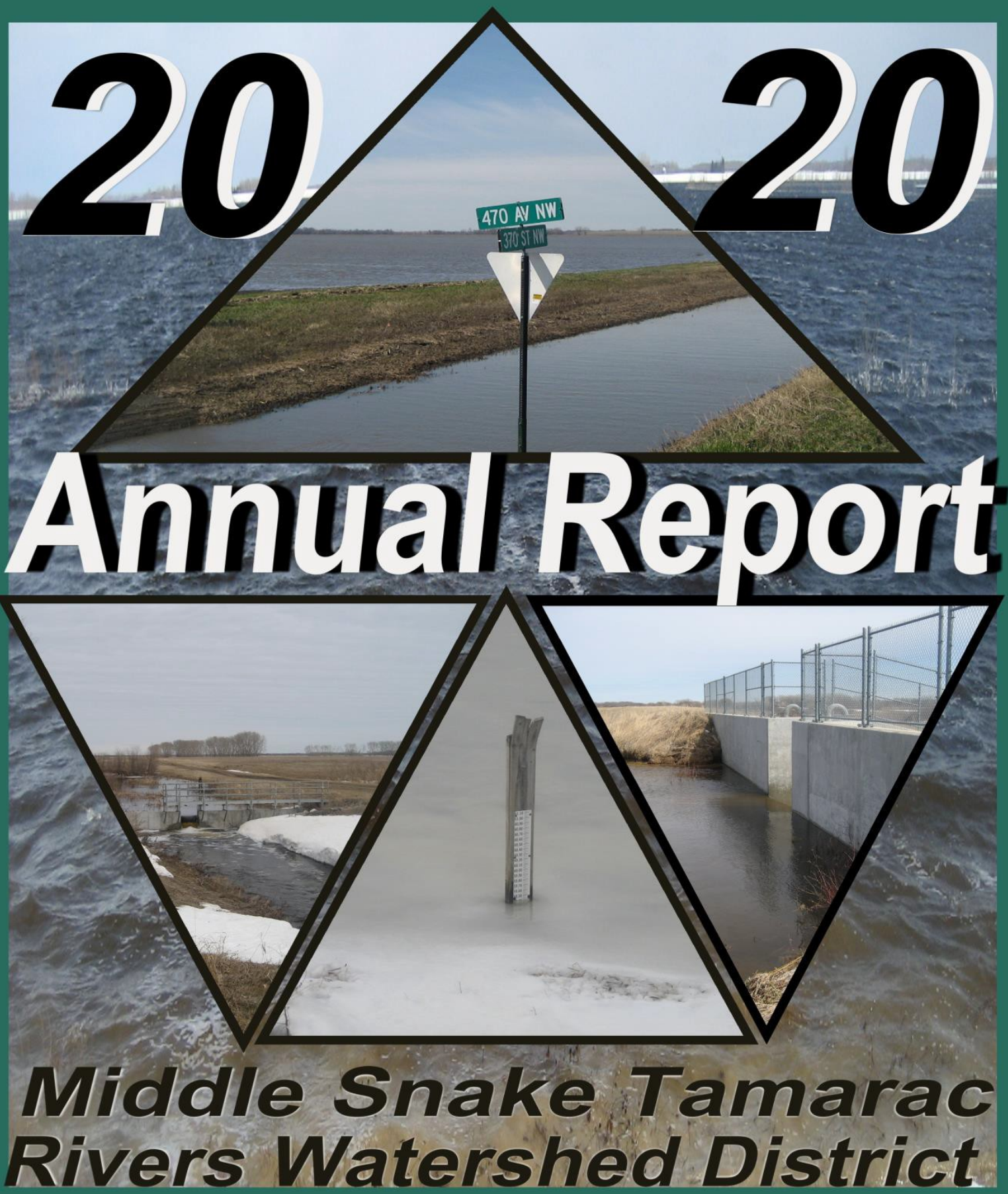

20 20
470 AV NW
370 ST NW
Annual Report
Middle Snake Tamarac
Rivers Watershed District

2020 Annual Report

Middle-Snake-Tamarac Rivers Watershed District

Contents

MISSION STATEMENT

The mission of the Middle-Snake-Tamarac Rivers Watershed District is to manage the District's resources for the efficient movement of water across the District for purposes of reducing flooding, providing agricultural drainage and to protect and improve water quality.

LETTER FROM THE CHAIRMAN

Pursuant to the Minnesota Watershed Act, Chapter 103D, we submit this 51st Annual Report for the Middle-Snake-Tamarac Rivers Watershed District (MSTRWD) for the year 2020.

Greetings and welcome to the 2020 Annual Report of the Middle Snake Tamarac Rivers Watershed District. The Middle Snake Tamarac Rivers Watershed District (MSTRWD) each year publishes an annual report on the various activities and projects that are taking place within the District. This report also includes comments on the maintenance of the various ditch systems, the financial condition of the District, as well as other items that may be of interest to the public.

This year we have had some staff changes. Joel Praska resigned mid-October and Connie Kujawa has begun her phased retirement. We have hired Katrina Haugen to be the Administrative Assistant and in mid-December, Morteza (Mori) Mahar, was hired as the Administrator.

2020 also proved to be a challenging year due to the Covid-19 pandemic. To adhere to the Governor's Administrative Orders, the Board held virtual board meetings, face coverings were required, and the office doors were locked for a short period of time.

2020 started with a spring flood and ended with a very dry fall.

In 2020, we completed the 3-mile improvement project on Polk County Ditch #175. We also continued to work with the City of Newfolden on a flood prevention project, and the Judicial Ditch #19 Regional Conservation Partnership Project, while the Swift Coulee/County Ditch #3 project and the Judicial Ditch #14 Regional Conservation Partnership Project have still not found landowners for a retention site, but we are continuing to have meetings with landowners.

The District has also been busy with different ditch maintenance projects.

The Board of Managers and District staff would like to thank you as we conclude another year. Together we will continue with our mission of reducing flooding, providing continued maintenance of agricultural drainage and in protecting and improving water quality throughout the MSTRWD.

I invite you to read this report, and if you have any questions or comments do not hesitate to contact us.

Respectfully Submitted,

John W Nelson
Chairman

BOARD OF MANAGERS

The MSTRWD is governed by a seven-member Board of Managers, appointed by the County Commissioners for Marshall and Polk Counties. Marshall County appoints six Managers and Polk County appoints one Manager. The terms are set so two Manager positions are appointed each year.

The Marshall County Board of Commissioners, in July of 2020, re-appointed Mr. Bill Petersen of Middle River to a three-year term.

Bill Petersen, John W. Nelson, Roger Mischel, Robert Kovar, David Bakke, Brad Blawat

The terms of the Managers are for 3 years. The following table lists the position they hold, county represented and term.

The Middle-Snake-Tamarac Rivers Watershed District Board of Managers

NAME	OFFICE	HOMETOWN	COUNTY REPRESENTED	TERM ENDS
JOHN W NELSON	President	Oslo	Marshall	Aug 27, 2022
BILL PETERSEN	Vice President	Middle River	Marshall	Aug 27, 2023
ROGER MISCHEL	Secretary	Warren	Marshall	Aug 26, 2021
ROBERT KOVAR	Treasurer	East Grand Forks	Polk	Jan 1, 2024
BRAD BLAWAT	Ass't Sec/Treas	Viking	Marshall	Aug 27, 2022
DAVID BAKKE	Manager	Newfolden	Marshall	Aug 26, 2021
VACANT	Manager		Marshall	Aug 27, 2023

BOARD MEETINGS

The Board of Managers held 24 regular scheduled meetings and 1 special meeting in 2020. Due to the Covid-19 pandemic, 13 meetings were held at the District office, 9 meetings were held virtually and 2 were held at the Marshall County Courthouse. These meetings are normally held on the first and third Monday of each month, at the District Office, at 8:30 a.m., (unless the date falls on a Federal holiday or postponement due to inclement weather).

The week prior to each meeting, the Watershed District posts a notice in the Watershed District office, publishes a notice in the Warren Sheaf and the Middle River Honker, posts a notice on the District website and the notice is sent by mail to those who request it.

Agendas for the upcoming meeting can be viewed here: http://mstrwd.org/about/agendas/
Meeting minutes can be viewed here: http://mstrwd.org/about/minutes/

The public is welcome at meetings. Anybody wishing to address the Board can do so, although it is appreciated if the office is notified prior to the meeting so guests can be placed on the agenda.

DISTRICT STAFF

Tyler, Danny, Connie, Katrina, Kyle, Morteza

Joel Praska

Joel Praska (Jan-October)	Administrator	Joel.Praska@mstrwd.org	
Morteza Dabbagh Maher (December)	Administrator	Morteza.Maher@mstrwd.org	218-230-5703
Connie Kujawa	Administrative Assistant	Connie.Kujawa@mstrwd.org	218-745-4741
Katrina Haugen	Administrative Assistant	Katrina.Haugen@mstrwd.org	218-745-4741
Danny Omdahl	Technician	Danny.Omdahl@mstrwd.org	218-201-0495
Kyle Schlomann	Technician	Kyle.Schlomann@mstrwd.org	218-230-4016
Tyler Larson	Technician	Tyler.Larson@mstrwd.org	218-230-1955

Administrative Assistant Connie Kujawa, after 34 years of service, entered into a Phased Retirement Agreement with the District on October 1st . Katrina Haugen was hired as an Administrative Assistant. Also in October, Administrator Joel Praska, terminated his employment and in December the Board hired Morteza Dabbagh Maher as the District Administrator.

OFFICE

Middle-Snake-Tamarac Rivers Watershed District Office

Address
453 North McKinley Street
Warren, MN 56762

Mail
PO Box 154
Warren, MN 56762

Office Hours
8:00 am to 4:30 pm
Weekdays

Phone: 218-745-4741
Fax: 218-745-5300
Email: info@mstrwd.org

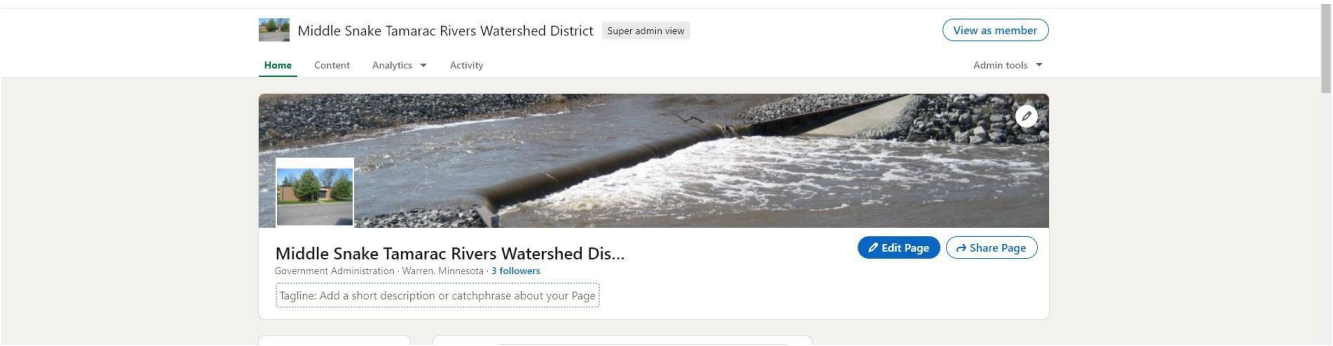
District Garage

WEBSITE

The District maintains a website (www.mstrwd.org) where staff posts notices, Board meeting agendas and minutes, reports and updates on District Projects, maps, and information about legal drainage systems (ditches) under MSTRWD jurisdiction and their benefited areas. The website also provides links to other websites that provide information of interest to our constituents.

Screenshot of MSTRWD Website

LinkedIn



The Watershed District Staff maintain a LinkedIn page where we share meeting notices, photos and updates. Everyone is welcome to follow our page you can find us by searching Middle Snake Tamarac Rivers Watershed District.

Engineering Services

The District's consulting engineering firm is Houston Engineering Inc. The District also utilizes the services of HDR Engineering, both located in Thief River Falls, MN.

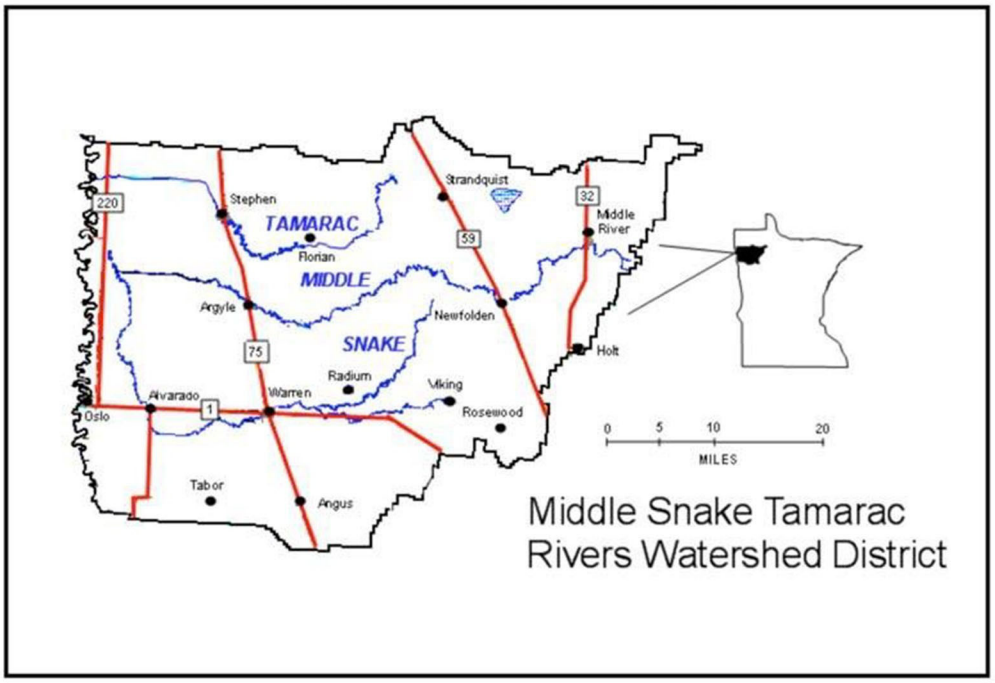
Legal Services

The District's general legal counsel is the law firm of Brink Lawyers.

Accounting Services

The District uses the accounting services of Brady Martz & Associates, P.C.

HISTORY OF THE MIDDLE-SNAKE-TAMARAC RIVERS WATERSHED DISTRICT



Map of the Middle-Snake-Tamarac Rivers Watershed District

After a landowner petition, the Middle River Snake River Watershed District was established by an order of the Minnesota Board of Water and Soil Resources (BWSR) on August 28, 1970. The purpose was to address water resource management issues and to alleviate flooding in the Red River Valley. The District comprised 1,020 square miles. Since its establishment, the District has worked primarily to develop projects that manage surface water.

In 1973, jurisdiction over the judicial drainage systems within the District - Marshall County Ditch #1, Marshall County Ditch #4, Marshall County Ditch #39 and Lateral #7 of Marshall County Ditch #44 - was transferred to the Watershed District Board of Managers by the District Court. In 1974, the District adopted rules that regulate certain works in the District. These rules were modified in 1978, 1999, 2004 and 2018.

In 1977, the Board entered a Joint Powers Agreement with eight other watershed districts in the Red River Basin to form the Lower Red River Watershed Management Board. That name was changed in 1991 to the Red River Watershed Management Board. The Red River Watershed Management Board currently consists of seven watershed districts. It has its own taxing authority, for which it contributes funds towards watershed flood damage reduction projects.

In April 2002, at the request of residents, the Marshall County Board of Commissioners successfully petitioned BWSR to add the Tamarac Watershed area to the Middle River Snake River Watershed District.

