APPENDICES

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APPENDIX A

Memorandum of Agreement

2016 MOA

MEMORANDUM OF COOPERATIVE AGREEMENT
RED LAKE RIVER PLANNING GROUP

This cooperative agreement (Agreement) is made and entered into by and between:

The Counties of Polk, Red Lake, and Pennington (Counties) by and through their respective County Board of Commissioners, and

The West Polk, Red Lake County, and Pennington Soil and Water Conservation Districts (SWCDs), by and through their respective Soil and Water Conservation District Board of Supervisors, and

The Red Lake Watershed District (RLWD), by and through its Board of Managers,

Collectively referred to as the "parties."

WHEREAS, the Counties of this Agreement are political subdivisions of the State of Minnesota, with authority to carry out environmental programs and land use controls, pursuant to Minnesota Statutes Chapter 375 and as otherwise provided by law; and

WHEREAS, the Soil and Water Conservation Districts of this Agreement are political subdivisions of the State of Minnesota, with statutory authority to carry out erosion control and other soil and water conservation programs, pursuant to Minnesota Statutes Chapter 103C and as otherwise provided by law; and

WHEREAS, the Watershed District of this Agreement is a political subdivision of the State of Minnesota, with statutory authority to conserve the natural resources of the state by land use planning, flood control, and other conservation projects by using sound scientific principles for the protection of the public health and welfare and the provident use of the natural resources, pursuant to Minnesota Statutes Chapter 103B, 103D, 103E and as otherwise provided by law; and

WHEREAS, the parties to this Agreement have a common interest and statutory authority to prepare, adopt, and assure implementation of a comprehensive watershed management plan in the Red Lake River Watershed to conserve soil and water resources through the implementation of practices, programs, and regulatory controls that effectively control or prevent erosion, sedimentation, siltation and related pollution in order to preserve natural resources, ensure continued soil productivity, protect water quality, reduce damages caused by floods, preserve wildlife, protect the tax base, and protect public lands and waters; and

WHEREAS, with matters that relate to coordination of water management authorities pursuant to Minnesota Statutes Chapters 103B, 103C, and 103D and with public drainage systems pursuant to Minnesota Statutes Chapter 103E, this Agreement does not change the rights or obligations of the public drainage system authorities; and

WHEREAS, pursuant to Minnesota Statutes Section 103B.101 Subd. 14, the Board of Water and Soil Resources (BWSR) "may adopt resolutions, policies, or orders that allow a comprehensive plan, local water management plan, or watershed management plan, developed or amended, approved and adopted, according to chapter 103B, 103C, or 103D to serve as substitutes for one another or be replaced with a comprehensive watershed management plan," also known as the "One Watershed, One Plan"; and

WHEREAS, the parties previously entered into a Memorandum of Agreement for the purpose of planning the One Watershed, One Plan for the Red Lake River Watershed, and the parties have now formed this Agreement for the specific goal of implementing the One Watershed, One Plan for the Red Lake River Watershed.

NOW, THEREFORE, the parties hereto agree as follows:

1. **Purpose:** The parties to this Agreement recognize that a guiding principle of One Watershed, One Plan is that "One Watershed, One Plan implementation will be accomplished through formal agreements among participating local governments on how to manage and operate the watershed." The parties to this Agreement acknowledge "that the purpose of this principle is to provide assurances that decision-making spanning political boundaries is supported by an in-writing commitment from participants." [The quoted sections are from *One Watershed One Plan Operating Procedures for Pilot Watersheds,* Page 13 BWSR June 25, 2014 document.]

   The parties working together for the purpose of planning the One Watershed, One Plan for the Red Lake River Watershed (Attachment A), known collectively as the "Red Lake River Planning Group" under the Memorandum of Agreement, now establish, through this Agreement, the process for governance of the implementation of the plan as they continue to recognize the importance of partnerships to plan and implement, protection and restoration efforts for the Red Lake River Watershed. Parties signing this Agreement will continue to be collectively referred to as the "Red Lake River Planning Group" and are partnering together in the form of this Agreement pursuant of the cooperative authority contained in Minnesota Statutes Section 471.59.

