
# South Fork Crow River Watershed Comprehensive Watershed Management Plan

March 2024

CLEAN WATER LAND & LEGACY AMENDMENT

# Acknowledgements

## Local Project Partners

Kandiyohi County
McLeod County
Meeker County
Renville County
Wright County
Carver SWCD
Kandiyohi SWCD
McLeod SWCD
Meeker SWCD
Renville SWCD
Wright SWCD
Winsted City
Buffalo Creek Watershed District

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

## Created in Collaboration With

Houston Engineering, Inc. (HEI)
7550 Meridian Circle North, Suite 120
Maple Grove, MN 55369

# Table of Contents

Section 1. Executive Summary ..... 1
Section 2. Land and Water Resource Narrative ..... 11
Section 3. Priority Issues and Opportunities ..... 22
Section 4. Measurable Goals ..... 37
Section 5. Targeted Implementation Schedule ..... 64
Section 6. Implementation Programs ..... 79
Section 7. Plan Administration and Coordination ..... 93

# Appendices

A. Planning Memorandum of Agreement
B. Impaired Waters and Total Maximum Daily Loads
C. Priority Resources
D. Geospatial Data for Priority Subwatersheds
E. HSPF-SAM Scenario with Storage Calculations
F. Altered Hydrology Analysis
G. BCWD Water Management Districts
H. BCWD Rules
I. Regulatory Comparison Table
J. Local Funding Authorities
K. Index of NRCS Practices
L. Formal Review Comments
M. References Cited

# Acronyms

| | |
|---|---|
| 1W1P | One Watershed, One Plan |
| BCWD | Buffalo Creek Watershed District |
| BMP | Best Management Practice |
| BWSR | Board of Water and Soil Resources |
| CEC | Contaminant of Emerging Concern |
| CIP | Capital Improvement Project |
| CRP | Conservation Reserve Program |
| CSP | Conservation Stewardship Program |
| CWF | Clean Water Fund |
| CWMP | Comprehensive Watershed Management Plan |
| DNR | Minnesota Department of Natural Resources |
| DO | Dissolved Oxygen |
| DWSMA | Drinking Water Supply Management Area |
| EPA | Environmental Protection Agency |
| EQIP | Environmental Quality Incentive Program |
| FSA | Farm Service Agency |
| FWS | Fish and Wildlife Service |
| GAM | Grants Administration Manual |
| HUC | Hydrologic Unit Code |
| LGU | Local Government Unit |
| LSOHC | Lessard-Sams Outdoor Heritage Council |
| MAWQCP | Minnesota Agricultural Water Quality Certification Program |
| 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 |
| NLCD | National Land Cover Database |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | Natural Resources Conservation Service |
| PFOA | Perfluorooctanoic Acid |
| PFAS | Pre- and Polyfluoroalkyl Substances |
| RCPP | Regional Conservation Partnership Program |
| RIM | Reinvest in Minnesota |
| SFCRW | South Fork Crow River Watershed |

| | |
|---|---|
| SSTS | Subsurface Sewage Treatment System |
| SWCD | Soil and Water Conservation District |
| TMDL | Total Maximum Daily Load |
| TNC | The Nature Conservancy |
| TP | Total Phosphorus |
| UMN | University of Minnesota |
| USACE | United States Army Corps of Engineers |
| USDA | United States Department of Agriculture |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| WBIF | Watershed-based Implementation Funding |
| WCA | Wetland Conservation Act |
| WD | Watershed District |
| WMA | Wildlife Management Area |
| WPLMN | Watershed Pollutant Load Monitoring Network |
| WRAPS | Watershed Restoration and Protection Strategy |
| WWTF | Wastewater Treatment Facilities |

# Section 1.
# Executive Summary

# Section 1. Executive Summary

## Introduction and Purpose

In 2022-2023, local partners with the South Fork Crow River Watershed developed the South Fork Crow River Watershed Comprehensive Watershed Management Plan (SFCRW CWMP) through the One Watershed One Plan (1W1P) program. The 1W1P program is administered by the Board of Water and Soil Resources (BWSR) through Minnesota Statutes§103B.801. This resulting plan is not a regulatory document. The plan instead focuses on voluntary conservation and provides a framework to guide watershed managers (local counties, soil and water conservation districts, and the watershed district) as they work to manage the watershed's natural resources.

## Plan Area

The South Fork Crow River Watershed (SFCRW) planning area is a predominately agricultural watershed in central Minnesota. The planning area is defined by Hydrologic Unit Code 8 watershed boundaries. The eastern side of the watershed extends into the seven county metropolitan area. Minnesota Statutes Chapter 103B.231 of the Metropolitan Surface Water Management Act requires metropolitan watershed districts and water management organizations to develop and adopt a watershed management plan. As such, the Pioneer-Sarah Creek and Carver County Watershed Management Organization (CCWMO) have Water Management Plans that overlaps with a portion of the SFCRW.

The watershed is 72 miles wide when measured between the cities of Independence and Willmar. The watershed is roughly 1,280 square miles and contains 179 lakes greater than 10 acres and over 1,420 perennial river and stream miles. It also crosses eight different county boundaries (Kandiyohi, Renville, Meeker, McLeod, Sibley, Wright,

*Picture credit: Explore Minnesota (left); McLeod SWCD (right)*

Carver, and Hennepin). The main river is the South Fork Crow River which flows from west to east and connects with the North Fork Crow River just upstream of Rockford, MN, before continuing to the Mississippi River as the Crow River (**Figure 1.1**).

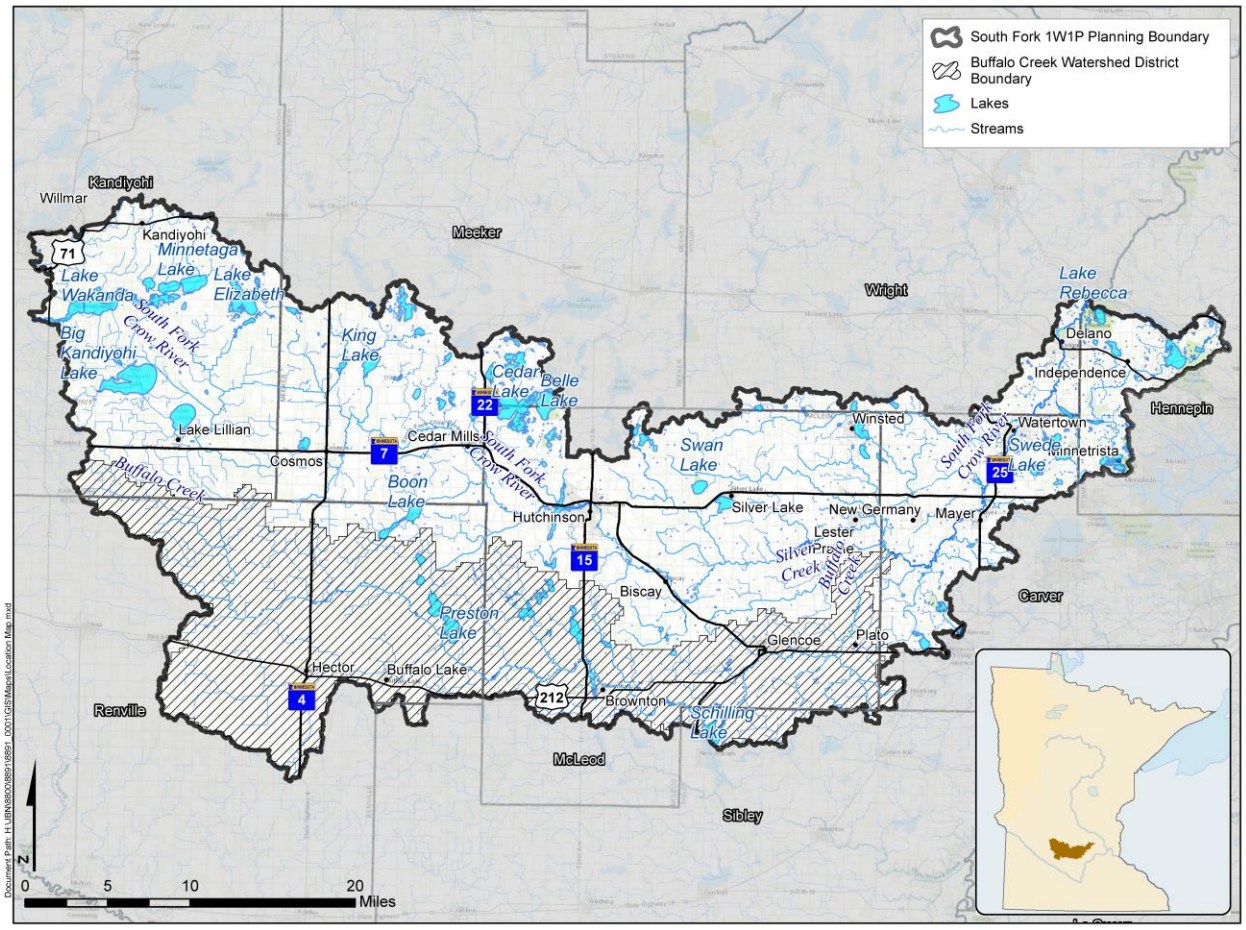



*Figure 1.1: South Fork Crow River Watershed planning area*

The plan area also includes a small area (approximately 117 acres) in McLeod County which was previously not covered under a 1W1P or metro watershed management plan. While this area is not part of the hydrologic boundary of the watershed, it has been included in the SFCRW under the guidance of BWSR (**Figure 1.2**).

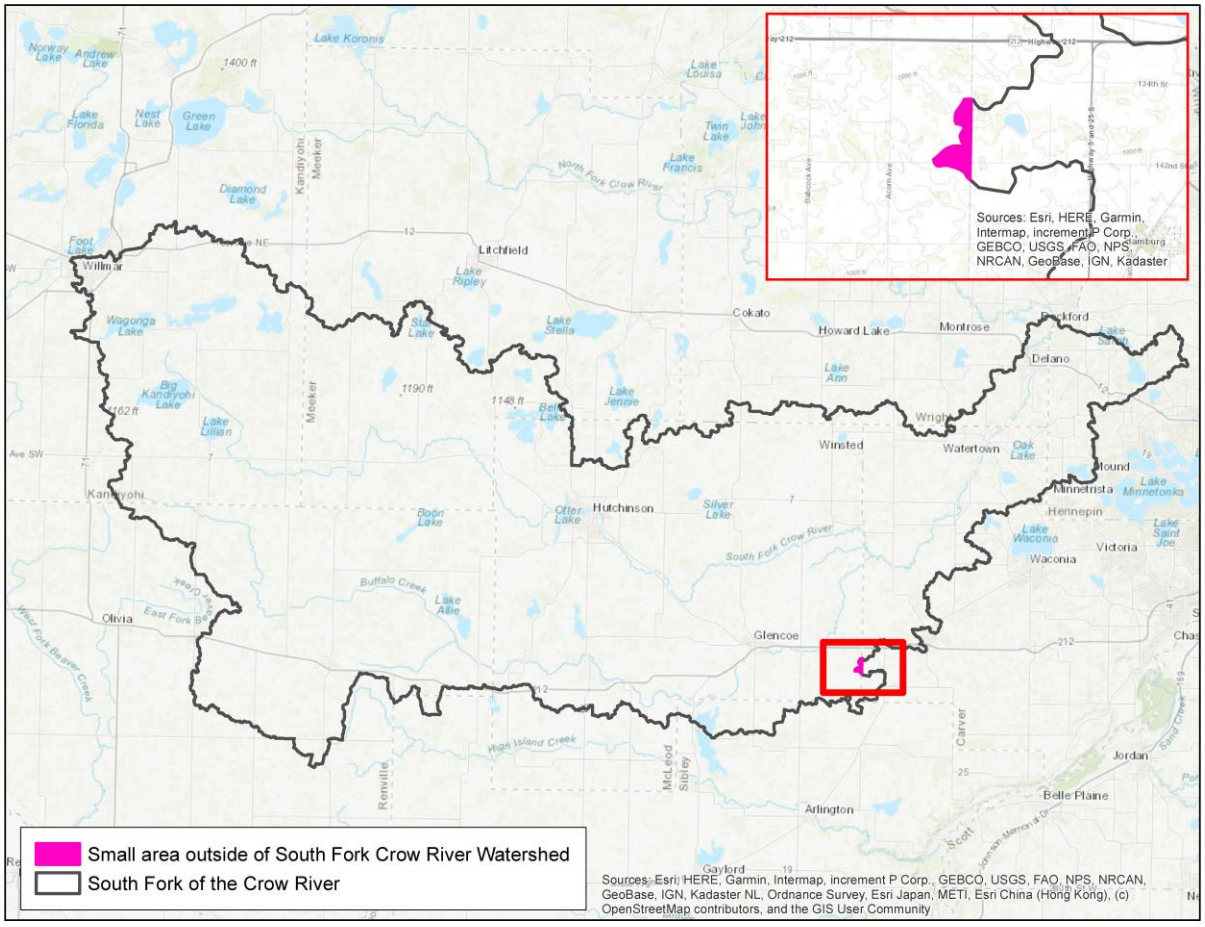



*Figure 1.2: Small area in McLeod County included in the South Fork Crow River Watershed CWMP*

## Planning Partners

The South Fork Crow River 1W1P planning process began within a Memorandum of Agreement (**Appendix A**) between the following local entities:

- The counties of Kandiyohi, McLeod, Meeker, Renville, and Wright,
- The Carver, Kandiyohi, McLeod, Meeker, Renville, and Wright Soil and Water Conservation Districts (SWCDs),
- The City of Winsted, and
- Buffalo Creek Watershed District (BCWD).

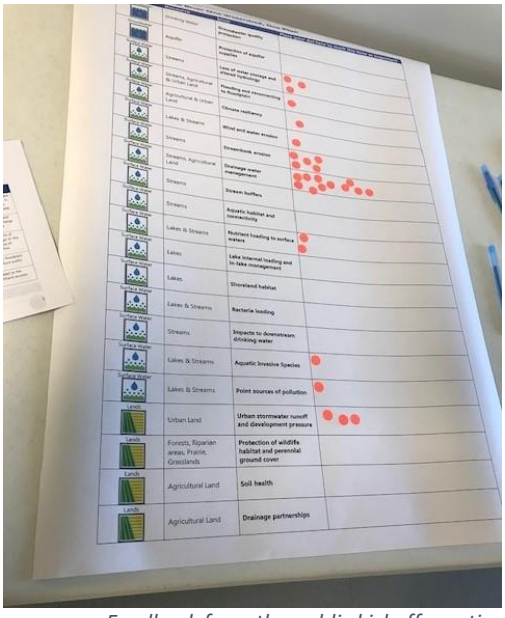
Three planning committees served the development of this plan: the Steering Committee, the Technical Advisory Committee, and the Policy Committee. The Policy Committee, made up of one representative from each entity in the Memorandum of Agreement (MOA), formed the decision-making body for this plan. The Steering Committee consisted of local staff from each of the entities in the MOA and generated

the content in this plan. The Technical Advisory Committee consisted of state agencies and local stakeholders and contributed to plan content in an advisory role.

The Steering and Policy Committee are the primary committees implementing the plan, with the Technical Advisory Committee advising on an as-needed basis. Successful implementation will depend on continuing and building partnerships in the watershed with landowners, planning partners, state agencies, and nongovernmental organizations.

## Priority Issues

**This plan focuses on voluntary conservation efforts.** Therefore, it's critical that the plan reflects the perspectives of the public. Recognizing this, in June of 2022, the Partnership began the planning process with a public kickoff event to receive feedback from the community about issues most important to them, and resources that should be the focus of implementation efforts. A survey was also provided online for members of the public that were not able to attend the kickoff event.



*Feedback from the public kickoff meeting*

After review and consolidation of public feedback, local water plans and studies, 1W1P notification responses, and committee input, 21 distinct issues were identified within the watershed. The issues were organized into one of three categories:

**Surface Water**

*e.g lakes, streams, wetlands, and drainage systems*

**Groundwater**

*e.g. aquifers, flow, and drinking water sources*

**Lands**

*e.g. land management healthy soils, habitat quality*

Identified issues were prioritized to focus time, energy, and funding during implementation. Members of the Steering and Policy Committees used input from the public meeting to sort issues into one of three priority tiers:

- Tier 1 issues are the most important issues and will be handled first during implementation.
- Tier 2 issues are important issues that will be addressed by the plan but may require partner involvement.
- Tier 3 issues are not a focus of this plan, as they will be handled by partners or addressed with additional dollars.

The resulting priority (Tier 1 and Tier 2) issues that are the focus of this plan are summarized in the **Table 1.1** and **1.2** below, with the **highest priorities representative of this predominately agricultural watershed: drainage water management, water storage, nutrient loading, wind and water erosion, and soil health.**

*Table 1.1: Tier 1 Priority Issues*

| Resource Group | Resource | Issue | Description |
|---|---|---|---|
| Surface Water  | Streams, Agricultural Land | **Drainage Water Management** | Many agricultural drainage systems are failing due to age and/or years of neglect. This not only reduces drainage function but results in accelerated sediment delivery to receiving waters. Incorporating conservation projects into drainage maintenance can alleviate field erosion that causes nutrient and sediment delivery, as well as reduce downstream flooding issues in agricultural and urban areas and enhance drainage function. |
| Surface Water  | Streams | **Loss of Water Storage and Altered Hydrology** | Altered hydrology refers to a change in the timing and volume of water delivered to receiving waters.. It can occur when water storage or infiltration on the landscape is reduced due to land use changes (including loss of wetlands) or due to climatic (precipitation) changes and can lead to both stream flashiness and low flow conditions. |
| Surface Water  | Lakes & Streams | **Nutrient Loading to Surface Waters** | Nitrogen and phosphorus are essential nutrients for plant growth but when in excess in the water, they can cause harmful algae blooms and create other water quality and aquatic life issues. Improper amount or timing of fertilizer application on agricultural land is a source of nutrients in the watershed. |

| Resource Group | Resource | Issue | Description |
|---|---|---|---|
| Surface Water  | Lakes & Streams | **Wind and Water Erosion** | Detached sediment from the landscape can be transported to nearby waterbodies by wind or water. Elevated concentrations of sediment in surface waters can be detrimental to aquatic life and aquatic recreation. |
| Lands  | Agricultural Land | **Soil Health** | Soil erosion from cropland and pastureland has a major impact on productivity and water quality conditions. Practices such as reduced or no-till and cover cropping can help to retain soil on the land and build soil health. |

*Table 1.2: Tier 2 Priority Issues*

| Resource Group | Resource | Issue | Description |
|---|---|---|---|
| Surface Water  | Lakes & Streams | **Bacteria Loading** | Bacteria in the water can come from animal or human waste, specifically from leaking septic systems, Waste Water Treatment Facilities (WWTFs), feedlots, pasture runoff, and improper manure management, making waters unsafe to swim in and drink from. |
| Lands  | Agricultural Land | **Drainage Partnerships** | Increased upstream water volume and flows has caused drainage systems in some locations to be inadequately sized for the increased rainfall events occurring. Increasing partnership between drainage authority and conservation staff will lead to redesigned drainage infrastructure that incorporates better drainage water management that has potential to both increase crop productivity and receiving water environmental benefits. |
| Lands  | Urban Land | **Urban Stormwater Runoff and Development Pressure** | Storm sewer systems in urban areas have the potential to deliver sediment, nutrients, and bacteria to surface waters from sediment build-up and runoff on impervious surfaces, pet waste, wildlife, leaves, lawn clippings, fertilizers, automobiles, construction sites, and poorly buffered areas near streams/ditches. |
| Lands  | Forests, Riparian areas, Prairie, Grasslands | **Protection of Wildlife Habitat and Perennial Ground Cover** | Protection and expansion of natural features, native species, and landscapes in the watershed to promote species richness, pollinator habitat, and environmental benefits. |

# Measurable Goals

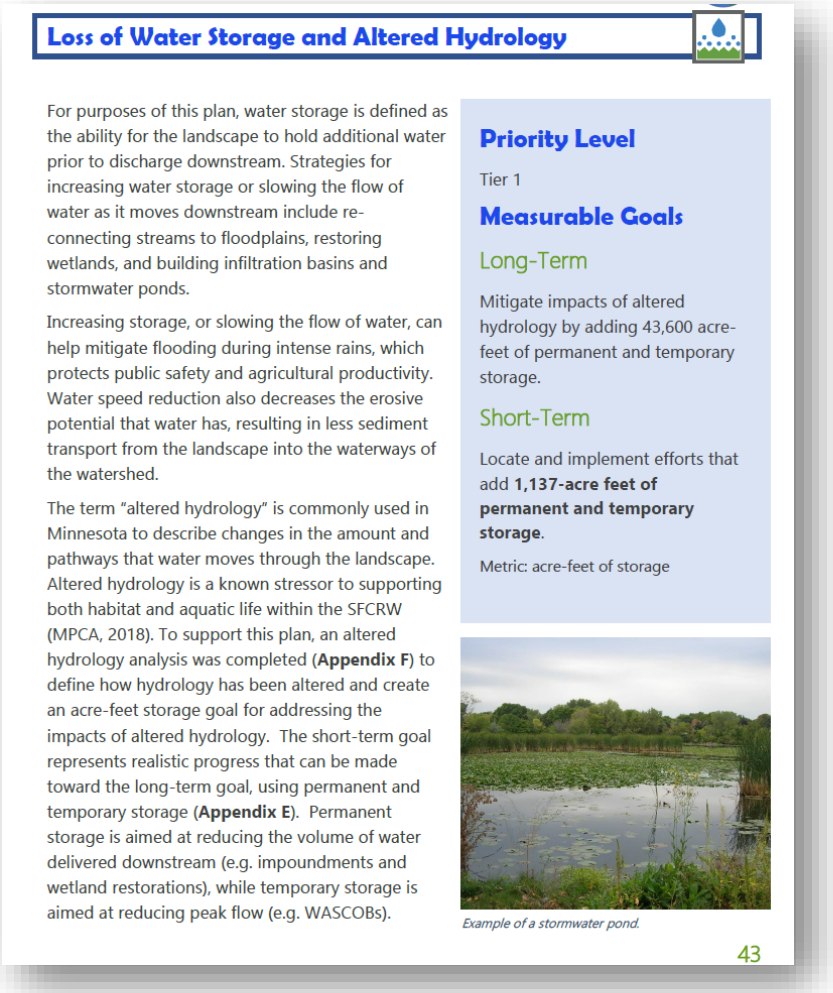
Measurable goals identify the desired change to address priority issues within the watershed. Goals were developed for each priority issues in this plan at two different time scales:

- ☑ **Long-term** goals describe the desired future condition (water quality, water availability, habitat quality) planning partners are striving to attain, regardless of time frame. This goal sets the direction for planning and future management.
- ☑ **Short-term** goals describe the quantifiable change planning partners expect to achieve during implementation of this 10-year plan.

Short- and long-term goals were created using existing local water management plans, state developed watershed restoration and protection strategy reports (WRAPS), total maximum daily load (TMDL) reports, results from water quality models, and local feedback.

Each priority issue is addressed by a goal and summarized in a goal sheet. Each goal sheet contains a summary of:

- Background on the goal and issue it seeks to address,
- Planning region targets,
- Stacked (multiple) benefits of meeting the goal, and
- Priority resources and subwatersheds where work will be focused.



**Loss of Water Storage and Altered Hydrology**

For purposes of this plan, water storage is defined as the ability for the landscape to hold additional water prior to discharge downstream. Strategies for increasing water storage or slowing the flow of water as it moves downstream include re-connecting streams to floodplains, restoring wetlands, and building infiltration basins and stormwater ponds.

Increasing storage, or slowing the flow of water, can help mitigate flooding during intense rains, which protects public safety and agricultural productivity. Water speed reduction also decreases the erosive potential that water has, resulting in less sediment transport from the landscape into the waterways of the watershed.

The term "altered hydrology" is commonly used in Minnesota to describe changes in the amount and pathways that water moves through the landscape. Altered hydrology is a known stressor to supporting both habitat and aquatic life within the SFCRW (MPCA, 2018). To support this plan, an altered hydrology analysis was completed (**Appendix F**) to define how hydrology has been altered and create an acre-feet storage goal for addressing the impacts of altered hydrology. The short-term goal represents realistic progress that can be made toward the long-term goal, using permanent and temporary storage (**Appendix E**). Permanent storage is aimed at reducing the volume of water delivered downstream (e.g. impoundments and wetland restorations), while temporary storage is aimed at reducing peak flow (e.g. WASCOBs).

**Priority Level**

Tier 1

**Measurable Goals**

Long-Term

Mitigate impacts of altered hydrology by adding 43,600 acre-feet of permanent and temporary storage.

Short-Term

Locate and implement efforts that add **1,137-acre feet of permanent and temporary storage**.

Metric: acre-feet of storage



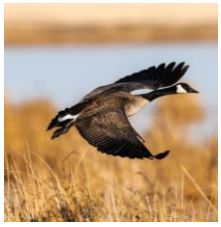
*Example of a stormwater pond.*

43

*Example of a measurable goal for a Tier 1 priority issue: Loss of Water Storage and Altered Hydrology*

A summary of this plan's short-term (10-year) measurable goals is provided in **Table 1-3** below. For more details on plan goals, see **Section 4 – Measurable Goals**.

*Table 1.3: South Fork Crow River Watershed short-term (10-year) measurable goals*

| Goal Name | Short-Term (10-Year) Goal |
|---|---|
|  **Drainage Partnerships and Drainage Management** | Implement **250 conservation practices** that contribute to priority drainage systems, also reducing erosion and sedimentation, nutrient loading, and altered hydrology and flooding. |
|  **Loss of Water Storage and Altered Hydrology** | Locate and implement efforts that add **1,137-acre feet** of permanent and temporary storage. |
|  **Nutrient Loading to Surface Waters** | Reduce total **phosphorus** (TP) loading watershed-wide by **2,048 lbs/year**<br>Reduce total **nitrogen** (TN) loading watershed-wide by **40,620 lbs/year** |
|  **Erosion and Sedimentation** | Reduce sediment loading watershed-wide by **286 tons/year** |
|  **Soil Health** | Implement **15,000 acres** of additional soil health practices |
|  **Bacteria Loading** | Implement **9 livestock waste management projects** to reduce delivery of bacteria to impaired streams |
|  **Urban Stormwater Runoff and Development Pressure** | Decrease urban runoff and urban flooding by routing and **treating an additional 1,000 acres** of developed area through BMPs. |
|  **Wildlife Habitat and Perennial Ground Cover** | An additional **825 acres** of land is protected permanently (e.g. RIM) within the watershed, with emphasis on adding to existing protected areas and corridors and areas 40 acres or larger. |

## Implementation Actions

This plan creates a framework for managing natural resources in the watershed, focused on voluntary conservation efforts. This framework culminates into a list of actions that will be pursued during the 10-year plan to make progress towards measurable goals. These actions are organized into action tables with the following information provided in each:

- Action description with "output" that will be implemented in the 10-year plan,
- Goals addressed, either primarily or as a secondary benefit,
- Lead and partnering entities,
- Timeline for implementing the action, and
- Funding level and estimated dollars for implementation.

Similar types of actions are grouped into one of five implementation programs, as shown in **Figure 1.3**, and described more in **Section 6 –Implementation Programs**.

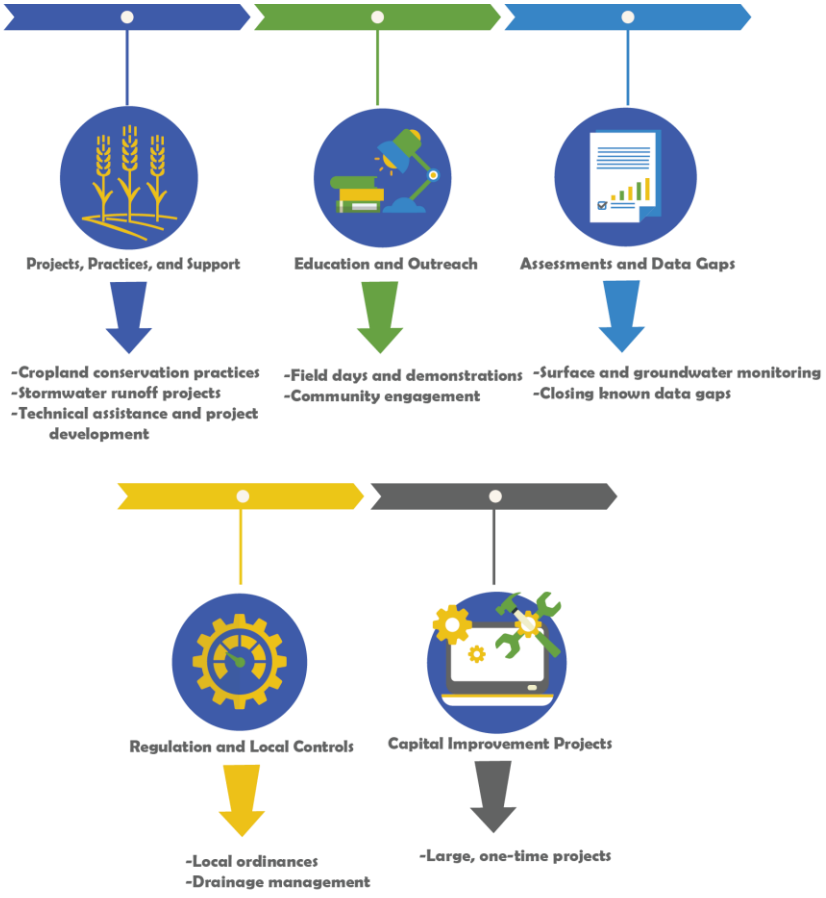



*Figure 1.3: Implementation programs with example actions.*

## Cost of Implementing the Plan

Implementing actions within the plan and making progress toward goals is largely dependent on funding, as more actions can be implemented with more funding. With an approved CWMP, the watershed is eligible to receive non-competitive Watershed-Based Implementation Funding (WBIF) through BWSR. In recognition of this, three funding levels are used to organize actions in this plan:

- Funding Level 1: Current, baseline funding
- Funding Level 2: Current, baseline funding plus WBIF (assumed ~$600,000 / yr),
- Funding Level 3: Partners, federal dollars, or other competitive funding

Actions pursued under Funding Level 2 (Current Funding + WBIF) are the focus of this plan. The estimated cost of implementing actions within Funding Level 2 is shown in **Table 1.4**.

*Table 1.4: Estimated cost of implementing the plan (Level 2 funding)*

| | Est. Annual Cost | Est. 10-Year Cost |
|---|---|---|
| **Implementation Programs** | | |
| Projects, Practices, and Support | $764,300 | $7,643,000 |
| Education and Outreach | $30,000 | $300,000 |
| Assessments and Data Gaps | $68,000 | $680,000 |
| Regulations and Local Controls | $174,000 | $1,740,000 |
| Capital Improvement Projects | $60,000 | $600,000 |
| **Additional Expenses** | | |
| Operations and Maintenance | $200,000 | $2,000,000 |
| Plan Administration | $60,000 | $600,000 |
| **Total** | **$1,356,300** | **$13,563,000** |

# Section 2.
# Land and Water Resource Narrative

# Section 2. Land and Water Resources Narrative

The South Fork Crow River Watershed is a predominately agricultural watershed in central Minnesota. The watershed is 72 miles wide when measured between the cities of Independence and Willmar. The watershed is roughly 1,280 square miles and contains 179 lakes greater than 10 acres and over 1,420 perennial river and stream miles. It also crosses eight different county boundaries (Kandiyohi, Renville, Meeker, McLeod, Sibley, Wright, Carver, and Hennepin). The main river is the South Fork Crow River which flows from west to east and connects with the North Fork Crow River just upstream of Rockford, MN, before continuing to the Mississippi River as the Crow River (**Figure 2.1**).