The petition also requested two changes: increasing the number of District Managers from 5 to 7 members, and a new name: the Middle-Snake-Tamarac Rivers Watershed District. In September 2002, BWSR granted the petition, which increased the area of the Watershed District by about 44%. No legal drainage systems in the Tamarac Watershed were added.

Today, the District consists of approximately 1,476 square miles in Marshall, Polk, Pennington, Kittson and Roseau Counties. The boundary of the District has been modified five times by boundary change proceedings. The District includes the drainage basin of the Snake River (approximately 750 square miles), the Middle River, a tributary of the Snake River, (approximately 295 square miles), the Tamarac Watershed Area (approximately 431 square miles), and the drainage basin of several Legal Drainage Systems draining directly into the Red River of the North.

In 2003, both the MSTRWD and the Two Rivers Watershed District successfully petitioned BWSR to change the District boundaries to follow a hydrologic boundary. The net effect of this petition was to move approximately 14 square miles into the Two Rivers Watershed District and to move about 2 square miles into the MSTRWDoc.

In 2004, the District petitioned BWSR to amend the *1994 Watershed Management Plan* to include the Tamarac Watershed area in the District. A Hearing on the proposed Amended Plan was held in December 2004. In January 2005, the Board approved the Amended Plan. The Amended Plan was published in May of 2005.

In 2009, the District began the process to update their *10 Year Management Plan*. The process continued thru 2010 and was approved at a hearing before BWSR in June 2011.

In 2010, the Polk County Commissioners gave jurisdiction of Polk County Ditches #43 and #44 (approximately 16 square miles in Angus Township) to the District. This increased the total miles of legal drainage system in the District to 336.

In 2020, the Minnesota Association of Watershed Districts presented the District with a plaque for 50 years of Watershed Management.

ANNUAL REPORT

Under MN Statute 103D.351 the watershed district board of managers are required to prepare a yearly report of the financial conditions of the watershed district, the status of all projects, the business transacted by the watershed district, other matters affecting the interest of the watershed district, and a discussion of the managers' plans for the succeeding year. Copies of the report must be transmitted to the Board of Water and Soil Resources, the commissioner, and the director within a reasonable time.

Copies of past annual reports are available online at http://mstrwd.org/about/annual-report/ or a hard copy can be made available from the District's office, per request.

10-YEAR PLAN

Under MN Statute 103D.401 the Managers must adopt a Watershed Management Plan for any or all of the purposes for which a watershed district may be established. The Watershed Management Plan (WMP) must provide a narrative description of existing water-related problems within a watershed district, possible solutions to the problems, and the general objectives of the watershed district. The board of managers are also required under MN Statute 103D.405 to revise or update a WMP for the district every ten years.

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 original "Ten Year Updated Watershed Management Plan" was prepared with the assistance of the landowners, the Marshall, West Polk, and Pennington SWCDs, the County Commissioners for Marshall, Polk, and Pennington counties, BWSR, DNR's Division of Waters, Wildlife, Fisheries, and MPCA. The latest plan revision was completed in 2011.

A copy of the latest 10 -Year Plan is available online at http://mstrwd.org/about/10-year-plan/. A hard copy can be made available from the District office, by request.

WATERSHED DISTRICT ADVISORY COMMITTEE

The Watershed District, on behalf of the Committee, holds at least one Advisory Committee meeting every year. Statutorily, the Advisory committee has, if possible, a supervisor of a SWCD, a County Commissioner, a representative of a sporting group, and a representative of a farm organization that are selected by the Managers to provide recommendations on matters affecting the watershed district, including all contemplated projects and improvements.

Along with participatory landowners, this group can play an important role in ensuring that the Watershed District is fulfilling the needs of the communities and is aware of citizens' concerns. The meeting is advertised in each county newspaper within the District, and the District sends invitations to previous attendees and township officials. The Advisory Committee meeting is open to the public and is encouraged to attend and participate.

On November 16, 2020, the Advisory Committee meeting was held at the Marshall County Courthouse, in Warren, Minnesota. District Attorney, Jeff Hane, opened the meeting and election of officers ensued. Norman Lindemoen was chosen to serve as Chairman and by acclamation, Tyler Larson, assumed the Secretary position.

2020 ADVISORY COMMITTEE ATTENDEES

Committee Members	Affiliation
Robert Kovar	Treasurer, Middle-Snake-Tamarac Rivers WD
Brad Blawat	Asst Sec/Treas, Middle-Snake-Tamarac River WD
Danny Omdahl	Interim District Administrator, Middle-Snake-Tamarac Rivers WD
Kyle Schlomann	Technician, Middle-Snake-Tamarac Rivers WD
Tyler Larson	Technician, Middle-Snake-Tamarac Rivers WD
Don Dietrich	Polk County Commissioner
Sharon Bring	Marshall County Commissioner
Norman Lindemoen	Landowner
Arlyn Dvergsten	Huntley Twp Supervisor
Jared Sands	Oak Park Twp Supervisor
Rolland Miller	Marshall County Commissioner
Jeff Hane	Attorney

After introductions, Interim District Administrator, Danny Omdahl presented a power point presentation which reviewed projects undertaken this year and ditch maintenance works performed in 2020. He specifically reviewed the outlet repair on Judicial Ditch #1; the repair and restoration of eroded slopes on County Ditch #43; erosion issues on Judicial Ditch #1 and Judicial Ditch #75; the status of the Newfolden Flood Prevention Project and the Judicial Ditch #14 RCPP project. He also gave an update on the Swift Coulee/CD #3 project and the Judicial Ditch #19 RCPP project.

Mr. Omdahl then opened the meeting to comments and questions from the participants.

Sharon Bring, Marshall County Commissioner, inquired about the status of the Newfolden Flood Prevention Project and the JD #14 RCPP project.

After discussion and with no further comments or questions from the public in attendance, Mr. Omdahl concluded the meeting. The 2021 Advisory Board Meeting will be held November 15, 2021 at 1:30 P.M. at the Bremer Bank in Warren, MN.

ONGOING PROJECTS

NRCS RCPP Projects

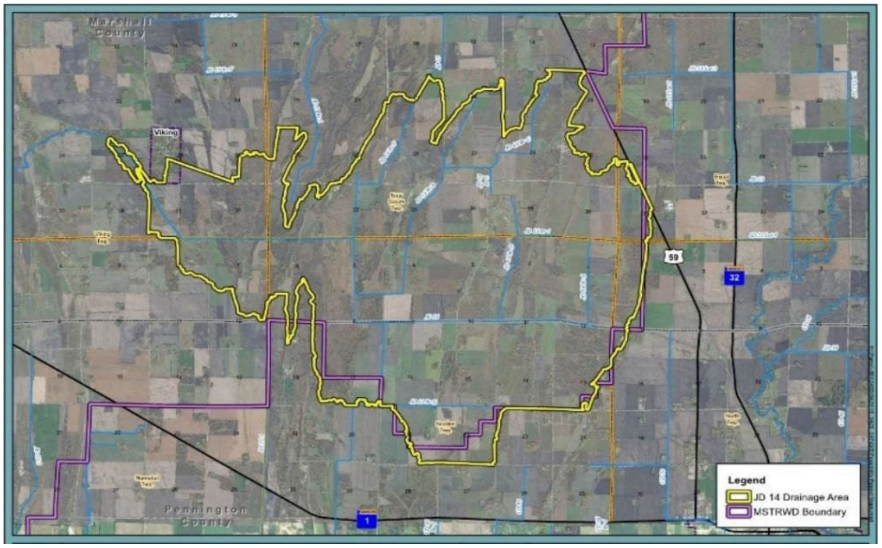
In the spring of 2015, the MSTRWD secured funding provided by the NRCS through the Regional Conservation Partnership Program (RCPP). This funding allocated $12 million dollars to eligible applicants as determined by the Red River Retention Authority (RRRA). The RCPP funding was made available to the MSTRWD for watershed planning in the Judicial Ditch #14, in the Snake River subwatershed and Judicial Ditch #19, in the Tamarac River subwatershed. Because these funds are provided by the NRCS, watershed planning must follow Federal agency guidelines for compliance with the National Environmental Protection Act (NEPA) requirements. Tasks required for the NRCS Watershed Plan are available in the *Feasibility Study and Plan of Work* document.

- Judicial Ditch #14 RCPP

A Project Team was developed for the JD #14 RCPP Project. Manager Brad Blawat with Manager, Robert Kovar, as the alternate, serve as the MSTRWD Team representatives. Landowner representatives are John Hams, Carl Roger Van Horn, and Gregory Dyrdal, with Donovan Dyrdal as an alternate.

Spring and summer flooding has resulted in problems in the JD #14 project area. The area is drained primarily by artificial channels which do not provide sufficient capacity for agricultural production nor does the system have an adequate outlet. Roads and culverts in the area are also impacted.

A grant agreement was entered with the NRCS on February 16, 2016, in the amount of $500,000.00. The funding cost share is 70% NRCS and 30% Middle-Snake-Tamarac Rivers Watershed District. This work includes developing a Purpose and Projected Outcomes document, evaluating various flood damage reduction strategies, and working with impacted landowners in areas with potential to store runoff.



Drainage area of Judicial Ditch #14

Review Points 1 – 3, developed by Houston Engineering, have been submitted to NRCS. The project received a contract extension through NRCS with a deadline date of September 30, 2020. As a result of the Coronavirus pandemic a second request was submitted to the NRCS requesting to extend the deadline, for one year. The extension was granted with the contract set to expire September 2021. Houston Engineering is performing Hydrologic & Hydraulic (H&H) modeling on **flood damage reduction** alternatives in addition to alternatives discussed at the September 29, 2020 Project Work Team meeting. Houston Engineering has completed the Wetland Field Delineation work and work on the Wetland Delineation Report is in the works. More information will be returned to Board committees for review as necessary.

Up-to-date information about the project and project team can be found at http://mstrwd.org/current-projects/jd-14-rcpp/.

- Judicial Ditch #19 RCPP

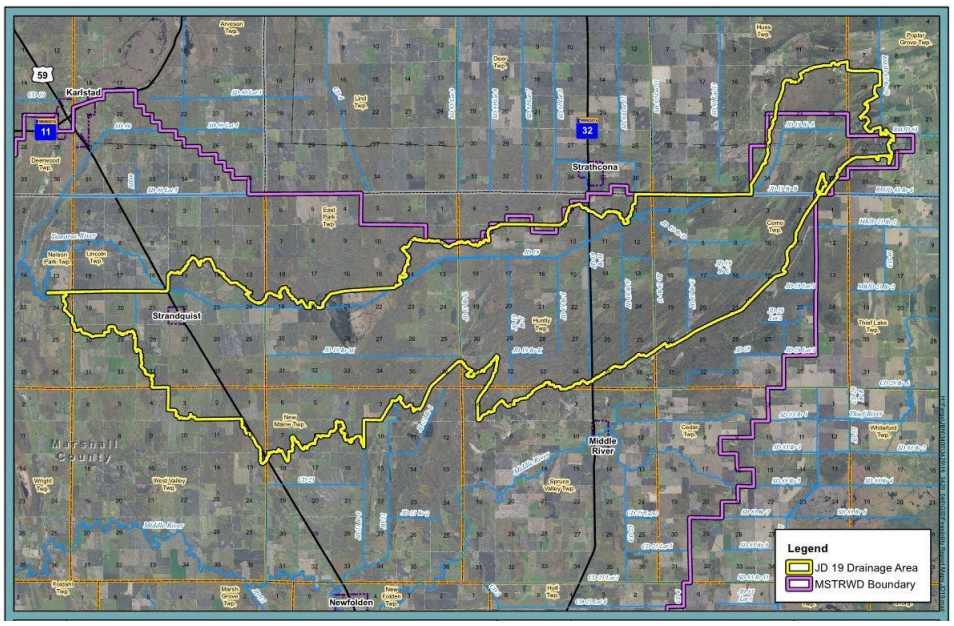
JD #19 RCPP Project Team, formerly known as the Tamarac sub-watershed Project Work Team, have Managers Bill Petersen and Brad Blawat serving as the MSTRWD representatives. Neil Widner, Larry Eftefield, Ken Borowicz, J Myron Larson, Mark Anderson, Dennis Olson, Richard Hanson, Paul St. Germain and Earl Anderson represent the landowner team members.

The JD #19 drainage area is in the upper approximately 110 square miles of the nearly 431 square mile Tamarac River sub-watershed. Both spring snow melt and summer rainfalls have historically resulted in flooding problem throughout the agriculturally dominated landscape. Water resource problems in the Judicial Ditch #19 Watershed include recurrent flood damages to roads, culverts, agricultural fields, and artificial and natural waterways. Floodwaters from the Judicial Ditch #19 Watershed also contribute to a larger scale flooding and flood damages downstream of the Watershed outlet along the Tamarac River and the Red River of the North.

The District signed a grant agreement with the NRCS, in the amount of $500,000.00, February 18, 2016 to perform technical studying and hydraulic analysis for a future flood damage reduction project within the Judicial Ditch #19 sub-watershed. The funding cost share is 70% NRCS and 30% MSTRWD.

The Board directed Houston Engineering Inc. to develop a Purpose and Need statement. Preliminary development of alternatives focused on narrowing the range of alternatives by reviewing and analyzing technical and practical considerations to evaluate potential to meet project objectives from the Purpose and Need. Concurrence Point #3 was submitted to the United State Army Corps of Engineers (USACE) on April 28, 2020 summarizing the identification of the selected alternative, which includes improvements to the existing Nelson Slough Impoundment Site in the JD #19 sub-watershed. The USACE approved concurrence points 2 and 3 June 10, 2020.

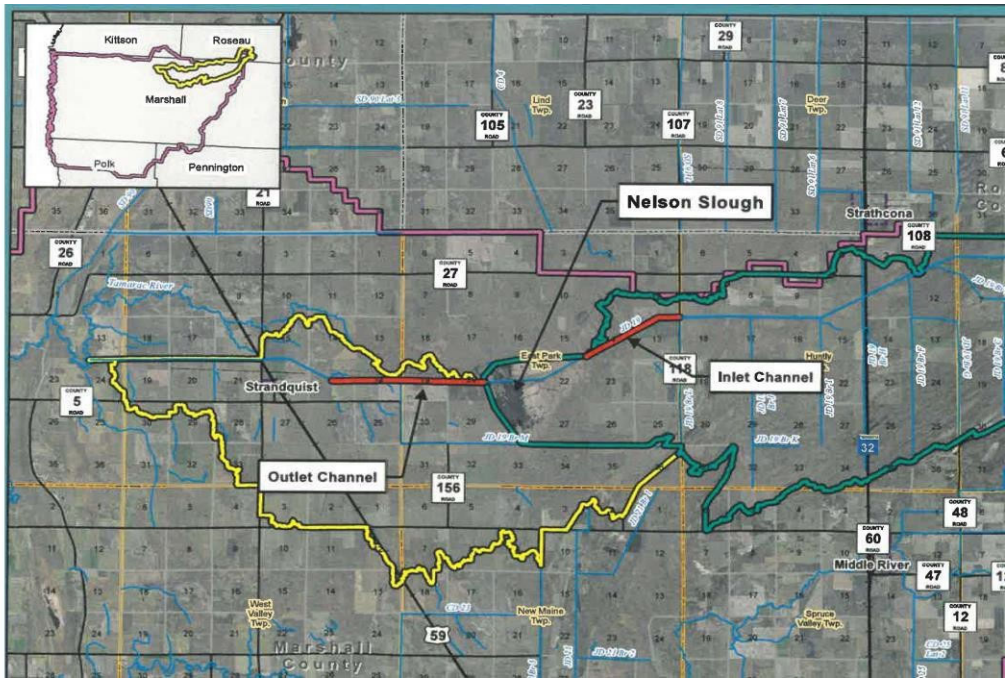
Nelson Slough is an on-channel multi-purpose impoundment site constructed in 1971 located with the East Park Wildlife Management Area in Marshall County. The site controls flow from 68.6 square miles of the approximate 110 square mile JD #19 Watershed.



