# EXECUTIVE SUMMARY

The Lower Minnesota River Watershed District (District) Watershed Management Plan (Plan) describes how the District will address water resources management over the next 10 years as required by M.S. 103B and 103D and Minnesota Rules (MN Rules) 8410. The purpose of this Plan is to protect, preserve, and manage the surface water resources (Minnesota River, lakes, streams, and wetlands) and groundwater within the District.

In 1960, the District was organized by petition from Hennepin, Ramsey, Dakota, Scott, and Carver counties in response to the Minnesota Watershed Act of 1955.-The District's first Watershed Management Plan was prepared, approved, and adopted in 1961.

The Metropolitan Surface Water Management Program (M.S. 103B) and Watershed Act requires the District to review and update its Plan every ten years.. This Plan will be effective 2018–2027. In addition to complying with the aforementioned laws, this Plan meets the requirements of MN Rules 8410, 8420, and 7050. The Plan includes management standards and procedures for addressing surface water, wetland, and groundwater issues, as well as navigation issues along the Minnesota River.

## E1. PLAN ORGANIZATION

This Plan documents the Lower Minnesota River Watershed and its management, and therefore, much of the information is technical. Background information regarding scientific terms and processes is provided where practical. An acronym list is also provided. Readers are encouraged to consult area professionals or professional references for more information.

The Plan contains the following sections as required by MN Rule 8410:

**Executive Summary:** Provides an overview of the plan.

**Introduction:** Summarizes State statutes, plan requirements, the organization and its history, and 2010 - present District accomplishments.

**Section 1.0: Land and Water Resource Inventory:** Presents current and historic background and inventory information regarding the watershed's physical, hydrological, biological, and human environment.

**Section 2.0: Issues Identification/Assessment of Problems:** Provides an overview of the issues identified during the planning process, assesses the adequacy of existing controls, and identifies potential management gaps.

**Section 3.0**: **Goals, Policies, and Management Strategies:** Presents the management framework (goals, policies, and strategies) adopted by the District Board of Managers (Managers) to address the priority issues and management gaps. Standards needed, reinforced by the District's Statement of Need and Reasonableness Report, to address these gaps were compiled in Appendix K.

**Section 4.0: Implementation Program:** Describes the Plan's implementation elements and impact on local governments and residents. This section provides an implementation program table and preliminary annual budgets.

**Section 5.0: Impact on Local Units of Government:** Expresses the potential financial impact that the Plan changes will have on local government units (LGU).

**Section 6.0: Amendment and Reporting:** Describes the procedures for amending the Plan and addressing the annual reporting requirement.

## E2. WATERSHED ISSUES

Watershed issues are problems or concerns identified by the Managers, by the Technical Advisory Committee (TAC), and the Citizen Advisory Committee (CAC). These issues need attention and, in some cases, resolution. The TAC and CAC held workshops and partnership work sessions to develop a list of watershed issues. Information generated at those sessions was presented to the Board and is addressed here. The following issues were identified and discussed in detail in Section 2.0 - Issues and Problems Assessments.

1. Unclear role of the District
2. Outside influences
3. Water quality
4. Flooding and floodplain management
5. Erosion and sediment control
6. Groundwater
7. Commercial and recreational navigation
8. Public education and outreach
9. Potential problems

## E3. WATERSHED MANAGEMENT FRAMEWORK

Section 3.0 presents the Plan's management framework regarding goals, policies, strategies, and standards. This framework is based on the issues identified by the TAC, and Manager, given their priority and the adequacy of existing controls. The District's mission and purpose, presented below, were also taken into consideration when developing the framework.

## E3.1. MISSION

The District's mission is to manage and protect the Minnesota River, lakes, streams, wetlands, and groundwater, and to assist and facilitate in providing river navigation by:

- Promoting open communication, partnering with citizens, community organizations, and local, state, and federal agencies.
- Improving and protecting the quality of the Minnesota River and all water bodies in the watershed.

- Minimizing the negative effects of floods and droughts on the Minnesota River and all water bodies in the watershed.
- Collecting and distributing information regarding surface water and groundwater in the watershed; establishing priorities; and developing local plans to improve water resources in the watershed.
- Monitoring and understanding the effects of municipal groundwater appropriations and drought on groundwater levels.
- Working with LGUs to enforce the Wetland Conservation Act.
- Assisting and facilitating the efforts of state and federal agencies to maintain the navigation channel.
- Educating stakeholders about the impact they have on the water resources in the watershed and motivating them to change behaviors that have a negative impact.