*South Fork Crow River (MPCA)*

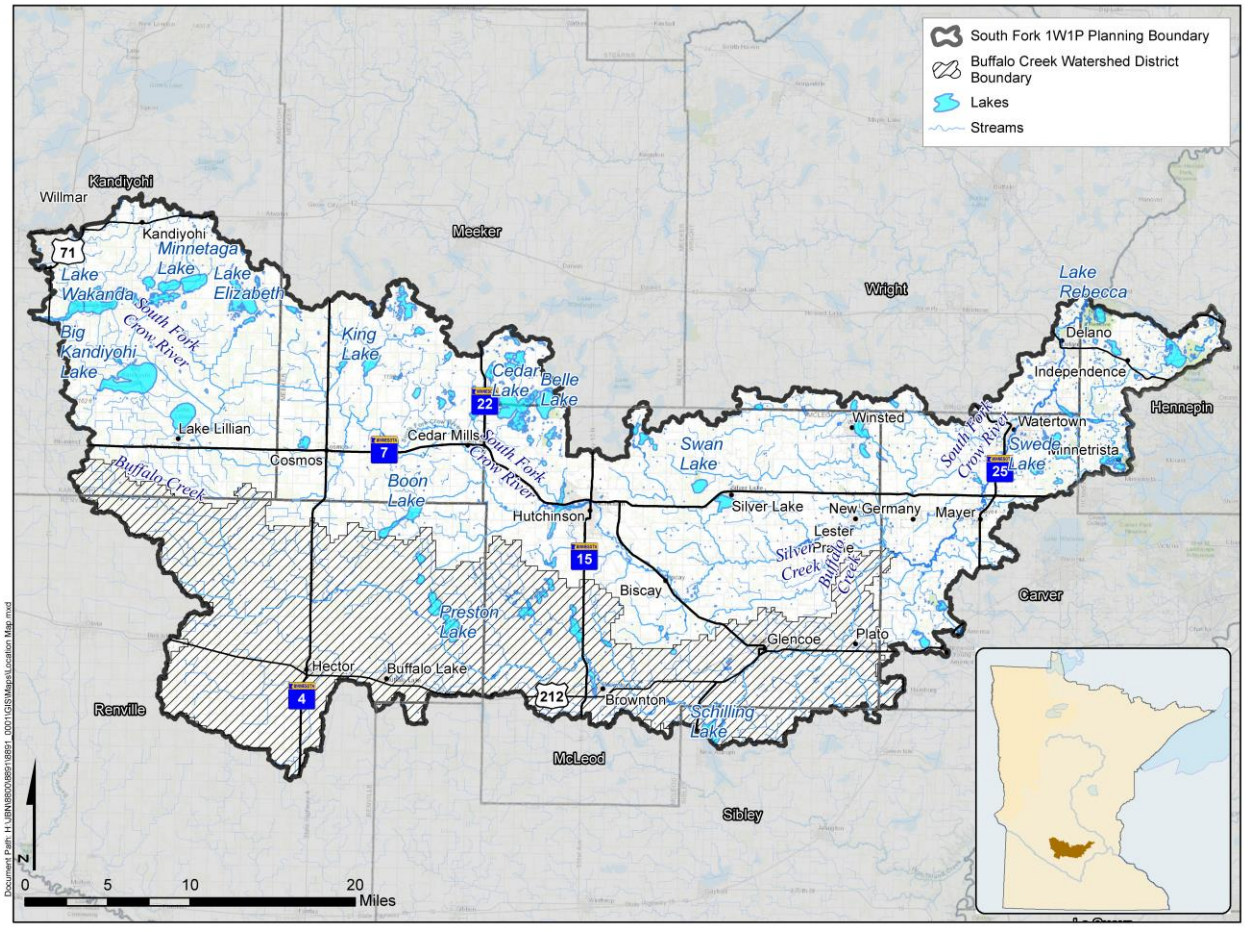



*Figure 2.1: The South Fork Crow River Watershed planning area.*

## Land Use: Then and Now

Euro-American settlement began in the area after the Treaty of Traverse de Sioux was signed in 1851. It is believed that the earliest native peoples to inhabit the area did so around 1200 B.C.E. This group is known as The Woodland Culture, a group of people known for hunting and gathering off the land. Around 1700, the Dakota people moved into the region and hunted the land (DNR, 2022b). The Treaty of Traverse de Sioux, signed in what is now known as St. Peter, MN, ceded 24 million acres of land from the Dakota Nation to the United States of America, opening new land for Euro-American settlement (MNHS, 2022). The Dakota Nation maintained a 10-mile buffer of land on either side of the Minnesota River in this treaty. Approximately 100,000 Euro-American settlers settled on the land within the next decade following the signing of the treaty.

Today, the largest city fully contained within the watershed is Hutchinson, with a population of 13,935 persons according to the 2020 census. Hutchinson is in the north central part of the watershed. The city is built around the South Fork Crow River and was settled after the Treaty of Traverse de Sioux was signed. The town was established in 1857. The first dam in Hutchinson was built in 1858, and the first flour mill began operation in 1866. Willmar is the largest city that is partially within the watershed, with a total population of 21,015 according to the 2020 census.

Pre-settlement vegetation consisted of mainly prairie, with an estimated 51% of the watershed being covered in prairie. Other dominant vegetation types within the watershed pre-settlement consisted of Big Woods – Hardwood (21%), Wet Prairie (12%), Aspen-Oak Land (8%), and open water (4%). The remaining landscape consisted of barren land, river bottom forest land, conifer bogs and swamps (4%) (MRLC, 2021).

Today, the landscape is dominated by row crop agriculture and pasture (**Figure 2.2**). These two land use types make up 81% of the watershed area (MRLC, 2021). Other land use types include developed land (6%) and water, wetlands, and forests, each at roughly 5%. Planning

*Agricultural land in the South Fork Crow River Watershed*

partners do not expect these land use patterns to change dramatically during this 10-year plan.

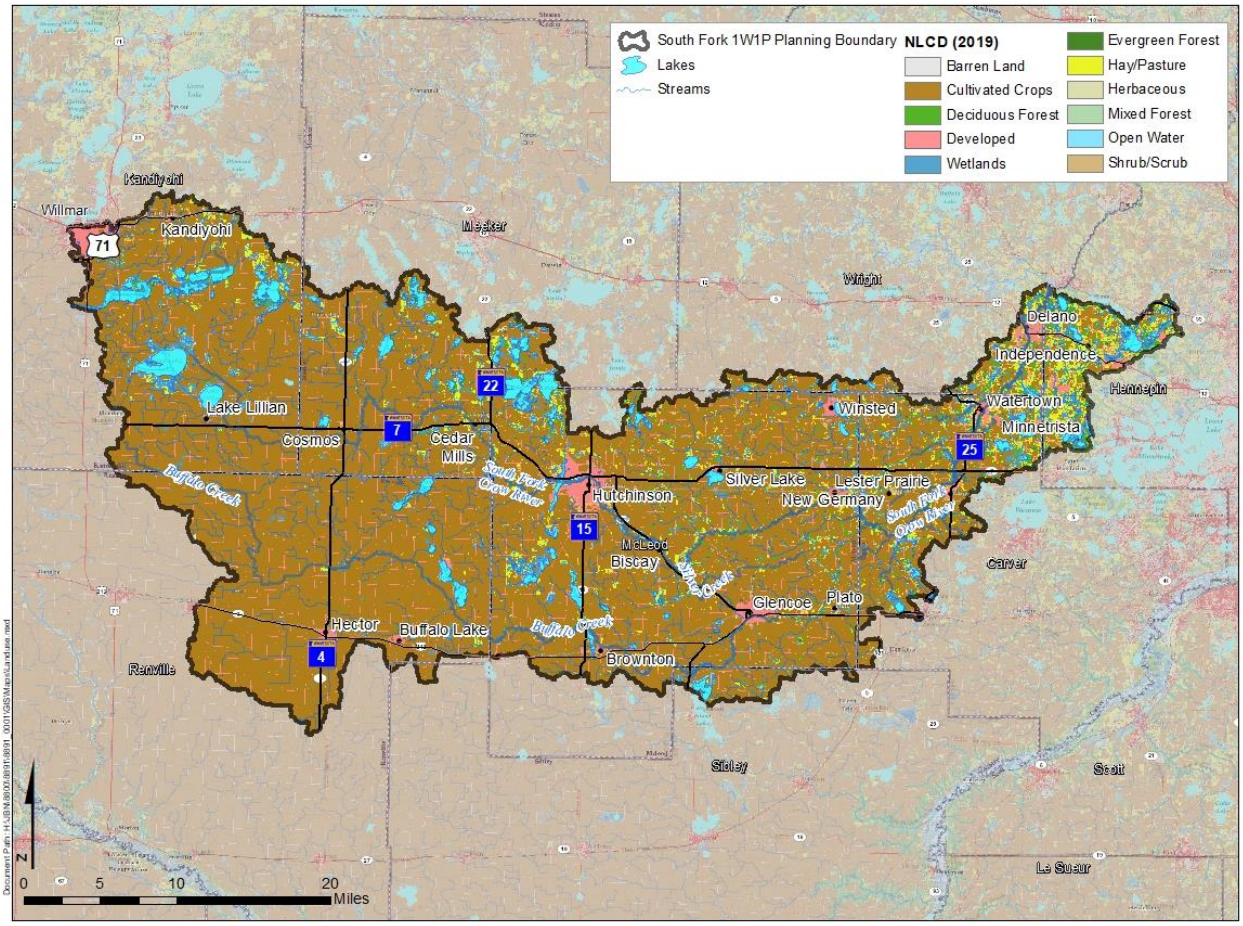



*Figure 2.2: Land use in the South Fork Crow River Watershed.*

## Surface Water Resources

Streams within the watershed generally flow west to east and meander to the northeast as the watershed area approaches the Twin Cities. The dominant river within the watershed is the South Fork Crow River, which meanders for 116 river miles. The South Fork Crow River begins at Little Kandiyohi Lake and joins the North Fork of the Crow River at Rockford, MN before continuing as the Crow River. The river flows from the northwest to the southeast past Hutchinson until the river passes the city of Biscay and begins traveling northeast until meeting the North Fork of the Crow River. The second largest river/creek within the watershed is Buffalo Creek. Buffalo Creek is 88 river miles in length and is south of the South Fork Crow River, but generally follows a parallel path of the South Fork Crow River until Buffalo Creek meets up with the South Fork Crow River just east of Lester Prairie and south of New Germany. The three largest lakes in the

watershed are Big Kandiyohi, Cedar, and Wakanda Lake, with total lake acreage areas equaling 2683, 1860, and 1760 respectively.

## Surface Water Quality

*Picture: Buffalo Creek Watershed District*

Most of the waters that have been assessed within the watershed are not meeting their intended use requirements. This suggests that these waterbodies need restoration. The Minnesota Pollution Control Agency (MPCA) assesses waterbodies on a 10-year cycle. The South Fork Crow River Watershed will be next assessed 2023, where some waters may be taken off the impaired waters list and others may be added. The WRAPS, a document that outlines restoration and protection goals for the watershed, was published in 2018 and provides information about the surface water quality of the watershed. The report breaks down what standards are required for each assessed lake and stream segment.

There were 62 assessed stream segments in the WRAPS, and only nine (14.5%) stream segments met their designated use standard. A total of 51 lakes were assessed. All lakes were classified as class 2B waters, meaning they were being protected for aquatic life and recreation beneficial uses (**Table 2.1**). Thirty-seven lakes (73%) were not meeting requirements supporting aquatic life due to excessive algal and nutrients.

When streams and lakes do not meet their designated use standards, they are designated as impaired. A full list of impaired waters within the watershed is provided in **Appendix B**. According to the 2022 proposed impaired waters list, there are 360 miles of perennial streams, ditches, and creeks in the watershed that have been designated as impaired. Of these 360 stream miles, 87 are impaired ditch miles (county ditches, judicial or joint ditches, and one state ditch). These impaired ditch systems drain mostly into Buffalo Creek, with a few miles draining into the South Fork Crow River (**Figure 2.3**). While the impaired waters in the watershed will need restoration efforts, many waterbodies, including impaired ones, are well used for recreation by locals and tourists for fishing, boating, and more.

Once impaired, restoration activities can be implemented in an effort to bring the waterbody back to meeting its beneficial uses, therefore delisting it as impaired. This has occurred for three waterbodies: Rebecca Lake (27-0192-00) in 2018 for nutrients, South Fork Crow River (07010205-508) in 2018 for chloride, and Buffalo Creek (07010205-501) in 2012 for turbidity.

*Table 2.1: Impairment categories within the South Fork Crow River Watershed*

| Waterbody | Category | Impairment Description |
|---|---|---|
| Lake | 2B | Cool and warm water aquatic life and habitat |
| Stream | 2Bg | Aquatic Life and Recreation – General Cool and Warm Water Aquatic Life Habitat |
| Stream | 2Bm | Aquatic Life and Recreation – Modified Cool and Warm Water Aquatic Life Habitat |

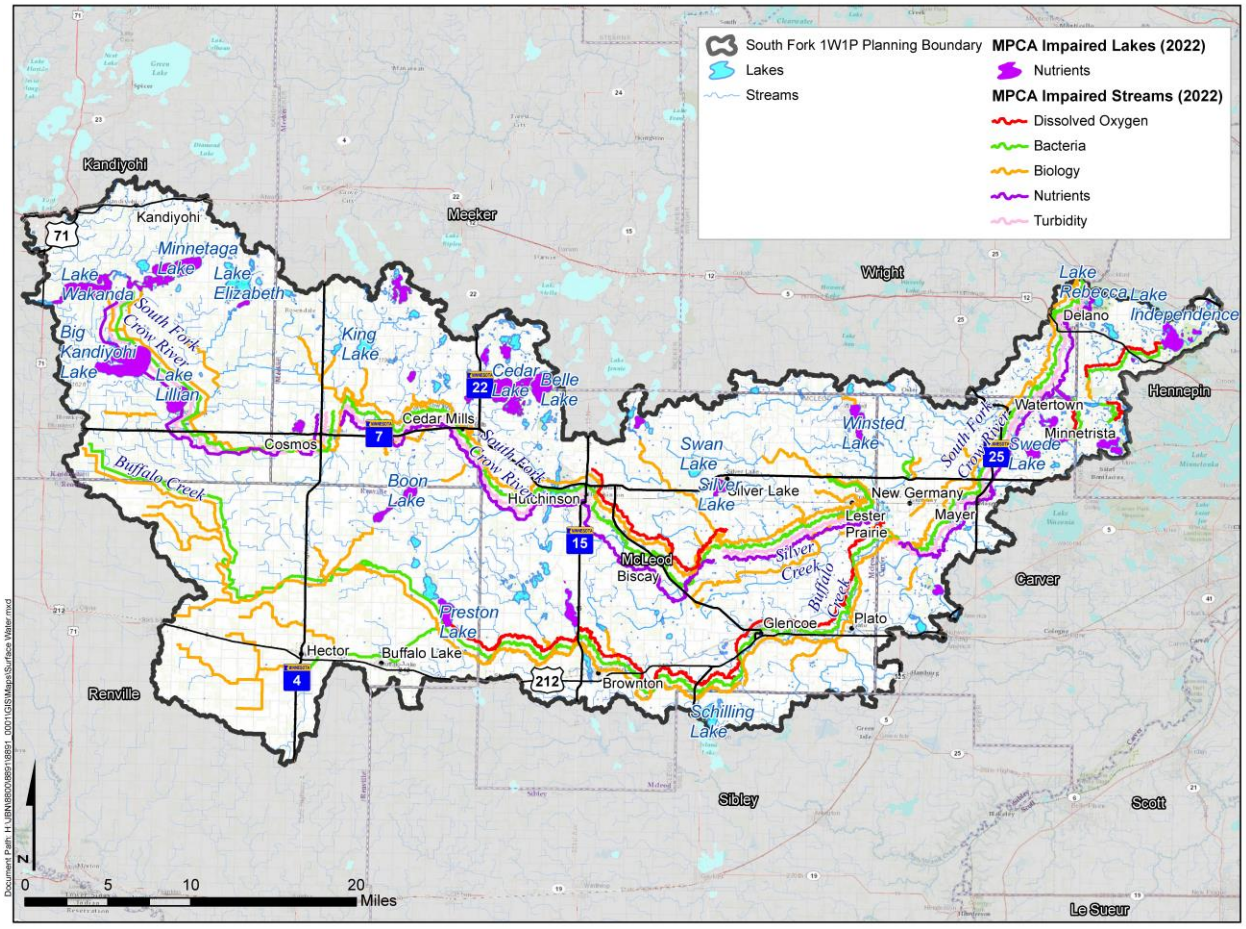



*Figure 2.3: Impaired waters (MPCA, 2022) in the South Fork Crow River Watershed. Parallel lines indicate multiple impairments of the same waterbody*

## Altered Hydrology and Flooding

An estimated 67% of streams within the South Fork Crow River Watershed have been altered, meaning they have been ditched or straightened. 12% of streams are natural streams, 3% have been impounded, and another 17% have no definable channel.

Altered watercourses are not unique to the South Fork Crow River Watershed and pose issues similar to other altered watercourses around the state. Ditches were often constructed to drain agricultural fields. A network of tile drainage through the South Fork Crow River Watershed's agricultural land moves water off agricultural fields and into streams and rivers.

Existing streams, known as public waters, are meandering unless they were altered. Meandering streams and ditches have less erosion than channelized, or straightened, streams or ditches. Altered watercourses can reduce in-stream and downstream water quality conditions due to the increased peak flow and velocity of straightened channels and reduced habitat complexity. Straightened channels can also increase streambank sloughing and sediment, total phosphorus, and total nitrogen transport.

Water levels are control by small dams and control structures on various lakes in the watershed. The South Fork Crow River has a series of rock rapids that allows for fish passage but results in a large impoundment upstream. The river has a second dam downstream, in Watertown, but this dam is not large enough to be an impoundment (MPCA, 2016).

*The South Fork Crow River (DNR)*

### Stormwater

Overland runoff in urban areas flows over impervious surface area, picking up pollutants such as salt, nutrients, bacteria, trash, oil, and more as it flows into storm sewers. Storm sewers carry stormwater out of an urban area where it is unable infiltrate into the ground and directly discharge the water into streams, lakes, or wetlands. To protect water resources from stormwater runoff from large communities, a Municipal Separate Storm Sewer System (MS4) permit is required under the MPCA's National Pollutant Discharge Elimination System (NPDES) program. In the South Fork Crow River Watershed, nine municipalities are required to have an MS4 permit regulating urban stormwater runoff discharges. Hennepin County is also an MS4. An additional twenty municipalities in the watershed are small enough they are not required to be permitted, but voluntary stormwater management could reduce pollutant contributions downstream.

## Groundwater and Drinking Water Resources

Groundwater resources are important to monitor and protect to promote safe drinking water. The watershed is estimated to have over 5,800 private wells that are used for drinking water consumption. While private well owners are responsible for testing and treatment of their wells, private wells have been tested in some capacity by the Minnesota Department of Health (MDH). Some wells have nitrate concentrations that exceed drinking water standards of 10 mg/L. An additional issue that MDH has identified with private wells is elevated levels of arsenic, a naturally occurring contaminant that can lead to cancer and other serious health effects (MPCA, 2018).

Drinking Water Supply Management Areas (DWSMAs) are established to secure public water supply within a designated area. These areas have restrictions on what can be applied on the landscape to help keep groundwater supplies around municipal wells safe for consumption. There is a total of 21 DWSMAs in the watershed, focused around cities (**Figure 2.4**). Additionally, the entire watershed is within the Twin Cities Metropolitan DWSMA for surface water. **Downstream communities, including Minneapolis and St. Paul, use surface water intakes from the Mississippi River to help supply municipal consumable water for their populations and are directly affected by what happens in the Crow River and Upper Mississippi River systems** (SPRWS, 2022).

There is a known hydrologic connection between surface and groundwater in this watershed. Groundwater resources can feed surface water resources like wetlands, streams, and lakes, making the health of groundwater resources an important part of improving surface water resources. Groundwater resources therefore enable vibrant biological communities to exist and enable the recreational opportunities that the South Fork Crow River provides (MPCA, 2018).

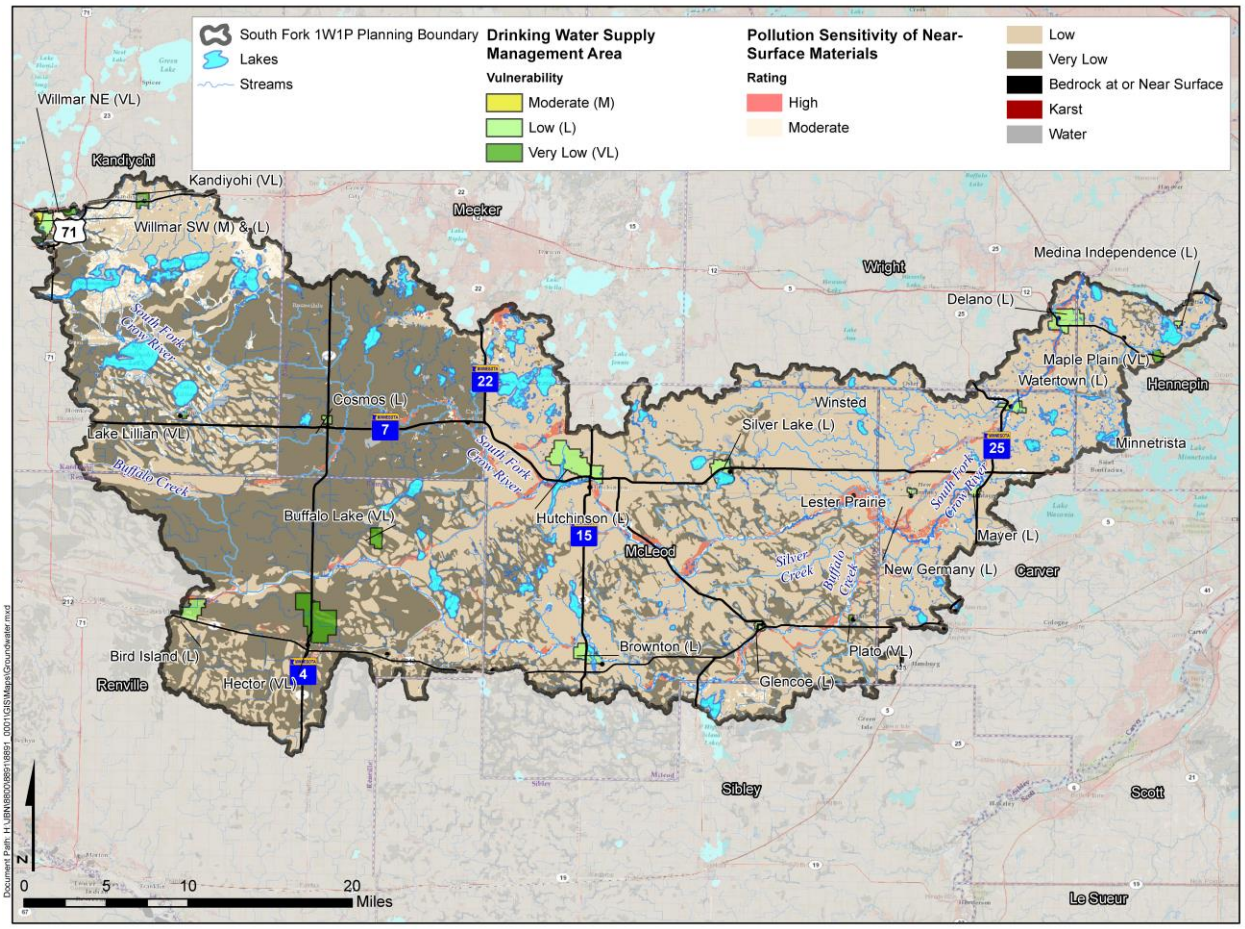



*Figure 2.4: DWSMAs and Pollution Sensitivity of Near-Surface Materials (MDH) in the South Fork Crow River Watershed. Data provided on a county basis based on results from the Geologic Atlas.*

## Soils

During the last glaciation and glacial retreat, ice sheets compressed the land surface, smoothing the landscape. During the melting of the ice sheets, water moved around and under the ice, creating new drainage paths through the landscape. The Upper Midwest has been defined as the Prairie Pothole region, as the landscape is relatively flat

and hard to drain due to the soils the glaciers have left behind. The soils that formed during this time period are generally sandy to loamy-clay in texture.

The watershed has two main ecoregions making up almost the entirety of the watershed area. The Environmental Protection Agency (EPA)-defined level-four ecoregions are the Big Woods and the Des Moines Lobe, a subclass of the Eastern Broadleaf Forest Province and Prairie Parkland Province. The Eastern Broadleaf Forest bedrock is composed of sandstone, shale, and dolomite in the south, and sandstone and clay to the north. Soils are loamy but range from loam to clay loam and are generally classified as Alfisols (DNR, 2022d). The Prairie Parkland Province is the Red River Basin and southeastern Minnesota and was very heavily influenced by recent glaciation of the Des Moines Lobe and glacial lake melting, depositing deep-water sediment across the region (DNR, 2022c). Bedrock exposures are rare except in the deeply downcut Minnesota River valley and a few places where quartzite bedrock highs protrude through thinner drift in the southwestern corner of the province (DNR, 2022c).

## Recreation and Habitat

Most lakes in the watershed have Minnesota Department of Natural Resources (DNR) public water access points, making them popular destinations for aquatic recreation and fishing. There is one 385-acre state recreation area within the watershed, Greenleaf Lake. The recreation area is known for its wetlands, fishing opportunities (including panfish and largemouth bass) and waterfowl viewing. In addition to the state recreation area, there are 45 DNR management areas that include aquatic management areas and wildlife management areas. The Crow River State Water Trail: South Fork also provides ample outdoor recreation opportunity. This state water trail provides canoers and kayakers of all skill levels the opportunity to paddle, with the most popular area being the section of the river between Watertown and Rockford (DNR, 2022b).

The Luce Line State Trail, a 63-mile trail, winds through part of the watershed, providing a very popular amenity to the area for outdoor recreationists like cyclists, hikers, horseback riders and snowmobilers. Additionally, Three Rivers Park District operates three parks in the watershed: Baker Park Reserve east of Lake Independence, Kingswood Park, and Lake Rebecca Park Reserve.


*Luce Line State Trail (DNR)*

The US Fish and Wildlife Service (USFWS) has identified one threatened species in the watershed, the Northern Long-eared Bat, one endangered species, the Rusty Patched Bumble Bee, and is considering classifying the Monarch Butterfly as threatened or endangered. **Table 2.2** provides additional information about these species. Additionally, the DNR maintains a list of state threatened and endangered species, many of which are present in the watershed.

*Table 2.2: Federally Endangered or Threatened species within the South Fork Crow River Watershed.*

| Common Name | Scientific Name | Threatened or Endangered | Species Classification |
|---|---|---|---|
| Monarch Butterfly | Danaus plexippus | Candidate for classification | Insect |
| Rusty Patched Bumble bee | Bombus affinis | Endangered | Insect |
| Northern Long-eared Bat | Myotis septentrionalis | Threatened | Mammal |

## Climate and Precipitation

The DNR Minnesota Climate Trends website hosts over 100 years of climate data for Minnesota's watersheds. Over the last 100 years (1922-2021) of complete climate data, the watershed had an average annual temperature of 43.5 °F. Over the same timeframe, precipitation averaged 27.6 inches per year. The coldest average annual temperature year was in 1951, with an average annual temperature of 39.5 °F. The warmest average annual temperature year was in 1987, with an average temperature of 48.3 °F. The wettest year in the last 100 years was in 2019 when 39.7 inches of precipitation fell throughout the watershed. The driest year was in 1976 with only 15.3 inches of precipitation (DNR, 2022). On average, over the last 100 years, precipitation has increased by 0.06 inches per year and temperature has increased by 0.02°F per year which results in, on average, 6 more inches of precipitation per year and 2 degrees of

warmer temperature per year today when compared to 1922. Increased heavy precipitation events and warmer summers and winters are impacting farmers who rely on predictable weather during their growing seasons.

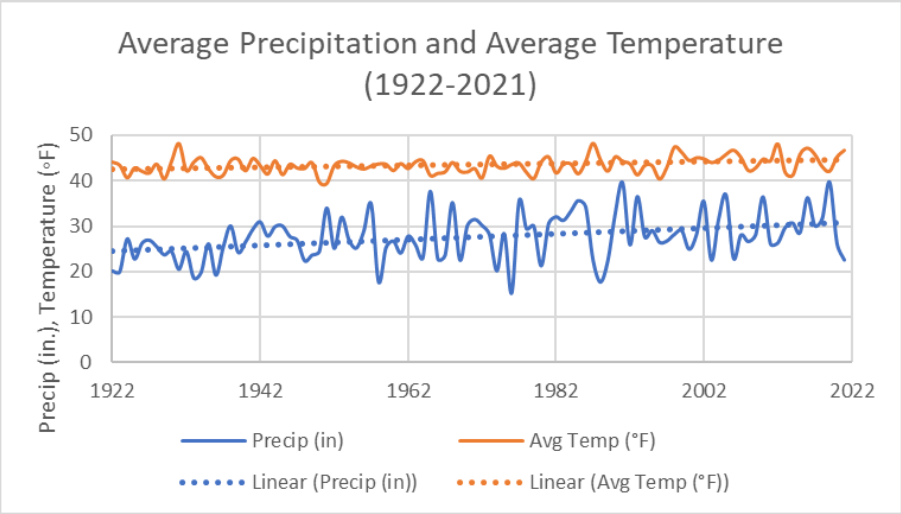



*Figure 2.5: Average precipitation and temperature over 100-year period in South Fork Crow River Watershed (DNR, 2022).*

## Demographics

Understanding the residents of the watershed is useful for plan implementation since many actions require buy-in from or voluntary participation of residents. The watershed population is estimated to be 87,000 people (United States Census Bureau, 2022). The median age of the watershed is 41 years of age, with 24% of the population being under 18 years of age and 18% of the population being older than 65. The watershed is largely made up of people identifying as white (89%). Most other persons identify as Hispanic (7%) or as multiple ethnicities (3%). The median household income is $67,468 and the watershed has a poverty rate of 8%. Ninety-three percent of the adult population in the watershed has at minimum of high-school education. Sixteen percent of the population has a bachelor's degree, and an additional seven percent have a graduate degree (United States Census Bureau, 2022).


*City of Hutchinson (Explore Minnesota)*

# Section 3.
# Priority Issues and Opportunities

# Section 3. Priority Issues and Opportunities

An "issue" is a problem, risk, or opportunity related to a resource. A "resource" is a feature on the landscape such as a lake, stream, agricultural land, or habitat. This plan section summarizes the issues impacting resources within the South Fork Crow River Watershed (SFCRW) and highlights the prioritized issues that are the focus of this plan.