   This Agreement does not establish a joint powers entity but set outs the terms and provisions by which the parties "may jointly or cooperatively exercise any power common to the contracting parties or any similar powers, including those which are the same except for the territorial limits within which they may be exercised." Minnesota Statutes Section 471.59. As is permitted under the joint exercise of powers statute, Minnesota Statutes Section 471.59, the parties agree that under this Agreement, and as agreed upon and directed by the Policy Committee, one or more of the parties may exercise any power common to them on behalf of the other participating units, such as they have done under the Memorandum of Agreement where the Red Lake Watershed District has provided the day-to-day administrative duties of the Red Lake River Planning Group and the Pennington SWCD has been the fiscal agent.

2. **Term:** This Agreement is effective upon signature of all parties in consideration of the BWSR Participation Requirements for One Watershed, One Plan; and will remain in effect until canceled according to the provisions of this Agreement, unless earlier terminated by law.

3. **Adding Additional Parties:** A qualifying party within the Red Lake River Watershed that is responsible for water planning and resource management according to Minnesota State Statutes desiring to become a member of this Agreement shall indicate its intent by adoption of a governing board resolution that includes a request to the Policy Committee to join the Red Lake River Planning Group, a representative appointed to the Policy Committee, and a statement that the qualifying party agrees to abide by the terms and conditions of this Agreement; including but not limited to the bylaws, policies, and procedures adopted by the Policy Committee.

4. **Procedure for Parties to Leave Membership of the Agreement:** A party desiring to leave the membership of this Agreement shall indicate its intent in writing to the Policy Committee in the form of an official board resolution. Notice must be made 180 days in advance of leaving the Red Lake River Planning Group. A party that leaves the membership of the Agreement remains obligated to complying with the terms of any grants the Red Lake River Planning Group has at the time of the party's notice to leave membership and is obligated until the grant has ended.

5. **General Provisions**:

   a. **Compliance with Laws/Standards:** The parties agree to abide by all Federal, State or local laws; statutes, ordinances, rules and regulations now in effect or hereafter adopted pertaining to this Agreement.

   b. **Indemnification:** Each party to this Agreement shall be liable for the acts of its officers, employees or agents and the results thereof to the extent authorized or limited by law and shall not be responsible for the acts of any other party, its officers, employees or agents. The provisions of the Municipal Tort Claims Act, Minnesota Statutes Chapter 466 and other applicable laws govern liability of the parties. To the full extent permitted by law, actions by the parties, their respective officers, employees and agents, pursuant to this Agreement are intended to be and shall be construed as a "cooperative activity" and it is the intent of each party that this Agreement does not create any liability or exposure of one party for the acts or omissions of any other party pursuant to Minnesota Statutes Section 471.59, Subd. 1a. (a). If a party is found responsible for any liability associated with the actions of the Group, said party agrees to indemnify and hold harmless any of the other non-liable parties of the Group for any defense costs and expenses associated with any such claim.

   c. **Employee Status:** The parties agree that the respective employees or agents of each party shall remain the employees or agents of each individual respective party.

   d. **Data Practices and Records Retention:** The parties agree that each respective party will be responsible for complying with the Minnesota Government Data Practices Act (Minnesota Statutes Chapter 13), and the Official Records Act (Minnesota Statutes Section 15.17) for the data collected, created, received, maintained, disseminated or stored by each respective party pursuant to the terms of this Agreement. The Group will designate a responsible data official to collect and comply with all data requests associated with grants awarded or projects undertaken by the Group.

   e. **Timeliness:** The parties agree to perform obligations under this Agreement in a timely manner and keep each other informed about any delays that may occur.

   f. **Termination:** The parties anticipate that this Agreement will remain in full force and effect until canceled by all parties, unless otherwise terminated in accordance with law or other provisions of this Agreement. The parties acknowledge their respective and applicable obligations, if any, under Minnesota Statutes Section 471.59, Subd. 5 after the purpose of the Agreement has been completed.

g. **Distribution of Property:** At the time of termination, any property acquired as the result of such cooperative exercise of powers and any surplus monies remaining shall be divided pro-rata in proportion to the contributions of the several contracting parties. If no contributions have been made, the assets and surplus monies shall be divided equally among the parties.