Drainage area of Judicial Ditch #19

Review Points 1 – 3 have been submitted to NRCS. The project received a contract extension through NRCS with an expiration date of September 30, 2020.

As a result of the Coronavirus pandemic, a 2nd request was submitted to the NRCS requesting to extend the deadline for one year. The extension was granted with the contract set to expire September 2021.

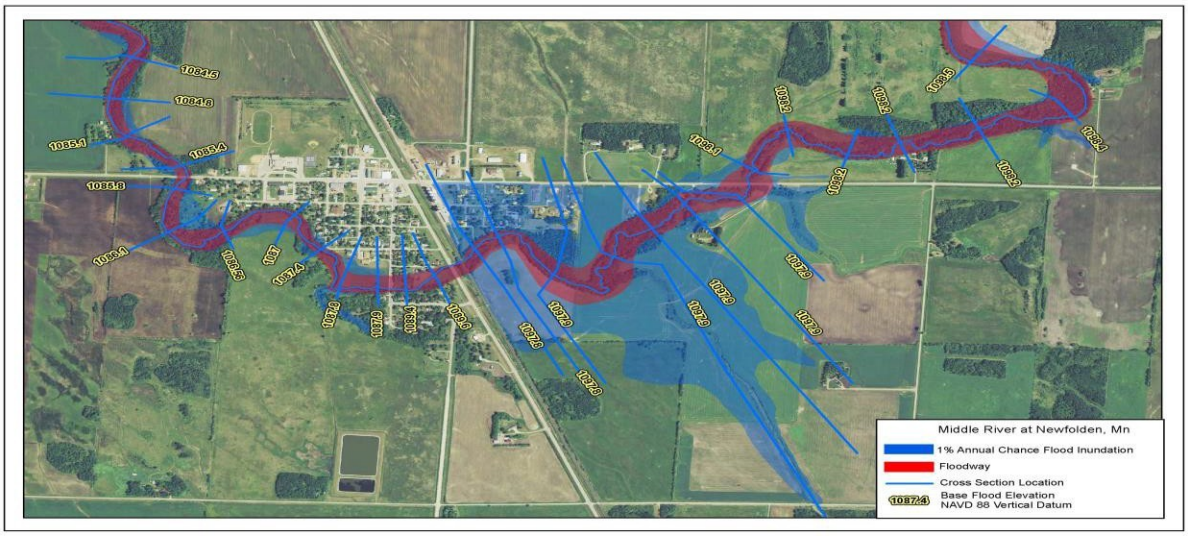


Nelson Slough Area

The MSTRWD and the DNR are currently developing a potential plan for the East Park area to improve Flood Damage Reduction Benefit and improve wildlife habitat. A Step 1 Submittal will be submitted to the Red River Watershed Management Board in 2021. Up-to-date information about the project and project team can be found at http://mstrwd.org/current-projects/jd-19-rcpp/.

Newfolden / Middle River Subwatershed Flood Damage Reduction Project

A Project Team was developed for the Newfolden / Middle River Subwatershed Flood Damage Reduction project. The City of Newfolden had been mapped for the 100-year Flood Plain Zoning (FPZ) for the first time, in 2015. The Federal Emergency Management Agency (FEMA) and the MNDNR produce Digital



Current mapping from DNR HEC-RAS Model as of May 6, 2016

Flood Insurance Rate Maps (DFIRM) for selected counties in the state. These maps are often referred to as FEMA Floodplain maps. This resulted in numerous properties with homes on the east side of US Highway 59 and some on the west side, being placed in the 100 year FPZ. The City contacted HDR Inc. and reached out to the MSTRWD for guidance and assistance. An appeal was given to the MNDNR to seek alternatives.

Brad Blawat, Bill Petersen and Roger Mischel, as the alternate, serve as the MSTRWD Project Work Team (PWT) representatives. Landowner representatives are David Lokstad, David Myhrer, David Thompson, Roger Rivera, Jr., Glenn Meekma, Norman Lindemoen and Derrick Converse.

The PWT has discussed mitigation alternatives such as to construct a levee along the river, diverting a portion of water around the city, potentially adding culvert(s) to the Canadian Pacific Railway and possible impoundment sites. The purpose of the project is to remove the City of Newfolden from the 1% annual (100 year) FEMA floodplain.

The MSTRWD submitted a task order to HDR Engineering to develop a preliminary engineers report to identify and breakdown potential alternatives for flood prevention measures. Soil boring tests along two possible impoundment sites and a potential diversion have been completed by NTI, a geotechnical company, and integrated in the development of the preliminary engineer's report that was presented to the public, the PWT, and the MSTRWD on April 15, 2019.

May 6, 2019, a public hearing was held and the MSTRWD Board of Managers ordered the project to be officially established and titled "The City of Newfolden Flood Prevention Project." Right-of-way discussions continued with the landowners located within the proposed impoundment site and those along the inlet channel. Easement Purchase Option and Pre-Construction Agreements have been drafted and it is anticipated all the affected landowners will sign the agreements by the end of 2020. On May 19, 2020 HDR Engineering submitted Step 2 to the Red River Watershed Management Board and to the Flood Damage Reduction Work Group on May 27, 2020.

At the September 8, 2020 Regular Board Meeting, the Board accepted the Task Order #3-Final Engineering for the City of Newfolden Flood Prevention Project and directed HDR Engineering, to proceed with the final engineering and construction documents. Meetings with the Canadian Pacific Railroad continued which resulted in the execution of a Memorandum of Understanding regarding to the replacement of the railroad bridge within the City of Newfolden.

The City of Newfolden has been notified by FEMA the new floodplain maps will become effective March 23, 2021.

Up-to-date information about the project and project team can be found at http://mstrwd.org/current-projects/middle-river-sub-watershed-feasibility-study/

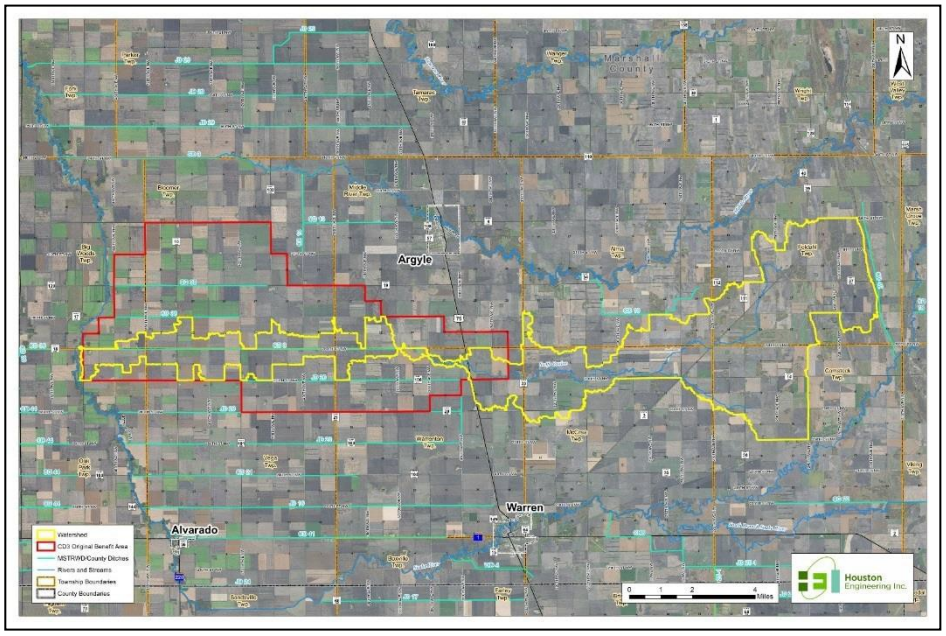
Swift Coulee / Marshall County Ditch #3 Project

The Swift Coulee's drainage area starts approximately ½ mile southeast of the Old Mill State Park. The flow in the drainage area is primarily to the southwest. The Coulee empties into CD #3, 1.2 miles west of US Hwy #75. The Coulee can regularly overtop its banks causing local flooding. Sediment in the Swift Coulee causes a bottleneck to flow on the west side of US Hwy #75.

CD #3 drains westerly for 11 miles and into the Snake River. Flooding issues along CD #3 see water leaving the ditch both on the north and south sides, as there is no set spoil or road height to control outbreaks. Much of the drainage area of the Swift is not in the Benefited Area of the CD #3.

CD #3 is part of a MNDNR Protected Water, along with the lower approximate 7.5 miles of Coulee, extended across 5 sections.

The Project Team's District representatives are Roger Mischel and Brad Blawat. Landowner representatives are Ken L Johnson, Stuart Nordling, Jim Vansickle, Mark Yutrzenka and Fred Nicholls.



Swift Coulee drainage area (yellow) & Marshall CD 3 Benefited Area (red)

In the summer of 2017, District staff assisted Houston Engineering in surveying the Swift Coulee/County Ditch #3 area. The generated information was used for the preliminary hydraulics and hydrology modeling report.

Concurrence Points 1 & 2, which include the Purpose and Need statement and development of alternatives have been approved by USACE. Concurrence Point 3 is currently under development and the project team is still exploring additional alternatives that will improve conveyance through the Swift Coulee without causing downstream impacts to CD #3.

The District held a PWT meeting August 19, 2020 to discuss possible channel restoration along the Swift and possible impoundment sites within the area and how to proceed with moving the project forward. One comment made by the Project team is they would like the flooding burden to spread over the upstream landowners. Houston Engineering is working on developing two alternatives. The District is currently seeking landowners who may be interested in having an impoundment site on their land.

Up-to-date information about the project and project team can be found athttp://mstrwd.org/current-projects/swift-coulee-pt/

Oslo Access Study

In December of 2014, the MSTRWD entered into a grant agreement with the Minnesota Department of Transportation to conduct a hydraulic analysis of Minnesota Trunk Highway #1, in the vicinity of Oslo, Minnesota to analyze various options to address ingress/egress into Oslo during times of flooding.

Arial photo of the City of Oslo

On June 28, Houston Engineering presented the Oslo Area Hydraulic Analysis – Phase 2 Report to the MSTRWD and the Walsh County Water Resource District. The study began with the identification and evaluation of over 70 potential flow restrictions within the study area, with modifications to 5 bridges being part of the initially identified restrictions. Early model simulations indicated that with all of the initially identified restrictions being removed there would be a significant reduction in peak water surface elevation near Oslo for the synthetic and historic flood events that were simulated. Multiple iterations of model simulations were completed in order to prioritize the over 70 restrictions and to eliminate potential restrictions that were not affecting the flood elevations. The prioritization of the potential flow restrictions resulted in the elimination of approximately half of the initially identified restrictions.

The road raise/levee component was incorporated to keep floodwaters closer to the river channels and to convey more water through the modified bridges. This alternative was eventually defined as Alternative B. Model results for Alternative B indicate benefits to the transportation infrastructure by reducing overtopping depths and durations for the range of flood events.

The scope of the study is to evaluate the effects of removing flow restrictions within the Red River floodplain. Alternative B has an estimated probable cost of $39 million for Minnesota and $57 million for North Dakota with a total estimated probable cost of $96 million.

The Board appointed Manager John W. Nelson as the District's representative to the steering committee and Manager Bill Petersen as the alternate.

Up-to-date information about the project and project team can be found at http://mstrwd.org/current-projects/oslo-access-study/

Watershed Restoration and Protection Strategies (WRAPS)

The Federal Clean Water Act was established in 1972, requiring states to set water quality standards for all surface waters and to develop a list containing all waterbodies that do not meet their water quality standards. The waters that do not meet the Act's water quality standards are then required by the U.S. Environmental Protection Agency (USEPA) to have a Total Maximum Daily Load (TMDL) developed for that waterbody. A TMDL is designed to reduce the amount of pollutants in a waterbody and allow it to

meet standards. A formula is used to calculate the maximum amount of a pollutant, like sediment or phosphorus, a waterbody can receive and still meet the state's water quality standards.

In 2013 the State of Minnesota established the Clean Water Accountability Act which ensures that pollution sources are properly identified and that state funding is targeted to areas that provide the max water quality benefit. It also defined and set WRAPS reports into law and made them the responsibility of the Minnesota Pollution Control Agency (MPCA). A WRAPS document is intended to establish the strategies used to restore impaired waters and protect waters that are not impaired. It creates a path for implementing the TMDLs and guides local implementation of management practices aimed at improving water quality, ensuring compliance with the Federal Clean Water Act.

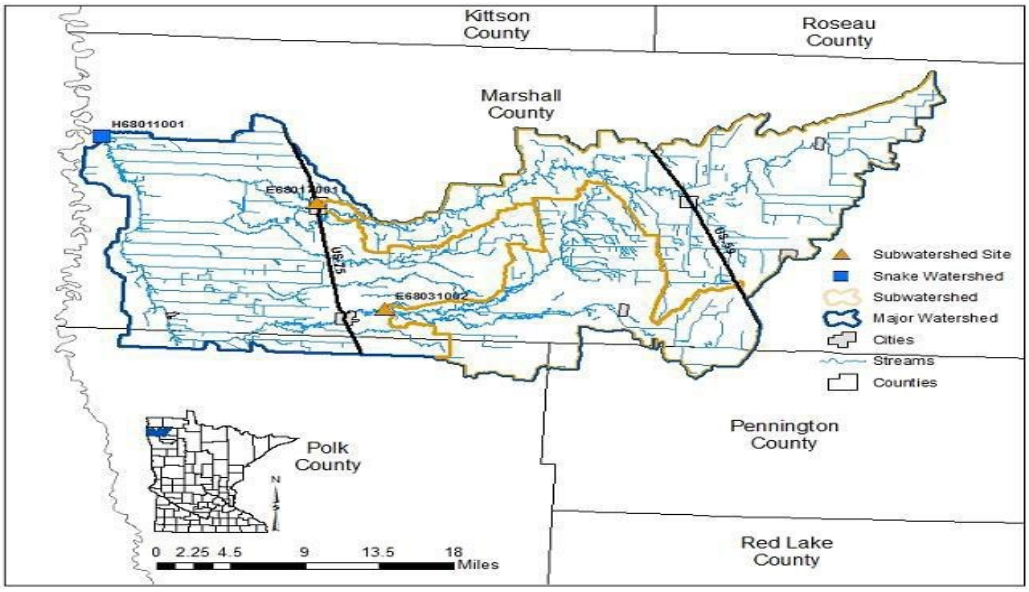
The State of Minnesota adopted the "Watershed approach" which sets a 10-year cycle for each major watershed to first monitor and assess impairment status for its surface waters, then establish work plans to improve/protect water bodies. When the 10-year cycle ends, it starts over again. The major benefit of this approach is the integration of monitoring resources to provide a more complete and systematic assessment of water quality at a geographic scale. The data will be useful for the development and implementation of effective TMDLs, project planning, effectiveness monitoring and protection strategies.

Along with the Watershed approach, the MPCA developed a 4-step process to identify and address threats to water quality in each of the major watersheds.

- Step 1 begins with a two-year intensive monitoring program of lakes and streams which the MPCA determines their overall health and identifies impaired waters. The Monitoring and Assessment Report and a Stressor Identification Report are the outcomes of the first step.
- Step 2 is to assess the data based on the results. The MPCA determines whether a water resource meets water quality standards, lists waters as impaired, identify waters to be protected and identify stressors affecting aquatic life in streams.
- Step 3 is to develop strategies to restore and protect the watershed's water bodies creating a WRAPS report and a TMDL. The strategies provide details on water quality issues and identifies what needs to be done to clean the stream and lakes that are impaired and to protect those that are at risk of becoming impaired.
- Step 4 is when restoration and protection projects are conducted in the watershed. Local units of government including watershed districts, municipalities and SWCDs take the lead in developing and carrying out plans.