## Issues by Planning Region

As introduced in **Section 2-Land and Water Resources Narrative**, the SFCRW is a large watershed, covering 1,280 square miles. The main river artery of the watershed is the South Fork Crow, running west to east near the Twin Cities Metropolitan Area. The second largest river/creek within the watershed is Buffalo Creek. For purposes of this plan and its implementation, the SFCRW was organized into three planning regions (**Figure 3.1**) based on resources present and location within the watershed.

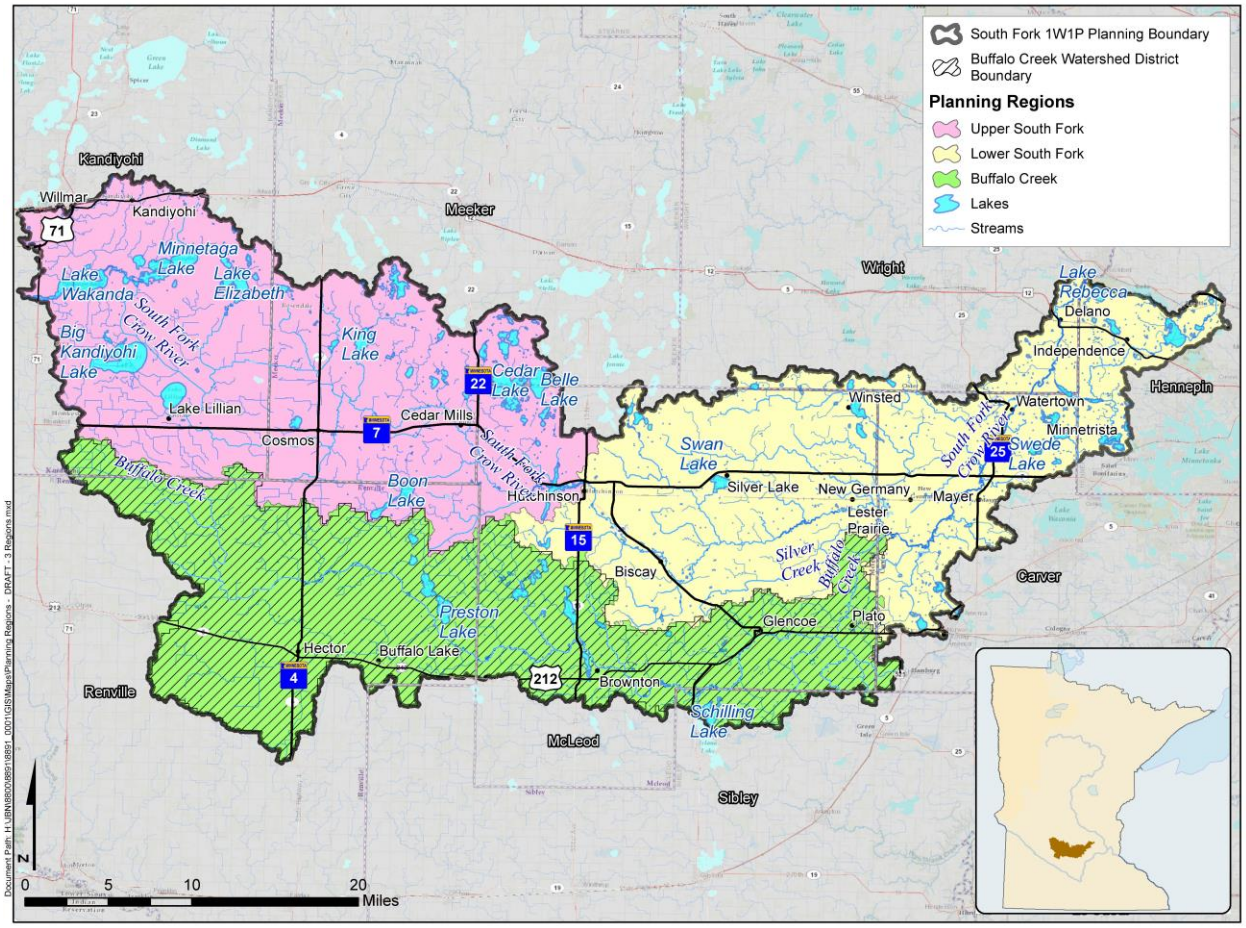



*Figure 3.1: Planning Regions.*

**Table 3.1** describes the planning regions within the watershed. The planning regions boundaries are set based on HUC-10 boundaries.

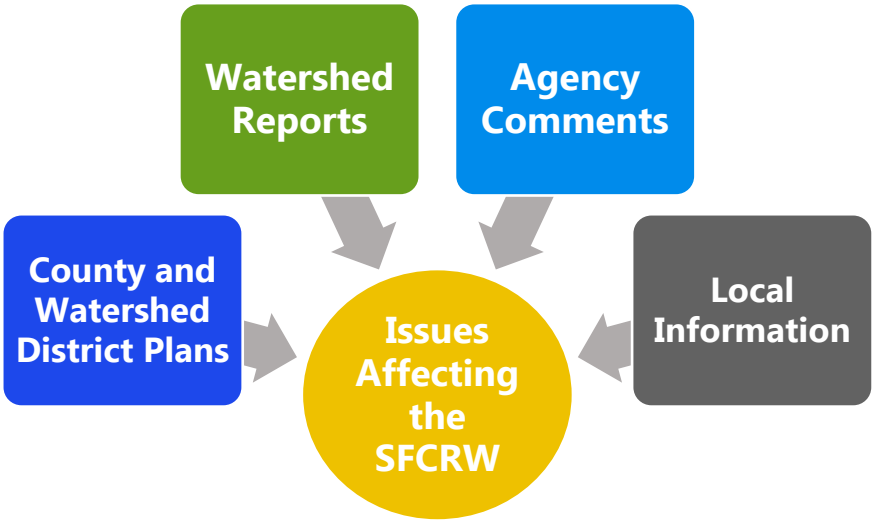
*Table 3.1: Planning Region Descriptions.*

| Planning Region Name | Description |
|---|---|
| **Upper South Fork** | Encompasses the northwestern portion of the watershed and ends in Hutchinson. |
| **Lower South Fork** | Picks up where the Upper South Fork Planning Region ends and concludes at the outlet of the watershed, the confluence with the North Fork of the Crow River upstream of Rockford. |
| **Buffalo Creek** | Focuses on the drainage area of the Buffalo Creek Watershed District up to the confluence with the South Fork Crow River near Lester Prairie, MN. |

## Identifying Issues

To identify the issues that are priorities for this plan, all watershed issues first needed to be gathered and identified. Many existing sources of data and information were reviewed to compile a comprehensive list of SFCRW issues, including:

- Existing local county water plans and the BCWD Overall Plan
- Watershed reports
  - WRAPS and supporting reports (Monitoring and Assessment Report, Stressor Identification Report, and TMDLs)
  - Natural Resources Conservation Service (NRCS) Rapid Watershed Assessment
  - Watershed Health Assessment Framework (WHAF)
- Agency comment letters from the 60-day notification process
  - DNR, BWSR, Minnesota Department of Agriculture (MDA), MDH, MPCA, FWS, Metropolitan Council
- Existing local information
  - King Creek Fact Sheet, Star Lake Management Plan and Star Lake information
  - Technical Memo Big Kandiyohi Lake Sediment Analysis




Once the comprehensive list of issues was compiled, the issues were sorted into "resource categories" that most relate to the issue. The resource categories are outlined in **Table 3.2**.

*Table 3.2. Resource categories used to group issues.*

| Category | Name | Description |
|---|---|---|
| | Surface Water | Includes issues affecting surface water such as lakes, streams, wetlands, and drainage systems. |
| | Groundwater | Includes issues affecting groundwater resources including aquifers, flow, and drinking water sources. |
| | Lands | Includes issues that through land management will have multiple benefits for healthy soils, groundwater, surface water, and habitat quality. |

## Prioritizing Issues with Public Input

Input from the community is an integral component to 1W1Ps as they are local plans that will be implemented in the community by local organizations. To ensure the public's opinions on what was most concerning to them in their watershed was incorporated into the plan, a public kickoff meeting was held on June 22, 2022. Twenty-

two attendees were present at the public kickoff meeting, including landowners, local farmers, business owners, and local and agency staff. At the meeting, attendees were asked to use up to five sticky dots to indicate what issues were most important to them, using large scale maps and a table. The outcomes of this activity are summarized in **Figure 3.2.** Top priorities of the attendees of the kickoff meeting in order of importance include:

- Drainage water management
- Aquatic invasive species
- Nutrient loading to surface waters
- Streambank erosion
- Loss of water storage and altered hydrology

Local planning partners appreciated the input from attendees who were able to make time to participate in the public kickoff meeting.

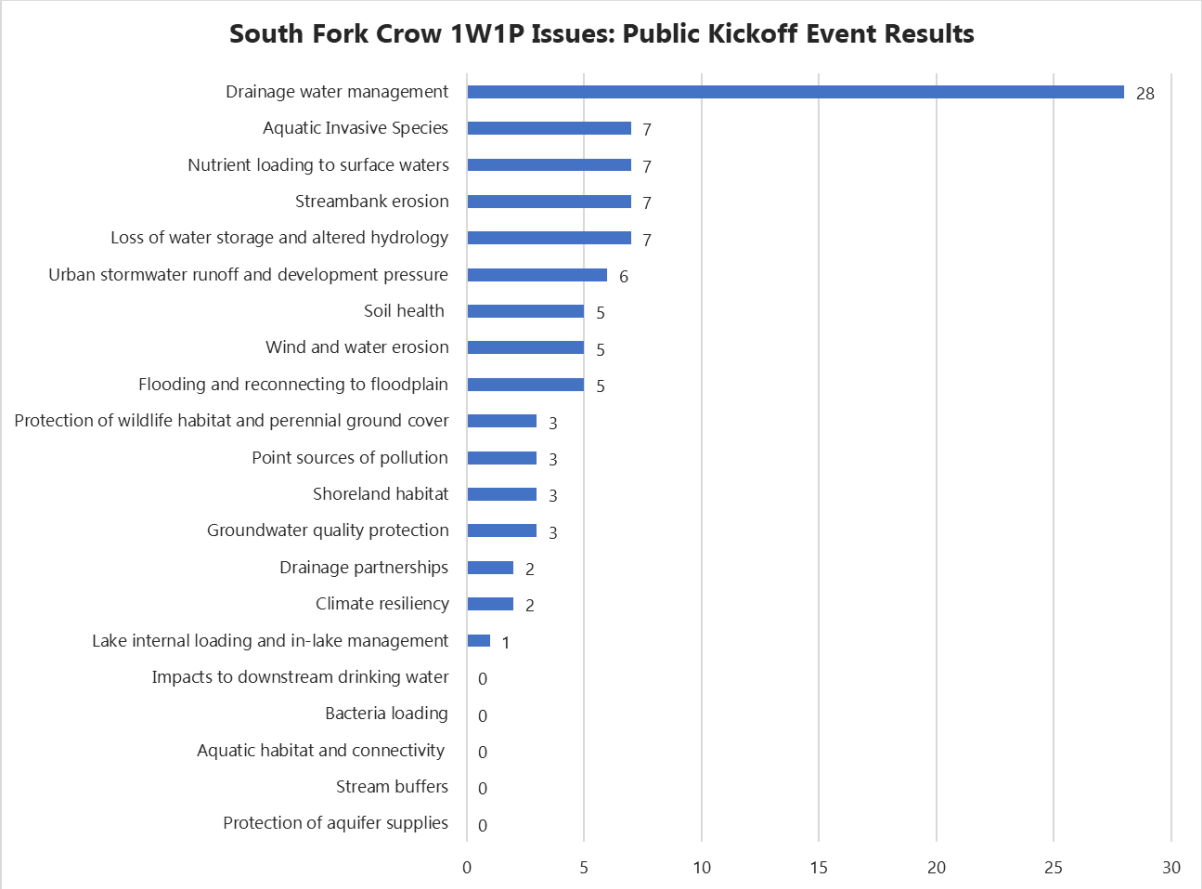
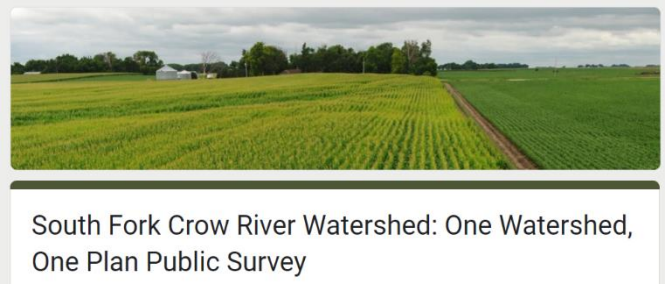



*Figure 3.2: Ranking of 1W1P issues from public kick-off event.*

An online survey was also created to receive feedback from members of the public that were not able to attend the public kickoff event, especially landowners. Fourteen responses were submitted. Top issues identified by the online survey included:

- Groundwater quality protection
- Loss of water storage and altered hydrology
- Nutrient loading to surface waters
- Protection of wildlife habitat
- Water and wind erosion



## Prioritizing Issues with Committee Input

The Steering, Technical Advisory, and Policy Committee were tasked with combining local knowledge, existing information, and public input to finalize a list of issues as the focus of this plan.

To do this, the Steering Committee met in August 2022 to begin prioritizing issues for this plan. The Steering Committee began by defining priority tiers that would be assigned to each issue (**Table 3.3**). Under these definitions, Tier 1 and Tier 2 issues are the "priority issues" and the focus of this plan. Goals are established for each priority issue in **Section 4-Measurable Goals**, and **Section 5-Targeted Implementation** has actions that will be implemented to achieve goals.

*Table 3.3: Priority Tier Definitions.*

| Priority | Description |
|---|---|
| Tier 1 | These are the most important issues that we intend to handle first as part of this plan. |
| Tier 2 | These are important issues that will be addressed by this plan but may require partner involvement. |
| Tier 3 | These issues are not a focus of this plan. While they are important, they will be handled by partners or addressed with additional dollars. |

Using these definitions, the Steering Committee broke into small groups and discussed each issue in the context of the following criteria:

- Feasibility of addressing the issue
- Urgency of need
- Economic importance
- Ecosystem importance
- Cultural and social importance

Each small group then assigned a priority tier to each issue. At the end of the meeting, small groups shared priority assignments for each issue and reached consensus on a final list of priority issues to be recommended to the Policy Committee. The Policy Committee met in August 2022 and approved issues prioritized by the Steering Committee.

**Tables 3.4-3.6** on the following page present and provide a description of the Tier 1, Tier 2, and Tier 3 issues that affect natural resource management within the SFCRW. **Tables 3.4 and 3.5** represent priority issues (Tier 1 and Tier 2, respectively).

The priority tier definitions are important for communicating why some issues were not deemed a focus of this plan. For example, aquatic invasive species was one of the highest-ranking issues in the public kick-off meeting but is a Tier 3 issue for this plan. This is because aquatic invasive species are handled by partners instead of the South Fork Crow River Partnership.

## Tier 1 Priority Issues

These are the most important issues that will be addressed first as part of this plan.

*Table 3.4: Tier 1 Priority Issues.*

| Resource Group | Resource | Issue | Description |
|---|---|---|---|
| Surface Water  | Streams, Agricultural Land | **Drainage Water Management** | Many agricultural drainage systems are failing due to age and/or years of neglect. This not only reduces drainage function but results in accelerated sediment delivery to receiving waters. Incorporating conservation projects into drainage maintenance can alleviate field erosion that causes nutrient and sediment delivery, as well as reduce downstream flooding issues in agricultural and urban areas and enhance drainage function. |
| Surface Water  | Streams | **Loss of Water Storage and Altered Hydrology** | Altered hydrology refers to a change in the timing and volume of water delivered to receiving waters. It can occur when water storage or infiltration on the landscape is reduced due to land use changes (including loss of wetlands) or due to climatic (precipitation) changes and can lead to both stream flashiness and low flow conditions. |
| Surface Water  | Lakes & Streams | **Nutrient Loading to Surface Waters** | Nitrogen and phosphorus are essential nutrients for plant growth but when in excess in the water, they can cause harmful algae blooms and create other water quality and aquatic life issues. Improper amount or timing of fertilizer application on agricultural land is a source of nutrients in the watershed. |
| Surface Water  | Lakes & Streams | **Wind and Water Erosion** | Detached sediment from the landscape can be transported to nearby waterbodies by wind or water. Elevated concentrations of sediment in surface waters can be detrimental to aquatic life and aquatic recreation. |
| Lands  | Agricultural Land | **Soil Health** | Soil erosion from cropland and pastureland has a major impact on productivity and water quality conditions. Practices such as reduced or no-till and cover cropping can help to retain soil on the land and build soil health. |

## Tier 2 Priority Issues

These are important issues that will be addressed by this plan but may require partner involvement.

*Table 3.5: Tier 2 Priority Issues.*

| Resource Group | Resource | Issue | Description |
|---|---|---|---|
| Surface Water  | Lakes & Streams | **Bacteria Loading** | Bacteria in the water can come from animal or human waste, specifically from leaking septic systems, Waste Water Treatment Facilities (WWTFs), feedlots, pasture runoff, and improper manure management, making waters unsafe to swim in and drink from. |
| Lands  | Agricultural Land | **Drainage Partnerships** | Increased upstream water volume and flows has caused drainage systems in some locations to be inadequately sized for the increased rainfall events occurring. Increasing partnership between drainage authority and conservation staff will lead to redesigned drainage infrastructure that incorporates better drainage water management that has potential to both increase crop productivity and receiving water environmental benefits. |
| Lands  | Urban Land | **Urban Stormwater Runoff and Development Pressure** | Storm sewer systems in urban areas have the potential to deliver sediment, nutrients, and bacteria to surface waters from sediment build-up and runoff on impervious surfaces, pet waste, wildlife, leaves, lawn clippings, fertilizers, automobiles, construction sites, and poorly buffered areas near streams/ditches. |
| Lands  | Forests, Riparian areas, Prairie, Grasslands | **Protection of Wildlife Habitat and Perennial Ground Cover** | Protection and expansion of natural features, native species, and landscapes in the watershed to promote species richness, pollinator habitat, and environmental benefits. |

## Other Issues

These issues are not a focus of this plan. While they are important, they will be handled by partners or addressed with additional dollars.

*Table 3.6: Tier 3 Issues.*

| Resource Group | Resource | Issue | Description |
|---|---|---|---|
| Groundwater  | Drinking Water | **Groundwater Quality Protection** | Potential groundwater contaminants in the watershed include (but are not limited to) arsenic and nitrate. Groundwater quality protection is important due to the hydrologic connection between groundwater and surface water and direct impact on human health if groundwater becomes contaminated. |
| Groundwater  | Aquifer | **Protection of Aquifer Supplies** | Groundwater supplies are important sources of drinking water and water supply. Care must be taken to promote groundwater recharge and ensure groundwater withdrawals do not exceed estimated groundwater recharge. |
| Surface Water  | Streams | **Aquatic Habitat and Connectivity** | Reduced or fragmented stream connectivity restricts aquatic organisms from moving freely upstream or downstream and disconnects access to floodplains during periods of high-water flow. Barriers to connectivity in the watershed include dams, improperly sized and perched culverts, and lack of floodplain access. |
| Surface Water  | Streams | **Stream Buffers** | Although there has been great improvement on the presence of buffers along public waters and public drainage systems, there is opportunity for additional voluntary buffers along tributary streams, private ditches, and wetlands, and enhanced buffers along public waters to reduce pollutant loading to surface waters. |
| Surface Water  | Streams, Agricultural & Urban Land | **Flooding and Reconnecting to Floodplain** | Altered hydrology increases flood risk; however, effective floodplain management and projects with multiple benefits can reduce public expenditures related to flood damages. |

| Resource Group | Resource | Issue | Description |
|---|---|---|---|
| Surface Water  | Agricultural & Urban Land | **Climate Resiliency** | Increasing precipitation patterns exacerbate issues related to the timing and volume of water, causing additional streambank erosion and/or flooding. |
| Surface Water  | Streams | **Streambank Erosion** | Stream instability and in-channel and bank erosion can occur from channelization, flashiness, or increased runoff. The issue contributes sediment to waterways and decreases the quality of aquatic habitat. |
| Surface Water  | Lakes | **Lake Internal Loading and In-lake Management** | Both deep and shallow lakes in the watershed need some level of internal load reductions to be flipped to a clear water state and meet state water quality standards. |
| Surface Water  | Lakes | **Shoreland Habitat** | Protecting or improving lake shoreland habitat by managing shoreline areas can improve the overall integrity of aquatic life within lake systems and prevent against continued shoreland erosion. |
| Surface Water  | Streams | **Impacts to Downstream Drinking Water** | The runoff from the SFCRW all flows into the Mississippi River, which in turn supplies drinking water for the Twin Cities, as well as 50 other communities. |
| Surface Water  | Lakes & Streams | **Aquatic Invasive Species** | Aquatic invasive species are non-native organisms that change the natural dynamics of an aquatic ecosystem and threaten the quality of native plant and animal communities. These species can be detrimental to commercial, agricultural, or recreation activities that depend on those ecosystems. |
| Surface Water  | Lakes & Streams | **Point Sources of Pollution** | Permitted municipal and industrial point sources of pollution can impact water quality conditions. |

# Emerging Issues

The issues table above lists issues that affect the SFCRW and where there is enough information available to set measurable goals. The issues table above is not a comprehensive list of all issues that are affecting the watershed, and only Tier 1 and Tier 2 issues will get a measurable goal associated with them. Emerging issues, which are discussed in this section, are issues that could become an issue during the lifetime of this plan or in future plans or currently do not have enough data to drive local decision-making.

## Contaminants of Emerging Concern

Contaminants of emerging concern (CECs) include everyday items such as pharmaceuticals and personal care products (PPCPs), a large category of synthetic chemicals known as PFAS (per- and polyfluoroalkyl substances), and other contaminants like microplastics that have not been traditionally addressed in watershed plans. PPCPs can act as endocrine disrupters that alter the normal functions of hormones resulting in a variety of health effects in humans and aquatic life even at low levels of exposure. PFAS are used in the manufacturing of consumer and industrial goods such as Teflon, stain retardant for carpets and upholstery, water-resistant clothing, PPCPs, cosmetics, food wrapper and paper plate coatings, and firefighting foams.

In more urban areas, many contaminants such as PPCPs are washed down drains and toilets and enter the solid waste stream at people's homes. These contaminants are not treated by WWTPs or broken down in the landfill before they end up in surface and groundwater. In rural areas, these contaminants may enter septic systems and could impact groundwater resources. The State of Minnesota and the MPCA are in the process of investigating where fish and drinking water have been contaminated in the state and how to address the issue.

## Storage, Resiliency, and Drainage

Within the SFCRW, a substantial portion of drainage infrastructure (both tile and open channel) is reaching a critical end of life period, where infrastructure that is over 100 years old will need to be replaced or rehabilitated so it can maintain or increase functionality and be maintainable. Increased precipitation intensities and quantities, along with expansion of private drainage, will continue to put pressure on already stressed drainage infrastructure. As failures occur within the aging drainage infrastructure, sediment can move freely through the pipe failures and directly to the outlet of the drainage pipes. Planning for and **addressing the resiliency and the efficiency of the infrastructure will benefit landowners within the watershed by restoring and/or enhancing drainage function and will address water quality goals by reducing sediment transport within the drainage infrastructure when it fails. As these drainage systems are often the "arteries" of the watershed, regional storage is often best located along or adjacent one of these systems.** Advanced planning for storage opportunities ahead of drainage infrastructure rehabilitation can facilitate integrated drainage/storage solutions that improve shared functionality, decrease rework, and reduce costs.

## Environmental Justice

Environmental justice describes the effort to make sure that pollution does not have a disproportionate impact on any group of people. This means that all people - regardless of their race, color, national origin, or income - benefit from equal levels of environmental protection and have opportunities to participate in decisions that may affect their environment or health (MPCA, 2023).

Environmental justice considerations are important because of increasing temperature and precipitation trends in the development of sustainable and resilient communities. Though particular goals or actions directly addressing environmental justice are not specifically prescribed in this plan, it is encouraged to be considered during plan implementation.

Environmental justice areas defined by the MPCA as of 2023 are shown in **Figure 3.3**. For more information and the most current map of environmental justice areas within the South Fork Crow River Watershed, please visit the MPCA website listed below:
https://www.pca.state.mn.us/about-mpca/environmental-justice

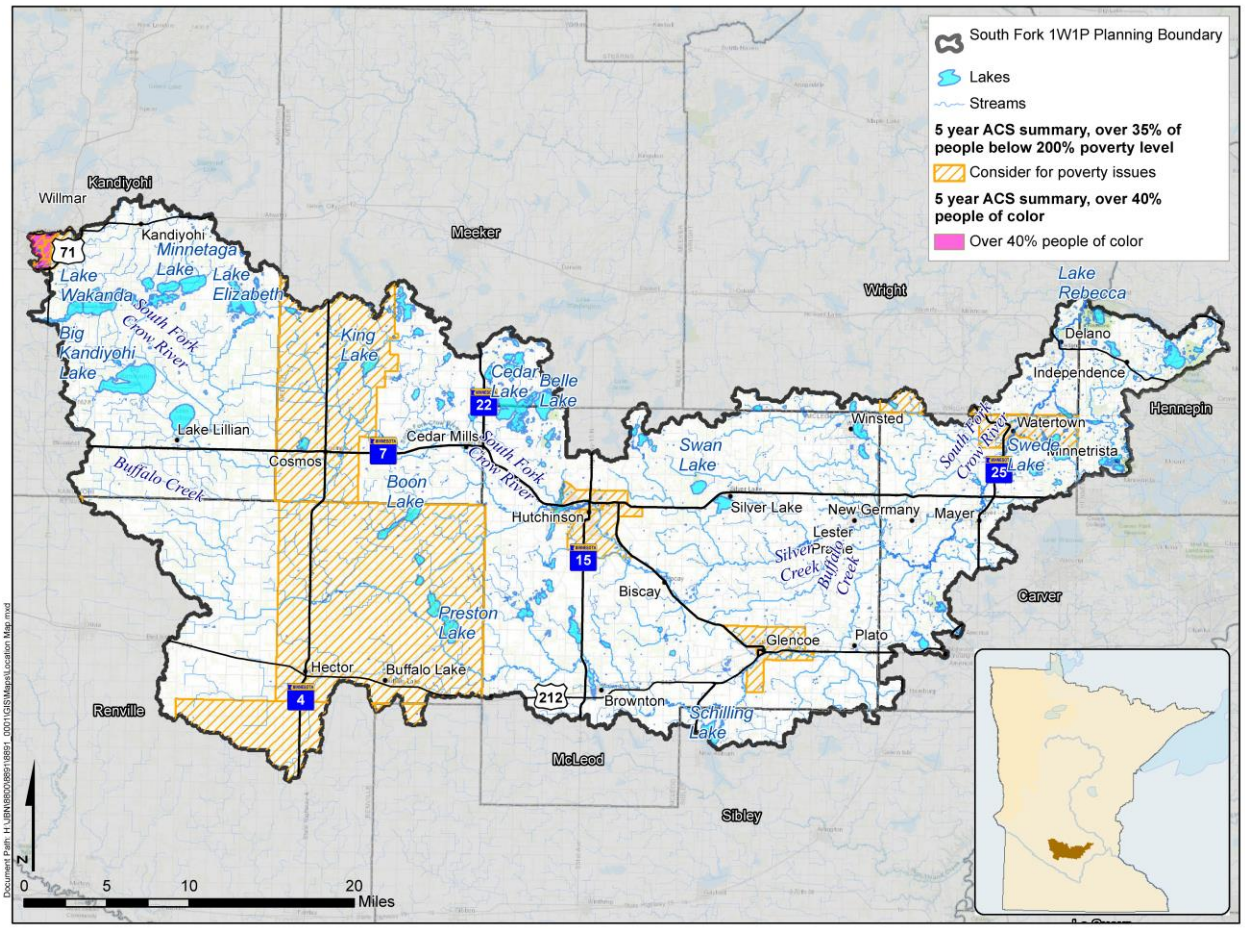



*Figure 3.3: Environmental justice areas in the South Fork Crow River Watershed (Source: MPCA, 2023)*

## Chlorides

Road salt is applied on roads to reduce the risk of traffic accidents in the winter months. However, this salt, sodium chloride, is not degradable and therefore builds up in the environment. Chloride concentrations have been shown to be increasing in freshwater across the country since the 1950s, and the trend is expected to continue unless the application of chloride is drastically reduced. As of the 2022 MPCA impaired waters list, Minnesota has 54 waterbodies impaired for chloride. While no waterbodies in the watershed are currently impaired , it should be considered an emerging concern, especially in the eastern, more densely populated area of the watershed.

The WRAPS document discusses the Twin Cities Metropolitan Area Chloride Management Plan on how to reduce chloride concentrations within the metropolitan

area. The plan focuses on assisting local communities in meeting reductions in chloride concentrations within water resources (both surface and groundwater). The document discusses recommendations, which are outlined in the WRAPS, that could be implemented within the SFCRW. Smart salting workshops and chloride management plans can help teach commercial and residential property owners how to effectively apply salt.

*Salting truck, MPCA*

Road salt is not the only source of chloride (others include water softeners, fertilizer, and industrial discharge), but it is the largest source. The salinization of freshwater is a serious threat that not only harms lakes and rivers, but threatens drinking water, as chloride infiltrates through soil and into shallow aquifers. High chloride in the environment impairs water quality and has also been shown to induce toxicity to roadside vegetation, corrode infrastructure, and degrade soil quality.

These serious impacts of chloride on the environment have led to a push to reduce chloride application wherever possible. The best way to reduce chloride is to put down less road salt. Road salt is often over applied and applied in weather where it is not effective or in excess amounts. Training of applicators can help to reduce chloride applications. Use of alternative deicers besides chlorides are an option, although they are more expensive and come with their own set of environmental problems. More information about how chloride impacts Minnesota specifically can be found in the Statewide Chloride Management Plan.

# Section 4.
# Measurable Goals

# Section 4. Measurable Goals

Measurable goals identify the desired change for addressing priority issues within the watershed. Goals were developed for each priority issue in this plan at two different time scales:

- ☑ **Long-term** goals describe the desired future condition (water quality, water availability, habitat quality) planning partners are striving to attain, regardless of time frame. This goal sets the direction for planning and future management.
- ☑ **Short-term** goals describe the quantifiable change planning partners expect to achieve during implementation of this 10-year plan.

Each goal is detailed in the following pages with a summary of:

- Background on the goal and issue it seeks to address,
- Planning region targets,
- Stacked (multiple) benefits of meeting the goal, and
- Priority resources and subwatersheds where work will be focused.

Many of these goals have stacked, multiple benefits. For example, implementing conservation practices to reduce maintenance needs on drainage systems will also accrue water quality benefits such as a reduction of erosion and sedimentation and nutrient loading to surface waters. In addition, phosphorus and nitrogen reductions achieved through this plan will contribute to targets established by the MN Nutrient Reduction Strategy (MPCA, 2014).

Priority resources were identified based on a review of scientific data and expertise of the local planning committees. They include (for example) priority drainage systems and locations most suitable for habitat expansion. Priority resources also include "nearly" and "barely" impaired lakes and streams to align with the Nonpoint Priority Funding Plan for Clean Water Funding Implementation (BWSR, 2014). These resources are summarized in **Appendix C**.