6. **Structure:** To carry out the planning, development, implementation and governance of the Red Lake River One Watershed, One Plan, the parties agree to continue the structure established under the Memorandum of Agreement, which includes the Policy Committee, the Advisory Committee, and the Planning Workgroup.

   a. **Policy Committee.** The parties agree that the Policy Committee established under the Memorandum of Agreement for the purpose of developing the One Watershed, One Plan shall continue to operate cooperatively, but not as a single entity, for the purpose of implementation of the Red Lake River Watershed plan. Membership on the Policy Committee shall remain as each party's designated representative. That individual who serves as their respective party's designated representative must be an elected or appointed member of that party's governing board. The governing boards may choose alternates to serve on the Policy Committee from their boards as needed. The Policy Committee will meet quarterly or as needed.

      i. Authority of Policy Committee Members: Each representative on the Policy Committee shall have one vote, and shall have the authority to act on behalf of the party they represent in the following matters: grant applications for grants the Policy Committee has voted to apply for/request on behalf of the Red Lake River Planning Group; report review and approval, payments under Red Lake River Planning Group grant(s), the implementation of the plan, plan amendments, and the governance of the plan. The Policy Committee will follow the bylaws adopted by the Policy Committee and will have the power to modify the bylaws.

      ii. Policy Committee Member Duties: Each Policy Committee member will serve as a liaison to their respective governing boards and has the responsibility to inform their governing board on actions taken by the Policy Committee.

   b. **The Advisory Committee**. The parties agree that the Advisory Committee shall continue to provide technical support on the plan implementation to the Policy Committee, including identification of priorities. The Advisory Committee will remain as consisting of the local Planning Workgroup, the state's main water agencies, citizens, and other identified stakeholders. The Advisory Committee will meet quarterly or as needed.

   c. **The Planning Workgroup**. The parties agree that the Planning Workgroup shall continue and shall consist of the One Watershed One Plan Coordinator, local water planners, and the WD Administrator for the purposes of logistical and day-to-day decision-making in the implementation process. The Planning Workgroup will meet quarterly or as needed.

7. **Implementation of the Plan.** The parties agree to adopt and begin implementation of the plan within 120 days of state approval and provide notice of plan adoption pursuant to Minnesota Statutes Chapter 103B and 103D.

8. **Fiscal Agent.** The Policy Committee shall appoint annually one of the parties to the Agreement to be the Fiscal Agent for the Red Lake River One Watershed One Plan. The Fiscal Agent agrees to:

    a. Accept all fiscal responsibilities associated with grant agreements applied for and received by the Red Lake River Planning Group.

    b. Perform financial transactions as part of contract implementation.

    c. Pursuant to Minnesota Statutes Section 471.59, Subd. 3, provide for strict accountability of all funds and report of all receipts and disbursements and annually provide a full and complete audit report.

    d. Provide the Policy Committee and the Planning Workgroup with such records as are necessary to describe the financial condition of the grant agreements the Policy Committee oversees.

    e. Responsible for fiscal records retention consistent with the Fiscal Agent's records retention schedule until termination of this Agreement. At that time, the fiscal records will be turned over to the One Watershed One Plan Coordinator.

