2024.
- Minnesota Pollution Control Agency (MPCA). 2021. Redwood River Watershed Stressor Identification Report. Document number: wq-ws3-07020006a
- Minnesota Department of Pollution Control (MPCA). 2023a. Environmental Justice. Accessed from MN Geospatial Commons.
- Minnesota Pollution Control Agency (MPCA). 2023b. Redwood River Watershed Restoration and Protection Strategies Report. Document number: wq-ws4-94a
- Minnesota Pollution Control Agency (MPCA). 2024a. Feedlots in Minnesota Dataset. Accessed from MN Geospatial Commons April 2024.
- Minnesota Pollution Control Agency (MPCA). 2024b. Impaired Waters List
- Minnesota Pollution Control Agency (MPCA). 2024c. Best management practices by watershed. MPCA Data Services. Accessed: <https://public.tableau.com/app/profile/mpca.data.services/viz/CWAA-Bestmanagementpracticesbywatershed/Bestmangementpracticesbywatershed>
- Minnesota Pollution Control Agency (MPCA). 2024d. *Response to Request for Priority Issues and Concerns to be addressed in the Redwood One Watershed, One Plan*. Delivered to HEI 14 May 2024.

United States Census Bureau (US Census). 2022. American Communication Survey 5-Year Narrative Profiles.

United States Department of Agriculture - National Agricultural Statistics Service (USDA-NASS). 2022. Census of Agriculture. Minnesota Volume 1, Chapter 2. County Level Data.

United States Geological Survey (USGS). 2021. National Land Cover Database (NLCD).