In addition to priority resources, this plan identifies subwatersheds (HUC-12 scale) that should be the initial focus of implementation efforts specific to each goal. These subwatersheds were identified based on a geospatial analysis that considered information including the prominence of priority resources present in each subwatershed, WRAPS data, and loading information from Hydrologic Simulation Program – Fortran Scenario Application Manager (HSPF SAM). Additional detail about this geospatial analysis is included in **Appendix D**.

## Understanding Short-Term Goals

This plan uses outputs from the HSPF SAM to inform short-term goals for this plan. HSPF SAM evaluates existing pollutant loads in a watershed and estimates water quality benefits and annualized costs for treating cropland with conservation practices that are part of an implementation scenario. Pollutant loads and water quality benefits arising from the implementation scenario are expressed in terms of annual overland load reductions of sediment (TSS), total phosphorus (TP), and total nitrogen (TN).

The practices included in the South Fork Crow River Watershed HSPF SAM implementation scenario were selected to align with local voluntary implementation trends. The scenario includes practices that contribute to priority drainage systems and practices will be implemented to benefit other surface water resources, including grassed waterways/filter strips, Water and Sediment Control Basins (WASCOBS), restored wetlands, and soil health practices. The Steering Committee recognizes these practices were selected solely for purposes of informing a modeling scenario, and that other practices will also be pursued during implementation.

The number of practices and cropland area treated within the implementation scenario is designed to align with the projected funding that will be available during plan implementation. This includes an assumption of continued current, baseline funds and Watershed-Based Implementation Funds. More information about estimated plan funding is provided in **Section 5- Targeted Implementation Schedule**.

Framing the HSPF SAM implementation scenario around available funding sets realistic goals about what can be achieved in ten years with the expected funding available. A summary of cropland treated and estimated water quality benefits and annualized cost for this implementation scenario is summarized in **Table 4.1** and **Appendix E**.

Table 4.1: HSPF SAM implementation scenario results for the SFCRW CWMP.

| | Planning Region | Upper South Fork | Lower South Fork | Buffalo Creek | Total |
|---|---|---|---|---|---|
| | **Treated Area [acres]** | 5,781 | 1,996 | 6,993 | 14,770 |
| | **Percent of Cropland** | 3% | 1% | 3% | N/A |
| **TSS [tons/yr]** | Base | 8,537 | 5,920 | 7,406 | 21,863 |
| | Reduction | 196 | 72 | 183 | 451 |
| | % Removal | 2.30% | 1.20% | 2.50% | 2.06% |

| | Planning Region | Upper South Fork | Lower South Fork | Buffalo Creek | Total |
|---|---|---|---|---|---|
| | Treated Area [acres] | 5,781 | 1,996 | 6,993 | 14,770 |
| | Percent of Cropland | 3% | 1% | 3% | N/A |
| TN [lbs/yr] | Base | 1,922,411 | 1,097,337 | 3,324,696 | 6,344,444 |
| | Reduction | 21,851 | 6,809 | 38,177 | 66,837 |
| | % Removal | 1.10% | 0.60% | 1.20% | 1.05% |
| TP [lbs/yr] | Base | 121,730 | 83,739 | 116,632 | 322,101 |
| | Reduction | 1,387 | 505 | 1,398 | 3,290 |
| | % Removal | 1.10% | 0.60% | 1.20% | 1.02% |
| **10-Year Total Cost** | | **$2,059,845** | **$711,323** | **$2,491,680** | **$5,262,848** |

HSPF SAM was also run for a scenario in which all cropland area within the watershed is simulated as being treated with conservation practices. These results are also shown in **Table 4.2**, demonstrating that even treating all cropland acres with conservation practices would still not amount to removing all sediment and nutrient contributions to waterways, but may be sufficient for addressing some TMDL targets for impaired waters summarized in **Appendix B.**

*Table 4.2: HSPF SAM implementation scenario results for the SFCRW CWMP.*

| | Planning Region | Upper South Fork | Lower South Fork | Buffalo Creek | Total |
|---|---|---|---|---|---|
| | Treated Area [acres] | 171,880 | 108,064 | 197,028 | 476,972 |
| TSS [tons/yr] | Base | 8,537 | 5,920 | 7,406 | 21,863 |
| | Reduction | 5,899 | 4,091 | 5,118 | 15,108 |
| | % Removal | 69.10% | 69.10% | 69.10% | 69.10% |
| TN [lbs/yr] | Base | 1,922,411 | 1,097,337 | 3,324,696 | 6,344,444 |
| | Reduction | 659,986 | 380,642 | 1,096,882 | 2,137,510 |
| | % Removal | 34.33% | 34.69% | 32.99% | 33.69% |
| TP [lbs/yr] | Base | 121,730 | 83,739 | 116,632 | 322,101 |
| | Reduction | 41,341 | 28,355 | 38,501 | 108,197 |
| | % Removal | 33.96% | 33.86% | 33.01% | 33.59% |
| | **10-Year Total Cost** | **$71,513,470** | **$45,546,690** | **$52,888,940** | **$169,949,100** |

# Drainage Partnerships and Drainage Management

There are approximately 450 miles of public drainage systems (subject to MS 103E) in the SFCRW. Public drainage systems in the watershed are managed by counties and the BCWD on behalf of the benefitting landowners. "Private" (non-MS 103E) drainage systems are managed by individual landowners or easement holders (e.g. road authorities).

Aging infrastructure and lack of maintenance of drainage systems can cause erosion and accelerated sediment delivery downstream. Inadequate conveyance of water results in poor drainage of fields, which negatively impacts crop yields and field operability. While increasing drainage conveyance generally does not significantly increase runoff volume from an individual rainfall event downstream, it can potentially modify hydrologic patterns in a matter that, in aggregate, increase peak flows at a watershed scale, potentially exacerbating existing flooding and erosion issues for downstream farmers and communities.

Public drainage systems that are stable and properly maintained reduce erosion and sediment delivery and accumulation. Systems that have adequate drainage capacity can reduce flooding of lands that rely upon the drainage system as an outlet. The short-term goal focuses on implementation of conservation practices (e.g. WASCOBs, grade stabilization structures, filter strips) to reduce peak flows and volume in receiving waters and reduce erosion and sedimentation issues associated with public drainage systems. Implementation of these practices would have a direct connection to other plan goals for water storage, nutrient loading, and erosion and sedimentation, while maintaining functional systems and benefitting communities and farmers.

## Priority Level

- Drainage partnerships (Tier 1)
- Drainage water management (Tier 1)

## Measurable Goals

### Long-Term

Where needed, all land contributing to priority drainage systems are treated by conservation practices to enhance system functioning.

### Short-Term

Implement **250 conservation practices that contribute to priority drainage systems**, also reducing erosion and sedimentation, nutrient loading, and altered hydrology and flooding.

Metric: # of projects implemented

# Drainage Partnerships and Drainage Management

## Measuring

Progress towards this plan's short-term goals will be made within each planning region, as shown by these planning region targets:

| Planning Region | Target |
|---|---|
| Upper South Fork | 68 projects |
| Lower South Fork | 47 projects |
| Buffalo Creek | 135 projects |

## Stacking Multiple Benefits

Benefits from implementing 250 conservation practices were estimated using HSPF SAM. Implementing these practices would reduce erosion and sedimentation and nutrient loading to receiving surface waters. Implementing these practices may also create temporary water storage on the landscape.

- Erosion and Sedimentation
  *165 tons/year TSS reduced*
- Nutrient Loading to Surface Waters
  *1,242 lbs/yr TP; 26,217 lbs/yr TN reduced*
- Altered Hydrology and Flooding

## What Can Be Done, and Where?

Example actions that can be implemented to address this goal include drainage management planning, coordination with drainage authorities, and multipurpose drainage management practices. Actions focused on addressing these issues will preferentially occur alongside or in areas contributing to priority drainage systems, as shown in **Figure 4.1** and listed in **Appendix C**. These systems have been locally prioritized for future project implementation. In addition, the following criteria will be used to identify additional priority drainage systems during plan implementation:

- Willing landowners and partnership opportunities
- Drained basins/lake beds
- Persistent maintenance issues
- Upstream systems
- Drainage law considerations

*Example of drainage system that would benefit from stabilization practices.*

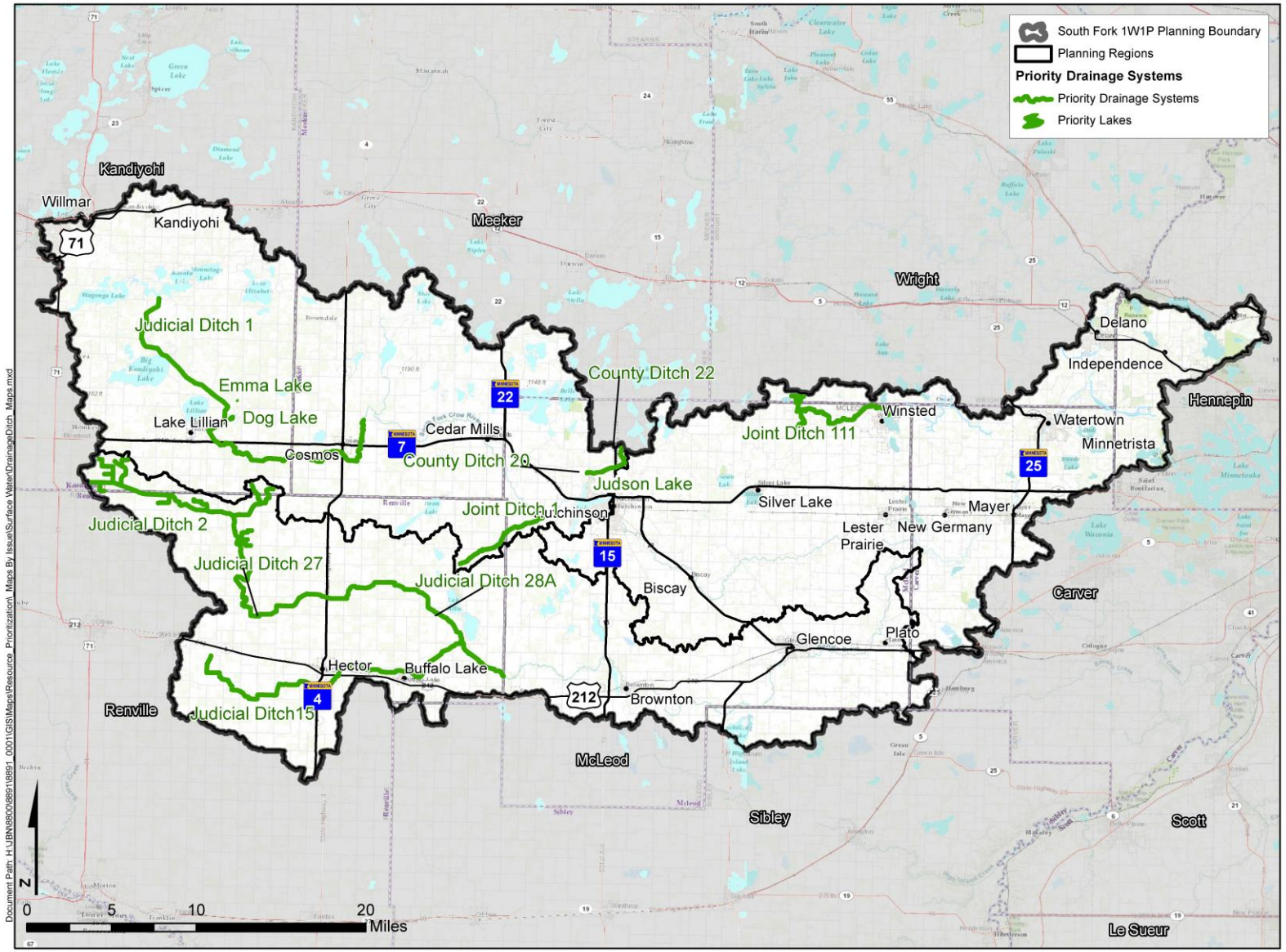



***Figure 4.1**: Priority public drainage systems within the South Fork Crow River Watershed.*

# Loss of Water Storage and Altered Hydrology

For purposes of this plan, water storage is defined as the ability for the landscape to hold additional water prior to discharge downstream. Strategies for increasing water storage or slowing the flow of water as it moves downstream include re-connecting streams to floodplains, restoring wetlands, and building infiltration basins and stormwater ponds.

Increasing storage, or slowing the flow of water, can help mitigate flooding during intense rains, which protects public safety and agricultural productivity. Water speed reduction also decreases the erosive potential that water has, resulting in less sediment transport from the landscape into the waterways of the watershed.

The term "altered hydrology" is commonly used in Minnesota to describe changes in the amount and pathways that water moves through the landscape. Altered hydrology is a known stressor to supporting both habitat and aquatic life within the SFCRW (MPCA, 2018). To support this plan, an altered hydrology analysis was completed (**Appendix F**) to define how hydrology has been altered and create an acre-feet storage goal for addressing the impacts of altered hydrology. The short-term goal represents realistic progress that can be made toward the long-term goal, using permanent and temporary storage (**Appendix E**). Permanent storage is aimed at reducing the volume of water delivered downstream (e.g. impoundments and wetland restorations), while temporary storage is aimed at reducing peak flow (e.g. WASCOBs).

## Priority Level

Tier 1

## Measurable Goals

### Long-Term

Mitigate impacts of altered hydrology by adding 43,600 acre-feet of permanent and temporary storage.

### Short-Term

Locate and implement efforts that add **1,137-acre feet of permanent and temporary storage**.

Metric: acre-feet of storage

*Example of a stormwater pond.*

# Loss of Water Storage and Altered Hydrology (Cont.)

## Measuring

Progress towards this plan's short-term goals will be made within each planning region, as shown by these planning region targets:

| Planning Region | Action Tables | CIPs | Total Target |
|---|---|---|---|
| Upper South Fork | 167 ac-ft | 35 ac-ft | 202 ac-ft |
| Lower South Fork | 204 ac-ft | 30 ac-ft | 234 ac-ft |
| Buffalo Creek | 201 ac-ft | 500 ac-ft | 701 ac-ft |

It is estimated that 572 acre-feet storage will be added through structural conservation practices summarized in Action Tables (Section 5). The remaining 565 acre-feet is anticipated from capital improvement projects (CIPs) (**Appendix E**).

## Stacking Multiple Benefits

Planning partners recognize that implementing projects to add storage will make progress toward multiple plan goals. Those are summarized visually here.

- Soil Health
- Drainage Water Management
- Nutrient Loading to Surface Waters
- Erosion and Sedimentation

## What Can Be Done, and Where?

Below are some example actions that can be implemented to address this goal. A full list is shown in **Section 5**.

- Large capital improvement projects (e.g. impoundments)
- Agricultural BMPs (e.g. WASCOBs, ponds)
- Soil health practices (e.g. tillage management and cover crops)
- Multipurpose drainage water management projects

Actions focused on adding water storage will preferentially occur within priority subwatersheds shown in dark green in **Figure 4.2**. These subwatersheds were prioritized based on local knowledge for water storage opportunities. Actions that restore floodplain connectivity and enhance stream connectivity will be a consideration when choosing practices to implement.

*Cover crops.*

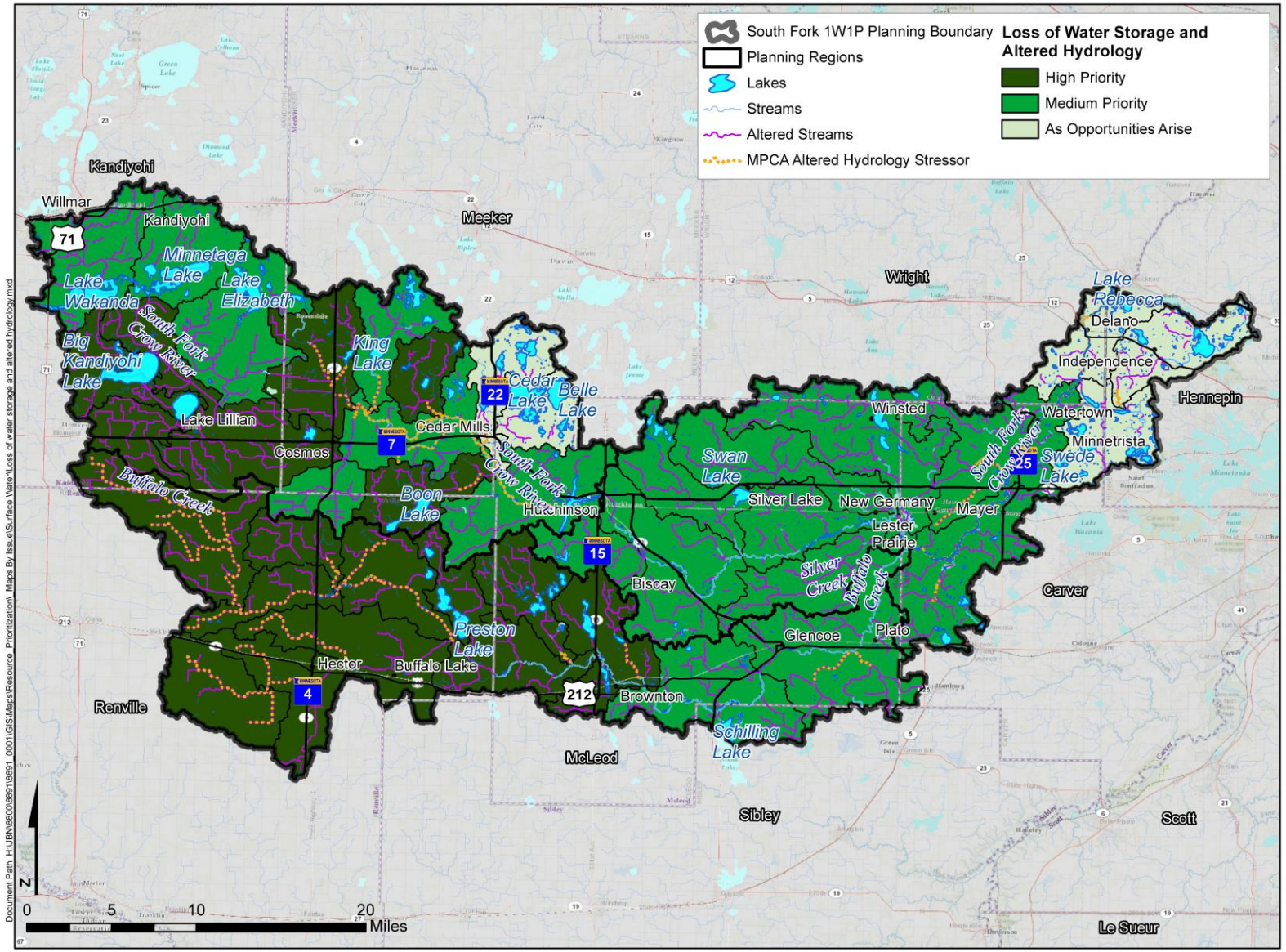



***Figure 4.2**: Priority subwatersheds for addressing loss of storage and altered hydrology within the South Fork Crow River Watershed.*

# Nutrient Loading to Surface Waters

Nutrients (total nitrogen and total phosphorus) are essential to sustaining life, but in excess, can impact aquatic life, recreation, and consumption.

Total nitrogen (TN) refers to the different forms nitrogen can take (such as nitrite or nitrate). Nitrate is easily transported by water, making it a prevalent issue in streams, lakes, and in groundwater. An estimated 45% of cropland within the watershed has been altered with subsurface tile lines, resulting in increased potential for nitrogen movement from agricultural fields to surface waters. (MPCA, 2018). As of 2022 there are no drinking water nitrate impairments within the SFCRW.

Total phosphorus (TP) refers to all the forms of phosphorus (such as dissolved phosphorus). Phosphorus can attach to sediment particles and get transported downstream. Streambank erosion and altered hydrology have been found to be the highest sources of phosphorus loading in the watershed (MPCA, 2018). As of 2022, there are five stream reaches that are impaired for dissolved oxygen and five streams impaired for nutrients within the watershed. Additionally, 35 of the 40 impaired lakes within the watershed are impaired for nutrients.

The desired future condition is to delist all nutrient impaired streams and lakes, while accruing progress toward the 45% TN and TP reduction milestones set by the Nutrient Reduction Strategy (MPCA, 2014). The short-term goal represents realistic progress that can be made during implementation, as estimated by HSPF SAM. This represents approximately 1% reduction from current conditions.

## Priority Level

- Tier 1

## Measurable Goals

### Long-Term

All stream reaches and lakes within the watershed meet nutrient water quality standards for aquatic life and aquatic recreation.

### Short-Term

**Reduce total phosphorus (TP) loading watershed-wide by 2,048 lbs/year** as estimated by HSPF-SAM

**Reduce total nitrogen (TN) loading watershed-wide by 40,620 lbs/yea**r as estimated by HSPF-SAM

Metric: lbs/year TN or TP reduced

Lake Lillian Photo: White Bear Lakes Area

# Nutrient Loading to Surface Waters (Cont.)

## Measuring

Progress towards this plan's short-term goals will be made within each planning region, as shown by these planning region targets:

| Planning Region | Target |
|---|---|
| Upper South Fork | 1,076 lbs TP/yr<br>15,297 lbs TN/yr |
| Lower South Fork | 319 lbs TP/yr<br>2,876 lbs TN/yr |
| Buffalo Creek | 653 TP/yr<br>22,447 lbs TN/yr |

## Stacking Multiple Benefits

Meeting this short-term goal will make progress toward multiple plan goals. Numeric estimates provided by HSPF SAM show that by meeting the nutrient loading short-term goal, 100% of the erosion and sedimentation goal and 49% of the soil health goal are also met.

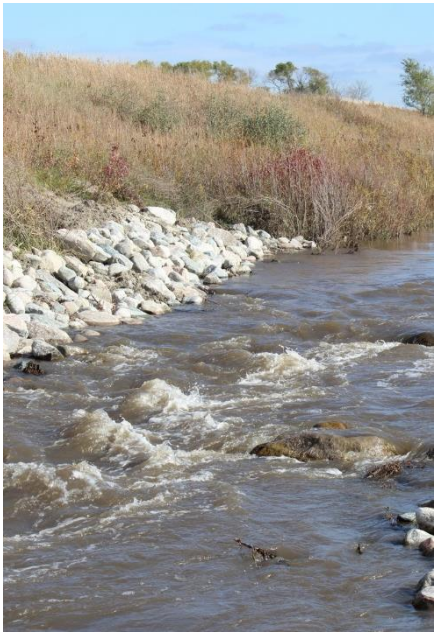
- Bacteria Loading
- Erosion and Sedimentation
  *286 tons/year TSS reduced*
- Drainage Water Management
- Soil Health
  *7,385 acres treated*

## What Can Be Done, and Where?

Below are some example actions that can be implemented to address this goal. A full list is shown in **Section 5**.

- Nutrient management planning
- Agricultural BMPs (e.g. water and sediment control basins, grade stabilization)
- Modeling for field-scale practice feasibility

Actions focused on addressing nutrient loading will preferentially occur in areas contributing to nearly or barely impaired streams or lakes for nutrients, or locally prioritized lakes (**Figure 4.3**). Subwatersheds have also been prioritized based on nutrient yield estimates provided by HSPF, and prominence of nutrient-impaired streams or lakes.



*Example of a grade stabilization practice.*

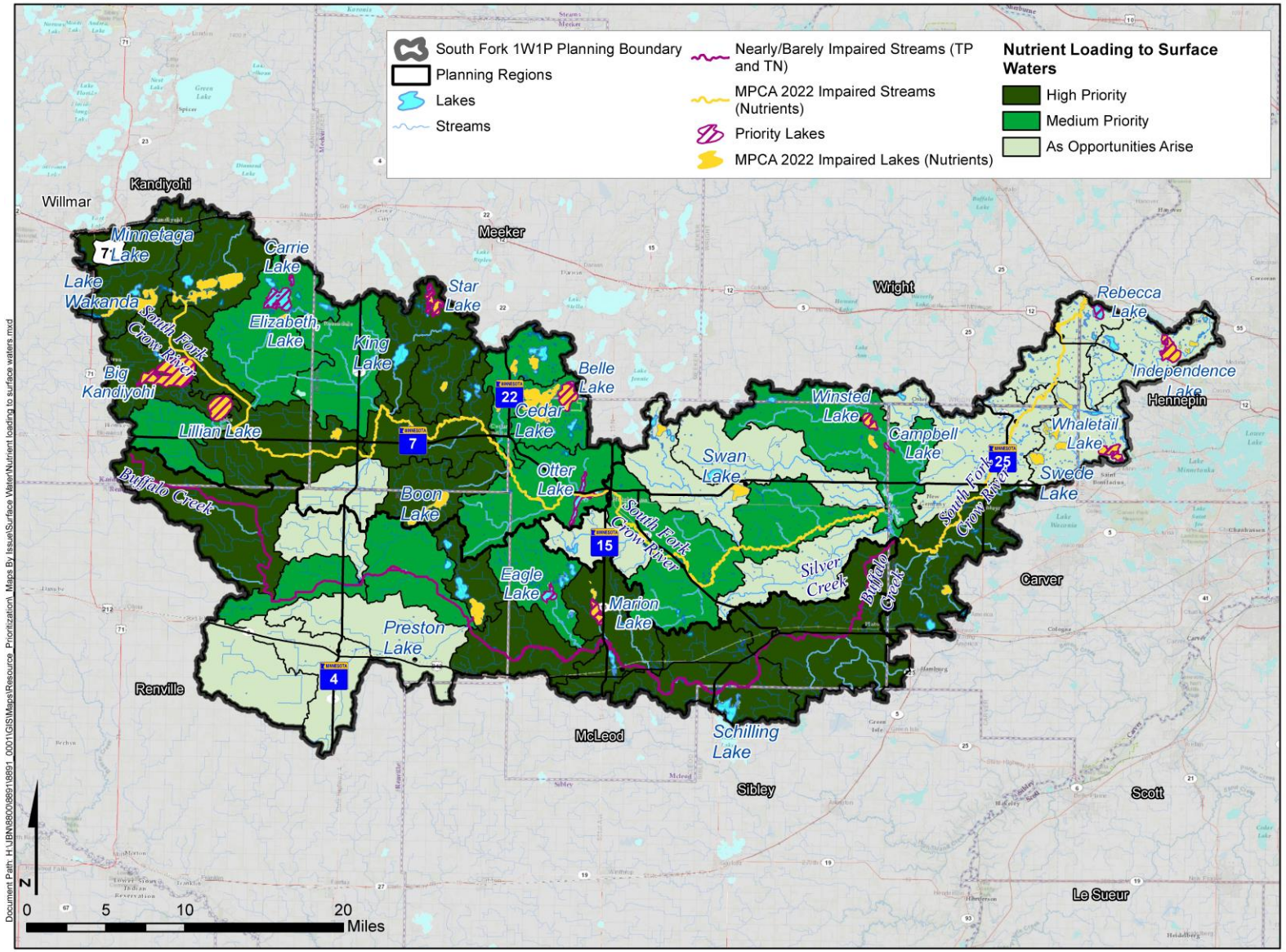



***Figure 4.3**: Priority resources and subwatersheds for addressing nutrient loading to surface waters.*

# Erosion and Sedimentation

Sedimentation occurs when wind and water erosion move soil off the land and deposit it in a different place. Overland erosion is caused when exposed soils encounter heavy rains, rushing water, or strong winds. While erosion is a natural process, human activities can increase erosion when vegetation is removed from the land for agriculture, development, construction, or logging. When sediment is deposited on the land, it can inhibit crop productivity and damage roads and bridges. Sediment in streams can decrease the quality of aquatic habitat and harm aquatic life.

It is estimated that 44-77% of sediment loss within the watershed is due to bank erosion and bedload processes (MPCA, 2018). This can be exacerbated by impacts from altered hydrology, as increased flow events can cause increased bank erosion and bedload sedimentation. The next highest source of sediment loss is likely field erosion. It is estimated that 40% of sediment loss from the watershed is from agricultural fields (MPCA, 2018). As of 2022, there are four stream reaches in the watershed that are impaired for TSS or turbidity.

## Priority Level

- Tier 1

## Measurable Goals

### Long-Term

All stream reaches within the watershed meet total suspended solids (TSS) and turbidity water quality standards for aquatic life and aquatic recreation.

### Short-Term

**Reduce sediment loading watershed-wide by 286 tons/year** as estimated by HSPF-SAM

Metric: tons/year sediment

This goal is focused on public water courses and does not address erosion and sedimentation associated with public drainage systems. As such, the desired future condition for this plan is ultimately to delist all TSS and turbidity impaired streams. To meet TMDL targets, this would amount to an average sediment reduction of 45%. The short-term goal represents realistic progress that can be made during plan implementation as estimated by HSPF SAM, which represents about a 2% decrease from current conditions.

# Erosion and Sedimentation (Cont.)

## Measuring

Progress towards this plan's short-term goals will be made within each planning region, as shown by these planning region targets:

| Planning Region | Target |
|---|---|
| Upper South Fork | 155 tons/yr |
| Lower South Fork | 47 tons/yr |
| Buffalo Creek | 84 tons/yr |

## Stacking Multiple Benefits

Meeting this short-term goal will make progress toward multiple plan goals. Numeric estimates provided by HSPF SAM show that by meeting the erosion and sedimentation short-term goal, 100% of the nutrient goal and 49% of the soil health goal are also met.

- Drainage Water Management
- Nutrient Loading to Surface Waters
  *2,048 lbs/yr TP; 40,620 lbs/yr TN reduced*
- Soil Health
  *7,385 acres treated*
- Altered Hydrology and Flooding

## What Can Be Done, and Where?

Below are some example actions that can be implemented to address this goal. A full list is shown in **Section 5**.

- Agricultural BMPs (e.g. WASCOBs, grade stabilization)
- Soil health practices
- Wind erosion control measures (e.g. windbreaks, living snow fences)
- Streambank/shoreline restorations

Actions focused on addressing erosion and sedimentation will preferentially occur within priority subwatersheds, shown in dark green in **Figure 4.4,** or in areas contributing to nearly/barely impaired streams for TSS. These subwatersheds have the highest sediment loads as estimated by HSPF and have the highest erosion susceptibility as estimated through the DNR WHAF.