9. **One Watershed One Plan Coordinator**. The Policy Committee shall appoint annually a "One Watershed One Plan Coordinator" to handle the administrative work of the Red Lake River One Watershed One Plan. "In the circumstance that the One Watershed One Plan Coordinator position is vacated, the Policy Committee shall appoint one of the parties to the Agreement to fill this role until the position is re-filled." The party that is the One Watershed One Plan Coordinator handling the administration agrees to provide the following to the Red Lake River Planning Group for the purposes of this Agreement:
    a. Handle administrative responsibilities associated with the implementation of the Red Lake River One Watershed One Plan and any subsequent grant(s), if any, the Red Lake River Planning Group applies for and receives to implement the watershed-based plan.

    b. Be the contact for the Red Lake River One Watershed One Plan and grant agreements, if any, the Red Lake River Planning Group applies for/requests and receives.

    c. Be responsible for the BWSR and other grant reporting requirements.

    d. Assist the Policy Committee and the Planning Workgroup with the administrative details to oversee implementation of the watershed-based plan.

    e. Maintain the Red Lake River One Watershed One Plan webpage

    f. Perform other duties to keep the Policy Committee, the Advisory Committee, and the Planning Workgroup informed about the implementation of the watershed-based plan.

10. **Authorized Representatives:** The following persons will be the primary contacts for all matters concerning this Agreement:

Polk County

County Administrator
612 N Broadway
Crookston, MN 56716
Telephone: (218) 281-2554

Pennington County

County Auditor
101 Main Ave. North
Thief River Falls, MN 56701
Telephone: (218) 683-7000

Red Lake County SWCD
District Manager
2602 Wheat Drive
Red Lake Falls, MN 56750
Telephone: (218) 253-2593 ext. 4

Red Lake Watershed District
District Administrator
1000 Pennington Ave. South
Thief River Falls, MN 56701
Telephone: (218) 681-5800

Red Lake County

County Auditor
124 Langevin Ave.
Red Lake Falls, MN 56750
Telephone: (218) 253-2598

Pennington SWCD

District Manager
201 Sherwood Ave. S
Thief River Falls, MN 55965
Telephone: (218) 683-7075

West Polk SWCD
District Manager
525 Strander Ave.
Crookston, MN 56716
Telephone: (218) 281-6070 ext. 122

11. **Counterparts.** This Agreement may be executed in any number of counterparts, each of which shall constitute one and the same instrument.

[Remainder of page intentionally left blank]

IN TESTIMONY WHEREOF the parties have duly executed this Agreement by their duly authorized officers.

Partner: Polk County

APPROVED:

BY: _____
Board Chair Date

BY: _____ 1-24-2017
Administrator Date

APPROVED AS TO EXECUTION

BY: _____ 1-30-17
County Attorney Date

IN TESTIMONY WHEREOF the parties have duly executed this Agreement by their duly authorized officers.

Partner: Red Lake County

APPROVED:

BY: _____ 12/27/16
Board Chair Date

BY: _____ 12-27-16
Auditor Date

APPROVED AS TO EXECUTION

BY: Michael LaCoursiere 12/28/2017
County Attorney Date

IN TESTIMONY WHEREOF the parties have duly executed this Agreement by their duly authorized officers.

Partner: Pennington County

APPROVED:

BY: _____ Vice Chair 1/24/17
Board Chair Date

BY: _____ 1/24/17
Auditor Date

APPROVED AS TO EXECUTION

BY: _____ 1-24-17
County Attorney Date

IN TESTIMONY WHEREOF the parties have duly executed this Agreement by their duly authorized officers.

Partner: Pennington SWCD

APPROVED:

BY: _____ 1-19-17
Board Chair Date

BY: Bryan E Malone 1/26/17
District Manager Date

APPROVED AS TO EXECUTION

BY: _____ 1-24-17
County Attorney Date

IN TESTIMONY WHEREOF the parties have duly executed this Agreement by their duly authorized officers.