## E3.2. WATERSHED PURPOSE

The Metropolitan Surface Water Management Act states that the District's purposes and other water management programs (quoted from M.S.103B.201) are as follows:

- Protect, preserve, and use natural surface and groundwater storage and retention systems.
- Minimize public capital expenditures needed to correct flooding and water quality problems.
- Identify and plan for means to effectively protect and improve surface and groundwater quality.
- Establish more uniform local policies and official controls for surface and groundwater management.
- Prevent soil erosion into surface water systems.
- Promote groundwater recharge.
- Protect and enhance fish and wildlife habitat and water recreational facilities.
- Secure the other benefits associated with proper surface and groundwater management.

Unlike other water management programs in the state subject to M.S.103B, the District has an additional purpose, as noted in the District's mission, which is to assist and facilitate the efforts of state and federal agencies to maintain the Minnesota River 9-Foot navigation channel.

## E3.3. GOALS

The following goals and associated strategies were established by the District to address issues identified. These goals are not presented in any order and do not reflect rank within the District.

**Table E-1: Lower Minnesota River Watershed District Summary of Issues, Goals, and Strategies**

| Issues | Goals | Strategies |
|---|---|---|
| Issue 1: Unclear Role of the District | Goal 1: Organizational Management - To manage the different | Strategy 1.1.1: Work cooperatively with local, state, and federal government; other agencies; and non-government organizations on issues affecting the District's resources. |

| Issues | Goals | Strategies |
|---|---|---|
| Issue 2: Outside Influences | and changing roles of the District | Strategy 1.2.1: Provide public information services<br>Strategy 1.3.1: Perform periodic assessments and program reviews<br>Strategy 1.3.2: Use short and long-term metrics to measure progress |
| Issue 3: Water Quality | Goal 2: Surface Water Management - To protect, preserve, and restore surface water quality | Strategy 1.3.1: Provide strategic resource evaluation and management<br>Strategy 2.1.1: Lower Minnesota River Watershed District – High value resources area overlay district<br>Strategy 2.2.1: Watershed management standards<br>Strategy 2.2.2: Promote disconnected stormwater management and low impact development<br>Strategy 2.2.3: Cost share incentive program<br>Strategy 2.2.4: Water quality restoration programs<br>Strategy 2.3.1: Modify and continue the monitoring program<br>Strategy 2.3.2: Complete detailed data assessments<br>Strategy 2.3.4: Coordinate with other agencies and water quality programs<br>Strategy 4.4.3: Steep Slopes Standard<br>Strategy 7.2.1: Develop a Vegetation Management Standard/Plan |
| | Goal 3: Groundwater Management - To protect and promote groundwater quantity and quality | Strategy 1.3.1: Provide strategic resource evaluation and management<br>Strategy 2.3.1: Modify and continue the monitoring program<br>Strategy 3.1.1: Support wellhead protection efforts<br>Strategy 3.2.1: Infiltration standard<br>Strategy 3.2.2: Promote conservation and wise use of groundwater<br>Strategy 3.3.1: Groundwater monitoring<br>Strategy 3.3.2: Regional modeling |
| | Goal 4: Unique Natural Resources Management - To protect and manage unique resources | Strategy 1.3.1: Provide strategic resource evaluation and management<br>Strategy 2.3.1: Modify and continue the monitoring program<br>Strategy 4.2.1: Data acquisition and management<br>Strategy 4.2.2: Provide technical assistance<br>Strategy 4.2.3: Provide educational opportunities<br>Strategy 4.3.1: Develop a mechanism for identifying and acquiring high value conservation easements<br>Strategy 4.4.1: Encourage wildlife connectivity projects which achieve multiple goals, such as water quality improvements and fen and steep slopes protection<br>Strategy 7.2.1: Develop a Vegetation Management Standard/Plan |
| | Goal 5: Wetland Management - To protect and preserve wetlands | Strategy 1.3.1: Provide strategic resource evaluation and management<br>Strategy 4.3.1: Develop a mechanism for identifying and acquiring high value conservation easements |