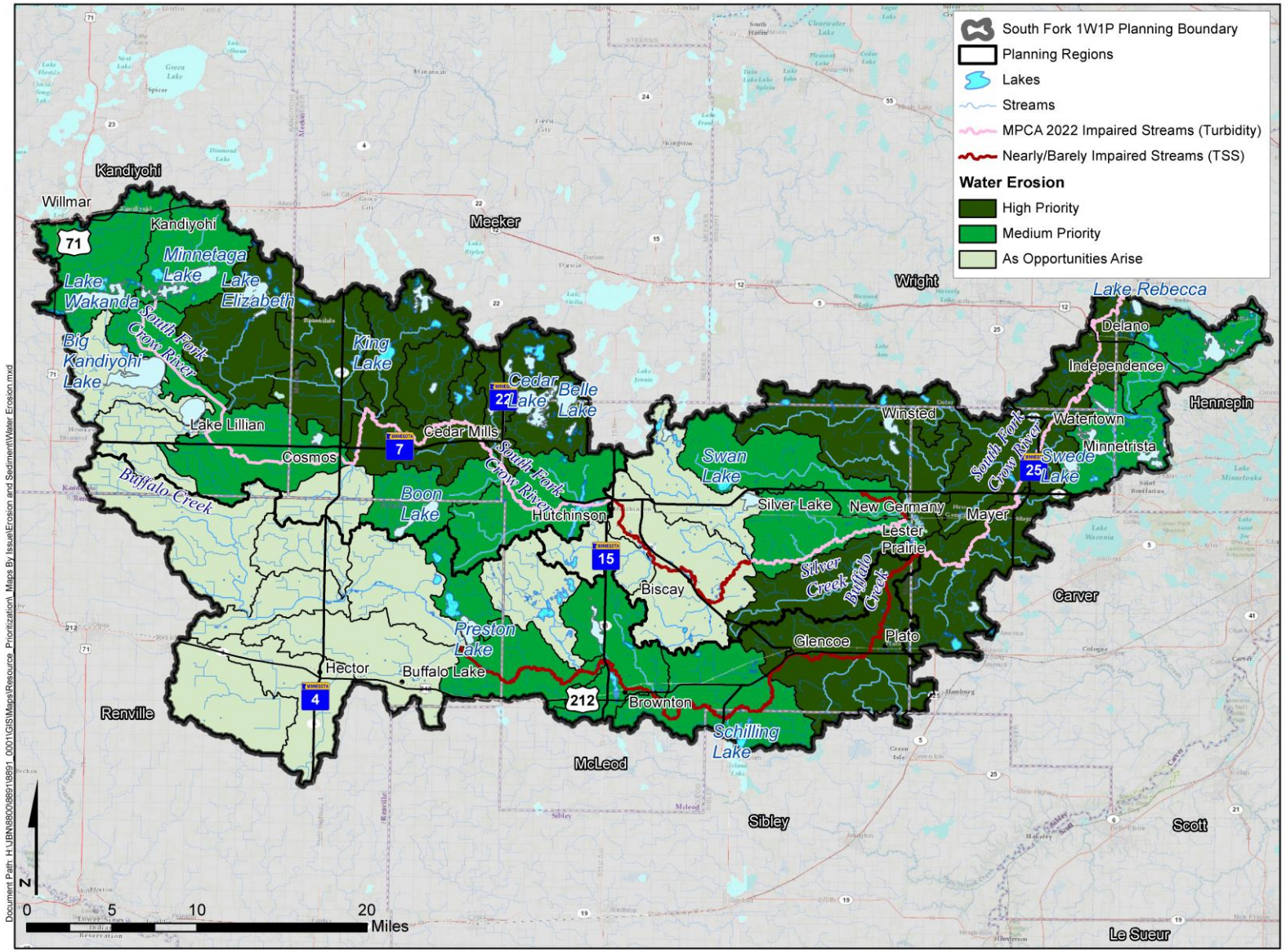



***Figure 4.4**: Priority resources and subwatersheds for addressing erosion and sedimentation.*

# Soil Health

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

Healthy soils regulate water, filter and buffer pollutants, cycle nutrients, and stabilize plant roots. Soils become susceptible to erosion as they degrade through loss of nutrients, soil structure, microorganisms, and water holding capacity. Erosion causes sedimentation in fields and downstream.

Regenerative soil health practices improve soil organic matter and structure, carbon storage, and water and nutrient holding capacity. For purposes of this plan, "soil health practices" are practices such as cover crops and reduced tillage that meet NRCS standards. As such, the focus to this plan's short-term goal is to promote and implement these practices to improve resource conditions in the South Fork Crow River Watershed.

## Priority Level

- Tier 1

## Measurable Goals

### Long-Term

Successful outreach with landowners leads to implementation of soil health practices in all practical agricultural land.

### Short-Term

Implement **15,000 acres of additional soil health practices** over 10 years.

Metric: acres of soil health practices added

*Example of a no-till field.*

# Soil Health (Cont.)

## Measuring

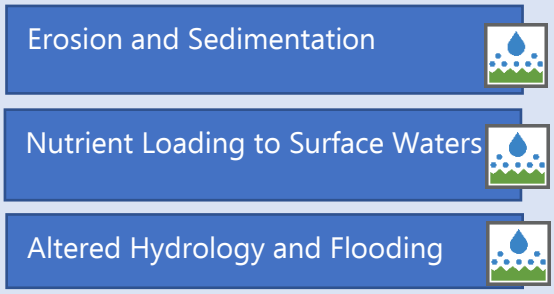
Progress towards this plan's short-term goals will be made within each planning region, as shown by these planning region targets:

| Planning Region | Target |
|---|---|
| Upper South Fork | 3,500 acres |
| Lower South Fork | 3,500 acres |
| Buffalo Creek | 8,000 acres |

Planning partners recognize that competitive and partner funding and support is needed to meet this goal.

## Stacking Multiple Benefits

Planning partners recognize that implementing projects to address soil health will make progress toward multiple plan goals. Those are summarized visually here.




## What Can Be Done, and Where?

Below are some example actions that can be implemented to address this goal. A full list is shown in **Section 5**.

- Cover crops
- Reduced tillage
- Field days/workshops with landowners

Actions focused on improving soil health will preferentially occur within priority subwatersheds, shown in dark green in **Figure 4.5**. These subwatersheds have the most agricultural cropland, have the highest sediment loads as estimated by HSPF, and have the highest erosion susceptibility as estimated through the DNR WHAF. It also reflects local knowledge and feedback from the planning committees.

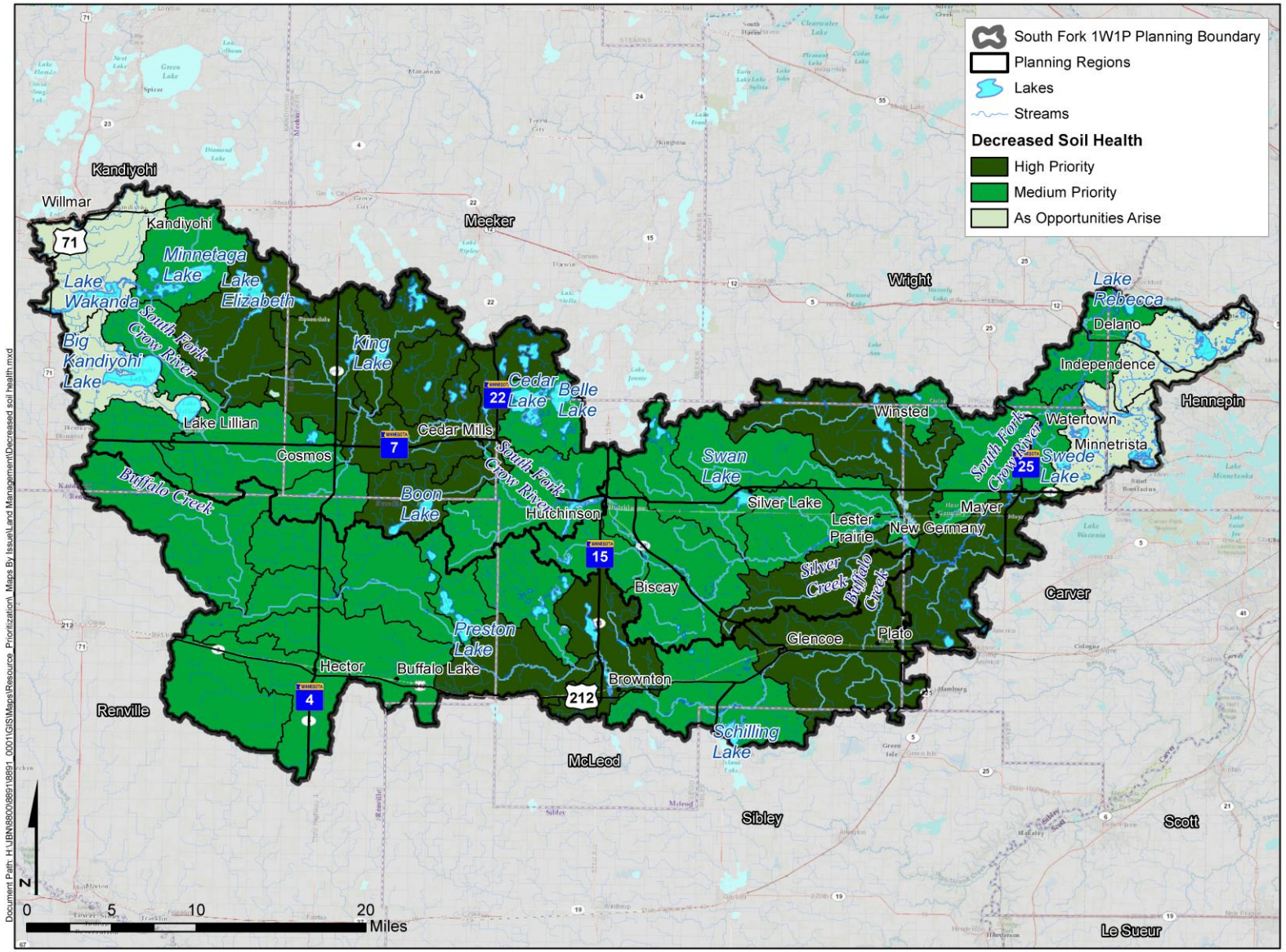



***Figure 4.5**: Priority subwatersheds for addressing soil health within the South Fork Crow River Watershed.*

# Bacteria Loading

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

There are 10 streams within the watershed that are impaired due to *E. coli* concentrations. Because *E. coli* loads and consequently load reductions are difficult and expensive to measure, this plan's long-term goal is based on reducing the number of impairments in the watershed. As delisting an impaired stream reach can be a long process, the short-term goal is based on projects that can be implemented to make progress toward the long-term goal.

## Priority Level

- Tier 2

## Measurable Goals

### Long-Term

Livestock waste management projects are implemented where needed to support waters meeting aquatic recreation standards for bacteria (*E. coli*) concentrations.

### Short-Term

**Implement 9 livestock waste management projects** to reduce delivery of bacteria to impaired streams

Metric: # of projects implemented

The WRAPS report (MPCA, 2018) has identified that a significant amount of the bacteria creating impairments in the watershed is coming from surface applied manure, sourced both from farms in the watershed and manure shipped in from outside the watershed. Manure is a valuable resource for agricultural production, therefore precise handling and use is advantageous for both the producer and downstream resources alike. As such, the focus of this plan's short-term goal is to assist in managing nonpoint sources of bacteria through livestock waste management projects, preferentially working from the headwaters down. Livestock waste management projects may include, but are not limited to manure storage, fencing, and stacking slabs. Prioritizing implementation of these projects on areas closer to riparian areas (and/or drainage directly to water ways) will ensure the projects implemented will have more of an effect.

# Bacteria Loading (Cont.)

## Measuring

Progress towards this plan's short-term goals will be made within each planning region, as shown by these planning region targets:

| Planning Region | Target |
|---|---|
| Upper South Fork | 3 projects |
| Lower South Fork | 2 projects |
| Buffalo Creek | 4 projects |

## Stacking Multiple Benefits

Planning partners recognize that implementing projects to address bacteria loading will make progress toward multiple plan goals. Those are summarized visually here.

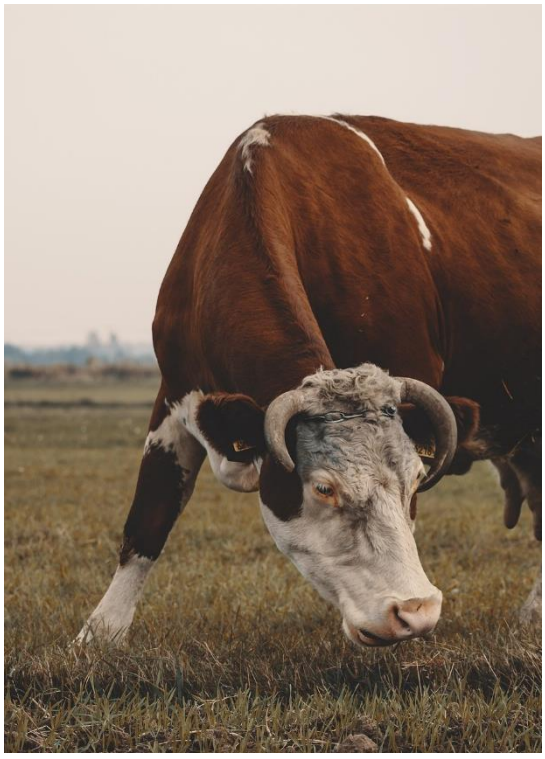
- Erosion and Sedimentation
- Nutrient Loading to Surface Waters

## What Can Be Done, and Where?

Below are some example actions that can be implemented to address this goal. A full list is shown in **Section 5**.

- Livestock stream access reduction
- Septic system inspection
- Nutrient and manure management planning, including timing of spreading

Actions focused on addressing bacteria loading will preferentially occur within priority subwatersheds, shown in dark green on **Figure 4.6** and closer to riparian areas (and/or drainage directly to waterways). These subwatersheds have the highest prominence of bacteria impaired streams (also reflects local knowledge).



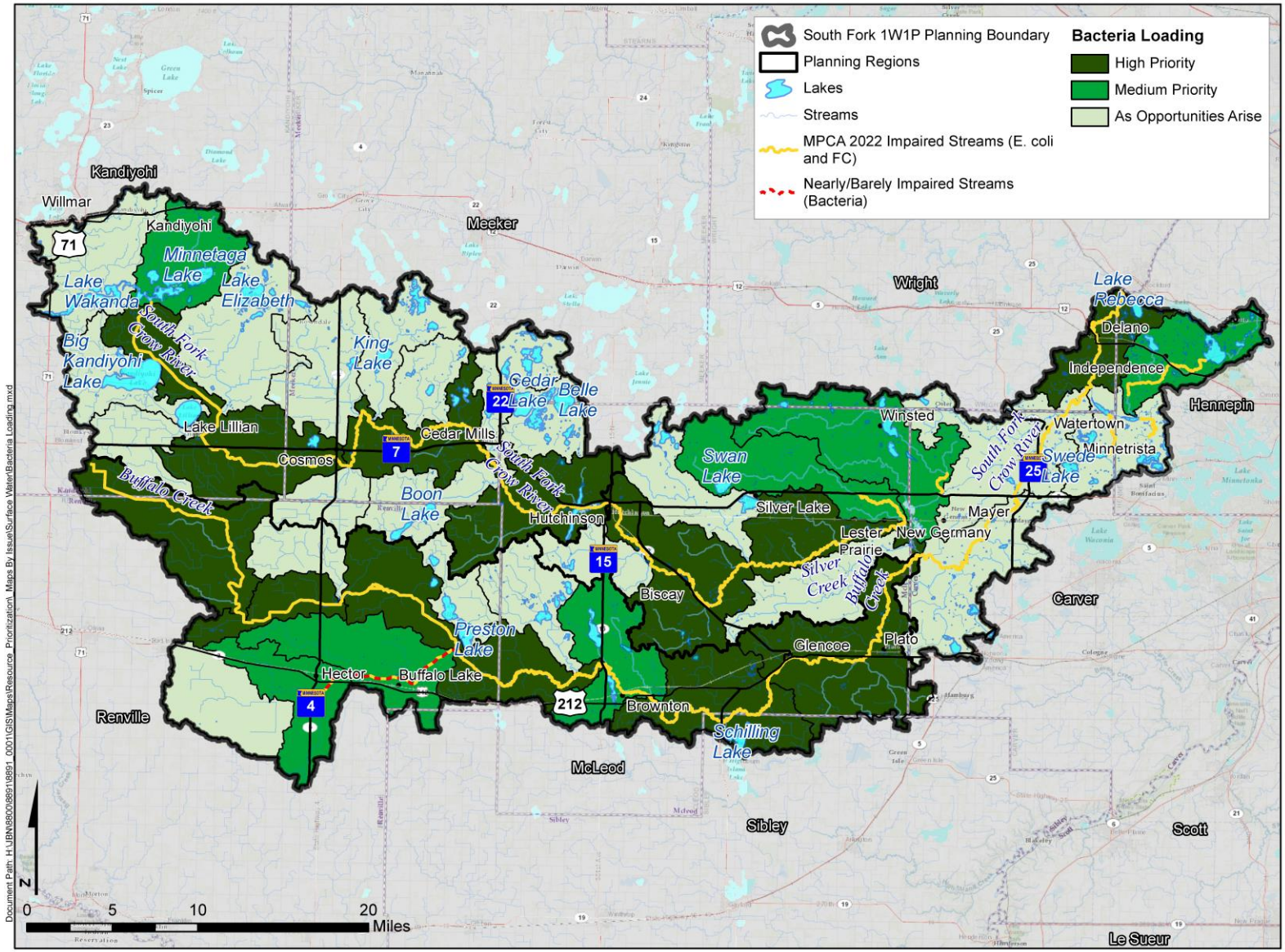



***Figure 4.6**: Priority subwatersheds for addressing bacteria loading within the South Fork Crow River Watershed.*

# Urban Stormwater Runoff and Development Pressure

Urban stormwater systems enable the delivery of sediment, nutrients, bacteria, and anything else that flows into storm drains, to downstream resources. The storm system has a very important purpose, to prevent flooding of the built environment and transport water that has fallen on impervious surfaces. Within the South Fork Crow River Watershed, approximately 6% of the land cover is urban developed land (MPCA, 2018). There are nine municipalities that are fully or partially within the watershed that are large enough to be required to participate in the MPCA's Municipal Separate Stormwater System Permit program (MS4), a program designed to help mitigate water pollution from stormwater runoff of various population sizes greater than 1,000 (MPCA, 2022). Six of these municipalities are in the far eastern portion of the watershed within the Twin Cities Metropolitan Area: Corcoran, Independence, Loretto, Maple Plain, Medina, and Minnetrista. Hennepin County is also an MS4. The cities of Willmar, Hutchinson, and Glencoe are non-Metro MS4s located in the central and western portion of the watershed (MPCA, 2018). There are also 20 non-MS4 municipalities located throughout the watershed. This plan will focus on decreasing the amount of urban runoff and urban flooding potential by using BMPs to slow the speed of water leaving impervious surfaces and infiltrate or treat some of the runoff prior to entering the storm system.

## Priority Level

- Tier 2

## Measurable Goals

### Long-Term

All MS4 communities maintain or exceed MS4 standards. Smaller communities that aren't required to meet MS4 standards may still be making progress to address stormwater runoff. Stormwater BMPs are implemented where practical in urban areas to improve water quality in receiving waters.

### Short-Term

Decrease urban runoff and urban flooding by routing and **treating an additional 1,000 acres of developed area through BMPs**.

Metric: acres treated

*Source: MPCA*

# Urban Stormwater Runoff and Development Pressure

## Measuring

Progress towards this plan's short-term goals will be made within each planning region, as shown by these planning region targets:

| Planning Region | Target |
|---|---|
| Upper South Fork | 15 acres / yr |
| Lower South Fork | 70 acres / yr |
| Buffalo Creek | 15 acres / yr |

## Stacking Multiple Benefits

Planning partners recognize that implementing projects to address urban stormwater runoff will make progress toward multiple plan goals. Those are summarized visually here.

- Erosion and Sedimentation
- Nutrient Loading to Surface Waters
- Altered Hydrology and Flooding

## What Can Be Done, and Where?

Below are some example actions that can be implemented to address this goal. A full list is shown in **Section 5**.

- Green stormwater infrastructure and maintenance
- Stormwater planning within non-MS4 communities
- Educational workshops on stormwater development

Actions focused on urban stormwater runoff will preferentially occur within priority subwatersheds, shown in dark green within **Figure 4.7**. These subwatersheds contain the most developed land (as defined by NLCD).

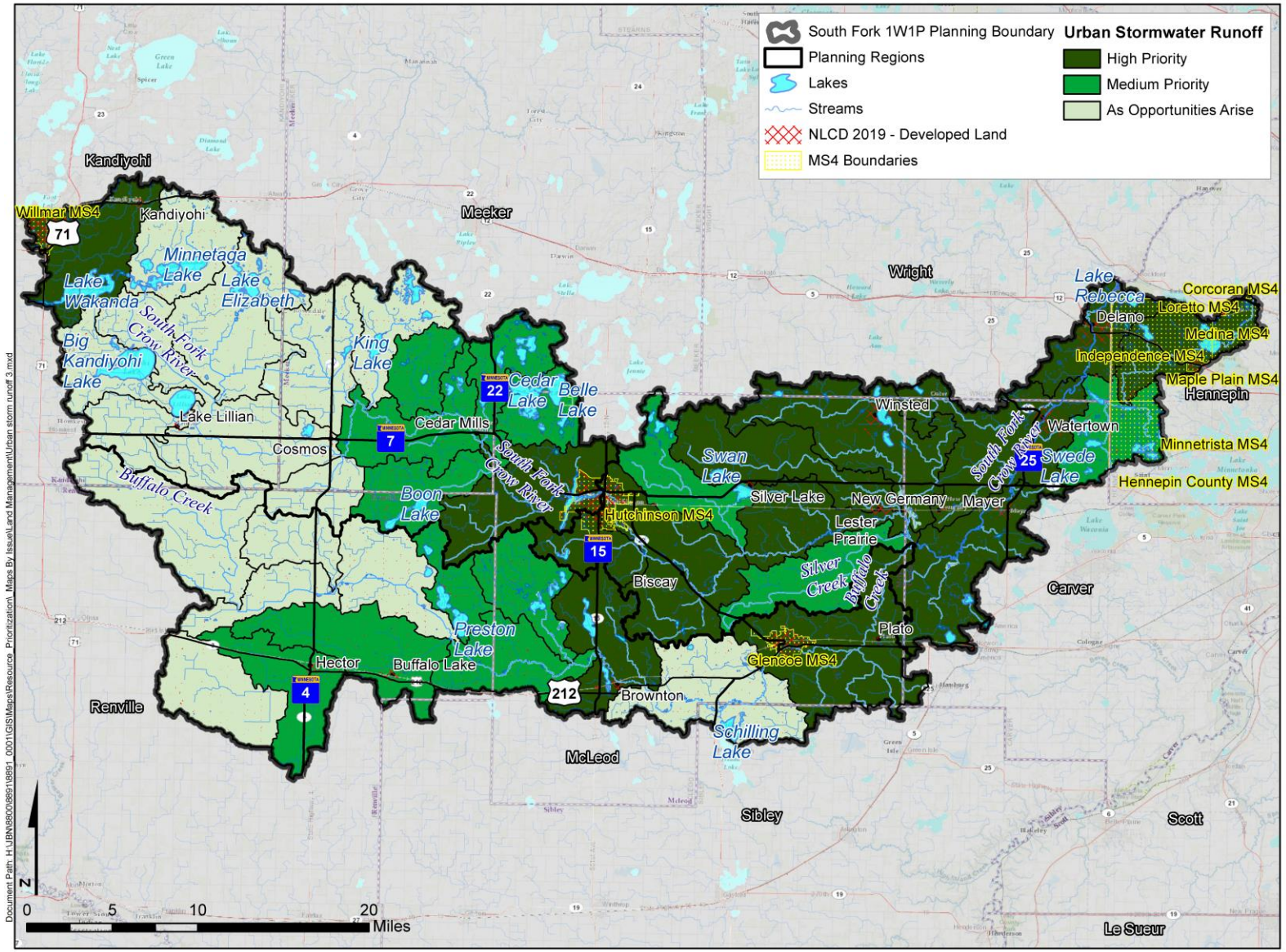



***Figure 4.7**: Priority subwatersheds for addressing urban stormwater runoff within the South Fork Crow River Watershed.*

# Wildlife Habitat and Perennial Ground Cover

Prairie and wildlife habitat once covered approximately one third of Minnesota's landscape. Today, it is estimated that only around one percent of that original prairie remains (DNR, 2018).

Similar to many areas in central Minnesota, wildlife habitat in the South Fork Crow River Watershed has been degraded and fragmented from pre-settlement baselines to accommodate current land uses for developed areas and agriculture. However, there are some areas with high concentrations of natural habitat that offer a starting point for enhancement of what is already there, in addition to a basis for expansion. This includes 32,600 acres (or nearly 4% of the watershed) of land currently protected as Waterfowl Protection Area, Wildlife Management Area, Re-Invest in Minnesota, Conservation Reserve Enhancement Program, US Fish and Wildlife Service, and State Parks/Recreation Areas. Enhancement and restoration of native habitats offer many quantifiable benefits, such as water quality, water storage, and increased tourism and recreation.

## Priority Level

- Tier 2

## Measurable Goals

### Long-Term

Existing protected areas are preserved and enhanced to maintain and expand high-quality habitat.

### Short-Term

An **additional 825 acres of land is protected permanently** (e.g. RIM) within the watershed, with emphasis on adding to existing protected areas and corridors and areas 40 acres or larger.

Metric: acres of protected land

This plan will focus on adding areas of permanent protection within the watershed, focusing on adding to existing protected areas or creating new habitat complexes of 40 acres or larger. When implementing wildlife habitat, areas will be chosen with best possible use in mind. Protection of riparian land will also be vital to providing habitat and improving water quality.

# Wildlife Habitat and Perennial Ground Cover (Cont.)

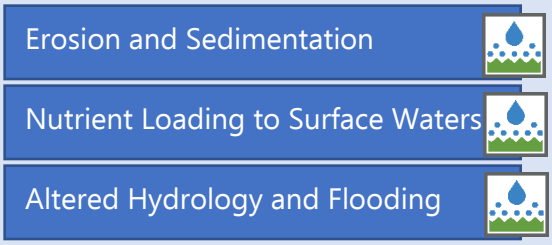
## Measuring

Progress towards this plan's short-term goals will be made within each planning region, as shown by these planning region targets:

| Planning Region | Target |
|---|---|
| Upper South Fork | 405 acres |
| Lower South Fork | 223 acres |
| Buffalo Creek | 197 acres |

## Stacking Multiple Benefits

Planning partners recognize that adding more permanently protected land also benefits water quality, and therefore will make progress toward multiple plan goals. Those are summarized visually here.




## What Can Be Done, and Where?

Below are some example actions that can be implemented to address this goal. A full list is shown in **Section 5**.

- Wetland and grassland restoration
- Promotion of existing land protection programs
- Field-scale identification of priority areas for protection (e.g. low productivity land adjacent to currently protected areas)

Actions focused on addressing this goal will preferentially occur on marginal lands within priority subwatersheds, shown in dark green within **Figure 4.8**. These subwatersheds contain the highest prominence of existing protected land (WPA, WMA, RIM, CREP, FWS, and State Parks/Recreation Areas), and therefore have the greatest opportunity for expansion or creating corridors to connect existing protected areas. Actions that consider protection of native species and control of invasive species may receive a greater rank.

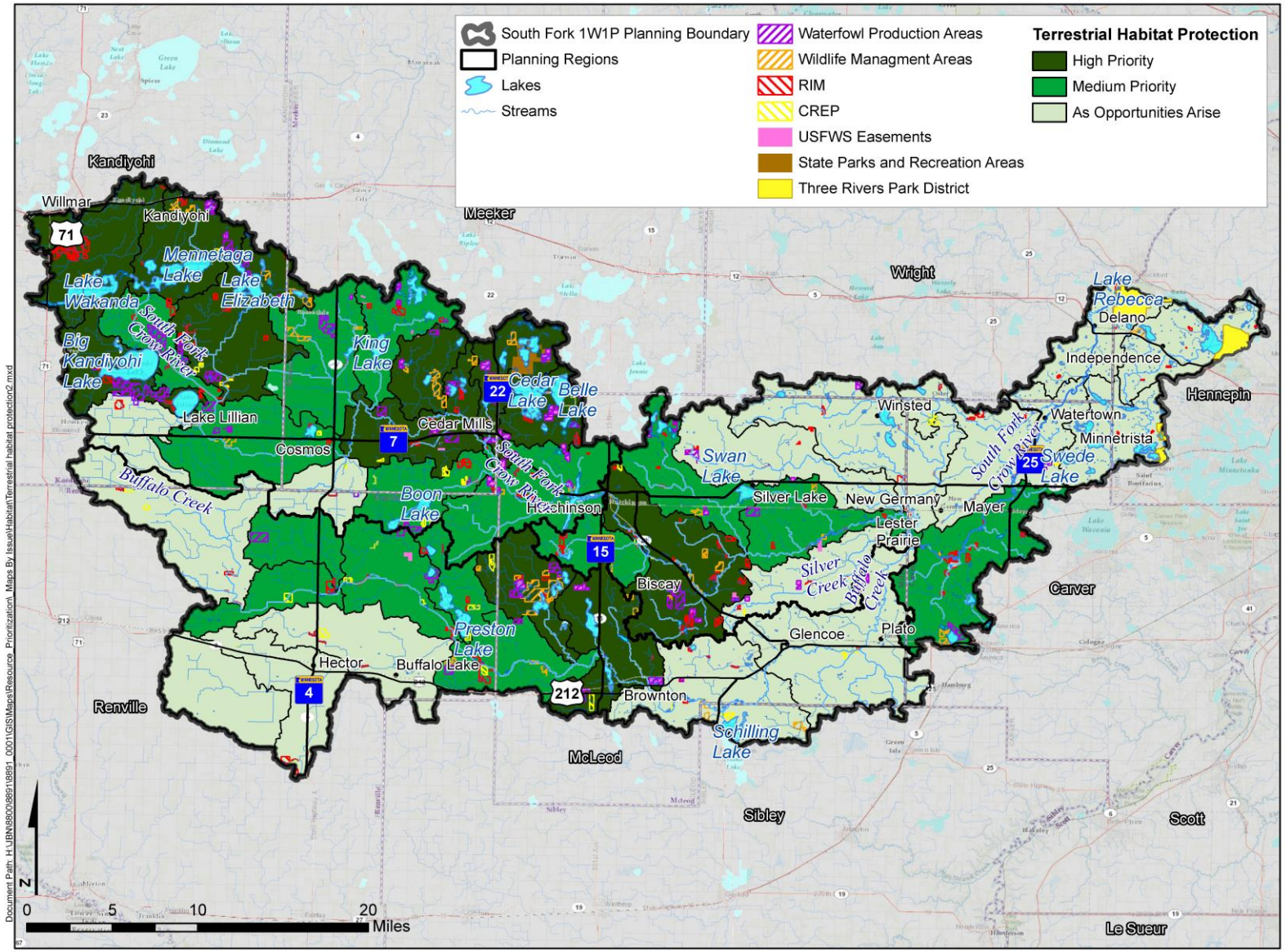



***Figure 4.8**: Priority subwatersheds for protection of wildlife within the South Fork Crow River Watershed.*

# Section 5. Targeted Implementation Schedule

# Section 5. Targeted Implementation Schedule

Each goal is addressed by a series of actions. This section of the plan identifies those actions that will be implemented in the lifespan of this plan to address priority issues and make progress toward measurable goals.

The list of actions was developed through discussion of what is currently being implemented in the watershed and committee discussions on what they would like to see done in the 10 years to address goals. Actions are organized and summarized into "action tables" that include the following information:

- Action description,
- Action "output" that will be implemented in the 10-year plan,
- Goals addressed, either primarily or as a secondary benefit,
- Lead entities responsible for overseeing implementation, with partners that may assist with funding and efforts,
- Timeline for implementing the action, and
- Funding level and estimated dollars for implementation.