Partner: Red Lake County SWCD

APPROVED:

BY: Dave Miller 1-09-17
Board Chair Date

BY: Tonya Hamm 1-9-17
District Manager Date

APPROVED AS TO EXECUTION

BY: Michael LaCoursiere 01/28/2017
County Attorney Date

IN TESTIMONY WHEREOF the parties have duly executed this Agreement by their duly authorized officers.

Partner: West Polk SWCD

APPROVED: 1/19/17

BY: _____ 1-19-17
Board Chair Date

BY: _____ 1/19/17
District Manager Date

APPROVED AS TO EXECUTION

BY: _____
County Attorney Date

IN TESTIMONY WHEREOF the parties have duly executed this Agreement by their duly authorized officers.

Partner: Red Lake Watershed District

APPROVED:

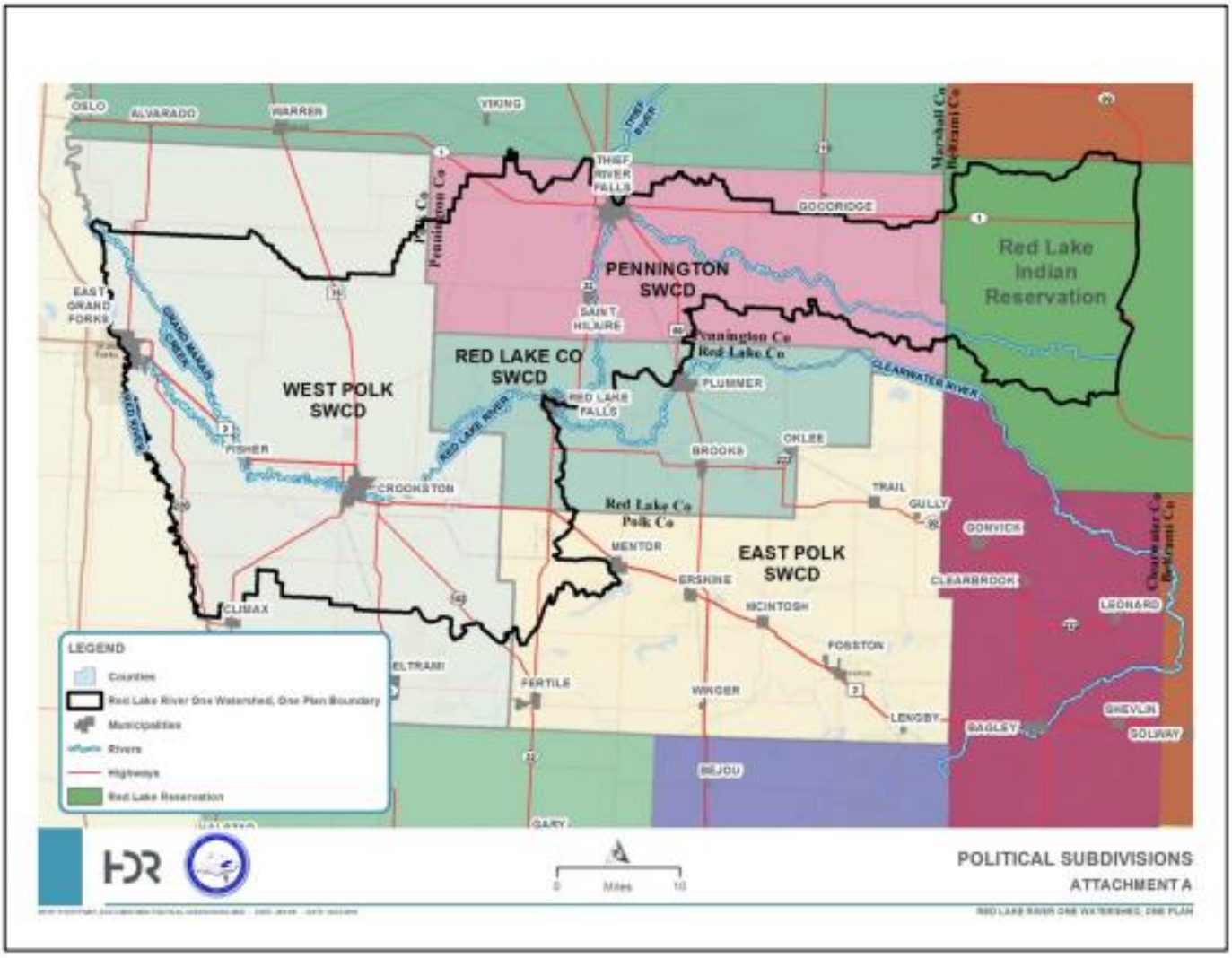
BY: _____ 1-12-17
Board Chair Date

BY: _____ 1-12-17
District Administrator Date

APPROVED AS TO EXECUTION

BY: _____ 1-12-17
District Attorney Date

Attachment A



MEMORANDUM OF AGREEMENT

This agreement (Agreement) is made and entered into between:

The Counties of Pennington, Red Lake and Polk, by and through their respective County Board of Commissioners, and

The Pennington, Red Lake County and West Polk Soil and Water Conservation District, by and through their respective Soil and Water Conservation District Board of Supervisors, and

The Red Lake Watershed District, by and through its Board of Managers.

WHEREAS, the Counties of this agreement are political subdivisions of the State of Minnesota, with authority to carry out environmental programs and land use controls, pursuant to Minnesota Statutes Chapter 375 and as otherwise provided by law; and

WHEREAS, the Soil and Water Conservation Districts (SWCDs) of this agreement are political subdivisions of the State of Minnesota, with statutory authority to carry out erosion control and other soil and water conservation programs, pursuant to Minnesota Statutes Chapter 103C and as otherwise provided by law; and

WHEREAS, the Watershed District of this agreement is a political subdivision of the State of Minnesota, with statutory authority to carry out conservation of the natural resources of the state by land use controls, flood control, and other conservation projects for the protection of the public health and welfare and the provident use of the natural resources, pursuant to Minnesota Statutes Chapter 103B, 103D and 103E as otherwise provided by law; and

