
1. Introduction

1.1 District Overview

The mission of the Sand Hill River Watershed District (SHRWD) is to serve the residents of the District by wisely and judiciously managing water resources in a manner which sustains and enhances the social, economic and natural resources of the District.

The Sand Hill River Watershed District (SHRWD), located in northwest Minnesota, comprises an area of 495 square miles. The Sand Hill River is relatively unbranched as it traverses the district. One notable exception is Kittleson Creek. Kittleson Creek is located in the north-central part of the district and joins the Sand Hill River between Fertile and Beltrami. These watercourses consist of a intermingling of natural streams and public and private drainage systems. Most of the land traversed by the Sand Hill River is characterized by low relief and is in agricultural production. The Sand Hill River flows generally to the west from Sand Hill Lake south of Fosston towards Winger, Fertile, Beltrami and Nielsville, Minnesota to the confluence with the Red River of the North near Climax, Minnesota.

There are many small lakes within the east-central portion of the SHRWD between Fertile and Winger. Most of these lakes tend to be closed basins or have poorly developed outlets. Union and Sara Lakes are the largest and most heavily developed in the District.

The SHRWD is comprised of portions of Polk, Mahnomen and Norman Counties (**Table 1.1**). Municipalities within the SHRWD include: Fosston, Winger, Fertile, Beltrami, Nielsville and Climax (**Figure 1.1**). The SHRWD office is located in Fertile and is responsible for resource management within the District boundary.

The Board of Managers (**Table 1.1**), responsible for guiding the direction of the SHRWD is appointed by the County Commissioners. Five Managers are appointed by the Polk County Board of Commissioners from within the District's legal boundary. Citizens who reside within the District in Norman and Mahnomen Counties may also be appointed as Managers by the Polk County Board of Commissioners.

Table 1.1. Composition of the Sand Hill River Watershed Distr. Board of Managers.

Name	Position	County
Harold Vig	Chairman	Polk
Roger Hanson	Vice Chairman	Polk
Stuart Christian	Treasurer	Polk
Scott Bolstad	Secretary	Polk
Robert Brekke, Jr.	Manager	Polk

Table 1.2. Counties Comprising the Sand Hill River Watershed District.

County	Square Miles (Acreage)	Percent Of District Area
Polk	437 (279,680)	88.3
Norman	25 (16,000)	5.0
Mahnomen	33 (21,120)	6.7

1.2 District History

The Sand Hill River Watershed District (hereafter referred to as the "District") was formed on May 21, 1975, from the Sand Hill River Drainage and Conservancy District. The Sand Hill River Drainage and Conservancy District was established by Order of the District Court dated May 18, 1949, in accordance with Chapter 111, Minnesota Laws of 1949. The Conservancy District encompassed approximately 484 sq. mi. located primarily in Polk County, with smaller areas in Norman County and Mahnomen County. The present District boundary is largely changed from the boundary of the Sand Hill River Drainage and Conservancy District (**Figure 1.1**). As of the August 25, 2011 boundary change, the SHRWD now encompasses approximately 495 sq. mi. located in Polk, Norman and Mahnomen Counties. The distribution of SHRWD area within these counties is shown in Table 1.2.

The State of Minnesota led water management efforts within the area comprising the District from the late 1800s through the early 1940s. The State's efforts focused primarily on providing flood control and drainage for agriculture. The State constructed the Sand Hill River State Ditch (State Ditch No. 6) and the Sand Hill River State Ditch Extension (State Ditch No. 7) between 1894 and 1898 to provide a defined channel through the

Beltrami Marsh, approximately three miles west of Beltrami. The State completed a contract for construction of a "new" State Ditch No. 6 in 1917. The Commissioner of the Department of Drainage and Waters (now the Department of Natural Resources) asked the District Court to: 1) establish a new State Ditch along the route of the Sand Hill River Ditch and Sand Hill River Ditch Extension; 2) appoint appraisers to determine benefits and assess damages; and 3) establish (i.e., construct) the new State Ditch No. 6.

State Ditch No. 6 continued as the focus for State water management initiatives during the early 1940s. The Minnesota State Department of Conservation, Division of Waters, evaluated conditions within the Sand Hill River basin and suggested a plan for improvement. The plan consisted of reconstructing the Sand Hill River State Ditch and constructing continuous dikes along the ditch. The State's unpublished report recommended limited channel enlargements, which were accomplished by local interests in 1948, using funds appropriated by the 1947 Minnesota Legislature.