Making progress toward goals is largely dependent on funding, as more actions can be implemented with more funding. As such, this plan recognizes three scaled funding levels (**Table 5.1**). With an approved CWMP, the Partnership is eligible to receive non-competitive Watershed-Based Implementation Funding (WBIF) through BWSR. In recognition of this, funding levels are organized in terms of current funding, current funding plus WBIF (assumed $600,000 / year), and what actions will be pursued by partners, with federal dollars, or with other competitive funding programs. **Actions pursued under Funding Level 2 (Current Funding + WBIF) are the focus of this section.**

*Table 5.1: Funding levels for the South Fork Crow River Watershed.*

| Funding Level | Description |
|---|---|
| Level 1 | Current Baseline Funding for the watershed for all programs |
| **Level 2** | **Baseline + Watershed-Based Implementation Funding** |
| Level 3 | Partner and Other Funding |

## Current BMPs on the Landscape

Implementation arising from this plan builds on decades of conservation action within the watershed. Between 2013 and the end of 2021, there have been 984 BMP practices installed within the watershed and uploaded into the state BMP database tracker, eLINK. This equates to, on average, 123 BMPs installed per year. The top six BMPs installed within the watershed make up 91% of the installed practices (**Figure 5.1**). This just shows the conservation practices that can be summarized by eLINK- in reality, much more has been done in the watershed.

| | | |
|---|---|---|
| **Septic System Improvements** 258 Practices | **Filter Strips** 248 Practices | **Well Sealing** 219 wells |
| **Streambank and Shoreland Protection** 50 Installations | **Windbreak/Shelterbelt** 42 Establishments | **WASCOBs** 34 Installations |

*Figure 5.1: Exiting practices in the South Fork Crow River Watershed (eLINK 2013-2021).*

## Implementation Programs

Each action in this plan is organized into one of five implementation programs, summarized visually on the following page (**Figure 5.2**). Implementation programs are the funding mechanism to implement actions. Actions within the Education and Outreach; Assessments and Data Gaps; Regulations and Local Controls; and Capital Improvements Projects implementation programs are implemented watershed-wide to promote consistency and shared services. Actions within the Projects, Practices, and Support Implementation Program are targeted to a planning region scale to reflect changing issues and priorities from one planning region to the next. For more details on each of these implementation programs, see **Section 6. Implementation Programs**.

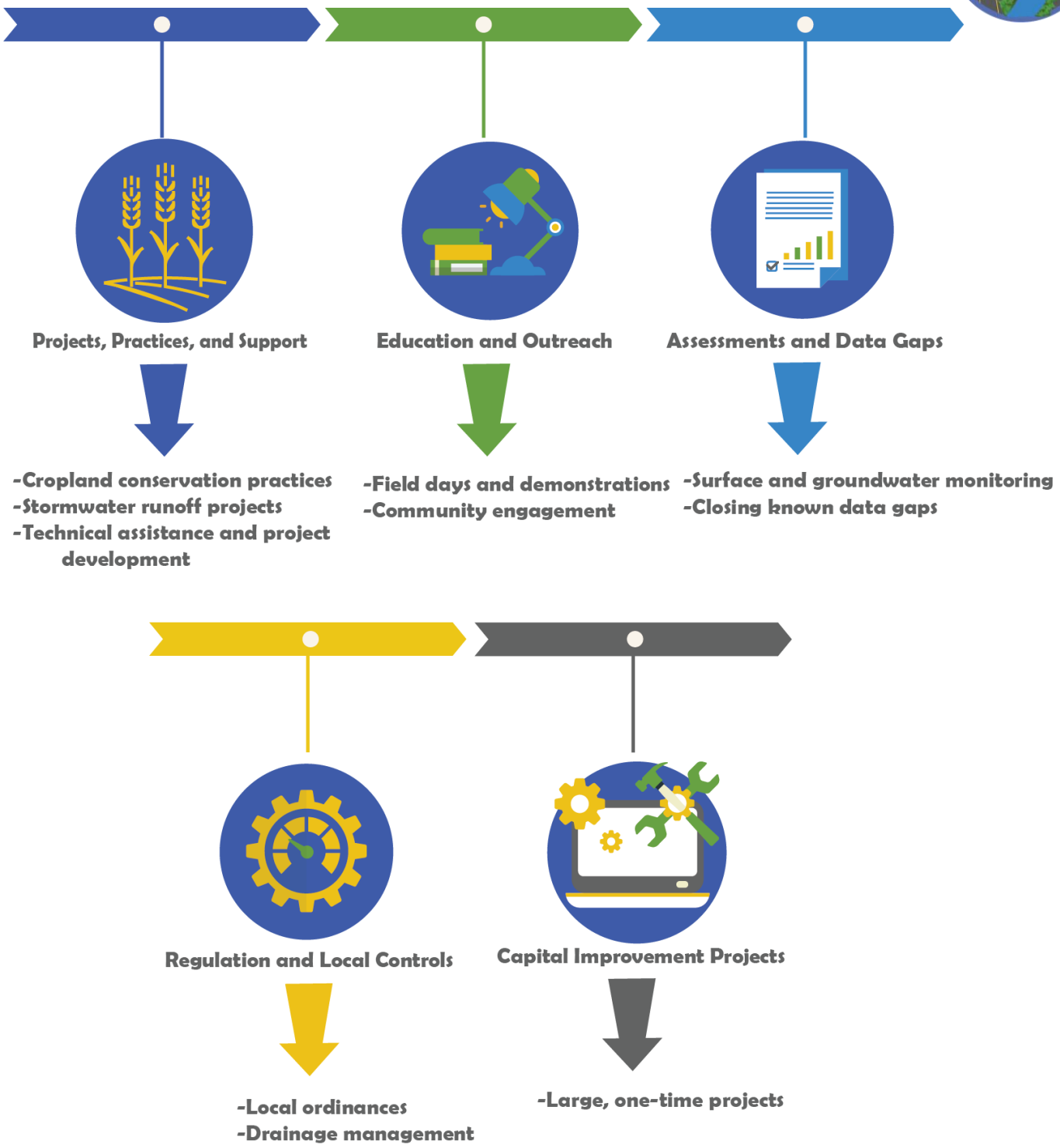



*Figure 5.2: Implementation programs with example actions.*

# Implementation of Projects and Practices

## Where to Work First

The long-term goals detailed in **Section 4** represent the desired future condition for watershed resources regardless of time, funding, and capacity. The short-term goals represent what is possible to accomplish in 10 years. That means putting efforts and funding toward areas that need it most. For the South Fork Crow River Watershed, this is especially pertinent for the implementation of cropland BMPs on the landscape.

To prioritize where to focus implementation of cropland BMPs, the focus areas for the water erosion, soil health, water storage, and nutrient loss goals were stacked together to determine overall watershed priorities. These goals were selected to be stacked due to their reliance on cropland BMPs to adequately address the issues and make progress toward goals. The final outcome was further adjusted based on local expertise of the Steering Committee and is shown in **Figure 5.3**. This indicates where outreach and funding will be focused in the first five years of plan implementation pertaining to the implementation of cropland BMPs.

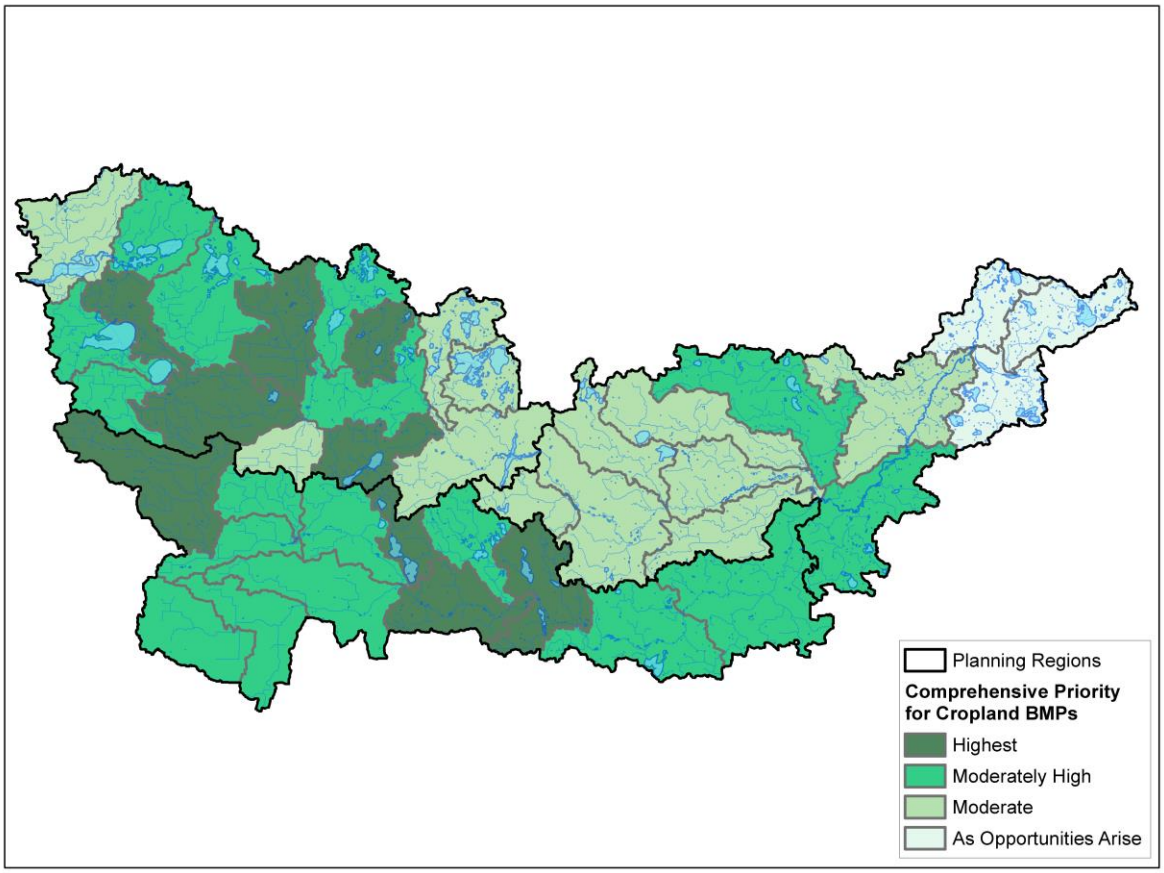



*Figure 5.3: Comprehensive priority for cropland BMPs in the watershed.*

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

## Targeting Projects

HSPF SAM is a watershed model commonly used in planning. The model allows users to estimate the costs and water quality benefits of implementing cropland BMPs in feasible locations at a small, subwatershed scale. Results from this tool were used to inform plan action tables..

Further information beyond HSPF SAM will be used in plan implementation, including data to target outreach for voluntary implementation efforts to an individual parcel scale. **Table 5.2** below summarizes data sets that can be used in addition to subwatershed maps in **Section 4** and HSPF SAM to target outreach efforts during implementation. These data sets are organized by goal.

*Table 5.2: Targeting data by goal for the South Fork Crow River Watershed.*

| Goal | Targeting Data | Finest Scale |
|---|---|---|
| Drainage Partnerships and Drainage Management | HSPF SAM + Parcels alongside or contributing to Priority Drainage Systems | Parcel |
| Loss of Water Storage and Altered Hydrology | HSPF SAM + Subwatershed map | Subwatershed |
| Nutrient Loading to Surface Waters | HSPF SAM + Parcels alongside or contributing to priority (nearly / barely impaired) streams and lakes | Parcel |
| Erosion and Sediment | HSPF SAM + Parcels alongside or contributing to priority (nearly / barely impaired) streams and lakes | Parcel |
| Soil Health | HSPF SAM + Erosion susceptibility (DNR WHAF) | Catchment |
| Bacteria Loading | Parcels alongside or contributing to bacteria impaired waters | Parcel |
| Urban Stormwater Runoff and Development Pressure | Developed land | Raster (30-meter) |
| Wildlife Habitat and Perennial Ground Cover | Parcels alongside existing permanently protected habitat | Parcel |

## Flexibility in Implementation

Implementation is based on the best-case scenario for planning efforts regarding the installation of best management practices. The plan is based on voluntary participation, funding availability, and field verification to ensure that practice implementation is feasible. Due to this, not all practices within the plan may be feasible.

Implementation is based on a variety of factors that will ultimately enable a specific project to move forward:

- Amount of funding available for implementation
- Emerging practices
- Field verification of practice type and location
- New data on resource conditions
- Shovel ready practices
- Success of education and outreach and research initiatives
- Voluntary participation by landowners and residents

Planning region action tables are provided on the following pages. Planning regions have specific actions tailored to them based on the working group's knowledge of the planning regions.

*Multipurpose drainage management (Source: BWSR)*

# Upper South Fork Planning Region - Action Table

**Table 5.3** below summarizes actions for implementing new structural and nonstructural practices, funded by the Projects, Practices, and Support Implementation Program. Practices will be targeted to focus area subwatersheds and resources, shown on the following page. Outputs and costs show what will be accomplished with Level 2 (Current Funding + WBIF) funding, and what will be pursued under Level 3 (Partner and Other Funding). Capital Improvement Projects pertain to the construction, repair, retrofit, or increased utility or function of physical facilities, infrastructure, or environmental features, and typically external funding. Where eligible, planning partners intend to use approximately 10% of the WBIF (~$60,000/year) to support implementation of these projects.

*Table 5.3. Upper South Fork Planning Region Action Table*

| Actions | | | Targeting and Measuring | Measurable Goals | | | | | | | | Responsibility | Timeline | | | | | Estimated Costs | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Action Description | ID | Focus Resources | 10-Year Output | Drainage Partnerships and Drainage Management | Loss of Water Storage and Altered Hydrology | Nutrient Loading | Erosion and Sediment | Soil Health | Bacteria Loading | Urban Stormwater Runoff and Development Pressure | Wildlife Habitat and Perennial Ground Cover | Responsibility/ Partners (Bold = Lead) | 2024-2025 | 2026-2027 | 2028-2029 | 2030-2031 | 2032-2033 | Funding Level | Estimated Total 10-Year Cost |
| Implement structural **agricultural practices** *(e.g. grassed waterways, WASCOBs, grade stabilizations, wetland restorations, etc.)* | USF 1 | Cropland priority subwatersheds | 1,756 acres treated<br>80 tons/yr sediment<br>8,089 lbs/yr TN<br>619 lbs/yr TP<br>101 acre-feet storage | ○ | ○ | ● | ● | ○ | ○ | | ○ | **SWCD**, NRCS, BWSR, MDA | ● | ● | ● | ● | ● | 2 | $764,000 |
| Implement **conservation practices that contribute to priority drainage systems** *(e.g. multipurpose drainage management practices, WASCOBs, grade stabilizations, filter strips)* | USF 2 | Priority Drainage Systems | 68 projects; 1,135 acres<br>41 tons/yr sediment<br>6,554 lbs/yr TN<br>311 lbs/yr TP<br>66 acre-feet storage | ● | ○ | ○ | ○ | | | | | **SWCD**, NRCS, BWSR, Drainage Authorities, MDA | ● | ● | ● | ● | ● | 2 | $260,000 |
| Implement **non-structural management practices** *(e.g. soil health practices, nutrient and manure management, conservation cover, etc.)* | USF 3 | Cropland priority subwatersheds | 3,500 **acres implemented*** <br>75 tons/yr sediment<br>7,208 lbs/yr TN<br>457 lbs/yr TP | ○ | ○ | ○ | ○ | ● | ○ | | ○ | **SWCD**, NRCS, BWSR, MDA | ● | ● | ● | ● | ● | 2 3 | $1,036,000 + Partner Funding |
| Implement **wind erosion** control measures *(e.g. windbreaks, tree planting, structural snow fence, etc)* | USF 4 | Cropland priority | 500 acres treated | ○ | | | | ○ | | | ○ | **SWCD**, NRCS, BWSR, MDA | ● | ● | ● | ● | ● | 2 | $50,000 |
| Implement **urban stormwater management practices** *(e.g. green stormwater infrastructure, raingardens, stormwater ponds)* | USF 5 | Municipalities | 150 acres treated | | ○ | ○ | ○ | | ○ | ● | | **Cities**, SWCD, Counties | ● | ● | ● | ● | ● | 2 3 | $150,000 + Partner Funding |
| Implement **livestock waste management** projects | USF 6 | Nearly/ barely bacteria streams | 3 projects completed | | | ○ | ○ | ○ | ● | | | **Counties**, SWCD, MPCA | ● | ● | ● | ● | ● | 2 3 | $50,000 + Partner Funding |
| Provide cost-share for **well sealing** | USF 7 | Watershed-wide | 12 wells sealed / year | | | ○ | | | | | | **Counties**, SWCD, MDH | ● | ● | ● | ● | ● | 2 3 | $50,000 + Partner Funding |
| Provide cost-share for **SSTS upgrades** | USF 8 | Watershed-wide | 9 systems upgraded | | | ○ | | | ○ | | | **Counties**, MPCA, MDA | ● | ● | ● | ● | ● | 3 | Partner Funding |
| **Increase permanently protected land** (e.g. wetlands, grassland) using existing programs (e.g. RIM) | USF 9 | Protected areas | 405 acres added | | ○ | ○ | ○ | ○ | | | ● | **SWCD**, USFWS, NRCS, BWSR, DNR | ● | ● | ● | ● | ● | 3 | Partner Funding |
| Offer **technical assistance to landowners** for project development | USF 10 | Watershed-wide | Ongoing | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | **SWCD** | ● | ● | ● | ● | ● | 2 | $534,000 |
| | | | | | | | | | | | | | | | | | | **Planning Region Total** | $2,894,000 |
| | | | | | | | | | | | | | | | | | | **Capital Improvement Projects (CIP 1-9)** | Table 6-3 |

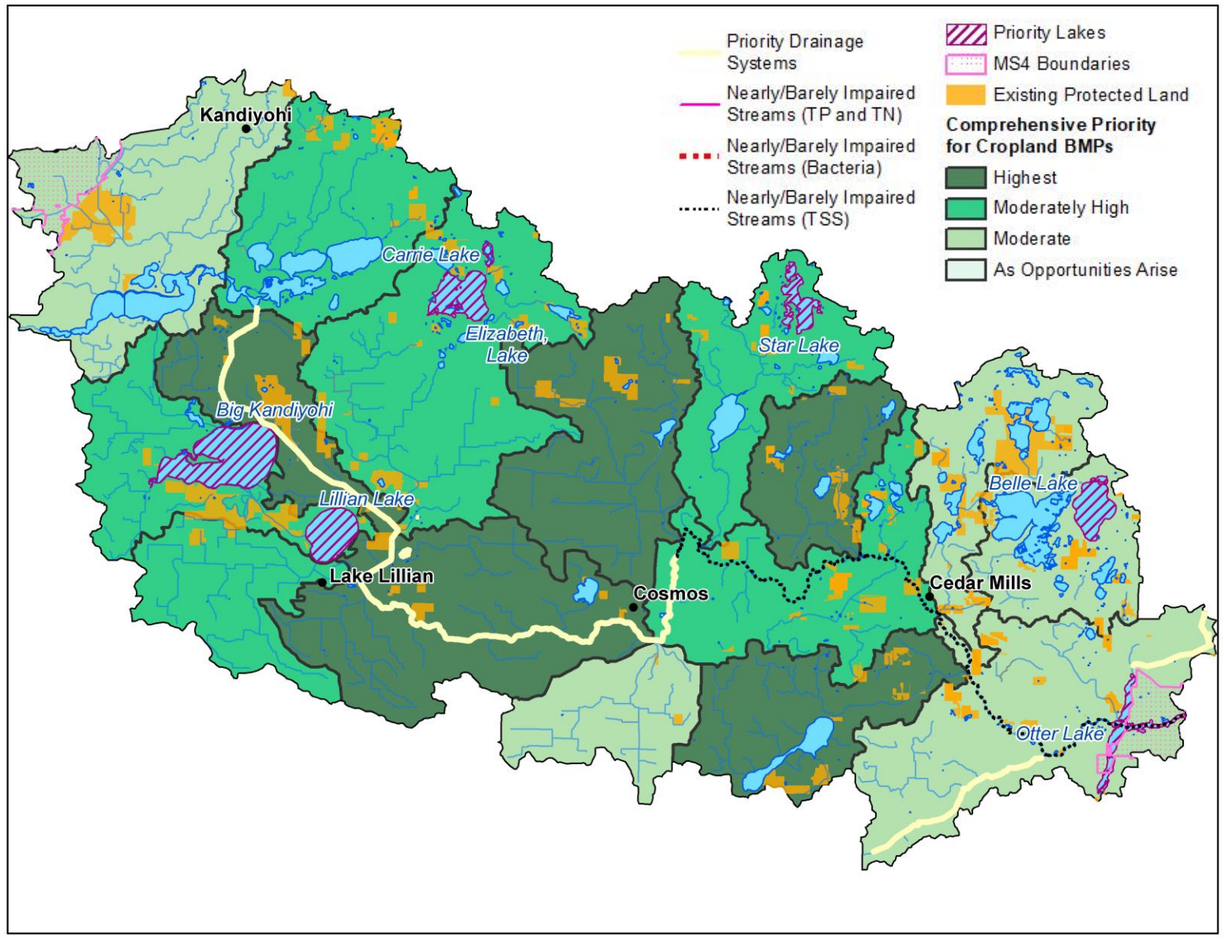
● = action directly addresses goal; ○ = action indirectly addresses goal; = Level 2 (Baseline + WBIF) Funding; = Level 3 (Partner and Other) Funding

*** The load reduction benefits shown are from the 2,890 acres of soil health practices included as part of the HSPF SAM implementation scenario (Table 4.1), reflecting what can be implemented with Baseline + WBIF Funding sources. Other funding sources are needed to reach the 3,500 acres implemented soil health milestone for this planning region.**

# Upper South Fork Planning Region- Action Table Support

Upper South Fork Planning Region is at the upper end of the watershed, draining areas in the northwest portion of the watershed into South Fork River. The plan region's most downstream location is in the city of Hutchinson just downstream of Otter Lake.

Section 4 introduces priority resources for each measurable goal. The map below summarizes all priority resources within the Upper South Fork Planning Region. Also shown are the subwatersheds that should be the highest priority for cropland BMPs (structural conservation practices and soil health practices). Targeting actions to these locations will make the most progress towards plan measurable goals.




## Benefits Calculator

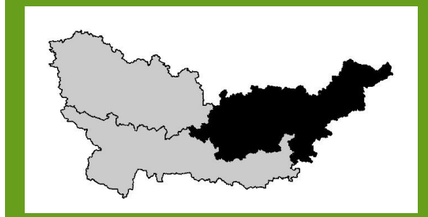
A HSPF-SAM scenario was developed to estimate the cost and water quality benefits for cropland practices in priority areas. A benefits calculator was created by summarizing the average size, cost, and water quality benefits provided by cropland practices in the Upper South Fork Planning Region. This calculator (or HSPF Tableau) can be used during implementation to track progress toward plan goals.

| Practice Type | Treated Area (Acres) | Sediment (tons/yr) | Total Nitrogen (lbs/yr) | Total Phos. (lbs/yr) | Annualized Cost ($) |
|---|---|---|---|---|---|
| Soil Health Practices | 1 | 0.026 | 2.5 | 0.158 | $35.83 |
| Restored Wetlands | 11.5 | 0.422 | 58.0 | 3.19 | $357.89 |
| Grassed Waterways | 40 | 1.64 | 177 | 11.3 | $497.24 |
| WASCOBs | 7.7 | 0.339 | 42.1 | 2.79 | $392.40 |

# Lower South Fork Planning Region – Action Table

**Table 5.4** below summarizes actions for implementing new structural and nonstructural practices, funded by the Projects, Practices, and Support Implementation Program. Practices will be targeted to focus area subwatersheds and resources, shown on the following page. Outputs and costs show what will be accomplished with Level 2 (Current Funding + WBIF) funding, and what will be pursued under Level 3 (Partner and Other Funding). Capital Improvement Projects pertain to the construction, repair, retrofit, or increased utility or function of physical facilities, infrastructure, or environmental features, and typically external funding. Where eligible, planning partners intend to use approximately 10% of the WBIF (~$60,000/year) to support implementation of these projects.

*Table 5.4. Lower South Fork Planning Region Action Table*

| Actions | | Targeting and Measuring | | Measurable Goals | | | | | | | | Responsibility | Timeline | | | | | Estimated Costs | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  Action Description | ID | Focus Resources | 10-Year Output | Drainage Partnerships and Drainage Management | Loss of Water Storage and Altered Hydrology | Nutrient Loading | Erosion and Sediment | Soil Health | Bacteria Loading | Urban Stormwater Runoff and Development Pressure | Wildlife Habitat and Perennial Ground Cover | Responsibility/Partners (Bold = Lead) | 2024-2025 | 2026-2027 | 2028-2029 | 2030-2031 | 2032-2033 | Funding Level | Estimated Total 10-Year Cost |
| Implement structural **agricultural practices** *(e.g. grassed waterways, WASCOBs, grade stabilizations, wetland restorations, etc.)* | LSF 1 | Cropland priority subwatersheds | 317 acres treated<br>19 tons/yr sediment<br>616 lbs/yr TN<br>152 lbs/yr TP<br>65 acre-feet storage | ○ | ○ | ● | ● | ○ | ○ | | ○ | **SWCD**, NRCS, BWSR, MDA | ● | ● | ● | ● | ● | 2 | $198,000 |
| Implement **conservation practices that contribute to priority drainage systems** *(e.g. multipurpose drainage management practices, WASCOBs, grade stabilizations, filter strips)* | LSF 2 | Priority Drainage Systems | 47 projects; 681 acres<br>25 tons/yr sediment<br>3,933 lbs/yr TN<br>186 lbs/yr TP<br>139 acre-feet storage | ● | ○ | ○ | ○ | | | | | **SWCD**, NRCS, BWSR, Drainage Authorities, MDA | ● | ● | ● | ● | ● | 2 | $156,000 |
| Implement **non-structural management practices** *(e.g. soil health practices, nutrient and manure management, conservation cover, etc.)* | LSF 3 | Cropland priority subwatersheds | 3,500 **acres implemented*** <br>28 tons/yr sediment<br>2,260 lbs/yr TN<br>167 lbs/yr TP | ○ | ○ | ○ | ○ | ● | ○ | | ○ | **SWCD**, NRCS, BWSR, MDA | ● | ● | ● | ● | ● | 2 3 | $358,000 + Partner Funding |
| Implement **wind erosion** control measures *(e.g. windbreaks, tree planting, structural snow fence, etc)* | LSF 4 | Cropland priority | 200 acres treated | ○ | | | | ○ | | | ○ | **SWCD**, NRCS, BWSR, MDA | ● | ● | ● | ● | ● | 2 | $20,000 |
| Implement **urban stormwater management practices** *(e.g. green stormwater infrastructure, raingardens, stormwater ponds)* | LSF 5 | Municipalities | 700 acres treated | | ○ | ○ | ○ | | ○ | ● | | **Cities**, SWCD, Counties | ● | ● | ● | ● | ● | 2 3 | $350,000 + Partner Funding |
| Implement **livestock waste management** projects | LSF 6 | Nearly/ barely bacteria streams | 3 projects completed | | | ○ | ○ | ○ | ● | | | **Counties**, SWCD, MPCA | ● | ● | ● | ● | ● | 2 3 | $50,000 + Partner Funding |
| Provide cost-share for **well sealing** | LSF 7 | Watershed-wide | 2 wells sealed/ year | | | ○ | | | | | | **Counties**, SWCD, MDH | ● | ● | ● | ● | ● | 3 | Partner Funding |
| Provide cost-share for **SSTS upgrades** | LSF 8 | Watershed-wide | 9 systems upgraded | | | ○ | | | ○ | | | **Counties**, MPCA, MDA | ● | ● | ● | ● | ● | 3 | Partner Funding |
| **Increase permanently protected land** (e.g. wetlands, grassland) using existing programs (e.g. RIM) | LSF 9 | Protected areas | 223 acres added | | ○ | ○ | ○ | ○ | | | ● | **SWCD**, USFWS, NRCS, BWSR, DNR | ● | ● | ● | ● | ● | 3 | Partner Funding |
| Offer **technical assistance to landowners** for project development | LSF 10 | Watershed-wide | Ongoing | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | **SWCD** | ● | ● | ● | ● | ● | 2 | $371,000 |
| | | | | | | | | | | | | | | | | | | **Planning Region Total** | $1,503,000 |
| | | | | | | | | | | | | | | | | | | **Capital Improvement Projects (CIP 10-12)** | Table 6-3 |

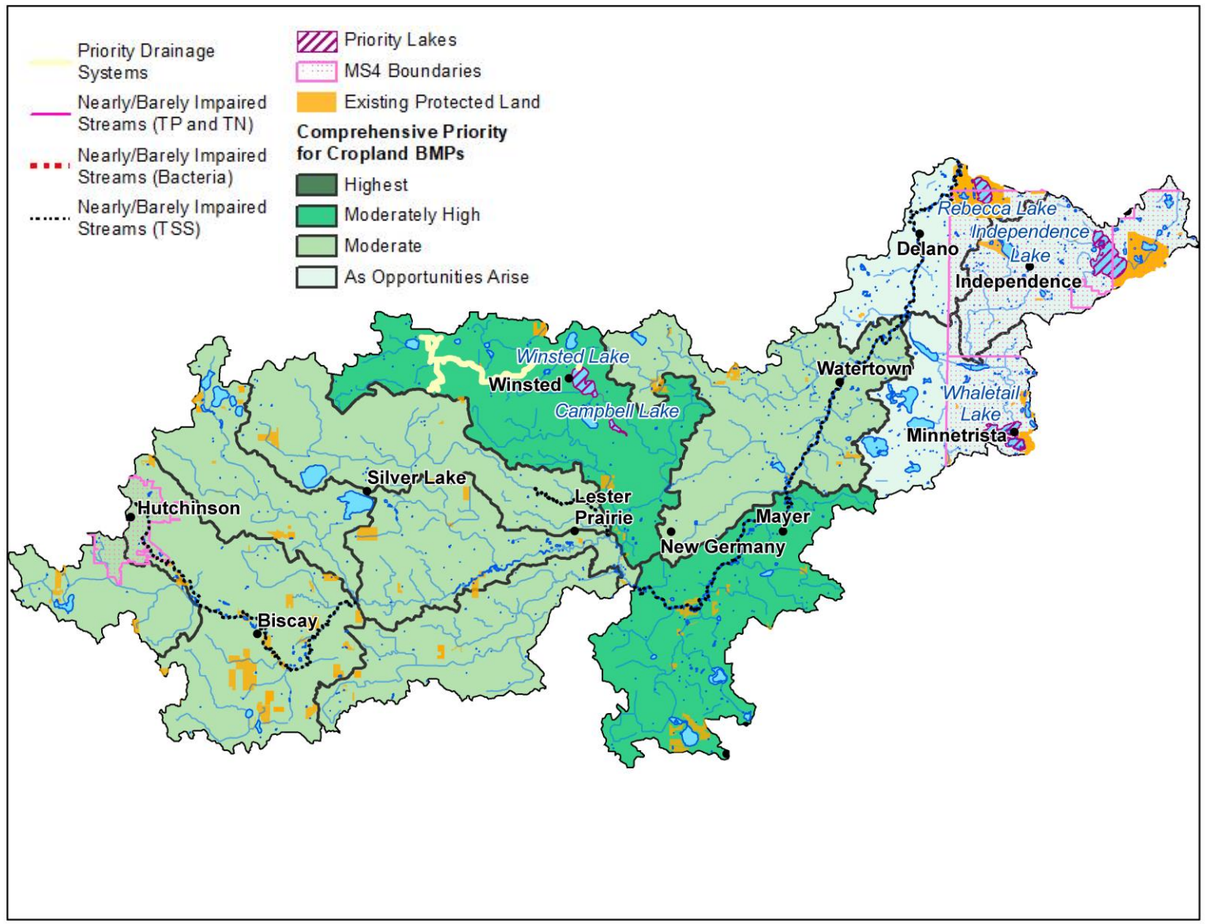
● = action directly addresses goal; ○ = action indirectly addresses goal; = Level 2 (Baseline + WBIF) Funding; = Level 3 (Partner and Other) Funding

*** The load reduction benefits shown are from the 998 acres of soil health practices included as part of the HSPF SAM implementation scenario (Table 4.1), reflecting what can be implemented with Baseline + WBIF Funding sources. Other funding sources are needed to reach the 3,500 acres implemented soil health milestone for this planning region.**

# Lower South Fork Planning Region- Action Table Support

The Lower South Fork Planning Region picks up where the Upper South Fork planning boundary ends in Hutchinson. The planning region follows the South Fork Crow River to the City of Rockford where it joins the North Fork of the Crow River to create the Crow River. The plan region ends at the confluence with North Fork Crow River.