WHEREAS, the parties to this agreement have a common interest and statutory authority to prepare, adopt, and assure implementation of a comprehensive watershed management plan in the Red Lake River Watershed to conserve soil and water resources through the implementation of practices, programs, and regulatory controls that effectively control or prevent erosion, sedimentation, siltation and related pollution in order to preserve natural resources, ensure continued soil productivity, protect water quality, reduce damages caused by floods, preserve wildlife, protect the tax base, and protect public lands and waters; and

WHEREAS, with matters that relate to coordination of water management authorities pursuant to Minnesota Statutes 103B, 103C, and 103D with public drainage systems pursuant to Minnesota Statutes 103E, this agreement does not change the rights or obligations of the public drainage system authorities.

WHEREAS, joining together in a collaborative process in establishing respective water plans will save time, monies and resources for each of the entities involved herein.

NOW, THEREFORE, the parties hereto agree as follows:

1. **Purpose:** The parties to this agreement recognize the importance of partnerships to plan and implement protection and restoration efforts for the Red Lake River Watershed as shown in Attachment A. Parties signing this agreement will be collectively referred to as the "Red Lake River Planning Group".

2. **Term:** This agreement is effective upon signature of all parties in consideration of the Board of Water and Soil Resources Participation Requirements for *One Watershed, One Plan*; and will remain in effect until December 31, 2017, unless it is canceled according to the provisions of this Agreement, or earlier terminated by law.

3. **Adding Additional Parties:** A party desiring to become a member of this agreement shall indicate its intent by adoption of a board resolution prior to January 1, 2015, authorizing appropriate parties to sign on its behalf, and agree to abide by the terms and conditions of the Agreement; including but not limited to the bylaws, policies and procedures adopted by the policy committee.