The federal government, under the auspices of the U.S. Army Corps of Engineers ("Corps"), assumed a lead role for water management within the Sand Hill River basin during the late 1940s. Flooding and a lack of drainage for agricultural land has remained a substantive problem. The Corps began investigating methods to reduce flooding and provide improved drainage. However, the implementation of any civil works by the Corps of Engineers required local cooperation and commitments.

The Corps completed "*Flood Control Definite Project Report on Sand Hill River, MN*" in September 1950. The design report described a project for flood control and major drainage on the Sand Hill River as part of the comprehensive plan for the Red River of the North Drainage Basin, authorized by the Flood Control Acts of June 1948 and May 1950. The proposed project consisted of "improving" the main river channel and ditch of the Sand Hill River between miles 12.6 and 34.4, and the construction of a new ditch approximately one mile in length to divert Kittleson Creek into the main channel at mile 31.1 (**Figure 1.1**).

The Sand Hill River Drainage and Conservancy District was established by Order of the District Court of Polk County, on May 18, 1949, in accordance with Chapter 111, Minnesota Laws of 1949. Meeting the local requirements for construction of the proposed Corps project became the primary impetus for formation of the Sand Hill River Drainage and Conservancy District. Responsibilities assumed by the Sand Hill River Drainage and Conservancy District related to completion of the Corps project included:

- Providing all lands, easements, rights-of-way and spoil disposal areas necessary for project construction and maintenance, without cost to the federal government;
- Holding and saving the federal government free from damages due to the construction and subsequent maintenance of the flood control works;
- Maintaining the channels and appurtenant structures upon project completion; and
- Making all needed changes to utilities, highways and bridges, including approaches.

The Corps gave notice to proceed and construction began during July 1955. Project construction was completed during May 1958 and the project formally transferred to the Sand Hill River Drainage and Conservancy District on July 3, 1958. Subsequent activities of the Sand Hill River Drainage and Conservancy District were primarily related to maintenance of the Corps project.

The Sand Hill River Drainage and Conservancy District assumed watershed district responsibilities during the summer of 1974 and the District was formed the following spring. The District Court, Ninth Judicial District, entered an Order decreeing that the Sand Hill River Drainage and Conservancy District shall exercise all of the rights and authorities contained in Sections 112.34 to 112.86 of Minnesota Statutes, known as the Minnesota Watershed Act, on August 29, 1974. The governing body of the Sand Hill River Drainage and Conservancy District petitioned the Minnesota Water Resources Board for a change in name, location of business and appointed managers on May 21, 1975. The District's Board of Managers adopted an Overall Plan as authorized by the Minnesota Watershed Act, Chapter 112 of Minnesota Statutes, on December 21, 1976. Subsequent hearings and approvals of the plan were completed by August 29, 1977.

Local government has assumed a greater role in water management during the last twenty years. The Corps completed a report titled "*Sand Hill River Subbasin, Red River of the North Reconnaissance Report*" in 1980, but no additional projects have been completed by state or federal government since completion of the Corps project in the late 1950s. However, the SHRWD, in cooperation with the Minnesota Department of Natural Resources (DNR), has completed a master plan for the removal of fish barriers along the main stem of the Sand Hill River and the Sand Hill Ditch. To date, two of six planned fish passage structures have been constructed. The U.S. Army Corps of Engineers is

currently investigating a federal project to complete the remaining four fish passage projects, as called for in the fish barrier removal master plan.

The District has initiated and completed approximately 30 investigations or projects since formation, some of which are described within **Appendix F**. These investigations and projects have largely been completed using local funds. Until recently, flood control and drainage were the primary focus of the District's efforts. District projects now vary considerably, and include bank stabilization, flood water retention, drainage, culvert replacements, water quality monitoring, wetland restorations, natural channel restoration, fish passage, natural resource management, and education.

The organizational structure of the Board of Managers remains unchanged since inception. The Polk County Board of Commissioners appoints the District's Board of Managers. Each Manager must be a voting resident within the District. With the exception of SWCDs, Managers are prohibited from being a public official of the county, state or federal government. Each Manager serves a three-year term, which is renewable by approval of the County Board of Commissioners.