| Issues | Goals | Strategies |
|---|---|---|
| | | Strategy 5.1.1: Delegate Wetland Conservation Act (WCA) to LGU's<br>Strategy 5.1.2: Require LGU's to conduct wetland inventories and complete wetland management plans<br>Strategy 5.1.3: Review WCA notices as received<br>Strategy 5.1.4: Wetland Standard<br>Strategy 7.2.1: Develop a Vegetation Management Standard/Plan |
| Issue 4: Flooding and Floodplain Management | Goal 2: Surface Water Management - To protect, preserve, and restore surface water quality | Strategy 2.1.1: Watershed Management Standards |
| | Goal 6: Floodplain and Flood Management - To manage floodplains and mitigate flooding | Strategy 6.1.1: Floodplain and drainage alteration standard<br>Strategy 6.1.2: Infiltration and peak flow standards<br>Strategy 6.1.3: Manage localized flooding |
| Issue 5: Erosion and Sediment Control | Goal 6: Floodplain and Flood Management - To manage floodplains and mitigate flooding | Strategy 6.2.1: Adopt infiltration and peak flow standards |
| | Goal 7: Erosion and Sediment Control - To manage erosion and control sediment discharge | Strategy 2.2.1: Watershed management standards<br>Strategy 4.4.3: Steep Slopes Standard<br>Strategy 7.1.1: Support the NPDES general permit<br>Strategy 7.1.2: Erosion and Sediment Control Standard<br>Strategy 7.2.1: Develop a Vegetation Management Standard/Plan<br>Strategy 7.3.1: Provide streambank and mainstem erosion assessment<br>Strategy 7.3.2: Continue gully erosion repair<br>Strategy 7.4.1: Promote and encourage shoreland protection<br>Strategy 7.4.2: Shoreline and streambank standard |
| Issue 6: Groundwater | Goal 3: Groundwater Management - To protect and promote groundwater quantity and quality | Strategy 1.3.1: Provide strategic resource evaluation and management<br>Strategy 2.3.1: Modify and continue the monitoring program<br>Strategy 3.1.1: Support wellhead protection efforts<br>Strategy 3.2.1: Stormwater infiltration criteria<br>Strategy 3.2.2: Promote conservation and wise use of groundwater |
| | | Strategy 3.3.1: Groundwater monitoring<br>Strategy 3.3.2: Regional modeling |
| Issue 7: Commercial and Recreational Navigation | Goal 8: Commercial and Recreational Navigation - To maintain and improve the Lower Minnesota River's navigation and recreational use | Strategy 8.1.1: Promote safety education<br>Strategy 8.2.1: Manage existing Cargill East River (MN – 14.2 RMP) dredge material site<br>Strategy 8.2.2: Beneficial use plan for dredge materials<br>Strategy 8.3.1: Develop a funding structure to ensure proper maintenance and improvement along the river |

| Issues | Goals | Strategies |
|---|---|---|
| Issue 8: Public Education and Outreach | Goal 9: Public Education and Outreach - To increase public participation and awareness of the Minnesota River and its unique natural resources | Strategy 1.2.1: Provide public information services<br>Strategy 4.2.3: Provide educational opportunities<br>Strategy 8.1.1: Promote safety education<br>Strategy 9.1.1: Maintain Citizen Advisory Committee (CAC)<br>Strategy 9.1.2: Develop an outreach program<br>Strategy 9.1.3: Engage volunteers<br>Strategy 9.1.4: Provide opportunity for public input<br>Strategy 9.2.1: Produce scientific studies and work products<br>Strategy 9.2.2: Promote a variety of education programs<br>Strategy 9.2.3: Use multiple outlets to distribute information |

## E3.4. PLAN IMPLEMENTATION

The three major elements of the implementation program described in Section 4 are highlighted below:

**Administrative/Managerial Efforts:** This includes staffing, day-to-day operations, and funding for audits, reporting, training, and contingency.