Section 4 introduces priority resources for each measurable goal. The map below summarizes all priority resources within the Lower South Fork Planning Region. Also shown are the subwatersheds that should be the highest priority for cropland BMPs (structural conservation practices and soil health practices). Targeting actions to these locations will make the most progress towards plan measurable goals.




## Benefits Calculator

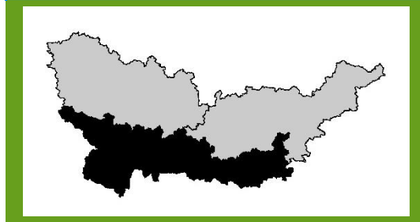
A HSPF-SAM scenario was developed to estimate the cost and water quality benefits for cropland practices in priority areas. A benefits calculator was created by summarizing the average size, cost, and water quality benefits provided by cropland practices in the Lower South Fork Planning Region. This calculator (or HSPF Tableau) can be used during implementation to track progress toward plan goals.

| Practice Type | Treated Area (Acres) | Sediment (tons/yr) | Total Nitrogen (lbs/yr) | Total Phos. (lbs/yr) | Annualized Cost ($) |
|---|---|---|---|---|---|
| Soil Health Practices | 1 | 0.028 | 2.26 | 0.167 | $35.83 |
| Restored Wetlands | 11.5 | 0.451 | 51.7 | 3.37 | $357.89 |
| Grassed Waterways | 40 | 1.76 | 159 | 12 | $497.24 |
| WASCOBs | 7.7 | 0.362 | 37.9 | 2.95 | $392.40 |

# Buffalo Creek Planning Region – Action Table

**Table 5.5** below summarizes actions for implementing new structural and nonstructural practices, funded by the Projects, Practices, and Support Implementation Program. Practices will be targeted to focus area subwatersheds and resources, shown on the following page. Outputs and costs show what will be accomplished with Level 2 (Current Funding + WBIF) funding, and what will be pursued under Level 3 (Partner and Other Funding). Capital Improvement Projects pertain to the construction, repair, retrofit, or increased utility or function of physical facilities, infrastructure, or environmental features, and typically external funding. Where eligible, planning partners intend to use approximately 10% of the WBIF (~$60,000/year) to support implementation of these projects.

*Table 5.5. Buffalo Creek Planning Region Action Table*

| Actions | | | Targeting and Measuring | Measurable Goals | | | | | | | | Responsibility | Timeline | | | | | Estimated Costs | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | | | | Drainage Partnerships and Drainage Management | Loss of Water Storage and Altered Hydrology | Nutrient Loading | Erosion and Sediment | Soil Health | Bacteria Loading | Urban Stormwater Runoff and Development Pressure | Wildlife Habitat and Perennial Ground Cover | | 2024-2025 | 2026-2027 | 2028-2029 | 2030-2031 | 2032-2033 | | |
| Action Description | ID | Focus Resources | 10-Year Output | | | | | | | | | Responsibility/Partners (Bold = Lead) | | | | | | Funding Level | Estimated Total 10-Year Cost |
| Implement structural **agricultural practices** *(e.g. grassed waterways, WASCOBs, grade stabilizations, wetland restorations, etc.)* | BC 1 | Cropland priority subwatersheds | 773 acres treated<br>14 tons/yr sediment<br>9,963 lbs/yr TN<br>192 lbs/yr TP<br>44 acre-feet storage | ○ | ○ | ● | ● | ○ | ○ | | ○ | **SWCD**, NRCS, BWSR, MDA, BCWD | ● | ● | ● | ● | ● | 2 | $614,000 |
| Implement **conservation practices that contribute to priority drainage systems** *(e.g. multipurpose drainage management practices, WASCOBs, grade stabilizations, filter strips)* | BC 2 | Priority Drainage Systems | 135 projects; 2,723 acres<br>99 tons/yr sediment<br>15,730 lbs/yr TN<br>745 lbs/yr TP<br>157 acre-feet storage | ● | ○ | ○ | ○ | | | | | **SWCD**, NRCS, BWSR, Drainage Authorities, MDA | ● | ● | ● | ● | ● | 2 | $625,000 |
| Implement **non-structural management practices** *(e.g. soil health practices, nutrient and manure management, conservation cover, etc.)* | BC 3 | Cropland priority subwatersheds | 8,000 **acres implemented*** <br>70 tons/yr sediment<br>12,484 lbs/yr TN<br>461 lbs/yr TP | ○ | ○ | ○ | ○ | ● | ○ | | ○ | **SWCD**, BCWD, NRCS, BWSR, MDA | ● | ● | ● | ● | ● | 2 3 | $1,253,000 + Partner Funding |
| Implement **wind erosion** control measures *(e.g. windbreaks, tree plantings, structural snow fence, etc)* | BC 4 | Cropland priority | 500 acres treated | ○ | | | | ○ | | | ○ | **SWCD**, NRCS, BWSR, MDA | ● | ● | ● | ● | ● | 2 | $50,000 |
| Implement **urban stormwater management practices** *(e.g. green stormwater infrastructure, raingardens, stormwater ponds)* | BC 5 | Municipalities | 150 acres treated | | ○ | ○ | ○ | | ○ | ● | | **Cities**, SWCD, Counties, BCWD | ● | ● | ● | ● | ● | 2 3 | $75,000 + Partner Funding |
| Implement **livestock waste management** projects | BC 6 | Nearly/ barely bacteria streams | 3 projects completed | | | ○ | ○ | ○ | ● | | | **Counties**, SWCD, MPCA | ● | ● | ● | ● | ● | 2 3 | $50,000 + Partner Funding |
| Provide cost-share for **well sealing** | BC 7 | Watershed-wide | 5 wells sealed / year | | | ○ | | | | | | **Counties**, SWCD, MDH | ● | ● | ● | ● | ● | 3 | Partner Funding |
| Provide cost-share for **SSTS upgrades** | BC 8 | Watershed-wide | 9 systems upgraded | | | ○ | | | ○ | | | **Counties**, MPCA, MDA | ● | ● | ● | ● | ● | 3 | Partner Funding |
| **Increase permanently protected land** (e.g. wetlands, grassland) using existing programs (e.g. RIM) | BC 9 | Protected areas | 197 acres added | | ○ | ○ | ○ | ○ | | | ● | **SWCD**, USFWS, NRCS, BWSR, DNR | ● | ● | ● | ● | ● | 3 | Partner Funding |
| Offer **technical assistance to landowners** for project development | BC 10 | Watershed-wide | Ongoing | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | **SWCD** | ● | ● | ● | ● | ● | 2 | $579,000 |
| | | | | | | | | | | | | | | | | | | **Planning Region Total** | $3,246,000 |
| | | | | | | | | | | | | | | | | | | **BCWD Operations and Maintenance** *(e.g. channel and ditch debris clearing)* | $2,000,000 |
| | | | | | | | | | | | | | | | | | | **Capital Improvement Projects (CIP 13-19)** | Table 6-3 |

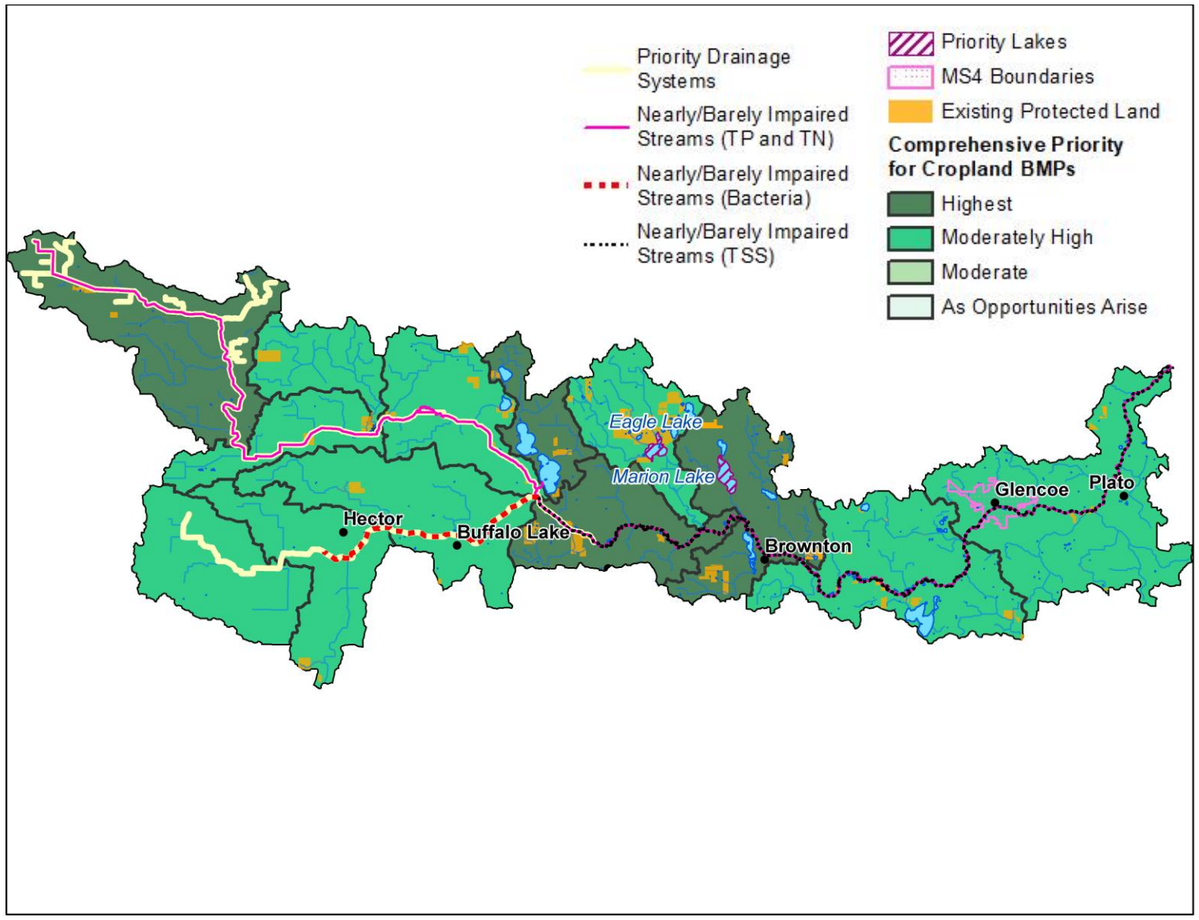
● = action directly addresses goal; ○ = action indirectly addresses goal; = Level 2 (Baseline + WBIF) Funding; = Level 3 (Partner and Other) Funding

*** The load reduction benefits shown are from the 3,497 acres of soil health practices included as part of the HSPF SAM implementation scenario (Table 4.1), reflecting what can be implemented with Baseline + WBIF Funding sources. Other funding sources are needed to reach the 8,000 acres implemented soil health milestone for this planning region.**

# Buffalo Creek Planning Region- Action Table Support

Buffalo Creek Planning Region matches the jurisdictional boundary of the BCWD. The planning region area is south of Upper South Fork Planning region starting south of Highway 7 just west of the town of Blomkest. The planning region continues south to Highway 212 having one of its most southern points at Schilling Lake near New Auburn. The plan boundary ends south of Lester Prairie when Buffalo Creek meets the South Fork Crow River.

Section 4 introduces priority resources for each measurable goal. The map below summarizes all priority resources within the Lower South Fork Planning Region. Also shown are the subwatersheds that should be the highest priority for cropland BMPs (structural conservation practices and soil health practices). Targeting actions to these locations will make the most progress towards plan measurable goals.





## Benefits Calculator

A HSPF-SAM scenario was developed to estimate the cost and water quality benefits for cropland practices in priority areas. A benefits calculator was created by summarizing the average size, cost, and water quality benefits provided by cropland practices in the Buffalo Creek Planning Region. This calculator (or HSPF Tableau) can be used during implementation to track progress toward plan goals.

| Practice Type | Treated Area (Acres) | Sediment (tons/yr) | Total Nitrogen (lbs/yr) | Total Phos. (lbs/yr) | Annualized Cost ($) |
|---|---|---|---|---|---|
| Soil Health Practices | 1 | 0.020 | 3.57 | 0.132 | $35.83 |
| Restored Wetlands | 11.5 | 0.327 | 85.8 | 2.68 | $357.89 |
| Grassed Waterways | 40 | 1.27 | 255 | 9.40 | $497.24 |
| WASCOBs | 7.7 | 0.263 | 60.7 | 2.32 | $392.40 |

# Watershed-Wide Action Table

Actions in **Table 5.6** are funded by the Education and Outreach, Assessments and Data Gaps, Local Controls implementation programs. They are implemented watershed-wide to promote consistency and sharing of services and are listed below in no order of priority.

*Table 5.6. Watershed-Wide Action Table*

| Actions | | | Targeting and Measuring | | Measurable Goals | | | | | | | | Responsibility | Timeline | | | | | Estimated Costs | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Action Description | ID | Program | Focus Resources | 10-Year Output | Drainage Partnerships and Drainage Management | Loss of Water Storage and Altered Hydrology | Nutrient Loading | Erosion and Sediment | Soil Health | Bacteria Loading | Urban Stormwater Runoff and Development Pressure | Wildlife Habitat and Perennial Ground Cover | Responsibility / Partners (Bold = Lead) | 2024-2025 | 2026-2027 | 2028-2029 | 2030-2031 | 2032-2033 | Funding Level | Estimated Total 10-Year Cost |
| Continue administration of local regulations including feedlot, shoreland management, SSTS, buffers, etc. (see Section 6, pages 89-92) | W1 | Regulation and Local Controls | Watershed-Wide | Ongoing | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | **SWCD, Counties, Drainage Authorities, BCWD** | ● | ● | ● | ● | ● | 1 | $1,740,000 |
| Continue and expand surface water monitoring efforts to understand water quality, trends, and impacts of conservation action (see Table 6.1) | W2 | Monitoring and Studies | Watershed-Wide | Ongoing | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | **SWCD, Counties,** BCWD | ● | ● | ● | ● | ● | 1 | $50,000 |
| Continue and expand watershed education and outreach programming in each jurisdictional area (see Section 6, page 81) | W3 | Education and Public Input | Watershed-Wide | Ongoing | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | **SWCD, Counties,** BCWD | ● | ● | ● | ● | ● | 1 | $230,000 |
| Conduct multi-purpose drainage management planning | W4 | Monitoring and Studies | Priority Drainage Systems | 10 plans | ○ | ○ | ○ | ○ | ○ | | | ○ | **SWCD, Counties, Drainage Authorities, BCWD** NRCS, BWSR, MDA, DNR | ● | ● | ● | ● | ● | 2 | $200,000 |
| Conduct an annual meeting with SWCDs, BCWD, and drainage inspectors to gain a deeper understanding of drainage system operation, conduct proactive maintenance rather than reactive, and identify opportunities for future conservation | W5 | Monitoring and Studies | Watershed-Wide | Annual meetings conducted | ○ | ○ | ○ | ○ | | | | | **Counties, BCWD, SWCD** | ● | ● | ● | ● | ● | 2 | $5,000 |
| Complete H&H modeling to understand impacts of altered hydrology and peak flows | W6 | Monitoring and Studies | Altered Hydrology Priority Subwatersheds | 2 analyses | ○ | ○ | | | | | | | **SWCD**, DNR, Cities, BCWD | | ● | | ● | | 2 | $100,000 |
| Complete hydroconditioned DEM and non-contributing analysis to better target conservation action | W7 | Monitoring and Studies | Watershed-Wide | 1 hydro-conditioned DEM | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | **SWCD**, DNR, BWSR, Counties | | ● | ● | | | 2 | $50,000 |
| Complete feasibility analyses for potential storage projects | W8 | Monitoring and Studies | Altered Hydrology Priority Subwatersheds | 3 feasibility studies completed | ○ | ○ | ○ | ○ | | | | | **SWCD**, DNR, BWSR, Counties, BCWD | | ● | | ● | ● | 2 | $225,000 |
| Utilize outputs from models or tools to identify opportunities for field-scale BMPs | W9 | Monitoring and Studies | Watershed-Wide | Model / tool complete | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | **SWCD,** BWSR, NRCS | | | ● | ● | ● | 3 | Partner Funding |

● = action directly addresses goal; ○ = action indirectly addresses goal; = Level 1 (Baseline) Funding; = Level 2 (Baseline + WBIF) Funding; = Level 3 (Partner and Other) Funding

| Actions | | | Targeting and Measuring | | Measurable Goals | | | | | | | | Responsibility | Timeline | | | | | Estimated Costs | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Action Description | ID | Program | Focus Resources | 10-Year Output | Drainage Partnerships and Drainage Management | Loss of Water Storage and Altered Hydrology | Nutrient Loading | Erosion and Sediment | Soil Health | Bacteria Loading | Urban Stormwater Runoff and Development Pressure | Wildlife Habitat and Perennial Ground Cover | Responsibility / Partners (Bold = Lead) | 2024-2025 | 2026-2027 | 2028-2029 | 2030-2031 | 2032-2033 | Funding Level | Estimated Total 10-Year Cost |
| Utilize tools/method to measure amount of erosion and to control wind erosion | W10 | Monitoring and Studies | Watershed-Wide | 1 assessment completed | ○ | | | ○ | | | | | **SWCD** | | ● | | ● | | 2 | $10,000 |
| Aggregate septic system data to better understand problem areas and where to best target septic upgrades | W11 | Monitoring and Studies | Watershed-Wide | Data aggregated and updated annually | | | ○ | | | ○ | | | **Counties**, MPCA | ● | ● | ● | ● | ● | 2 | $5,000 |
| Inventory and prioritize non-point sources of bacteria | W12 | Monitoring and Studies | Bacteria Priority Subwatersheds | Complete inventory and source assessments as determined by funding and partners | | | | | | ○ | | | **MPCA, MDH**, SWCD, Counties, Cities | | | | ● | ● | 3 | Partner Funding |
| Assist non-MS4 communities with stormwater management planning | W13 | Monitoring and Studies | Watershed-Wide | 2 plans / assessments completed | | ○ | ○ | ○ | | | ○ | | **Cities**, SWCD, BCWD, NRCS, BWSR | | | ● | ● | ● | 2 | $30,000 |
| Collaborate to support efforts towards completing TMDL and WRAPS reports | W14 | Monitoring and Studies | Watershed-Wide | Material provided as determined by funding and partners | | | ○ | ○ | ○ | | | | **MPCA,** SWCD, BCWD, Counties | ● | ● | ● | ● | ● | 1 | $5,000 |
| In addition to baseline outreach services, conduct education and outreach (e.g. field days, demonstration sites) geared to landowners about nutrient BMPs and soil health best management practices and impacts on profitability versus yield | W15 | Education and Public Input | Watershed-Wide | 5 field days | ○ | ○ | ○ | ○ | ○ | ○ | | | **SWCDs**, BWSR, NRCS, Extension | ● | ● | ● | ● | ● | 2 | $30,000 |
| Encourage planting cover crops on sugar beets and early harvest fields through financial incentives | W16 | Education and Public Input | Soil Health Priority Subwatersheds | 1 mailing per year | | | | | ○ | | | | **SWCD** | ● | ● | ● | ● | ● | 2 | $20,000 |
| Hold town hall for urban residents to increase resident awareness and understanding of urban stormwater and green stormwater infrastructure | W17 | Education and Public Input | Watershed-Wide | 1 workshop | | ○ | ○ | ○ | | | ○ | | **Cities,** SWCD, BCWD, Counties | | | | ● | | 2 | $10,000 |
| Build or expand existing partnerships and promote enrollment in perpetual land protection programs (CREP, RIM) | W18 | Education and Public Input | Habitat Priority Subwatersheds | 1 partner meeting per year, 1 enrollment per year | | ○ | ○ | ○ | ○ | | | ○ | **SWCD**, BWSR, NRCS, DNR | ● | ● | ● | ● | ● | 2 | $10,000 |
| | | | | | | | | | | | | | | | | | | | Education and Outreach | $300,000 |
| | | | | | | | | | | | | | | | | | | | Assessments and Data Gaps | $680,000 |
| | | | | | | | | | | | | | | | | | | | Regulations and Local Controls | $1,740,000 |

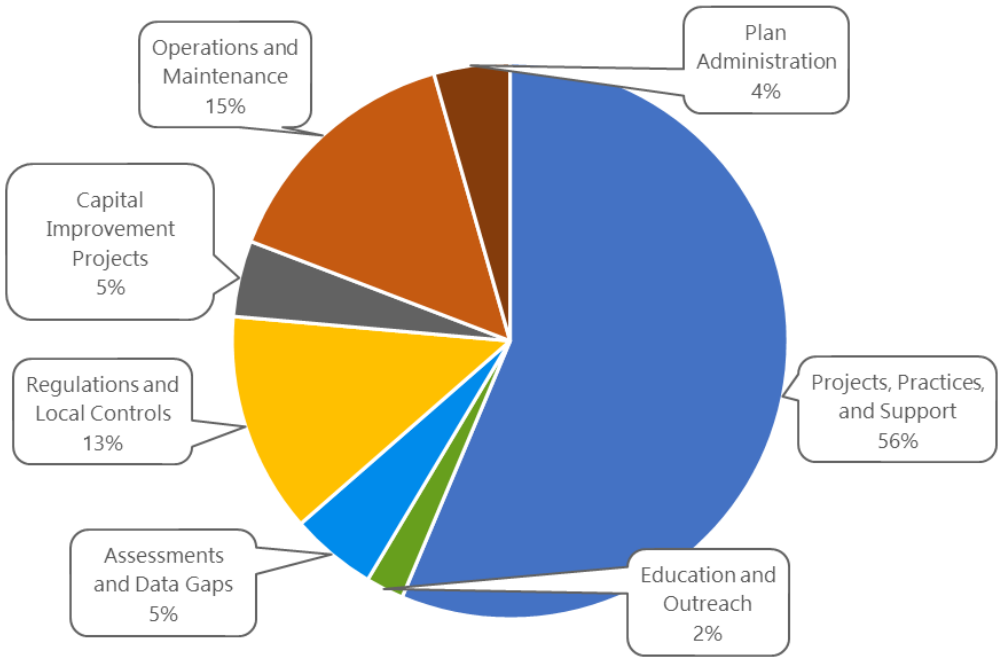
● = action directly addresses goal; ○ = action indirectly addresses goal; ■ = Level 1 (Baseline) Funding; ■ = Level 2 (Baseline + WBIF) Funding; ■ = Level 3 (Partner and Other) Funding

## Cost of Implementing the Plan

Below are the estimated costs for implementing actions in the plan (**Table 5.7**), not inclusive of actions funded by partnering entities or federal funds beyond EQIP. Costs are also included for plan administration and administrative costs and Operations and Maintenance costs within the BCWD. The program Regulations and Local Controls is funded through Level 1 funding, as WBIF funds will not go toward this program. This plan assumes baseline local and state fiscal support remains unchanged (see **Section 7**).

*Table 5.7: Estimated cost of implementing the plan*

| | Est. Annual Cost | Est. 10-Year Cost |
|---|---|---|
| **Implementation Programs** | | |
| Projects, Practices, and Support | $764,300 | $7,643,000 |
| Education and Outreach | $30,000 | $300,000 |
| Assessments and Data Gaps | $68,000 | $680,000 |
| Regulations and Local Controls | $174,000 | $1,740,000 |
| Capital Improvement Projects | $60,000 | $600,000 |
| **Additional Expenses** | | |
| Operations and Maintenance | $200,000 | $2,000,000 |
| Plan Administration | $60,000 | $600,000 |
| **Total** | **$1,356,300** | **$13,563,000** |



# Section 6.
# Implementation Programs

# Section 6. Plan Implementation Programs

This plan establishes five main implementation programs, summarized visually in **Figure 6.1** with some example action items that each program may fund. These programs fund the actions in **Section 5. Targeted Implementation Schedule** and are briefly described in the following pages.

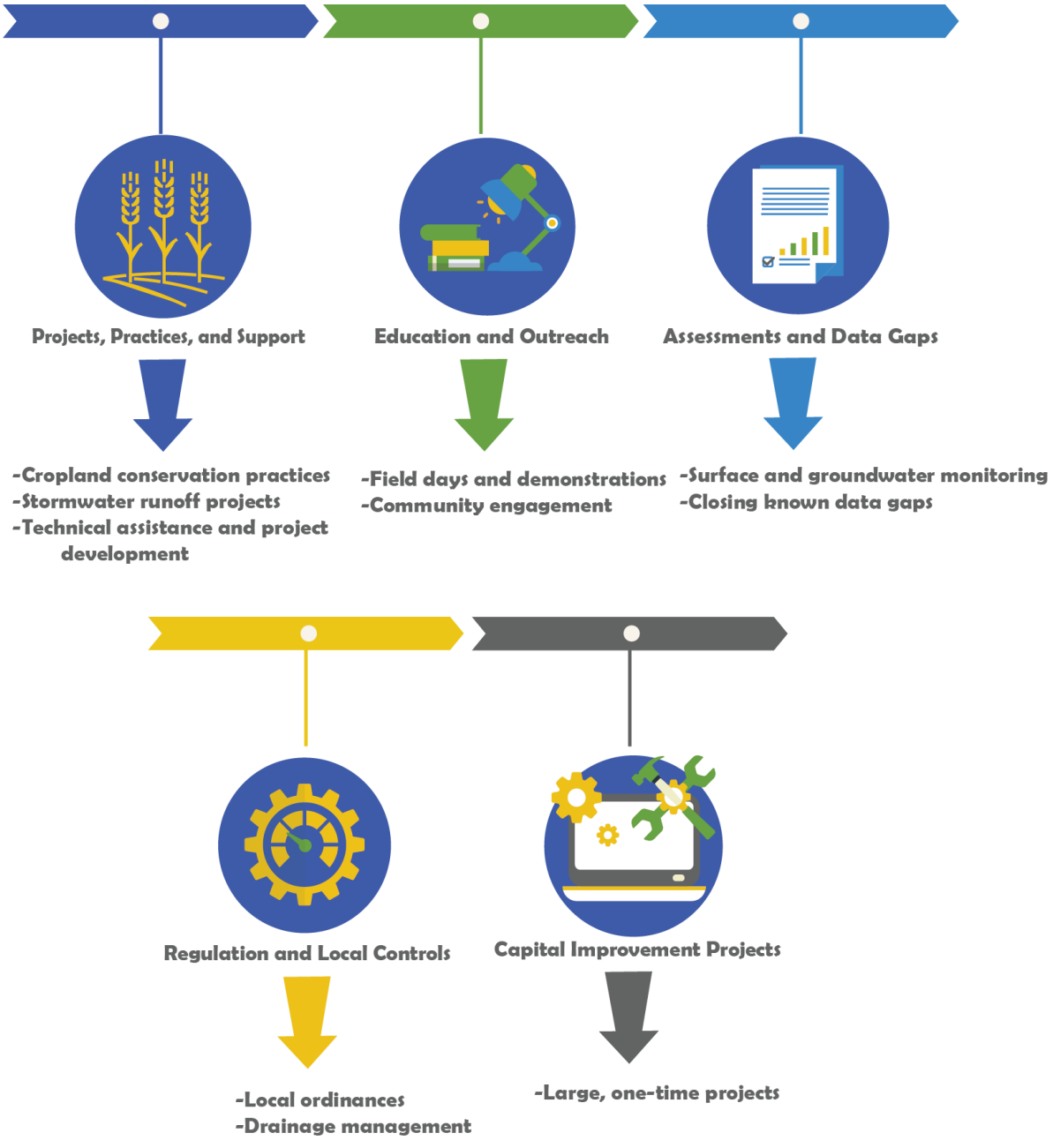



*Figure 6.1: Summary of South Fork Crow River Watershed implementation programs with example action items.*

## Projects, Practices, and Support

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

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

### Cost-Share and Incentives for Conservation Practices

Conservation practices can be structural (i.e., grassed waterways, grade stabilization structure) or nonstructural (i.e., nutrient management, conservation tillage). Local partners within the South Fork Crow River Watershed intend to incentivize implementation of these practices through cost-share and/or incentive programs. Cost-share programs financially assist landowner(s) with the cost of installing a practice that accrues natural resource benefits. Several cost-share programs are available at the local, state, and federal level that assist landowners in paying for conservation practices. Incentive programs exist to provide a financial payment for implementation of conservation projects and activities.

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

### Land Protection

Land protection programs serve to maintain existing acres of the watershed enrolled in temporary set-aside programs or land rental or obtain additional perpetual easements. This plan recognizes that there are many state, federal, and partner funded and other land protection programs of value in the South Fork Crow River Watershed.

Land protection, where landowners choose to enroll in a program to remove land from production and reserve it for conservation purposes, improves habitat, soil health, water storage, and water quality. One example of permanent land protection, Reinvest in Minnesota (RIM), compensates landowners for setting aside land in easements and planting native vegetation.

RIM conservation easements began in 1986, with the intention of restoring environmentally sensitive agricultural land. RIM easements help to restore wetlands, enhance riparian buffers, and provide habitat corridors.

RIM facts:

- The state has invested $200,000,000 in RIM
- MN has over 6,000 easements
- RIM land covers 250,000 acres

## Education and Outreach

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

This program builds on a foundation of engagement activities already occurring in the South Fork Crow River Watershed through individual partners. Example engagement activities include:

- Farmer-led councils
- Exhibiting at events such as county fairs
- Volunteer well monitoring program
- Field days
- Agricultural best management practice demonstrations
- Community involvement projects (stream clean-ups, rain garden installation, and maintenance)
- Master Water Stewards Program

This work is expected to continue during plan implementation, with additional actions implemented as summarized in **Section 5 – Targeted Implementation Schedule**.

## Assessments and Data Gaps

The Assessments 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 and impacts of conservation action.