The District, along with seven other watershed districts, is a member of the Red River Watershed Management Board ("RRWMB"). The RRWMB was formed by joint powers in 1976 as the Lower Red River Watershed Management Board. The RRWMB provides funding assistance to member districts. Funding for the RRWMB is provided by an ad valorem tax levy provided for by Chapter 162, as amended, of the 1976 Minnesota Session Law.

Only a minor adjustment to the south boundary has occurred since inception of the District. Future boundary adjustments may be needed to reflect the effect of roadway alterations, local drainage activities, and additional topographic information. The area included within the District is currently about 440 square miles located in Polk, Mahnomen and Norman Counties. The SHRWD has recently completed a study of its boundaries with the Red Lake Watershed District and the Wild Rice Watershed District. A petition was filed with BWSR to approve the new boundaries in July 2011, with final approval expected in the fall of 2011. This approval was received from BWSR on August 25, 2011. The new boundaries encompass an area of 495 square miles in Polk, Mahnomen and Norman Counties.

1.3 Purpose of the Watershed Management Plan

The SHRWD is required to prepare a Watershed Management Plan (WMP) per Minnesota Statute 103D (<http://www.revisor.leg.state.mn.us/>). The WMP is an important tool for identifying problems and issues, goals, and long and short-term strategies to address these issues and attain the goals. The WMP also inventories resources, assesses resource quality, and establishes regulatory controls, programs, or infrastructure improvements needed to manage the resources within the watershed. The WMP provides guidance for the SHRWD to manage the water and natural resources within the watershed boundary.

The first WMP for the District was accepted and approved by the State of Minnesota in 1976. The latest plan revision was completed in 1998. Land use and issues change over time. Minnesota Statute 103D, Section 405 establishes the requirement that the WMP must be updated and revised every 10 years. This WMP has been compiled to meet the statute requirements. The WMP also provides an opportunity to evaluate the success of activities identified within the previous plan and provide guidance for future activities and projects to address the SHRWD's changing needs.

1.4 District Role in the Red River Watershed Management Board

The Minnesota Legislature created the Red River Watershed Management Board (RRWMB) in 1976 to establish an organization with a basin-wide perspective concerning flooding. The RRWMB provided a process of funding projects through an ad valorem tax basin-wide (Minnesota side of Red River Basin), where a portion of the tax (50%) is sent to the RRWMB for funding projects throughout the RRWMB member watershed districts. The remaining portion (50%) is retained by each member watershed district for use specifically on projects within the district. The activities of the RRWMB have historically centered on flood control. Previous efforts in dealing with the flooding problem within the Red River Basin consisted of single projects within a localized area, planned with primary regard to local benefits. The RRWMB actively promotes a basin-wide perspective for water management.

1.5 Plan Relationship to the Flood Damage Mediation Agreement and the Red River Watershed Management Board

The SHRWD Board of Managers decided early during the WMP planning process to develop a Plan consistent with the myriad policy, legal and planning requirements established for Watershed Districts within the Red River of the North Basin. During the 1990s there were frequent disagreements between Watershed Districts and resource management agencies over the most effective and environmentally preferable methods to reduce flood damages. After the U.S. Army Corps of Engineers and Minnesota Department of Natural Resources (MDNR) completed a joint Environmental Impact Statement in 1996 on the cumulative effects of flood control projects under the purview of the RRWMB, the controversy reached its peak. Consequently, in May 1997, the Minnesota Legislature authorized funding for a “mediation” process to resolve the disputes regarding the environmental effects of flood control projects, the preferred methods to reduce flood damages and a process to develop mutually agreeable solutions.

In December 1998, an agreement to reduce flood damage and improve natural resources in the Minnesota portion of the Red River Basin was reached by representatives of Watershed Districts, state and federal agencies, environmental organizations, and private landowner representatives. The agreement forged by this group, known as the Flood Damage Reduction Work Group, provided for a new collaborative approach to planning and implementing both flood damage reduction and natural resource enhancement projects. A copy of the agreement is shown in **Appendix G**. Key elements of the agreement are clearly identified goals for both flood reduction and natural resources; comprehensive watershed planning; early consultation and collaboration among all stakeholders; and a cooperative approach to permitting projects. Many of the current planning requirements were established by the Flood Damage Reduction Mediation Agreement in 1998 (see <http://www.rrwmb.org/files/FDRW/FDRAGMT.pdf>).