Although the MSTRWD is not a major player in planning based on TMDL levels, almost all of the flood prevention or NRE projects it carries have that outcome as a strong side benefit.

Snake & Middle Rivers WRAPS



Watershed of Snake and Middle Rivers

Phase 1 of the Snake River WRAPS was completed in 2017. Phase 1 included data collection, modeling of sediment sources and delivery, the identification of impairments within the rivers, and the creation of a Watershed Conditions Report and community outreach.

Phase 2 of the project was completed in 2018. This involved the development of Total Maximum Daily Loads for the various impaired reaches, the development of strategies to restore and protect water quality within the rivers, the development of a WRAPS report and community outreach.

Phase 3 of the project, the development of restoration and protection strategies and the development of a draft WRAPS report was performed in 2019. This includes water-quality monitoring data and HSPF model simulations that evaluate and describe the current and historical water-quality conditions of surface waterbodies within the Snake-Middle River Watershed. A combination of tools, assessments, and resources will be used to prioritize Best Management Practices to be implemented within the Snake-Middle River Watershed for future realization.

In September 2020, the District announced they will be accepting comments on the TMDL report and WRAPS report, prepared by RESPEC**,** a natural resources engineering company, from September 21, 2020 to October 21, 2020. RESPEC's study was funded by a grant from the Minnesota Pollution Control Agency. The grant expired June 30, 2020.

Up-to-date information regarding the Snake & Middle Rivers WRAPS can be found at http://mstrwd.org/current-projects/snake-middle-rivers-watershed-restoration-and-protection-strategy-wraps/.

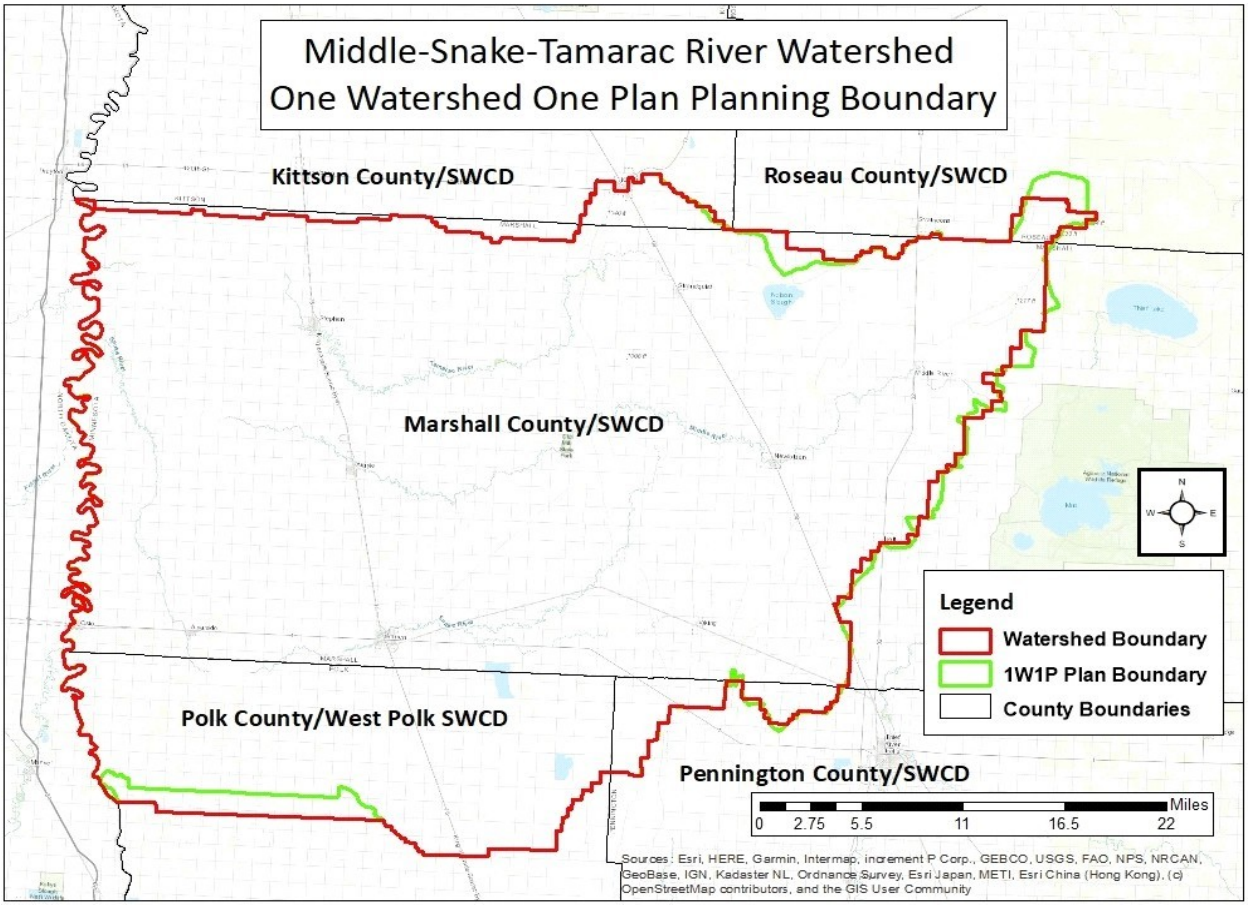
One Watershed One Plan

The first meeting to discuss the "One Watershed One Plan" was held January 13, 2020. Representatives from the West Polk SWCD, Marshall County SWCD, Kittson County SWCD, Marshall County Water Planning Division, Marshall County Highway Department and MN Board of Soil and Water Resources were present. In May, a second meeting was held to discuss grant funding available through the MN Board of Soil and Water Resources to help pay for the costs associated with the implementation of the 1W1P.

On May 18, 2020, the Board of Managers passed a resolution supporting a One Watershed One Plan consistent to the MN Board of Soil and Water Resources policies for the coordination and development of comprehensive watershed management plans consistent with MN Statutes 103B.801.

The resolution also supports an application be submitted to the Board of Soil and Water Resources for a planning grant to develop a comprehensive watershed management plan and enter into a Memorandum of Agreement with the counties, soil and water conservation districts and the Middle Snake Tamarac Rivers Watershed District. In September, the District received notification the grant application with the MN Board of Soil and Water Resources was approved.

Updated information on the "One Watershed One Plan" can be found on the Districts website at www.mstrwd.org under the 1W1P tab.



PRAP Review

In 2020, a Level 2 PRAP Review was conducted by the MN Board of Soil and Water Resources. The review is conducted at a minimum of every 10 years and focuses on the degree to which the District is accomplishing its watershed management plan. The results of the review show the District is in compliance with the BWSR basic and high-performance standards.

JUDICIAL DRAINAGE SYSTEMS

In 1973, the maintenance authority of some drainage systems within the District was transferred by the District Court to the District. The District is responsible for the maintenance and repair of these systems. Since that time, additional drainage systems have been transferred to the District and proceedings have been held concerning the establishment of legal drainage systems.

The following table lists the Public Drainage systems under the jurisdiction of the MSTRWD.

Drainage System	Date Established	Approximate Length (Miles)
JD 1	1903	16
JD 14	1912	30
JD 15	1911	39
JD 16	1910	11
JD 17	1910	6.5
JD 20	1910	36
JD 21	1910	13.5
JD 24	1911	3.5
JD 25-1	1912	12.5
JD 25-2	1912	17
JD 28	1913	16
JD 29	1917	40
JD 68	1919	1.5
JD 75	1928	21
MCD 39	1948	2.5
MCD 39 Improvement	1996	.04
PCD 175	1969	12
SD 3	1896	6
SD 5	1896	3
WD 2	1992	1
WD 4	1902	2.5
WD 5	1999	14
WD 6	1999	15
WD 7	1999	3.25
WD 7 Improvement	2000	.12
PCD 43	1903	10
PCD 44	1904	5
Total # of Ditches: 27		**Total Length: 338**

DITCH MAINTENANCE

The District maintains the legal drainage systems under its jurisdiction. Sediment removal, mowing, spraying and beaver dam removal account for most of the maintenance work.

There are some designated ditches which culvert replacement is performed, as needed. However, the District is responsible to maintain culverts on all ditches that were established after March 25, 1947.

To control cattails, bulrushes and brush in 2020, the District hired an aerial applicator to spray legal drainage ditches under its jurisdiction and impoundment areas. The contractor sprayed 74.66 miles of ditch.

Beavers, beaver dams and gophers continue to be a problem in drainage systems and in project areas. In 2020, contractors removed beavers, their dams and debris from ditches, culverts and impoundment areas, while gophers continue to be trapped at the District Impoundment sites.

The District had approximately 174 miles of ditch grass strip and slopes mowed in 2020. The mowers also work at the District's impoundment properties. Typically, the related ditches, dikes and some areas of the impounds are mowed. Brushing and aerial spraying are also utilized, as needed, at the impoundments.

Polk County Ditch #43

The District held several landowner meetings concerning the sloughing along CD #43 Main and Lateral #1 located in Angus Township, section 8 & 9. By working with the landowners, the District was able to identify 4 miles of ditch that was in need of repair. Implementing a clean water approach, the West Polk County SWCD, NRCS and FSA agencies partnered with the District to implement side water inlets, rock drop structures and grass buffers. Kraulik Excavating was awarded the contract and work began June 3, 2019.

Heavy rains in September 2019 and the 2020 spring runoff caused major erosion downstream of the rock drop structures. The District received funds from FEMA to help pay for the repair and restoration of the ditch slopes in 2020.

CD #43 2020 Rock Structure Erosion

CD #43 2020 Repair

Judicial Ditch #1

The south side slough repair work that took place in 2018 along section 20, Higdem Township, received noticeable erosion to the outside slope of the ditch during the spring melt of 2019. The interior slough repair that was performed in 2018 reappeared, to a smaller scale. Repairs were ordered, as Lunke Inc. restored the area to the pre 2019 spring melt. After the September rain events, the interior began to slough once again.

In 2020, the Board directed Houston Engineering to prepare plans and determine the costs to repair the outlet of JD #1, in sections 17 and 20 of Higdem Township. The plans called for the ditch to be sloped further south, the installation of a bench, and an additional 400' of French drains. On June 22, 2020 bids were entertained for the repair. Six contractors submitted bids, with the work awarded to Kraulik Excavating, Inc.

JD #1 Sluff at approximate Station 14+00

JD #1 Sluff at approximate Station 10+00

Sluff repaired at approximate Station 14+00

Spoil/Ag Levee approximate Station 16+00

County Ditch #175

On April 17, 2017, the Board approved a Petition to improve the 3 downstream miles of CD 175. On January 2019 Breidenbach Excavating was awarded the Improvement's contract. Setbacks due to the weather didn't allow for the project to be completed in 2019. In 2020, minor shaping, rock placement and seeding was completed.

CD #175 Looking south at section 11 Esther Twp Twp

CD #175 Looking east at section 6 Northland

Judicial Ditch #15, Br A

Starting in 2016, the District began removing sediment from the lower 3.3 miles of the 3.6 mile Branch A from County Road 117 to County Road 2.

The upper 2 miles of Branch A had never had sediment removed since its 1911 construction. Due to the available ditch funds and wet conditions, the sediment removal had to be staggered over the years. In early April, Olson Construction TRF Inc, finished the sediment removal project in Sections 30/31 New Solum Twp.

JD 15 Branch A at Station 149+22

JD 15 Branch A at Station 101+00

Judicial Ditch #25-Lateral 1

Anderson Excavating of Rosewood was hired in the fall to remove sediment from the mile long JD 25-1 Lat 1, located in Section 20 Helgeland Township. Lat 1 empties directly into the Agassiz Valley Impoundment.

JD 25-1 Lateral 1 looking S along CSAH #68

JD #25- Lateral 2

In the fall portions of JD 25-2 were surveyed and it was determined the upstream 3 miles should have sediment removed. Due to a lack of available funds, only the upstream mile would be cleaned and the remaining 2 miles will be cleaned in 2021. Olson Construction of TRF Inc hired to complete the work.

JD #25-2 Looking North along Section Line 16-17 Numedal Twp

A short reach of the back slope in the SW4 Sec 1 Angus Twp was repaired after spring flooding.

Watershed Ditch #4

Following a landowner request, WD 4 was surveyed and it was determined that 2 miles of sediment could be removed in Sections 11, 12 Boxville Twp and Section 7 McCrea Strip. Anderson Excavating was hired do the work.

WD #4 Looking SE at Section 7 McCrea Strip, E of Hwy #75

Watershed Ditch #7

Following numerous spring flooding events, WD 7 was surveyed and it was determined that over 2.5 miles of sediment could be removed in Sections 8, 9, 10 Oak Park Strip. Anderson Excavating was hired do the work.

WD #7 Looking East at Section 8 Oak Park Strip

Judicial Ditch #1 and Judicial Ditch #75

Areas of JD #1 and JD #75 are severely undergrade. To minimize further erosion of the ditch bottom, the District applied for $100,000 from the Red River Watershed Management Board's Water Quality Program to use for erosion control measures. JD #75 had 12 rock structures installed and 7 were installed on JD #1. Along with reducing erosion of the ditch bottom and the side slopes, these structures will build up the ditch bottoms through aggradation.

The 2020 spring flood contributed to the sluffing of the inslope of JD #75 in Sec 1 Northland Twp. Three layers of geogrid were installed along with rock structure. FEMA funds were received to assist with the repair.

A natural resource benefit to this project is that the water flowing over the rock structures will aerate the water and increase the Oxygen levels in JD #1 and JD #75.