4. **General Provisions**:

    a. **Compliance with Laws/Standards:** The parties agree to abide by all Federal, State or local laws; statutes, ordinances, rules and regulations now in effect or hereafter adopted pertaining to this Agreement or to the facilities, programs and staff for which the Agreement is responsible.

    b. **Indemnification:** Each party to this Agreement shall be liable for the acts of its officers, employees or agents and the results thereof to the extent authorized or limited by law and shall not be responsible for the acts of the other party, its officers, employees or agents. The provisions of the Municipal Tort Claims Act, Minnesota Statute Chapter 466 and other applicable laws govern liability of the parties. To the full extent permitted by law, actions by the parties, their respective officers, employees and agents, pursuant to this Agreement are intended to be and shall be construed as a "cooperative activity" and it is the intent of the parties that they shall be deemed a "single governmental unit" for the purpose of liability, as set forth in Minnesota Statutes Section 471.59, Subd. 1a(a), provided further that for purposes of that statute it is the intent of each party that this Agreement does not create any liability or exposure of one party for the acts or omissions of the other party.

    c. **Records Retention:** The parties agree that records created pursuant to the terms of this Agreement will be retained in a manner that meets their respective entity's records retention schedules that have been reviewed and approved by the State in accordance with Minn. Stat. §138.17.

    d. **Timeliness:** The parties agree to perform obligations under this Agreement in a timely manner and keep each other informed about any delays that may occur.

e. **Termination:** The parties anticipate that this Agreement will remain in full force and effect through the term of the grant agreement with BWSR or until canceled by all parties, unless otherwise terminated in accordance with law or other provisions of this Agreement.

f. This agreement may be amended from time to time if said amendment is agreed to in writing by all parties to this agreement.

5. **Administration:**

   a. **Development of the Plan.** The parties agree to designate one representative, who must be an elected or appointed member of the governing board, to a policy committee for development of the watershed-based plan. The committee will meet monthly or as needed to decide on the content of the plan. Each representative shall have one vote. The Policy Committee will establish bylaws by December 31, 2014. Parties agree to designate one or more technical representatives to an advisory committee for development of the watershed-based plan. The committee will meet monthly or as needed to make recommendations on the content of the plan.

   b. **Submittal of the Plan.** The policy committee will recommend the plan to the parties of this agreement. Each party will be responsible for initiating a local review and comment process that conforms to Minnesota Statutes 103B and 103D including required public hearings. Upon completion of local review and comment, and approval of the plan for submittal by each party, the policy committee will submit the watershed-based plan jointly to the Board of Water and Soil Resources for review and approval.

   c. **Adoption of the Plan.** The parties agree to adopt and begin implementation of the plan within 120 days of state approval and provide notice of plan adoption pursuant to Minnesota Statutes Chapter 103B and 103D.

6. **Fiscal Agent:** Pennington SWCD will act as the fiscal agent for the purposes of this agreement and agrees to:

   a. Accept all responsibilities associated with the implementation of the BWSR grant agreement for developing a watershed-based plan.

   b. Perform financial transactions as part of contract implementation.

   c. Annually provide a full and complete audit report to all parties hereto and any other applicable entity.

   d. Provide the policy committee with such records as are necessary to describe the financial condition of the BWSR grant agreement.

7. **Coordination of Policy and Advisory Committee meetings:** Red Lake Watershed District will provide meeting room and staff to complete the following tasks:
    a. Provide advance notice of meetings
    b. Prepare and Distribute the Agenda and related materials
    c. Prepare and Distribute Policy Committee Minutes
    d. Maintain all records and documentation of the Policy Committee
    e. Provide public notices to the counties and watershed district for publication

8. **Primary Contacts:** The following persons will be the primary contacts for all matters concerning this Agreement:

Polk County
County Auditor
612 N Broadway
Crookston, MN 56716
Telephone: 218-281-2554