The SHRWD also decided early during the WMP planning process to develop a Plan consistent with the project development requirements established by the RRWMB (<http://www.rrwmb.org/html/info.cfm?ID=5>). Developing a plan consistent with these planning requirements maintains consistency among the Watershed Districts within the Red River Basin.

This WMP has therefore, been developed to be consistent with the responsibilities of the SHRWD in accordance with:

- Watershed Law (i.e., MS 103D);
- Drainage Law (i.e., MS 103E);
- The Red River Basin Flood Damage Reduction Workgroup Agreement (December 9, 1998) and subsequent guidance information some of which includes:
 - Technical and Scientific Advisory Papers;
 - Project Compatibility and Readiness Evaluation; and
 - Project Implementation Process and Procedures.
- Red River Watershed Management Board Funding Requirements contained within Application Procedures for Funding Flood Damage Reduction Projects and Related Programs (March 16, 2004);
- State Environmental Review (Minnesota Environmental Policy Act);
- Federal Environmental Review (National Environmental Policy Act);
- Federal Laws (e.g., cultural resources, Threatened and Endangered species, water quality standards);
- State Laws (e.g., work in protected waters); and
- Local approvals (e.g., zoning, consistency with land use plans).

The process used by the SHRWD to identify, develop and select projects and programs consistent with these requirements is described in detail within **Section 6** of the WMP.

1.6 Plan Structure and Function

The WMP for the SHRWD is organized according to the required contents described in the Watershed Management Plan Guidelines published by the Minnesota Board of Water and Soil Resources per Minnesota Statute 103D.405. In addition, the plan conforms to the guidelines set forth in the Red River Basin Flood Damage Reduction Work Group Agreement (December 1998).

The overall SHRWD geographical area has also been divided into four planning regions (**Figure 1.2**). These planning regions have been defined and established to reflect unique resource problems and issues common to each region. It must be kept in mind that there are also resource problems which are common to the entire District. With this in mind, the structure of this WMP has been sub-divided on a planning region basis. Details pertaining to each planning region are contained in **Appendices A through D to the WMP**. Much of this detailed information from the planning region discussions has been incorporated

into the main body of the WMP. In this way, the main body of the WMP can address District-wide resource issues in a holistic fashion. The WMP organizational framework will act as a springboard where the various issues related to each specific planning region can be presented, and the goals and policies that are relevant to those issues can be discussed in a focused way. The SHRWD is a complex entity which varies in topography, economic base, resource availability and political / social differences. For these reasons, typical problems and concerns have a local focus, with regional interests having a different but valid perspective. This background leads one to the conclusion that the District's issues must be addressed from both a local (Planning Region) and a regional (SHRWD and RRWMB) framework.

Unlike previous plans, great effort has been made in this plan to quantify the goals of the SHRWD for both water quantity and water quality, as well as natural resource enhancement. These goals are broken down by planning region. In some cases the quantitative goals are yet to be established by ongoing studies that will not necessarily be completed by the closure of the plan revision process. Placeholders for this information will be left in the WMP with the quantitative goals being adopted as they are developed in the future.

A new concept of designated regional assessment locations (RALs) is utilized in this WMP document (see **Section 5** for more details on the RAL concept). The RALs identified by the SHRWD provide the backbone of the water quantity, water quality, and biological monitoring plans for the District. A minimum of one RAL is located within each planning region. Some planning regions have multiple RALs to help in providing more detailed information data. The intention of the RALs are to provide an analysis point to document trends in water quality and quantity, and natural resource enhancements, as well as to document overall effects that result from the combination of activities of the District and others within the various sub-watersheds and planning regions of the SHRWD.