JD #75 sluff repair looking W

JD #75 sluff repair looking E

Typical Rock Structure in JD #1 & JD #75

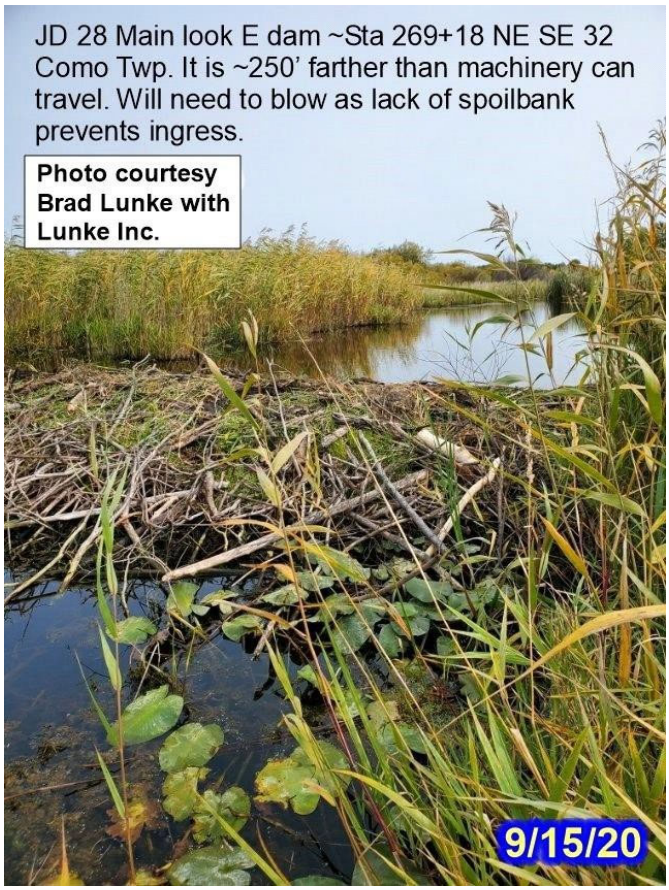
March Impoundment

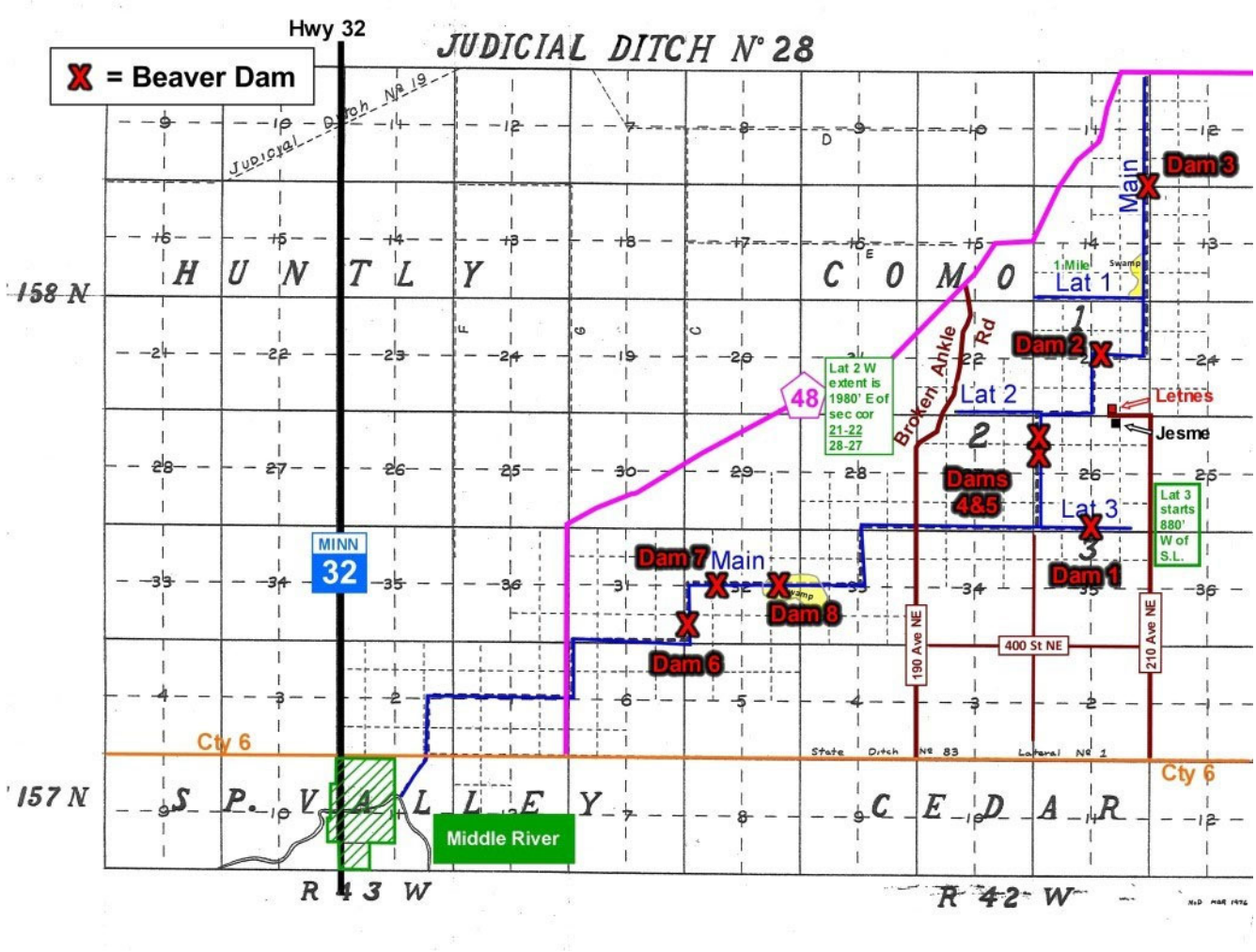
Sandsville Section 14 – 2020 Spring high waters again topped the north bank of the Snake River causing erosion of the property. RJ Zavoral and Sons, from EGF MN, were hired to raise the low spots following the fall harvest.

Beavers

Again in 2020, beavers continue to be a nuisance within the impoundments and legal drainage ditches of the District. The District hires trappers to remove the beavers and reimburses the trappers for each beaver trapped. The District also hired contractors to remove beaver dams at JD #14, JD #15, JD #21, JD #25-1, JD #25-2 and JD #28. Dams were also removed at the PL-566 Off Channel Storage Site (NE of Radium) and Agassiz Valley Impoundment Projects.

The District does not participate in the trapping of beavers in rivers unless they immediately affect a legal ditch or impoundment under the District's authority.





2020 dams located on JD #28, in Spruce Valley and Como Twps, north of Middle River

RAINFALL PROGRAM

The District has volunteers, throughout the Watershed, who record and submit monthly rainfall amounts. We appreciate our faithful reporters, and we are in need of others who would like to participate to be rainfall reporters. The District will supply the rain gauge, reporting forms, and stamped envelopes to mail your reports to the office. If you are interested in volunteering for the program, please contact the District office.

The following chart is the reported rainfall amounts for 2020:

2020 Annual Summary of Monthly Rainfall Middle-Snake-Tamarac Rivers Watershed District

Ref	Observer	Township	Sec	Twp	Rg	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
31	Ron Ueland	New Maine	22	157	44	1.66	0.68	6.35	3.73	4.58	1.08	0.69	**18.77**
33	RLWD	Rocksbury	4	153	43	1.39	0.89	9.05	2.67	2.73	no report	0.32	**17.05**
36	Nick Drees	Excel	34	155	43	0.30	0.80	no report	5.36	no report	no report	no report	**6.46**
37	Harold Maijala	Spruce Valley	36	157	43	0.93	0.73	5.93	5.57	3.87	0.96	1.37	**19.36**
38	Doris Klamar	Rollis	33	157	40	1.10	1.14	4.51	5.94	4.26	0.83	1.05	**18.83**
54	Nick Smieja	West Valley	28	157	45	0.73	0.97	5.33	7.82	2.65	1.42	0.51	**19.43**
56	Dennis Erickson	Foldahl	31	156	46	no report	0.48	5.45	5.50	2.92	0.28	no report	**14.63**
90	Alvin Nybladh	Donnelly	35	158	49	no report	0.92	5.95	8.80	1.90	0.80	0.45	**18.82**
91	Sharon Bring	West Valley	29	157	45	1.07	0.67	6.45	8.99	2.82	0.63	0.48	**21.11**
93	Peter Solem	Higdem	7	154	50	1.05	1.29	6.19	9.80	2.09	0.40	0.52	**21.34**
101	J Bolduc	Parker	7	157	49	0.00	0.78	8.80	5.21	2.47	no report	no report	**17.26**
102	MSTRWD					0.68	1.17	3.25	5.55	2.62	0.24	0.44	**13.95**
104	Paul Morken	Comstock	10	155	46	no report	0.80	7.45	6.00	2.75	0.50	no report	**17.50**
105	Dean Danielski	Farley	18	148	48	1.20	1.07	3.40	6.65	2.52	0.57	0.49	**15.90**

WATERSHED DISTRICT RULES AND REGULATIONS

A copy of the 2018 Amended Rules can be found at our website or at the District office to obtain a printed copy.

It is the intention of the Managers to promote the use of the waters and related resources within the District in a provident and orderly manner to improve the general welfare and public health for the benefit of its residents.

The requirement for a permit from the Managers for certain uses of water or for certain works within the District are not intended to delay or inhibit development, rather the permits are needed so that the Managers are kept informed of planned projects. The Managers can advise, in some cases provide assistance and ensure that development of the resources of the District is orderly and in accordance with the overall Management Plan of the District.

○ Works Requiring Permits from the Board of Managers

A Permit shall be obtained from the MSTRWD prior to any work being commenced for:

A. Waste disposed of directly or indirectly into any drainageway, including public drainage systems.
B. Any in-field drainage, including installation of surface and subsurface drains which create new or improve existing downstream outlet control on a public drainage system.
C. Any installation of a new or improvement to an existing subsurface tile drainage system which increases drainage coefficient.
D. Any new diking, excavating or levee construction or improvement to an existing bridge, dike, levee or culvert in or adjacent to any drainage-way that will change the hydraulic efficiency of the drainage-way or inhibit or restrict flows adjacent to the drainage-way.
E. Any work causing the flow or drainage of surface water to cross a sub-watershed boundary and thereby deliver water into another sub-watershed.
F. Any diversion or acceleration of water into any public drainage system from any land not assessed to that drainage system.
G. Any Construction, installation or alteration of a road or utility crossing beneath a public drainage system.
H. Any pumping of water, including the use of temporary or portable pumps, into a public drainage system or other drainage-way. In emergency situations such pumping may be subject to an after-the-fact permit as provided in these Rules.

A Permit granted by the MSTRWD does not relieve the applicant of the responsibilities of obtaining any other authorization required by law or regulation, or alter the applicant's responsibility or liability under statutory or common law.

○ Works Administratively Approvable

The MSTRWD Administrator is authorized to approve the following Permit applications without Board consideration or approval:

A. Emergency repairs requested by a governmental agency concerning public safety.
B. Lengthening of an in-place culvert.
C. To maintain or replace culverts or crossings, so long as the replacement or maintenance does not increase or change the hydraulic capacity, size, elevation or location of the culvert or crossing.
D. Requests from other governmental agencies (township, city, county, state) that include hydraulic analysis performed by a Licensed Professional Engineer.
E. Culverts installed in drainageways that conform to the MSTRWD's Culvert Size Chart contained in Appendix II.

F. Relocation of crossings that do not alter the hydrology of a drainageway.
G. Improvements to culverts of less than eighteen (18) inches to a culvert size of eighteen (18) inches or less.

In addition to the other guidelines and standards outlined herein, when considering the types of Permit applications described under Works Administratively Approvable paragraphs A, B, C, D, E, F, G the following Rules shall apply:

H. The MSTRWD Administrator shall not approve Permit applications which propose to change the elevation or grade of a drainageway.
I. The MSTRWD Administrator may add reasonable conditions to the approval of a Permit to address site-specific or work-specific concerns. All conditions of the Permit, to the extent possible, shall be met before the Permit can be deemed compete. Conditions requiring performance prior to the initiation of work shall be met before the applicant can begin work.
J. If a Permit application meets the administrative approval requirements (under Works Administratively Approvable) paragraphs A, B, C, D, E, F, G but the MSTRWD Administrator determines that administrative approval is inappropriate due to unusual circumstances or additional information is required, the Permit application shall be brought before the Board for approval.
K. The MSTRWD Administrator shall report all administratively approved Permits to the Board.
L. The MSTRWD Administrator is not authorized to deny a permit but may provide the Board with a recommendation for denial of the Permit application, including reasons for denial.

- Works Not Requiring Permits

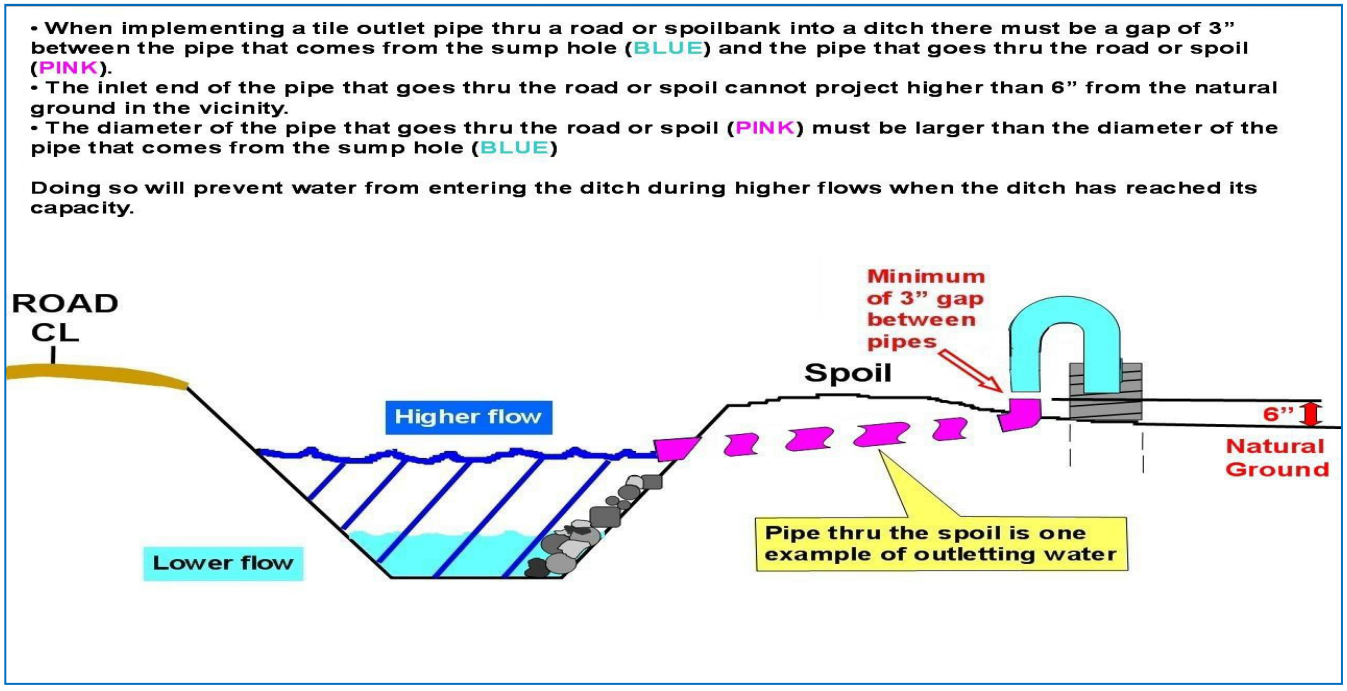
No Permit from the MSTRWD is required:

A. To perform maintenance on an existing drainageway that is not under the authority of the MSTRWD. A landowner or public entity performing maintenance is responsible for ensuring the work constitutes maintenance as defined in these Rules. If a landowner is unsure whether proposed work constitutes maintenance, they may seek technical assistance from the MSTRWD.
B. To maintain, repair or replace damaged subsurface tile drainage or subsurface tile drainage pump within a private drainageway without altering the original permitted design of the system.
C. To install in-field drainage improvements where the outlet for such improvements is not a public drainage system and the immediate downstream outlet control (i.e. a culvert or other restriction is not improved).
D. To perform maintenance or repair on levees and dikes which does not alter the original works permitted by the MSTRWD.

E. Nothing herein shall relieve the applicant of the responsibilities of obtaining any other authorization required by law or regulation, or alter the applicant's responsibility or liability under statutory or common law.

Permit applications need to be submitted by Wednesday at noon, prior to the next Board Meeting. The Board reviews permit applications at each regular meeting. Anyone contemplating work described above is urged to contact the Watershed District office for additional information. To get a copy of the Amended Rules & Regulations an individual may stop by the office or view and print them from our website.