Currently, a wide variety of monitoring is carried out by multiple state government organizations (**Table 6.1**). The existing data helped determine the current conditions for surface water, groundwater, and habitat in this plan and developed a starting point for measurable goals. These monitoring activities will continue during plan implementation, with little expansion under WBIF due to policies for use of the funds. However, local partners within the South Fork Crow River Watershed will continue to communicate future monitoring needs to agency partners that lead respective efforts, and support ongoing monitoring efforts.

*Table 6.1: Summary of ongoing water quality and quantity monitoring programs.*
*RS = Rivers and Streams, L = Lakes, W = Wetlands, and GW = Groundwater (Source: BWSR).*

| Parameters | MPCA | DNR | MDH | MDA |
|---|---|---|---|---|
| **Nutrients** | RS, L, W | RS, L | | RS, GW |
| **Suspended Solids** | RS, L, W | RS | | RS |
| **Productivity (Chlorophyll)** | RS, L | RS | | |
| **Pesticides** | | | | RS, L, W, GW |
| **Bacteria** | RS, L | | GW | |
| **Biology** | RS, L, W | RS, L | | |
| **Water Level/Flow** | RS, L | RS, L | | |
| **Algal Toxins** | L | | | |
| **Invasive Species** | | RS, L | | |
| **Fish Contaminants** | RS, L | L | RS, L | |
| **Chlorides** | RS, L, W | RS | RS, L, GW | |
| **Sulfates** | RS, L, W | RS, L | RS, L, GW | |

Three stream gaging stations serve as Watershed Pollutant Load Monitoring Network (WPLMN) sites that are benchmark monitoring sites for MPCA. Results from these networks and other ongoing tracking and monitoring programs can be used to document measurable water quality and quantity changes resulting from implementation activities (**Table 6.2**).

*Table 6.2: Using data to track progress toward resource improvement and plan goals.*

| Level | Description | Application |
|---|---|---|
| Tracking | The number of practices done or acres or practice will be tracked. | Outputs in Action Table. Projects will be tracked and reported in eLINK during implementation. |
| Estimating | Using lower resolution calculators and tools to give a sense of the collective impacts of projects. | HSPF SAM results |
| Modeling | Incorporating landscape factors and project information to predict future conditions. | HSPF SAM results |
| Measuring | Using field-collected information to assess the condition of the water. | Surface water monitoring completed by agency partners |

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

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

## Capital Improvement Projects

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

Proposed capital improvements are shown in **Table 6.3**. Members of the Policy Committee or the watershed group'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.

As highlighted throughout this plan, public drainage systems are prevalent throughout much of the plan area. Drainage authorities help coordinate implementing the action tables to make progress towards plan goals. Based on this engagement, drainage authorities could access implementation funds to adopt drainage actions in the action tables (**Section 5. Targeted Implementation**) during 103D and 103E processes and procedures when the opportunity arises within the planning area. 103B.335 (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, and natural and artificial watercourses. Operation and maintenance of natural watercourses, legal drainage systems, impoundments, and small dams will continue under the regular operations and maintenance plans of the entities that have jurisdiction over these systems.

*Table 6.3. Capital Improvement Projects in the South Fork Crow River Watershed. Where eligible, the planning partners intend to use approximately 10% of the WBIF (~$60,000/year) to support implementation of these projects. They are presented below in no order of priority.*

| Projects | | Measurable Goals | | | | | | | | Responsibility | Timeline | | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project | Project ID | Drainage Partnerships and Drainage Management | Loss of Water Storage and Altered Hydrology | Nutrient Loading | Erosion and Sediment | Soil Health | Bacteria Loading | Urban Stormwater Runoff and Development Pressure | Wildlife Habitat and Perennial Ground Cover | Lead Entity (Source in Bold) | Years | Status | Estimated Cost |
| **Montana St NW Drainage Improvements** Drainage improvements including storm sewer infrastructure and ponding | CIP 1 | ○ | ○ | ○ | ○ | | ○ | ● | | **City of Hutchinson** | 2029 | Concept only | $500,000 |
| **Regenerative Air Sweeper** Purchase of one regenerative air street sweeper to replace mechanical and vacuum sweepers | CIP 2 | | | ○ | ○ | | | ○ | | **City of Hutchinson** | 2027 | Budgeted | $275,000 |
| **Leaf Vacuum Replacements** Purchase two new leaf vacuums to replace existing. The vacuums are used for leaf collection each fall and reduce the release of nutrients into storm water | CIP 3 | | | ○ | | | | ○ | | **City of Hutchinson** | 2025 | Budgeted | $228,000 |
| **Big Kandiyohi Lake Hydrologic Analysis** Understand and restore altered hydrology within the Big Kandi subwatershed. | CIP 4 | ○ | ○ | ○ | ○ | | | | | **Kandiyohi SWCD** | 2024 | Not started | $75,000 |
| **South Fork- Emma Lakebed** Reestablish the drained lakebed of Emma Lake. | CIP 5 | ○ | ○ | ○ | ○ | | | | | **Kandiyohi SWCD** | 2026 | Not started | $10,000,000-$12,000,000 |
| **South Fork- Dog Lakebed** Reestablish the drained lakebed of Dog Lake. | CIP 6 | ○ | ○ | ○ | ○ | | | | | **Kandiyohi SWCD** | 2028 | Not started | $18,000,000-$22,000,000 |

● = action directly addresses goal; ○ = action indirectly addresses goal

| Projects | | Measurable Goals | | | | | | | | Responsibility | Timeline | | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project | Project ID | Drainage Partnerships and Drainage Management | Loss of Water Storage and Altered Hydrology | Nutrient Loading | Erosion and Sediment | Soil Health | Bacteria Loading | Urban Stormwater Runoff and Development Pressure | Wildlife Habitat and Perennial Ground Cover | Lead Entity (Source in Bold) | Years | Status | Estimated Cost |
| **Uptown Willmar Stormwater** Stormwater feasibility study to identify and prioritize water quality improvement BMPs. | CIP 7 | | ○ | ○ | ○ | | ○ | ○ | | **Kandiyohi SWCD** | 2024-2034 | Feasibility completed summer 2023 | $2,000,000 |
| **South Fork - JD2** Feasibility study and implementation of subsequent priority projects along JD2 | CIP 8 | ○ | ○ | ○ | ○ | | | | | **Kandiyohi SWCD,** Renville SWCD, Renville County, Kandiyohi County | Ongoing | Not started | TBD |
| **Big Kandiyohi Water Control Structure** Water control structure with carp barrier to alleviate carp problems | CIP 9 | | ● | ○ | ○ | | | | ○ | **Kandiyohi SWCD,** Kandiyohi County, Big Kandiyohi Lake Association | TBD | Not started | TBD |
| **Michigan St Regional Pond** Michigan St NE and Hilltop neighborhood regional pond and piping | CIP 10 | | ○ | ○ | ○ | | ○ | ● | | **City of Hutchinson** | 2025 | Pre-design | $500,000 |
| **Clifton Heights Drainage Improvements** Storm sewer improvements in Clifton Heights neighborhood necessary to alleviate localized flooding and convey water to Michigan St Regional Pond | CIP 11 | ○ | ○ | ○ | ○ | | ○ | ○ | | **City of Hutchinson** | 2026 | Pre-design | $300,000 |
| **Market St SW Drainage Improvements** Drainage improvements to Market St SW ditch system. Install new pipe conveyance and ponding to alleviate flooding in the area adjacent and North of the existing ditch | CIP 12 | ○ | ○ | ○ | ○ | | ○ | ● | | **City of Hutchinson** | 2028 | Initial modeling complete | $800,000 |

● = action directly addresses goal; ○ = action indirectly addresses goal

| Projects | | Measurable Goals | | | | | | | | Responsibility | Timeline | | Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project | Project ID | Drainage Partnerships and Drainage Management | Loss of Water Storage and Altered Hydrology | Nutrient Loading | Erosion and Sediment | Soil Health | Bacteria Loading | Urban Stormwater Runoff and Development Pressure | Wildlife Habitat and Perennial Ground Cover | Lead Entity (Source in Bold) | Years | Status | Estimated Cost |
| **Water storage (McLeod Parcel) with BCWD** Reduce peak flows and improve water quality (reductions in sediment and nutrients) | CIP 13 | ○ | ● | ● | ● | | | | ○ | **BCWD, McLeod, Renville counties** | 2-5 | R&D | $500,000 |
| **Water storage (Renville Parcels) with BCWD** Reduce peak flows and improve water quality (reductions in sediment and nutrients) | CIP 14 | ○ | ● | ● | ● | | | | ○ | **BCWD, McLeod, Renville counties** | 2-5 | R&D | $500,000 |
| **City of Brownton** Stream bank Stabilization | CIP 15 | ○ | ○ | ● | ● | | | | ○ | **BCWD**, City of Brownton | 5-7 | R&D | $500,000 |
| **JD15 Enhanced Drainage Management Plan** Enhanced drainage management plan | CIP 16 | ○ | | | | | | | | **BCWD** | 2-4 | TBD | $75,000 |
| **JD15 Enhanced Drainage Management Plan** Implementation of projects that arise from the completed JD15 Enhanced Drainage Management Plan | CIP 17 | ● | ● | ● | ● | | | | ○ | **BCWD** | 3-6 | TBD | $1,000,000 |
| **Glencoe East and Central Basic Water Management Project** | CIP 18 | ● | ● | ● | ● | | | | | **BCWD, City of Glencoe** | 2-5 | R&D | $250,000 |
| **Central Ditch Water Retention Project** Increase water storage and improve water quality in area located north of Glencoe. | CIP 19 | ○ | ● | ● | ● | | | | ○ | **BCWD,** City of Glencoe | TBD | R&D | $500,000 |

● = action directly addresses goal; ○ = action indirectly addresses goal

## Water Management Districts

Watershed districts can establish water management districts (WMD) to fund projects under current law (103D). To use this funding method, MS 103D.729 requires that the WMD includes an identification of the area, the amount to be charged, the methods used to determine the charges, and the length of time the WMD is expected to remain in force.

As of the date this plan was written, there are two water management districts enacted within the BCWD. See **Appendix G** for active water management districts. Because the existing authority of the watershed district is maintained, water management districts need only be approved by the BCWD to initiate a plan amendment, pursuant to the amendment process outlined under Minn. Stat. §§ 103D.729 and 103D.411. The BCWD shall notify the Policy Committee of the addition and the Policy Committee shall update plan documents as the state statute is followed.

# Regulation and Local Controls

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

The BCWD has rule making authority per MS 103D.341 and permitting authority per 103D.345; it retains its authority and ability to amend its rules, bylaws, inventories, permits, policies, procedures, and restrictions. Current rules were last revised in 2018 and could periodically change during this plan. The BCWD Rules are available by reference in **Appendix H.** To review current rules, please see the BCWD website (https://bcwatershed.org).

Counties, SWCDs, and the BCWD will meet when applicable to discuss ordinances and notify each other of proposed ordinance amendments. These entities will also review similarities and differences in local regulatory administration to identify local successes and identify changes needed to make progress towards goals outlined in this plan. A full comparison of how local ordinances are used to administer statutory responsibilities is provided in **Appendix I.**

## Shoreland Management

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

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

## Floodplain Management

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

- Regulations: Minnesota Statutes 103F, 104, 394

## Feedlots

Feedlot rules, regulations, and programs were established under MN Rules 7020 to govern the collection, transportation, storage, processing, and land application of animal manure and other livestock operation wastes. The program is administered through the MPCA, but local counties may accept delegation of this authority up until a feedlot becomes a confined animal feedlot operation at which point the MPCA becomes the regulatory agent. Kandiyohi, Meeker, Carver, Renville, and McLeod have been delegated feedlot regulations from the MPCA. MPCA implements feedlot rules in Hennepin County. Wright works with the MPCA to administer this regulation.

- Regulations: Minnesota Rules, Chapter 7020

## Buffers

The Riparian Protection and Water Quality Practices statute (Minnesota Statute 103F.48, commonly referred to as the Buffer Law) requires a 50-foot average continuous buffer of perennial vegetation with a 30-foot minimum width along all public waters and a 16.5-foot minimum width continuous buffer of perennial vegetation along all public drainage systems. While SWCDs are responsible for determining compliance with the Buffer Law (and assisting landowners), the enforcement of the law is the responsibility of the counties. All counties have buffer ordinances.

In most situations, landowners have the option of working with their SWCD or watershed district to determine if other alternative practices aimed at protecting water quality can be used in lieu of (or in combination with) a buffer.

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

## Aquatic Invasive Species

Aquatic invasive species can cause ecological and economic damage to water resources. The DNR has regulatory authority over aquatic plants and animals. Permits are required by the public for transporting and treating invasive species. All counties within the South Fork Crow River Watershed have either an AIS Department or program or there is a management plan developed for the county.

## Wetland Conservation Act

The Minnesota Legislature passed the Wetland Conservation Act (WCA) of 1991 to achieve no net loss of, increase the quantity, quality, and biological diversity of, and avoid direct or indirect impacts to Minnesota's wetlands. LGUs are responsible for administering, regulating, and educating landowners on WCA. The SWCD serves as the WCA LGU for Wright, Renville, McLeod, and Meeker counties. The County serves as the WCA LGU for Kandiyohi, the CCWMO is the LGU for Carver County, and individual cities serve as the WCA LGU for Hennepin County.

- Regulations: Minnesota Rules, Chapter 8420

## Comprehensive or Land Use Plans

Counties and municipalities within the South Fork Crow River Watershed are responsible for land use planning, which is administered through local zoning ordinances. Comprehensive or land use plans have been adopted by the LGUs within the watershed. From a regulatory perspective, land and resource management may overlap with the local government entities listed below. Therefore, meeting goals and strategies of local planning may also involve other governmental or non-governmental entities. LGUs within the South Fork Crow River Watershed that have comprehensive and/or land use plans are provided in **Table 6.4**. Please note this is not intended to be all-inclusive. In addition to the LGUs summarized in **Table 6.4**, each of the six cities in Hennepin County within the South Fork Crow River Watershed have their own comprehensive city plans. Each can be found on their city websites. Hennepin County also has a 2040 comprehensive plan which was adopted in 2019.

*Table 6.4: Local Comprehensive or Land Use Management Plans in the South Fork Crow River Watershed.*

| Local Governmental Unit | Comprehensive or Land Use Management Plan |
|---|---|
| Kandiyohi County | Kandiyohi County Comprehensive Land Use Plan (Adopted November 2001) |
| Meeker County | Meeker County Comprehensive Plan (Updated October 2008) |
| Wright County | Three Comprehensive Plans broken out by regions seeing different growth needs:<br>Northwest Quadrant (Adopted September 2009)<br>Northeast Quadrant (Adopted July 2007)<br>US HWY 12 Corridor (Adopted February 2011) |
| Renville County | Renville County Comprehensive Plan (Adopted June 2002, and updated August 2010) |
| McLeod County | McLeod County Comprehensive Plan (Adopted 1995) |
| Carver County | Carver County Comprehensive Plan (Adopted 2020)<br>*Cities within Carver County also have their own comprehensive plans, which can be found on their websites.* |
| City of Winsted | A Community Plan for Growth & Development: 2000-2020 (Adopted June 2000) |

## Drainage Management

Drainage authority over public ditches is granted to counties and watershed districts through MN Statute Chapter 103E to establish, construct, and in perpetuity maintain public drainage systems. County boards and the Buffalo Creek Watershed District serve as the drainage authorities for public drainage systems in the South Fork Crow River Watershed.

- Regulations: Minnesota Statute 103E

## Wellhead Protection

The MDH administers the state wellhead protection rule that sets standards for safe drinking water. All counties participating in this plan have identified wellhead protection as part of their planning process in County Water Plans or as part of programs within the county of watershed district.

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

## Subsurface Sewage Treatment Systems

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

- Regulations: Minnesota Rules, Chapters 7080 through 7083

## Solid Waste Management

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

- Regulations: Minnesota Statutes 115A, 400

## Hazard Management

Hazard mitigation may be defined as any action taken to eliminate or reduce the future risk to human life and property from natural- and human-caused hazards. Extreme weather events and infrastructure resilience play a part in hazard management. These requirements direct the State to administer cost-sharing. Hazard mitigation local emergency management departments are deployed in each of the contributing counties.

- Regulations: Minnesota Statute 12

# Section 7.
# Plan Administration and Coordination

# Section 7. Plan Administration and Coordination

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

- The counties of Kandiyohi, McLeod, Meeker, Renville, and Wright
- The Carver, Kandiyohi, McLeod, Meeker, Renville, and Wright SWCDs,
- The City of Winsted, and
- The Buffalo Creek Watershed District.

Individual local government units, governed separately by their respective boards, are individually responsible for their roles implementing this plan.

## Decision-Making and Staffing

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

At least two committees serve this plan during implementation:

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

**Table 7.1** outlines the probable roles and functions of these committees during implementation. Expectations are that the roles of each committee will shift and change focus during implementation. Fiscal and administrative duties may be assigned to a member LGU through a Policy Committee decision as outlined in the formal agreement. The Steering Committee will annually determine local responsibilities for annual work planning and will approve the fiscal agent.

*Table 7.1: Roles and functions of committees during implementation.*

| Committee Name | Primary Implementation Roles |
|---|---|
| **Policy Committee** | ▪ Review and confirm work plan<br>▪ Review and confirm priority issue recommendations<br>▪ Review and confirm plan amendments<br>▪ Review and confirm assessments as needed<br>▪ Confirm Fiscal and Administrative Agent(s) |
| **Steering Committee** | ▪ Review the status of available implementation funds from plan participants<br>▪ Review opportunities for collaborative grants<br>▪ Review work plan and adjust as needed<br>▪ Review reports submitted to BWSR as required<br>▪ Biennial review and confirmation of priority issues<br>▪ Prepare plan amendments<br>▪ Implement the action tables |
| **Local Fiscal and Administrative Agent** | ▪ Convene committee meetings<br>▪ Prepare and submit grant applications/funding requests<br>▪ Prepare work plan<br>▪ Contracting<br>▪ Compile results and filing annual assessment and grant reporting |

# Collaboration

## Collaboration Between Planning Partners

Although collaboration informally and formally is encouraged, mandatory participation is not required by this plan. Local governmental units who adopt this plan can choose whether to approve and participate in future formal implementation agreements. The benefits of successful collaboration between planning partners include consistent implementation of actions watershed-wide, increased likelihood of funding, and resource efficiencies gained, ultimately resulting in more water quality benefits. The watershed group will pursue opportunities for collaboration with fellow planning partners to gain administrative and program efficiencies, pursue collaborative grants, and provide technical assistance. This includes, but is not limited to, exploring opportunities for a shared engineering position, soil health technician, or nutrient management technician to assist with implementing this plan. The watershed group will also review similarities and differences in local regulatory administration to identify successes, as well as future changes needed to reach goals outlined in this plan.

## Collaboration with Other Units of Government

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

## Collaboration with Others

Plan partners expect to continue and build on existing collaboration with others, including non-governmental organizations and organizations like lake associations 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 Level 1: Baseline Funding

This section describes how the plan will be funded. As introduced in **Section 5-Targeted Implementation Schedule**, this plan includes three funding levels. The estimated annual cost for each funding level is summarized in **Table 7.2.**

*Table 7.2: Estimated annual and 10-year cost for funding levels within the SFCRW CWMP*

| Funding Level | Name | Estimated Annual Average | Estimated 10-Year Plan Total |
|---|---|---|---|
| 1 | Current Baseline Funding | $730,000 | $7,300,000 |
| 2 | Baseline + WBIF | $1,356,300 | $13,563,000 |
| 3 | Partner and Other Funding | Dependent on Partner and Grant Funding Availability | |

This plan budget builds upon an assumption that current, baseline sources of funding which comprise Funding Level 1 will remain consistent throughout implementation of this plan. The estimated annual costs for Funding Level 1 are based on current expenditures by each partner in the plan area. This estimation was derived from available land and water resource funds for each of the members of the Partnership and accounting for the percentage of each county's land area in the watershed. Funding Level 1 funding includes local, state, and federal funding, as explained in the following sections and summarized in **Table 7.3**.

## Local Funding

An estimated 45% of Funding Level 1 comes from local funding. Local funding is defined as money derived from either the local property tax base or in-kind services of any personnel funded from the local tax base. Examples include local levy, county allocations, and local match dollars (see Local Funding Authorities in **Appendix J**).

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

## State Funding

An estimated 39% of Funding Level 1 comes from state funding. State funding includes all funds derived from the State tax base. Examples of state funding include conservation delivery, state cost share, Natural Resources Block Grants, Clean Water Funds (CWF), and SWCD AID.

A fiscal agent on behalf of the watershed group will apply as an entity for collaborative grants, which may be competitive or non-competitive. The assumption is that future base support for implementation will be provided to the South Fork Crow River Watershed as non-competitive WBIF grants. Where the purpose of an implementation program aligns with the objectives of various state, local, non-profit, or private programs, these dollars will be used to help fund the implementation programs described by this plan.


## Federal Funding

An estimated 16% of Funding Level 1 comes from federal funding. Federal funding includes all funds derived from the Federal tax base. For estimating current, baseline funds, the local partners only assumed sources of funding from EQIP and did not include programs like CRP and CSP due to annual fluctuations.

Partnerships with federal agencies are an important resource for ensuring implementation success. An opportunity may exist to leverage state dollars through some form of federal program. Where the purpose of an implementation program aligns with the objectives of various federal agencies, federal dollars will be used to help fund the implementation programs described by this plan. For example, the NRCS will likely provide support for conservation practices, while the FSA may provide land-retirement program funds such as CRP.

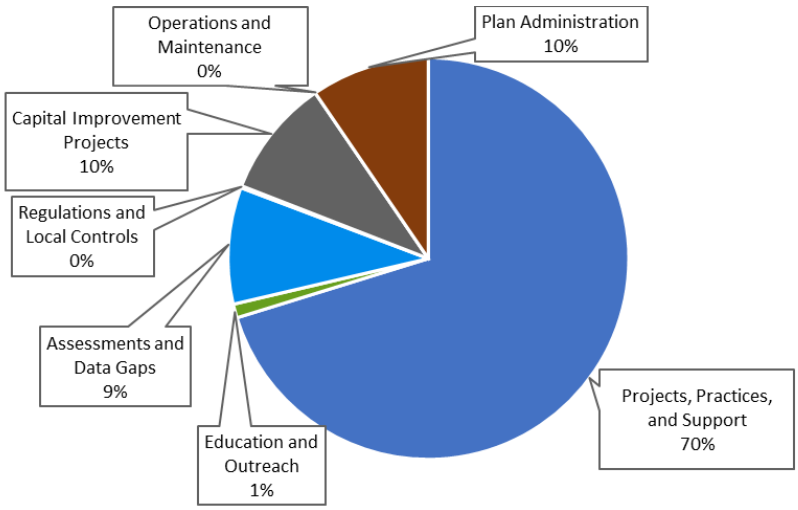
*Table 7.3: Sources of funding for Funding Level 1 (Current Baseline Funding)*

| | Local | | State | | Federal | | All Sources | |
|---|---|---|---|---|---|---|---|---|
| | Annual | Total | Annual | Total | Annual | Total | Annual | Total |
| Projects, Practices, and Support | $58,000 | $580,000 | $146,000 | $1,460,000 | $119,000 | $1,190,000 | $323,000 | $3,230,000 |
| Assessments and Data Gaps | - | - | $9,000 | $90,000 | - | - | $9,000 | $90,000 |
| Education and Outreach | $5,000 | $50,000 | $18,000 | $180,000 | - | - | $23,000 | $230,000 |
| Regulations and Local Controls | $65,000 | $650,000 | $110,000 | $1,100,000 | - | - | $175,000 | $1,750,000 |
| Capital Improvements | - | - | - | - | - | - | - | - |
| Operations and Maintenance | $200,000 | $2,000,000 | - | - | - | - | $200,000 | $2,000,000 |
| **Total** | **$328,000** | **$3,280,000** | **$283,000** | **$2,830,000** | **$119,000** | **$1,190,000** | **$730,000** | **$7,300,000** |

## Funding Level 2: WBIF Funding

**Figure 7.1** shows how the assumed WBIF allocation was used to inform the actions within the South Fork Crow River CWMP. Actions within the Projects, Practices, and Support implementation program received the most WBIF funding (70%) as estimated by this plan, with 10% of funding going toward Capital Improvement Projects. This plan recognizes the overlap between these two critical programs, where structural and non-structural projects are commonly implemented to support larger Capital Improvement Projects.

*Figure 7.1: Estimated WBIF allocation for informing actions within the SFCRW CWMP. Actual allocation will be determined during biennial work planning.*




## Other Funding Sources

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

Plan participants may pursue grant opportunities collaboratively or individually to fund the action table's implementation. Some example grant opportunities are highlighted on the following page, and are intended to demonstrate how plan goals and actions can connect to these opportunities. Additional state and federal grant opportunities that planning partners may pursue are also summarized in **Table 7.4** (on the following pages) showing additional potential sources of revenue for implementation.

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

### *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.

- Directly connects to 'Loss of Water Storage and Altered Hydrology' goal and actions

### *Climate Resiliency Grants*

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

- Directly connects to 'Urban Stormwater Runoff' goal and actions

### *Soil Health Grants*

As of 2022, BWSR has up to $3.5 million in Clean Water Funds to support soil health practices for SWCDs, watershed districts, municipalities, and counties.

- Directly connects to 'Erosion and Sedimentation', 'Soil Health', and 'Nutrient Loading' goals and actions

### *RIM 1W1P*

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.

- Directly connects to 'Wildlife Habitat and Perennial Ground Cover' goal and actions

*Table 7.4: Implementation programs and related funding sources for the SFCR Watershed. Note: List is not all-inclusive.*

| Program / Grant | | Primary Assistance Type | Projects, Practices and Support | Capital Improvement Projects | Assessments and Data Gaps | Education and Outreach |
|---|---|---|---|---|---|---|
| **Federal Programs / Grants** | | | | | | |
| **NRCS** | Conservation Innovation Grant (CIG) | Financial | · | | | |
| | Conservation Stewardship Program (CSP) | Financial | · | | | |
| | Environmental Quality Incentives Program (EQIP) | Financial | · | | | |
| | Agricultural Conservation Easement Program (ACEP) | Easement | · | | | |
| **FSA** | Conservation Reserve Program (CRP) | Financial | · | | | |
| | Farmable Wetlands Program (FWP) | Financial | · | | | |
| | Grasslands Reserve Program (GRP) | Financial | · | | | |
| | Wetland Reserve Program (WRP) | Easement | · | · | | |
| **FSA/ USDA/ NRWA** | Source Water Protection Program (SWPP) | Technical | | | | · |
| **USFWS** | Partners for Fish and Wildlife Program | Financial/ Technical | · | | | |
| **FEMA** | Hazard Mitigation Grant Program (HMGP) | Financial | · | · | | |
| | Pre-Disaster Mitigation (PDM) | Financial | · | · | | |
| | Flood Mitigation Assistance (FMA) | Financial | · | · | | |
| | Risk Mapping, Assessment, and Planning | Technical | · | · | | |
| **EPA** | Water Pollution Control Program Grants (Section 106) | Financial | | | | · |
| | State Revolving Fund (SRF) | Loan | · | | | |
| | Drinking Water State Revolving Fund (DWSRF) | Loan | · | | | |
| | Section 319 Grant Program | Financial | · | | · | · |
| **NACD** | Technical Assistance Grants | Financial/ Technical | · | · | · | · |
| **State Programs / Grants** | | | | | | |
| **LSOHF** | Lessard-Sams Outdoor Heritage Fund (LSOHF) | Financial | · | · | · | · |
| **DNR** | Aquatic Invasive Species Control Grant Program | Financial/ Technical | · | | · | · |
| | Conservation Partners Legacy Grant Program | Financial | · | · | | |

| Program / Grant | | Primary Assistance Type | Projects, Practices and Support | Capital Improvement Projects | Assessments and Data Gaps | Education and Outreach |
|---|---|---|---|---|---|---|
| | Pheasant Habitat Improvement Program (PHIP) | Financial | · | | | |
| | Flood Hazard Mitigation Grant Assistance | Financial | · | · | · | · |
| | Forest Stewardship Program | Technical | · | | | · |
| | Groundwater Atlas Program | Technical | | | · | |
| | Aquatic Management Area Program | Acquisitions | · | | | |
| | Wetland Tax Exemption Program | Financial | · | | | |
| **BWSR** | Clean Water Fund Grants | Financial | · | · | | · |
| | Erosion Control and Water Management Program | Financial | · | | | |
| | SWCD Local Capacity Funding | Financial | · | | · | · |
| | Natural Resources Block Grant (NRBG) | Financial | · | | | · |
| | Reinvest in Minnesota (RIM) | Financial | · | · | | · |
| **MPCA** | Surface Water Assessment Grants (SWAG) | Financial | | | · | · |
| | Clean Water Partnership | Loan | · | | | |
| **MDH** | Source Water Protection Grant Program | Financial | · | · | · | · |
| | Accelerated Implementation Grant | Financial | | | · | |
| | Public and Private Well Sealing Grant Program | Financial | · | | · | |
| **MDA** | Agriculture BMP Loan Program | Financial | · | | | |
| | Nutrient Management Initiative (NMI) | Technical/ Financial | · | | · | · |
| | Minnesota Agricultural Water Quality Certification Program | Financial | · | | | · |
| **Other Funding Sources** | | | | | | |
| Pheasants Forever | | Financial/ Technical | · | · | · | · |
| Trout Unlimited | | Financial/ Technical | · | · | · | · |
| The Nature Conservancy | | Financial | · | · | · | · |
| Minnesota Land Trust | | Financial | · | · | · | · |

# Work Planning

## Local Work Plan

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

## State Funding Request

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

# Assessment, Evaluation, and Reporting

## Assessments

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

## Mid-Point Evaluation

This plan has a 10-year life cycle beginning in 2024. To meet statutory requirements, this plan will be updated and/or revised every 10 years. Over the course of the plan life cycle, progress towards reaching goals and completing the implementation schedule may vary. In addition, new issues may emerge and/or new monitoring data, models, or research may become available. As such, in 2027-28 and at every midpoint of a plan life cycle, an evaluation will be done to determine if the current course of action is sufficient to reach the goals of the plan or if a change is necessary. Feedback received during the annual progress update will be documented and incorporated into mid-point evaluations.

## Reporting

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

# Plan Amendments

The SFCRW CWMP is effective through 2034. Activities described in this plan are voluntary and are meant to allow flexibility in implementation. An amendment will not be required for addition or substitution of any of the actions and projects if those changes will still produce outcomes that are consistent with achieving plan goals. This provision for flexibility includes changes to the activities except for capital improvement projects.

While this plan is in effect, it is likely that new data giving a better understanding of watershed issues and solutions will be generated. Administrative authorities, state

policies, and resource concerns may also change. New information, significant changes to the projects, programs, or funding in the plan, or the potential impact of emerging concerns and issues may require activities to be added to the plan.

While plan amendments may be proposed by any agency, person, or local government, the plan amendment process shall be initiated only by the Policy Committee and will proceed according to the procedure described in BWSR policy. However, the existing authorities of each LGU is still maintained. The establishment of water management districts, by the BCWD, need not follow the amendment procedure outlined herein if the BCWD utilizes the procedure outlined under Minn. Stat. § 103D.729. Previously enacted and newly enacted water management districts are/will be featured in **Appendix G**.