1.7 Previous Plan Success

The degree or amount of success toward accomplishing the goals of the previous 1998 WMP can be subjectively evaluated. The previous WMP identified several general goals. **Table 1.3** presents a self-assessment of the progress toward accomplishing these goals. The amount of progress is generally ranked as low, moderate or high. Progress on a specific goal is a function of economics, practicality, political (local and regional), and environmental factors. Some goals require projects needing financial and regulatory support from outside agencies. A low amount of progress generally indicates a low priority

from the perspective of an exterior stakeholder, local stakeholders, or the SHRWD relative to implementation. A moderate amount of progress generally indicates that a local, state or federal agency is principally responsible for leading the efforts to achieve the goal. A high amount of progress is generally indicated by the actual construction of projects or the implementation of specific programs, with support of local and regional agencies.

The goals are for the most part broad and generally progress has been made toward those goals which are a high priority for the SHRWD. Items, such as drainage administration and cooperation in support of erosion reduction, have been performed. Other items, such as erosion, flooding, and degradation of biotic habitat, are recurring issues inherent for the area of the SHRWD. A particular area of significant progress is in the cooperative efforts on the part of the SHRWD and the DNR in the removal of fish passage barriers within the District. This is an example of issues of regional interest which require external financial and regulatory support. Concrete evidence of plan success can be based upon actual projects that were completed in the effort to meet these goals.

1.8 Review of Existing Rules and Permit System

The rules and permit system of the SHRWD have been in effect since May 2, 1979. The rules of the SHRWD, as adopted and subsequently amended, are the guiding force behind the District's permit system. All landowners, public entities, and governmental units that anticipate implementing projects which affect the water resources of the SHRWD, are required to apply for and receive a permit before beginning construction activity. Participation by the public in the District's permit process has increased over the years. The District also acts in a consultative role as a disseminator of information for the public relative to local, state, and federal permits needed before initiating construction activity.

The SHRWD uses the permit system to enforce its adopted Rules and Regulations. Permits are required for a wide variety of construction activities that affect the water resources of the District. Any individual landowner, public entity, or governmental unit that contemplates a project impacting the water resources of the District, must secure a permit. Permit applications are considered at regular monthly meetings of the Board of Managers. It is a common occurrence for permit applicants to meet with the Board of Managers to explain their individual circumstances and conditions surrounding their permit application.

Such interaction with the permit applicants is strongly encouraged by the Board. The Board members and office staff are available to assist applicants in the permitting process. In addition to “in-house” assistance, it has become very common for prospective applicants to request field investigations by the Board or the District’s staff in order to obtain recommendations on construction technique and “best practices” applications.

The SHRWD will continue to use the permit system to enforce its adopted Rules and Regulations. It is also a policy of the District to assist permit applicants with technical advice so that project function may be accomplished in the most environmentally acceptable manner.

In a typical year, the District processes about 30 permit applications. In general, an alteration that would affect the drainage patterns on more than five (5) acres of land requires a permit from the SHRWD. The SHRWD attempts to process permit applications within 60 days of receiving the application from the applicant. A copy of the current SHRWD Rules and Regulations can be found in **Appendix E**.

A SHRWD permit is required for the following activities:

- Construction of an artificial drainage way across a sub-watershed into another watershed;
- Diversion of water into a legal drainage system from lands not assessed for the drainage system;
- Works or alterations of any legal drainage system under the jurisdiction of the SHRWD Board of Managers;
- Drainage of any wetland;
- Construction, removal, or abandonment of a culvert on any natural or legal drainage system;
- Construction of a bridge or placement of a culvert on any natural or legal drainage system;
- Change in the bed, banks, or shores of natural drainage ways, lakes, or wetlands;

- Placement of obstructions or disposal of wastes directly or indirectly into a natural or legal drainage system;
- Excavation, grading, or filling of, or near, any natural or legal drainage system;
- All water uses other than domestic use; domestic use is limited to sources serving twenty-five or fewer people;
- Crossing of natural drainage ways or established legal drainage systems by pipelines or underground utility lines.

On occasion, landowners or entities have violated the rules of the District. The District attempts to remedy these violations by working with the violating individual or entity. At times, the enforcement of the District rules has required Court orders to compel landowners to comply with the rules of the District.

Table 1.3. Assessment of progress toward accomplishing goals.