Example of a well-designed tile sump pump and pipe infrastructure emptying into Judicial Ditch 20 Branch A SW4 section 19 Vega Township

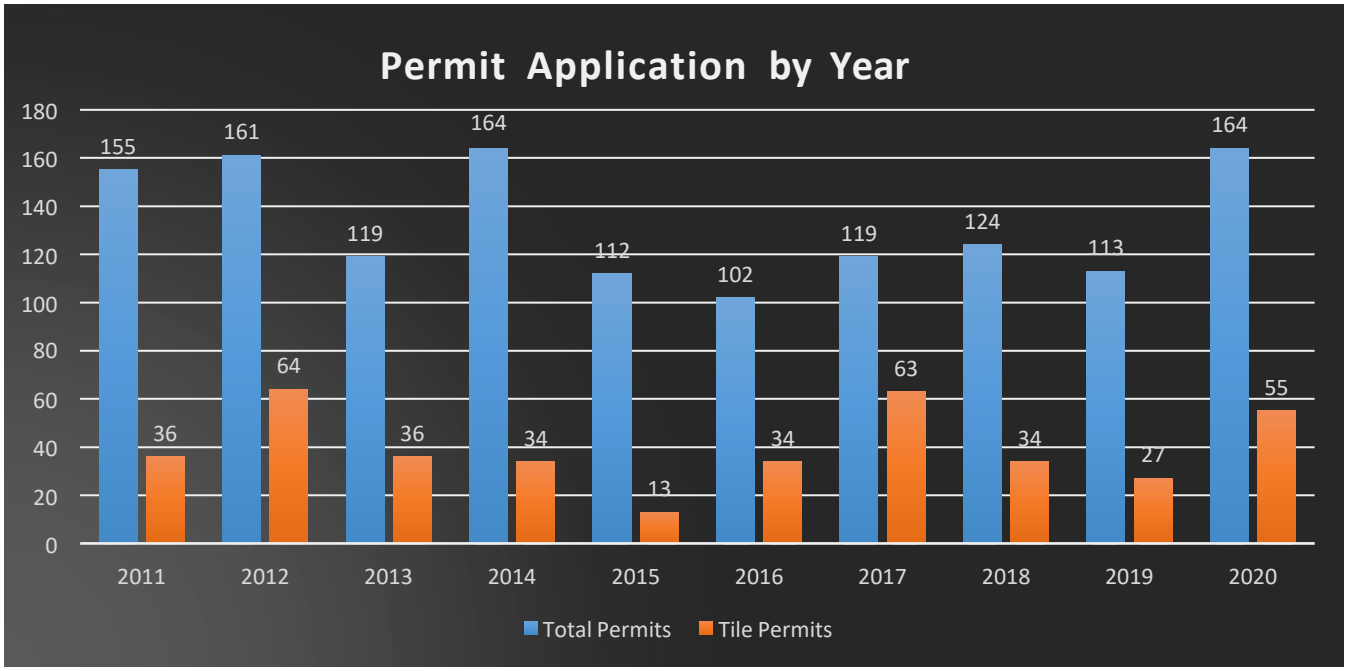


A diagram that demonstrates how the Board of Managers would like to see drain tile pumps and outlet pipes installed

PERMITS

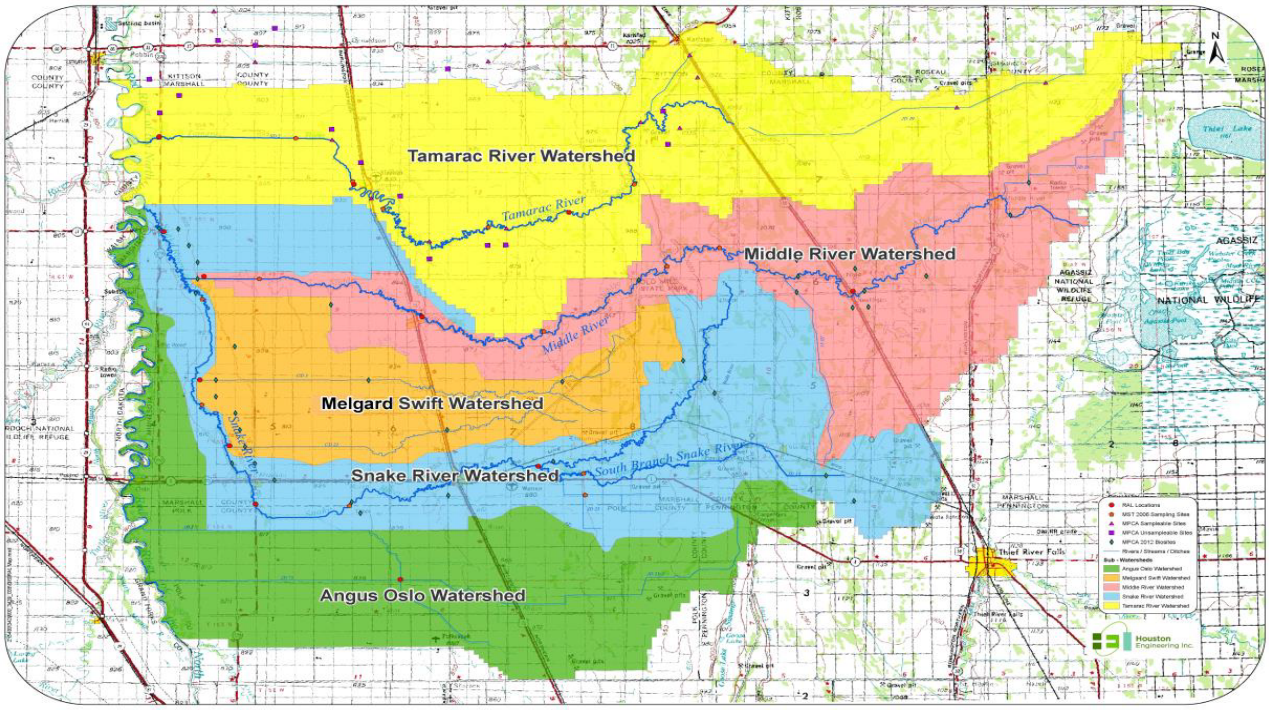
The District Board requests that all permit applications be submitted by Wednesday, at noon, prior to the next Board Meeting to allow for staff to gather information for the Managers in a timely manner.

In 2020, the Board reviewed 164 permit applications. Of the permits reviewed, 55 were for drain tile, 5 were for bridge replacements and 31 others were for new crossings. The following table reflects the number of permit applications per year:



Graph of each year's total number of applications

FIVE PLANNING REGIONS OF THE MSTRWD



Each of the five planning regions of the MSTRWD are highlighted in different colors

1. Tamarac River Planning Region

In general, issues within this planning region are associated with flooding/runoff reduction, erosion and sediment control, channel maintenance, water quality, wildlife and land use management.

Flooding is common throughout the District during spring melt and heavy rains. Floodwaters from both the Tamarac and Middle Rivers frequently break out of the banks near Stephen and east of Argyle, which cause overland flooding. Additionally, runoff initially designated for the Roseau River is being diverted into this planning region and continues to aggravate flood conditions. The region also struggles with providing adequate drainage, while minimizing erosion and maintaining channel stability. Throughout the region, channels appear to be undersized. This is evident by the widespread instability of the channels as they down cut and widen to handle flows. In addition to water erosion, soils within the region are highly susceptible to wind erosion. Wildlife and water quality issues include fish passage concerns, low base flow conditions and the impaired status of the river.

For more information on current projects within this planning region please see Judicial Ditch #19 RCPP Project Team and Tamarac River WRAPS under the Ongoing Projects section of this document.

2. Middle River Planning Region

As with the Tamarac River, the Middle River planning region exhibits a number of problem areas associated with flooding, erosion, channel stability, loss of habitat, and water quality. Accelerated runoff from the eastern portion of the region contributes to higher flows and flooding in the middle and western portions of the region. Despite the accelerated runoff, drainage systems in the eastern portion are undersized for the flow they receive. This contributes to the bank instability and erosion observed across the region. The accelerated runoff also created low flow conditions in the region that do not adequately support aquatic life, as is evident by the impaired status of the river.

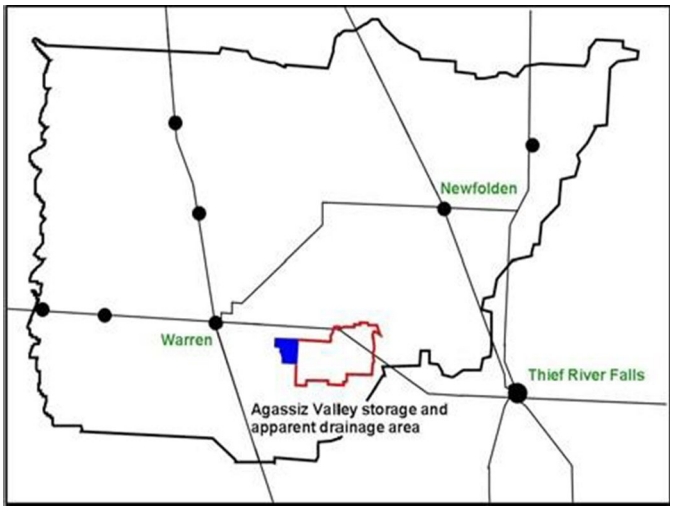
For more information on current projects within this planning region please see Newfolden/Middle River Subwatershed Flood Damage Reduction Project Team and the Snake & Middle River WRAPS under the Ongoing Projects section of this document.

3. Snake River Planning Region

Overland flooding, channel instability and insufficient channel size are persistent problems through this planning region. Channel improvements and restoration projects are needed along the Snake River, contributing ditches and coulees, to remove sediment and debris, to stabilize stream banks. The intent of these efforts is to prepare the stream to handle the flows without floodwaters spilling over the banks. As in other regions, soil erosion caused by wind, conversion of CPR land and the farming of riparian buffer strips are prevalent concerns. Wildlife management issues in the region include a need for clarification of DNR permits/requirements when cleaning Protected Waters, ditches and streams, a request to shift emphasis from managing public land from waterfowl to all wildlife species, and concerns about effect low base-flow conditions in the streams affecting fish habitat.

For more information on current projects within this planning region please see Judicial Ditch #14 RCPP Project Team and the Snake & Middle River WRAPS under the Ongoing Projects section of this document.

Agassiz Valley Water Resources Management Project



Agassiz Valley Water Resource Management Location and Drainage Area

The Agassiz Valley Water Resource Management Project (Agassiz) was developed from the outcome of the Mediation Agreement between the State of Minnesota and the Red River Watershed Management Board. The project was one of four funded by the State Legislature at a cost share of 75% State and 25% local. A multi-purpose project, it combines flood control and environmental enhancement features. Groundbreaking for the project was held June 24, 2008 and the entire flood control project was operational in the spring of 2010.

Project Statistics	
Drainage Area (square miles)	~31.6 square miles
Total Floodwater Storage (acre-feet)	10,670 acre-feet = 6.4 inches of runoff
Gated Flood Storage (acre-feet)	6,840 acre-feet = 4.1 inches of runoff
Temporary Flood Storage (acre-feet)	3,830 acre-feet = 2.3 inches of runoff
Approximate Land Requirements	2,600 acres
Prairie and Emergent Wetland Areas	~ 480 acres
Estimated Total Cost	$10,700,000

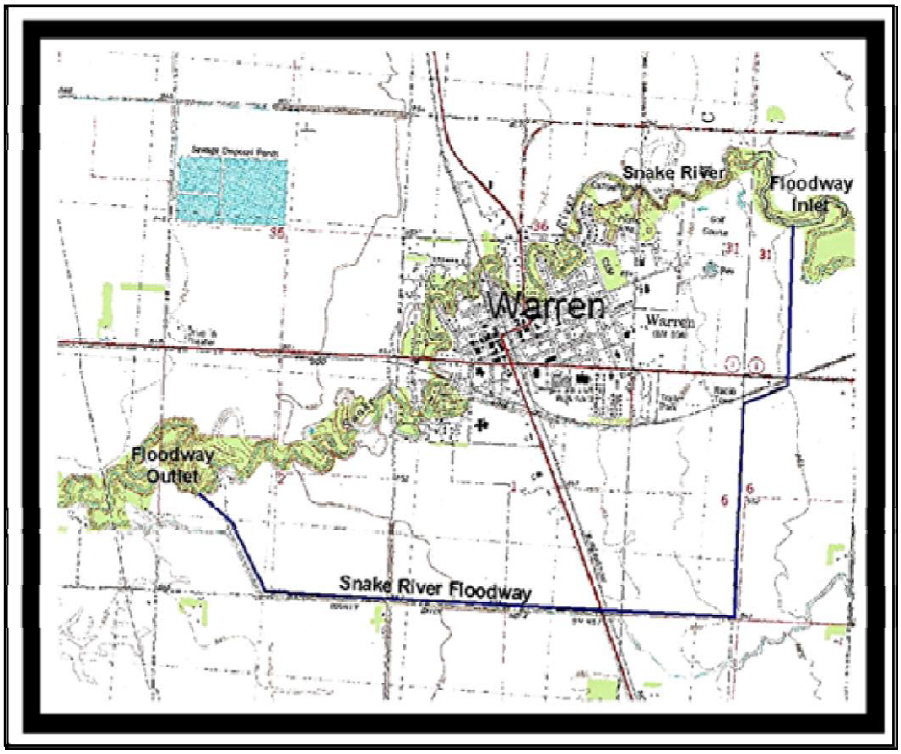
Agassiz occupies four sections of land and includes inlet ditches to total approximately 2,600 acres in the vicinity of Comstock Strip Township & McCrea Strip Township in Marshall County and Helgeland Township & Brislet Township in Polk County. The impoundment temporarily stores floodwater originating in the drainage area of Judicial Ditch #25-1. The project includes the construction of approximately 5.25 miles of embankment; associated inlet and outlet work; approximately 5.5 miles of inlet channels and approximately 2 miles of bypass channel.

Figure 1 Agassiz Valley aerial photo looking southeast, the outlet structure is located at the bottom of the photo. JD #25-1 is the ditch that Agassiz outlets into, which flows to the Snake River.

Agassiz has a significant impact in reducing flood damages in the Snake River Basin and also reduces flood damages in the Red River Basin. In addition to providing significant flood control and water quality benefits, the project provides grassland and woodland habitat, increased species diversity, educational and recreational opportunities, interpretive trails and overlooks, and a summer base flow augmentation for the Snake River.

Snake River PL-566 Project

Throughout its history, the City of Warren has endured numerous floods. In 1996 and 1997, the City suffered 3 major floods that caused an estimated $12.7 million dollars in damages. The late Mayor of the City of Warren, Richard P Nelson, had a dream to spare his City from more years of ravaging floods from the Snake River. Mr. Nelson recognized the opportunity provided by the USDA/NRCS Small Watershed Program, and set out to make his dream become a reality.

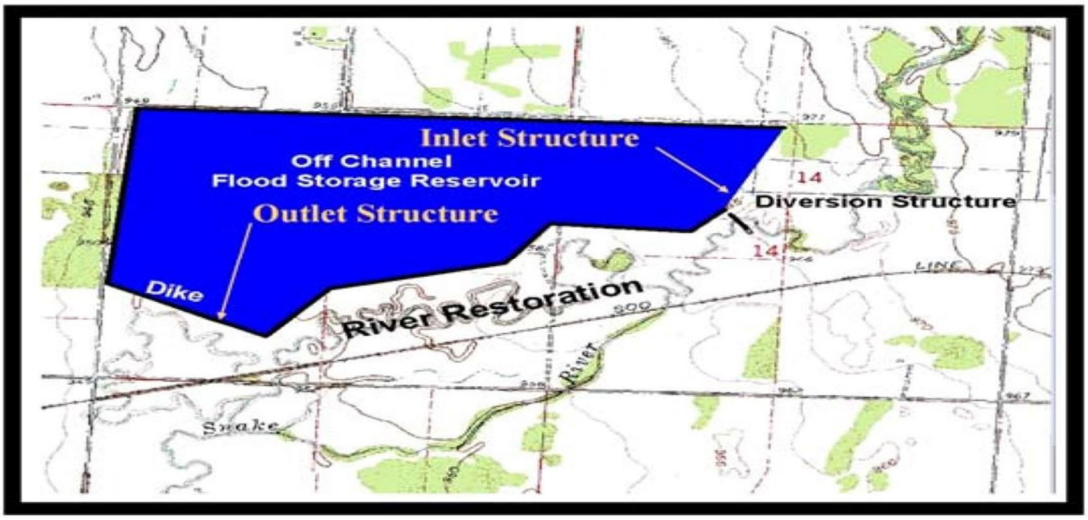


PL-566 Richard P Nelson Floodway map

In 1997, the City of Warren and the MSTRWD, the local sponsors of the project, asked the Natural Resources Conservation Service (NRCS) for assistance on planning and construction on the Snake River Watershed Project.