**Studies and Programs:** The Plan includes the following studies and programs.

- Cost Share Incentive and Water Quality Restoration Program
- Dredge Management
- Eagle Creek Bank Restoration at Town & Country RV Park Feasibility Study
- Education and Outreach Program
- Fen Private Land Acquisition Study
- Fen Stewardship Program
- Gully Inventory and Assessment Program
- Implementation of the Sustainable Lake Management Plans
- Monitoring Program and Detailed Data Assessments
- Project and Permit Reviews
- Seminary Fen Restoration Site C-2 Study
- Spring Creek Site 3 Design Feasibility Study
- Trout Streams Geomorphic Assessments
- Watershed Management Plan
- Water Resources Restoration Fund

**Capital Improvements Projects:** The Plan includes the following list of capital projects in Table E-2. These projects will be funded in whole or in-part by the District. Additional projects can be added during the annual meeting before the budgeting process starts.

**Table E-2: Lower Minnesota River Watershed District – Capital Improvement Projects***

| Project Name and Descriptions | Project Partner | Estimated Cost | Estimated Timeline |
|---|---|---|---|
| **Minnesota River Study Area 3 – Bluff Stabilization Project.** To address riverbank erosion, we will analyze the design and construction of the Minnesota River at Study Area 3 project in Eden Prairie. A study was completed in October 2008 for the City of Eden Prairie in cooperation with the district. Our project will expand the 2008 study by collecting and analyzing additional data that will extend to the final design, permitting, and construction. | City of Eden Prairie | $200,000 | 2022 - 2025 |

| Project Name and Descriptions | Project Partner | Estimated Cost | Estimated Timeline |
|---|---|---|---|
| **Minnesota River Floodplain Modeling.** The Lower Minnesota River Floodplain Model Feasibility Study determined that the hydrologic and hydraulic modeling commonly used to regulate development in the floodplain and evaluate Rule C permits are out of date. The hydrologic statistical analysis, based on the USGS streamgage at Jordan, has not been updated in 20 years, missed four of the top ten recorded floods on the Minnesota River and must be re-evaluated to determine the flood flows within the LMRWD reach. Following the hydrologic update, the hydraulic model of the Lower Minnesota River should be comprehensively updated to incorporate recent developments in the floodplain, the revised flow data, and better data were available to evaluate the flood risk within the Lower Minnesota River floodplain. The initial capital investment of updating the hydrology and hydraulic model will be followed by annual updates to maintain the hydraulic model and incorporate the most recent data from municipalities and LMRWD permits. | Army Corps of Engineers | $75,000 | 2023 |
| **Spring Creek Vegetation Management Project.** The creek will be prone to further erosion without the added protection of adequate vegetation. Vegetation management (e.g., removal of invasives, native plantings, etc.), particularly in the floodplain and channel banks, will be explored with the property owners. | Carver SWCD | $40,000 | 2023 |
| **Stormwater BMP at Parking Lot near Lewis Street West and Second Avenue West Project.** This stormwater best management practice project will be coordinated with the parking lot rehabilitation near Lewis Street West and Second Avenue West near Pablo's restaurant in Shakopee. The project focuses on providing water quality treatment to untreated stormwater runoff that is routed directly to the Minnesota River. | City of Shakopee | $750,000 (District's contribution $100,000) | 2023 - 2024 |
| **Seminary Fen Restoration Site B.** A partially drained 17-acre wetland from Falls Curve Road to Old Highway 12, which is predominantly growing reed canary grass, will be restored. The restoration involves disabling the drainage system and restoring vegetation. | City of Chaska and MNDNR | $75,000 | 2024 - 2025 |
| **Shakopee Riverbank Stabilization Project.** This project will include stabilizing sections of the Minnesota River riverbank that are eroding along the City of Shakopee's parallel trunk sanitary sewer line that flows to L-16 and other storm sewer outlets. | City of Shakopee | $5,280,000 (District's contribution $100,000) | 2024 – 2025 |