Goal in Previous Watershed Management Plan	Progress Toward Accomplishing Goal	Comments
<p>5.1.1 To reduce or alleviate the damage caused by floodwaters.</p>	<p>High</p>	<p>Constructed several projects including: Bear Park Dam, Beltrami Diversion, Liberty-Onstad Ditch, and on-going operation and management of the USACE Sand Hill Ditch Flood Control Project.</p> <p>Also implemented the farmstead ringdike program. Several additional projects are in the planning stages.</p>
<p>5.1.2 Administer and maintain the drainage systems of the District in order to fulfill their original function.</p>	<p>High</p>	<p>Successfully administered responsibilities under 103E. Projects completed include:</p> <ul style="list-style-type: none"> • Sand Hill Ditch Flood Control Project • Project No. 3 - Liberty-Onstad Ditch • Norman County Ditch No. 2 – Polk County Ditch No. 17 • Project No. 12 – Polk County Ditches 98 and 148 • Project No. 13 – Reis-Scandia Township Ditch • Project No. 17 – Polk County Ditches No. 6, 119, 9 • Project No. 20 – Polk County Ditch No. 46 • Polk County Ditch No. 80
<p>5.1.3 Develop programs and projects that will help to sustain an adequate supply of high quality surface and groundwater for public and private use.</p>	<p>Low</p>	<p>Generally lead by municipalities, therefore low District priority in previous plan.</p>
<p>5.2.0 Maintain or improve water quality of all surface water and groundwater</p>	<p>Moderate</p>	<p>Provided financial support to River Watch. Worked with the Minnesota Pollution Control Agency on impaired reaches of the Sand Hill River, provided financial support and technical advice to the East Polk SWCD, and developed an erosion control project for Union Lake.</p>

Goal in Previous Watershed Management Plan	Progress Toward Accomplishing Goal	Comments
resources within the District.		
5.3.1 The District will cooperate and support viable projects that have the purpose of reducing erosion.	Moderate	Continuing work with SWCD's in the development and construction of many erosion cooperative projects with interested farmers.
5.3.2 The District will actively pursue a program of erosion control and sedimentation management within all ditch systems under its jurisdiction.	Low	Generally complete erosion and sedimentation activities as a component of a flood control, natural resource enhancement or a drainage system project. No special programs have been implemented (e.g., cost-sharing program for buffer strips along drainage systems). Currently cooperating with the Soil and Water Conservation Districts on erosion control projects with individual cooperating farmers.
5.4.0 The District recognizes the value of its biotic resources and will seek to maintain the conditions and habitats critical to the existence of desired species.	High	Generally lead by state or federal agency. The District has implemented natural resource enhancement components when possible as project components. The SHRWD, in cooperation with the District's FDR Project Team and the MN DNR, has developed a fish passage master plan to provide for upstream fish migration through the Sand Hill Ditch portion of the Sand Hill River and modification of West Mill Dam in Fertile. As a result of this master plan, a "Texas Crossing" on the Sand Hill Ditch was upgraded, and the West Mill Dam was reconfigured to meet the objectives of the master plan. Four drop structures on the Sand Hill Ditch remain to be upgraded and modified as future funding becomes available.
5.5.1 Promote recreational opportunities wherever possible within projects of the District.	Low	Generally a low District priority in previous plans. Have supported and plan to continue supporting recreational projects pursued by other agencies.
5.6.1 All initiatives of the District should utilize potential cooperative efforts with appropriate	Moderate	Coordination through the Project Team established by the Flood Damage Reduction Mediation Work Group.

Goal in Previous Watershed Management Plan	Progress Toward Accomplishing Goal	Comments
federal, state, county, and township agencies.		
5.6.2 The District shall adopt by reference the applicable and compatible provisions of County Comprehensive Local Water Plans.	Low to Moderate	Generally accomplished as a component of a specific project or program.
5.6.3 The District shall continue to provide representation on County Water Resource Advisory Committees which are active within its jurisdiction.	Low to Moderate	Generally accomplished as a component of a specific project or program.
5.7.1 The District shall seek to inform and educate the citizens within its jurisdiction of all its ongoing activities and projects.	Moderate	Web site, booths and displays at Polk County Fair, etc.
5.7.2 The District shall seek to inform and educate the citizens within its jurisdiction of the benefits of the conservation of water and soil in the preservation and enhancement of our natural resources.	Low	Web site, booths and displays at Polk County Fair, etc. Cooperation with other agencies