In November 1999, project plan consisted of 4 phases of construction: the lower mile of the floodway and outlet chute, the off-channel floodwater storage site, the Snake River diversion structure and upper 3 miles of floodway, and the establishment of the mitigation features. In 2000, the MSTRWD held two public hearings and unanimously passed the Order for the Establishment of the PL-566 Project. The Snake River PL-566 Project groundbreaking ceremony *"Soaring to a Bright Future"* was held on October 26, 2001.

Although the project was not totally complete, it was operational in the spring of 2006 and it saved the City of Warren from flooding. The NRCS's estimation was approximately $8.7 million of flood damages that could have occurred. The PL-566 Project was officially dedicated in the summer of 2010. The Natural Resources Conservation Service and the MSTRWD provided funding for the landscaping of the Richard P. Nelson monument.



Map showing the location of the Off-Channel Flood Storage Reservoir located in Comstock Township

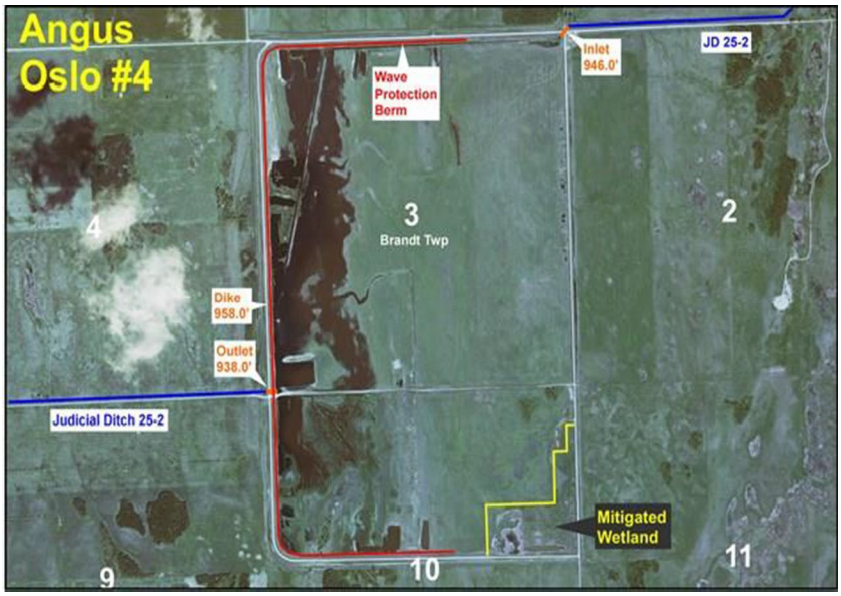
The Off-Channel Flood Storage Reservoir and Diversion ditch were funded by PL-566 which requires that the NRCS do yearly inspections of the project. Dave Jones from the NRCS completed an inspection of the Snake River Off Channel Storage Site. Cracking and deterioration along the inlet channel to the outlet drop structure has not changed from the 2016 inspection. Varmint digging continues to be an issue on the outside face of the embankment. This will require ongoing maintenance by the Watershed District. Dave Jones also inspected the Richard P Nelson Diversion Ditch around Warren.

Aerial photo of the Off-Channel Storage Reservoir located in Comstock Township

4. Melgard-Swift Coulee Planning Region

Overland flooding is the major concern in this region, particularly in the vicinity of CSAH 3 and TH 75. In addition, there is a general concern about channel instability and capacity in the areas of CD3 and along both the Melgard and Swift coulee channels. Soil erosion caused by water and wind has been deposited in the channel beds. The process is thought to be exacerbated by the conversion of CRP land to farmland and the farming of coulee edges, resulting in the need for more frequent channel maintenance. As with other regions, additional storage is likely needed to correct accelerated runoff timing and mitigate both minimum and peak flows. For more information on current projects within this planning region please see the Swift Coulee/ Marshall County Ditch 3 Project under the Ongoing Projects section of this document.

5. Angus-Oslo Planning Region

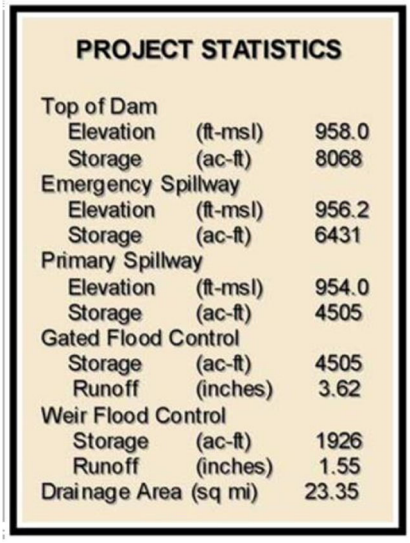


Map of Angus Oslo #4 Impoundment

Overland flooding, channel stability, soil erosion and ditch maintenance are issues in this planning region. During flood events access to the city of Oslo is limited. Restricted access to Oslo can be as long as five weeks. Portions of townships roads are under water with the worst problems being near the Red River. The channelization of streams in this region has reduced aquatic habitat diversity. Three of the District's five projects are in this Planning Region.

Angus Oslo #4 Impoundment

Angus Oslo #4 Outlet Structure



Angus Oslo #4 Project Statistics

In December 1994, the Board of Managers initiated by resolution for a new project to establish an off-channel impoundment in the vicinity of Sections 3 and 10 of Brandt Township, Polk County, Minnesota. Construction of the impoundment started in 1999 and has been operational since 2001. The total estimated cost of the project is $3.3 million. The Red River Watershed Management Board funded approximately 85% of the construction cost. The Watershed paid approximately 15%, with additional funding from a State of Minnesota Flood Damage Reduction Program Grant.

The drainage area above the project is approximately 23.4 square miles. The project can store 4,500 acre-feet of water (5.2 inches of runoff) - up to the emergency spillway.

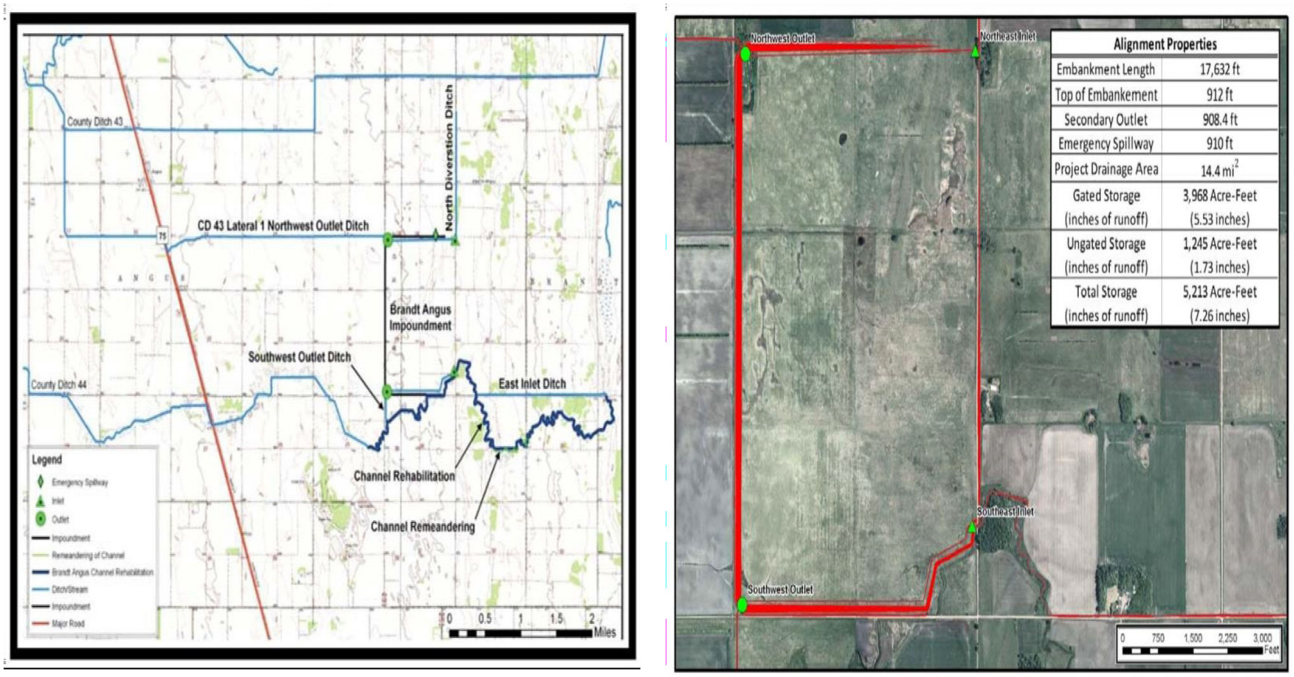
Following the impoundment construction, downstream landowners had expressed concerns about water leaving the bypass ditch during previous high flow events. Originally planned for 2019, the Bypass Raise project had been delayed until 2020 due to wet conditions. The exterior spoil bank was built up upwards of 2.5’ and was tied back into the existing ridge. Kraulik Excavating of Karlstad was awarded the job and they used clay from a borrow pit inside the impoundment to build up the dike.

Brandt/AngusCouleeProject

The Brandt/Angus impoundment is a multi-purpose off channel flood control project combining both flood control and environmental enhancement features through Wetland Reserve Program (WRP). It became operational in 2012 and it occupies approximately 1.5 sections of land (960 acres) 3.5 miles southeast of Angus in Polk County. The impoundment can hold 5,213 acre-feet of water (3,968 acre feet of gated and 1,245 of un-gated to the emergency spillway) from a calculated 7.26" of runoff.

The primary purpose of the Brandt-Angus project is to reduce flood damages downstream, reduce the frequency of summer storm flooding of agricultural land and to restore/maintain/enhance the natural stream habitat in the Brandt Angus Coulee. Secondary features are to provide for environment enhancement features such as wet prairies, stream restoration and water quality benefits.

The Red River Watershed Management Board and the MN Department of Natural Resources partnered with the Brandt/Angus Project through the Flood Damage Reduction Program and the MSTRWD.



Maps of Brandt-Angus Impoundment

When Brandt Angus Coulee was being planned, the MSTRWD agreed to assume the responsibility of maintaining the coulee up and downstream from the impoundment. In August, Olson Construction TRF Inc removed sediment from about 4,850' of the coulee in section 25 Angus Twp, downstream from the impoundment.

In 2010, the Project received Step II approval from the RRWMB and entered into a Flood Damage Reduction grant agreement with the MN DNR. With the natural resource enhancements that have been incorporated into the project, a 65% State 35% local cost share was obtained.

In addition, the District was able to utilize the Natural Resource Conservation Service Wetland Restoration Program (WRP) to offset land acquisition costs. Over 575 acres were enrolled into a conservation easement at a savings of over $450,000 to the Project. Restoration of wetlands relates to the District's management plan by increasing quality wetlands.

Wetland Reserve Programs signs are posted around the property mapping the boundaries of the wetland restoration

Following the wet fall of 2019, landowners upstream of the impoundment inquired if there was a way to get water into the impoundment faster. In 2020 the District hired Kraulik Excavating to regrade the northeast inlet ditch allowing water to enter the impoundment at a quicker rate. The District also had the Brandt/Angus coulee cleaned downstream of the southwest outlet to improve the rate of release from the impoundment.

Photo taken at the Brandt Angus Coulee Project. This was taken looking west from the NE corner of the Project and is of the NE Inlet Ditch.

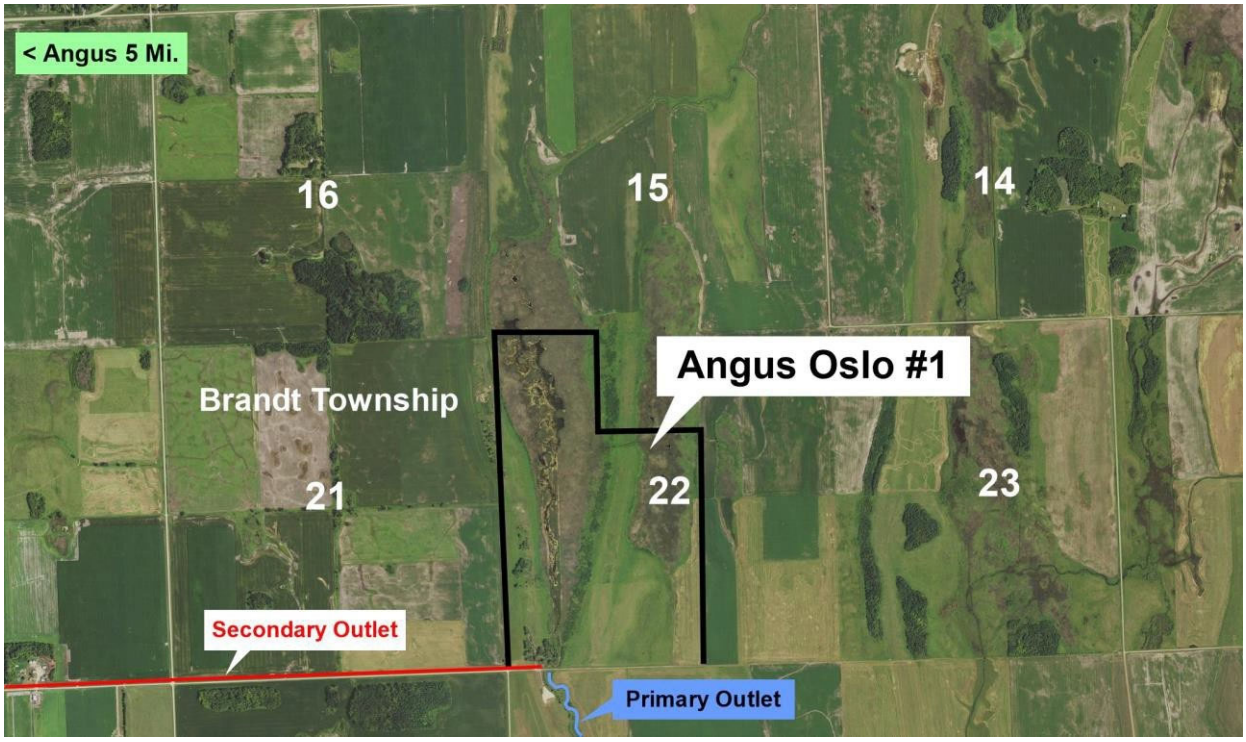
The ditch was deepened to increase the westerly grade to allow for improved drainage from the North Inlet Ditch along 260th Ave NW.

Angus Oslo Site #1 Impoundment

SELECTED STATISTICS		
100 yr		
Storage	(ft.-msl)	941.8
Volume	(ac-ft)	570
10 yr		
Storage	(ft.-msl)	940.8
Volume	(ac-ft)	340
Gated Storage		
Storage	(ft.-msl)	940.5
Volume	(ac-ft)	295
Drainage area	(sq mi)	3.1

Angus Oslo 1 statistics

The Board of Managers of the Middle River Snake River Watershed District (now the Middle-Snake-Tamarac Rivers Watershed District) established the Angus Oslo Site #1 Impoundment in 1982. Primarily a flood control project, Angus-Oslo #1 also provides incidental wildlife benefits. The affected area includes a wetland area totaling approximately 125 acres and approximately 145 acres of cropland. Completed in 1983, the $152,000 project was funded by the Legislative Commission on Minnesota Resources (LCMR), the Red River Watershed Management Board and the Middle River Snake River Watershed District project fund.