| Project Name and Descriptions | Project Partner | Estimated Cost | Estimated Timeline |
|---|---|---|---|
| **Spring Creek Site 1 and 2 Stabilization Project.** After the vegetation management project is complete, Site 1 and Site 2 along Spring Creek will be stabilized using the Carver SWCD's designs (increased riprap size and standard gradation recommended). | Carver SWCD | $270,000 | 2024 - 2026 |
| **Eagle Creek Bank Restoration at Town & Country RV Park Project.** The District will develop a design and stabilize the hillslope failure near the campground on Main Branch of Eagle Creek to reduce sedimentation to the creek. | MNDNR, City of Savage | $160,000 | 2025 - 2026 |
| **Seminary Fen Ravines Site C-2 and C-3 Design and Construction.** The final design and construction will be done for the Ravine Sites C-2 and C-3, which are discharging sediment into the Seminary Fen Wetland Complex. | City of Chaska and DNR | $170,000 | 2025 - 2027 |
| **Dredge Site Culvert Replacement.** A culvert near the site entrance needs to be removed and replaced. The District will work with the Army Corps of Engineers to perform the culvert replacement. | Army Corps of Engineers | $51,500 | 2026 |
| **Vernon Avenue Upgrade at the Dredge Site.** Approximately two-thirds of a mile of Vernon Avenue (from Hwy 13 to the site entrance) requires upgrading to allow for increased truck traffic. The District will coordinate with the Army Corps of Engineers to upgrade Vernon Avenue. | Army Corps of Engineers | $62,500 | 2026 |
| **Eagle Creek Brown Trout Habitat Improvements Project.** Background research indicates the East Branch historically has been able to support a more reliable brown trout population despite having some of the worst habitat conditions in the watershed. The District will complete habitat improvements in the East Branch to support brown trout populations. | MNDNR, USFWS | $70,000 | 2027 |

### E3.4.1. LOCAL WATER PLANS

The required content of local water plans, as stipulated by MN 8410, is addressed in Section 5. In general, local water plans shall be adopted by LGUs within 18-months of this Plan's approval and shall include:

- Surface Water, Groundwater, Wetlands, Floodplain and Flood Management, Unique Natural Resources, and Erosion and Sediment Control Goals and Policies
- Standards as presented in Appendix K
- Water Conservation Act (WCA) Responsibilities

## E3.5. MEASURABLE OUTCOMES

The Plan's success will be measured by successful implementation of policies and strategies to meet the nine identified goals mentioned above. Other success determinations include generated annual review trends and assessment of the program's short and long-term metrics. The short and long-term metrics are provided below in Table E-3.

**Table E-3: Lower Minnesota River Watershed District Short-term and Long-term Metrics**

| Goal | Short-term Metric | Long-term Metric |
|---|---|---|
| Goal 1: Organizational Management | • Completion of scheduled activities<br>• Annual LGU Audits<br>• Amount of dollars leveraged for projects from other agencies and property owners | • Formation of a Minnesota River Basin Commission<br>• Legislative funding support |
| Goal 2: Surface Water Management | • Number and types of projects completed as part of the Cost Share Incentive Program and Water Quality Restoration Programs<br>• Number of targeted studies and projects completed | • Positive trends in water quality parameters identified for monitoring efforts |
| Goal 3: Groundwater Management | • Number of targeted studies and projects completed | • Positive trends in water quality parameters identified for monitoring efforts |
| Goal 4: Unique Natural Resources Management | • Number of targeted studies and projects completed<br>• Development and completion of the Fen Stewardship<br>• Development of groundwater model for fen management | • Number and acreage of unique natural resources protected, restored, or enhanced<br>• Acquisition of high valued easements<br>• Sustained protection of the fens and trout waters |
| Goal 5: Wetland Management | • Completion of scheduled activities | • Number and acreage of wetlands protected, restored, or enhanced |

| Goal | Short-term Metric | Long-term Metric |
|---|---|---|
| Goal 6: Floodplain and Flood Management | • Completion of scheduled activities | • Number of structures damaged and value of flood damages<br>• Preservation of floodplain resources |
| Goal 7: Erosion and Sediment Control | • Completion of scheduled activities<br>• Reduction in streambank and ravine bank and slope failures | • Positive trends in water quality<br>• Protection and preservation of Minnesota River Bluff |
| Goal 8: Commercial and Recreational Navigation | • Completed of scheduled activities<br>• Number of targeted studies and projects completed | • Secure regular congressional and state legislative funding for the 9-Foot channel |
| Goal 9: Public Education and Outreach | • Number and types of sponsored events<br>• Number of participants at events<br>• Number of articles, press releases, and pamphlets developed and printed<br>• Number of volunteers | • Same as short-term metrics |