Map of Angus Oslo #1 Impoundment

THE RED RIVER WATER MANAGEMENT BOARD

The MSTRWD is a member of the Red River Watershed Management Board. In 2017, Manager Roger Mischel was appointed by the MSTRWD Board of Managers as the District's representative and Manager John W Nelson, the alternate.

As a member, the District coordinates with the RRWMB on the following projects:

- The District cost-shares with the RRWMB on Flood Damage Reduction Projects.
- The District supports the RRWMB River Watch program with high schools in the Red River Basin. Students from Warren-Alvarado-Oslo, Marshall County Central and Stephen-Argyle Central collect water samples in the District. The resulting data is forwarded to the International Water Institute
- The District partners with the RRWMB on cost-sharing with the US Geological Survey in the maintenance and operation of stream gauges.
- In 2010, the RRWMB entered into an agreement with the Red River Joint water resources Board in North Dakota to form the Red River Retention Authority (RRRA) whose purpose is to seek funds to construct flood retention projects on both sides of the Red River of the North.

The RRWMB website www.rrwmb.org features RRWMB news, current projects, meeting documents, governing documents, policies, maps, contact information of RRWMB members and more!

MARSHALL COUNTY WATER RESOURCE ADVISORY COMMITTEE

The District is a member of the Marshall County Water Resources Advisory Committee (WRAC). District staff attends quarterly WRAC meetings along with landowner and Marshall County Township Association representatives and staff from the Minnesota Pollution Control Agency, Red Lake Watershed District, the Soil & Water Conservation District, the Natural Resources Conservation Services, US Fish & Wildlife Service, Board of Water and Soil Resources, Agassiz National Wildlife Refuge, MN DNR and the Marshall County Commissioners.

POLK COUNTY WATER RESOURCE ADVISORY COMMITTEE

The District is a member of the Polk County Water Resources Advisory Committee (WRAC). District staff attend quarterly WRAC meetings along with Polk County Commissioners, East Polk Soil & Water Conservation District, West Polk Soil & Water Conservation District, Board of Water & Soil Resources, Polk County Environmental Services, MN Department of Natural Resources, Sand Hill River Watershed

District, Red Lake Watershed District, MN Pollution Control Agency, The Nature Conservancy, River Watch, and International Water Institute.

EDUCATION AND OUTREACH

District staff encourage college and high school students, birdwatchers, community groups, outdoor recreation clubs and tourists to contact the District for tours of the MSTRWD flood control projects.

The MSTRWD and the Red Lake Watershed District have 5 locations where informational kiosks have been placed along impoundment sites to aid in educating bird enthusiasts and others interested in the natural resource enhancements impoundment sites have to offer within the area. The 5 locations are listed below.

Agassiz Valley Water Resource Management Project

5 miles east of Warren on 280th Ave NW and 1 mile south of Warren on 210th ST NW.

Agassiz Audubon

5 miles east of Warren on 280th Ave NW and 3 miles south of Warren on 190th ST NW.

Brandt-Angus Impoundment

2 miles south of Angus on US HWY #75 and 2.5 miles east of Angus on 120th St NW.

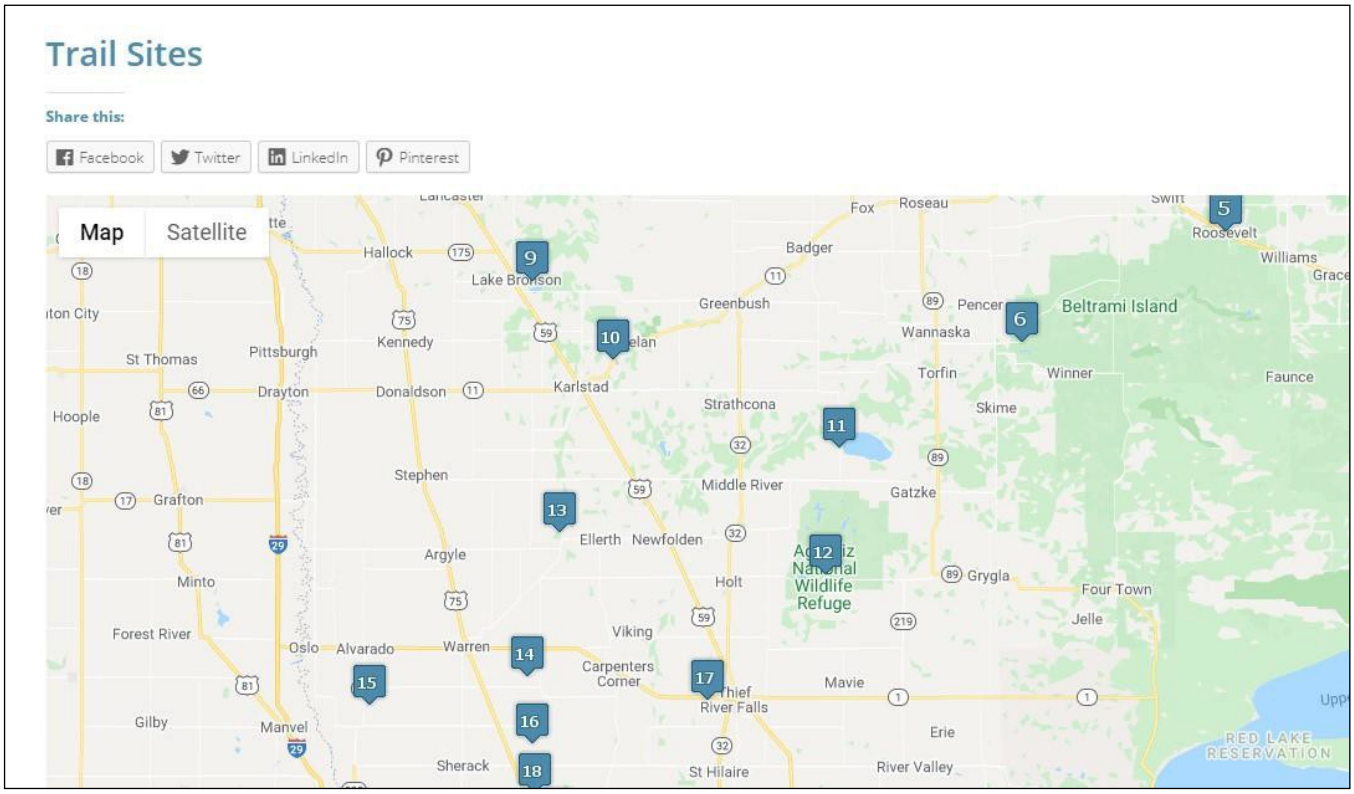
Euclid East Impoundment

1 mile east of Euclid on County Road #19.

Parnell Impoundment

4.5 miles south of Euclid on US HWY #75 and 2.5 miles east on County Road #17.

The Agassiz Valley Water Resource Management Project, Angus Oslo #4 Impoundment and the Brandt/Angus Impoundment sites were added to the Pine to Prairie Birding Trail. The Minnesota Trail is over 200 miles in length with 45 sites to view birds. The Pine to Prairie International Birding Trail extends another 300 miles north of Minnesota into Manitoba, Canada with an additional 23 sites and bird species.



Locations: #14 Agassiz Valley Water Resource Management Project; #15 Angus-Oslo #4; #16 Brandt/Angus

Additional information can be found on the Pine to Prairie International Birding Trail website, https://mnbirdtrail.com/about/.

Photographs taken by Heidi Hughes

MSTRWD Staff photo

Photograph taken by Heidi Hughes

The ditch systems and impoundments in the MSTRWD bring lots of wildlife and birds to the area. Impoundments such as Agassiz Valley and Brandt Angus Coulee, have great viewing areas that are open to the public. There are a spectacular variety of waterfowl especially during the migration seasons. The photos above, taken by Heidi Hughes who works with the Agassiz Audubon Society, are just a few birds that one can see. The Agassiz Audubon Society does bird conservation, habitat restoration, nature field trips, public programs, and more. They provide lots of opportunities to go birding and experience nature throughout the Red River Valley and the 480-acre property formerly known as the Agassiz Audubon Center at Wetlands Pines and Prairie Audubon Sanctuary. The property is owned and operated by the MSTRWD. If you would like more information about this organization, check out their Facebook page https://www.facebook.com/agassizaudubon/ or e-mail at agassizaudubon@gmail.com. You can even call to report bird sightings at 218-745-5663.

Photographs taken by Heidi Hughes

PUBLIC ACCESS

The District encourages the public to use the District properties for recreation opportunities such as canoeing, hiking, bird watching, photography, horseback riding, fishing, trapping and hunting. No motorized vehicles or boat motors are allowed on the properties.

HUNTING

The District has a public access permit procedure whereby an applicant reads and understands the District's access rules. The rules were developed from citizens within the District and based upon MNDNR hunting regulations, which were edited and approved of by the District Board. There were229 people that obtained permits to hunt, trap and fish on the District's properties in 2020.

PROJECTIONS FOR 2021

Impoundments

The District will continue to maintain the impoundments. Inspections will continue by staff and engineers.

Ditch Maintenance

The MSTRWD will continue to respond to landowner requests for ditch maintenance as well as continue its ditch inspection for sediment, weeds, brush, beaver dams and other obstructions to flow.

Water Quality

Staff will assist with the Lower Red River, Grand Maris Creek, Middle and Snake Rivers WRAPS projects, as needed. The district will continue to incorporate Water Quality benefits into the design of its future maintenance and repair projects.

The Red River Watershed Management Board

The District will continue to work with the Red Board in constructing flood control projects through the Mediation Agreement of 1998. The MSTRWD is committed to the RRWMB goal of 20% reduction of Red River peak flows from its tributaries into the Red River.

Stream Maintenance

The rivers and streams in the MSTRWD are important to the managing of surface water in the MSTRWD. Therefore, we will continue to assist landowners and agencies in the removal of tree deadfall from the channels, using programs such as Sentence to Serve (STS). The District historically has expended up to $5,000 per year contracting with STS.

Outreach and Education

Tours of the PL-566 Richard P Nelson Floodway and Off Channel Storage Site, the Agassiz Valley Water Resources Management Project can be arranged. Trail kiosks installed at Agassiz Valley, Brandt/Angus and the Agassiz Audubon Society location are available for viewing. To go along with the installation of the kiosks, all of these sites including Angus/Oslo #4 have been designated bird friendly sites mapped out by Pine to Prairie. The walking trails created and maintained by the Agassiz Audubon Society are

are open for exploration during the growing season and cross-country skiing in the winter months.

Drainage Management

Whether staff and the Board are working on the next flood damage reduction project, a ditch maintenance project or stream debris removal, the District will strive to incorporate its management plan. While the District's funding partners have been an important ally towards improving our natural resources, we anticipate further future opportunities in coordinating approaching projects with fellow agencies.

DITCH LEVIES

The following page has the list of the 2020 ditch levies to be collected in 2021, for the drainage systems under the jurisdiction of the District and the "Independent Auditors Report" for the year ending December 31, 2020. Once the levies are set, they are given to the Marshall, Pennington and Polk County Auditors.

2020 Ditch Levies for Drainage Systems under the Jurisdiction of the MSTRWD

System	County	Portion	Redetermination of Benefits Year	Benefits	2020 Levy %	2020 Levy ($)
JD #1	Marshall	13.56%	1993	$497,195	4.84%	$24,064
	Polk	86.44%	1992	$3,168,795	1.61%	$51,018
WD #2	Marshall	100.00%	1991	$40,513	1.23%	$498
SD #3	Marshall	100.00%	1958	$98,435	12.00%	$11,812
WD #4	Marshall	73.33%	1990	$97,791	0.99%	$968
	Polk	26.67%	1990	$35,575	2.25%	$800
WD #5	Polk	100.00%	1999	$2,568,049	0.50%	$12,840
WD #5 bond retirement fund	Polk	100.00%	1999	$2,568,049	0%	$0.00
WD #6	Polk	100.00%	1999	$1,940,736	0.50%	$9,703
WD #6 bond retirement fund	Polk	100.00%	1999	$1,940,736	0%	$0.00
WD #7	Marshall	58.40%	2000	$304,504	0.50%	$1,522
	Polk	41.60%	2000	$34,063	0.50%	$170
WD #7 Imp	Marshall	58.40%	2000	$76,133	0.75%	$570
	Polk	41.60%	2000	$54,237	0.75%	$406
JD #14	Marshall	74.92%	2014	$983,879	3.00%	$29,516
	Pennington	25.08%	2014	$329,416	5.00%	$16,470
JD #15	Marshall	100.00%	1980	$1,535,665	2.75%	$42,230
JD #16	Marshall	100.00%	1987	$929,352	0.50%	$4,646
JD #17	Marshall	6.48%	1982	$43,470	0.00%	-
	Polk	93.52%	1982	$627,149	1.00%	$6,271
JD #20	Marshall	100.00%	1985	$2,354,906	1.70%	$40,033
JD #21	Marshall	100.00%	1985	$279,838	1.80%	$5,037
JD #24	Marshall	72.78%	1990	$247,353	0.75%	$1,855
	Polk	27.22%	1990	$92,494	0.75%	$693
JD #25-1	Marshall	38.34%	2014	$388,653	4.00%	$15,546
	Polk	56.33%	2014	$571,047	4.00%	$22,841
	Pennington	5.33%	2014	$54,032	4.00%	$2,161
JD #25-2	Marshall	9.21%	1989	$70,810	4.00%	$2,832
	Polk	55.66%	1989	$427,954	4.00%	$17,118
	Pennington	35.13%	1989	$270,062	4.00%	$10,802
JD #28	Marshall	100.00%	1913	$55,990	20.00%	$11,198
JD #29	Marshall	100.00%	1981	$2,237,910	2.50%	$55,947
CD #39	Marshall	100.00%	1990	$125,681	0.99%	$1,244
CD #39i	Marshall	100.00%	1996	$108,466	0.99%	$1,073
CD #43	Polk	100.00%	1989	$1,176,137	4.30%	$50,573
CD #44	Polk	100.00%	1989	$1,001,112	2.00%	$20,022
JD #68	Polk	100.00%	1995	$248,110	0.15%	$372
JD #75	Polk	100.00%	1990	$3,653,439	3.00%	$109,603
CD #175	Polk	100.00%	1997	$1,288,554	2.75%	$35,435

CONCLUSION

2020 started out with flooding in some areas. Portions of the District received adequate rainfall in June and July. Other areas had too much rain resulting in a total crop failure. Going into the fall there was a shortage of rain, which improved some harvest conditions, but probably also reduced some yields. The lack of moisture delayed cover some crop germination, which leaves the soil subject to erosion over the winter.

The public often comments that it seems like we are getting more water than we used to, which is true. Depending on where a person's property is, land use probably provides the biggest change. Following that, is the ditching methods have vastly improved. Spotty, heavy rain events continue to cause localized flooding and damages. The one thing District staff hasn't seen, is drainage changes from one sub-watershed to another. Occasionally, staff does meet with landowners to view suspected alterations in drainage.

The City of Newfolden 100 Year floodplain and Flood Prevention Project plans should be finalized in 2021, with possible construction in 2022.

It's possible the JD #19 RCPP and JD #14 RCPP Projects will have plans finalized sometime in 2021. We anticipate construction activity in 2022.

Although no landowners have agreed to have largescale floodwater storage on their property for the Swift Coulee Project, it's possible multiple smaller projects could take place. Finding landowners willing to sell property, or sell a flowage easement while retaining the property, is a challenge.

The One Watershed One Plan, administered through the Board of Water and Soil Resources, will be taking place in 2021. Water quality and quantity are the main focuses of the Plan. Addressing flooding will be a significant issue for us.

If you have any questions, comments or concerns related to the mission of the MSTRWD, please contact a Board Manager or the staff at the District office.