Red Lake County
County Auditor
124 Langevin Ave
Red Lake Falls, MN 56750
Telephone: 218-253-2598

Pennington County
County Auditor
101 Main Ave. North
PO Box 616
Thief River Falls, MN
Telephone: 218-683-7000

Pennington SWCD
Peter Nelson or successor
201 Sherwood Ave. S
Thief River Falls, MN
Telephone: 218-683-7075

Red Lake County SWCD
Tanya Hanson or successor
District Manager
2602 Wheat Drive
Red Lake Falls, MN 56750
Telephone: 218-253-2593 ext. 4

West Polk SWCD
Nicole Bernd or successor
District Manager
525 Strander Ave.
Crookston, MN 56716
Telephone: 218-281-6070 ext. 122

Red Lake Watershed District
Myron Jesme or successor
District Administrator
1000 Pennington Ave. S
Thief River Falls, MN 56701
Telephone: 218-681-5800

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.

PARTNER: POLK COUNTY

APPROVED:

BY: _____ 10-8-14
Board Chair Date

BY: _____ 10-9-14
Board Member/Administrator Date

APPROVED AS TO FORM

BY: _____ 10/20/14
County Attorney Date

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.
(Repeat this page for each participant)

PARTNER: RED LAKE COUNTY

APPROVED:

BY: _____ 9-23-14
Board Chair Date

BY: _____ 9-23-14
~~Board Member/Administrator~~ Date
County Auditor - Board Clerk

APPROVED AS TO FORM *(use if necessary)*

BY: Michael LaCoursiere 9/26/14
County Attorney Date

PARTNER: Pennington County

APPROVED:

BY: _____
Board Chair Date

BY: _____ 10/14/14
Board Member/Administrator Date

APPROVED AS TO FORM *(use if necessary)*

BY: _____ 10-14-14
County Attorney Date

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.

PARTNER: Pennington SWCD

APPROVED:

BY: _____ 10-K-14
Board Chair Date

BY: Bryan L. Malone 10/16/14
District Manager/Administrator Date

APPROVED AS TO FORM *(use if necessary)*

BY: _____ 10-14-14
County Attorney Date

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.
(Repeat this page for each participant)

PARTNER: Red Lake County SWCD

APPROVED:

BY: David Miller 10/20/14
Board Chair Date

BY: Tanya Hanson 10/20/14
District Manager/Administrator Date

APPROVED AS TO FORM *(use if necessary)*

BY: Michael LaCoursiere 9/26/14
County Attorney Date

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.
(Repeat this page for each participant)

PARTNER: RED LAKE WATERSHED DISTRICT

APPROVED:

BY: _____ 10-24-14
Board Chair Date

BY: _____ 10-24-14
District Manager/Administrator Date

APPROVED AS TO FORM *(use if necessary)*

BY: _____
District Attorney Date

Resolution to Adopt and Implement the Red Lake River Watershed Comprehensive Management Plan

Whereas, the East Polk Soil and Water Conservation District (SWCD) is a member of the Red Lake River Watershed One Watershed One Plan Policy Committee; and

Whereas, the Plan will serve as a substitute for either the SWCD comprehensive plan or county local water management plan as per 103C or 103B respectively for the duration of the state approved Plan.

Now; Therefore, Be it Resolved, East Polk SWCD hereby adopts and will begin implementation of the Plan for the area of the County identified within the Plan.

CERTIFICATION

STATE OF MINNESOTA

East Polk SWCD I do hereby certify that the foregoing resolution is a true and correct copy of the resolution presented to and adopted by East Polk SWCD at a duly authorized meeting therefore held on June 13,2024.

Board Chair: _____

East Polk Soil and Water Conservation District

Resolution to be Added to the Red Lake River 1W1P

Memorandum of Agreement for Plan Implementation

Whereas, the Red Lake River Comprehensive Watershed Management Plan (Plan) was approved by the Minnesota Board of Water and Soil Resources (BWSR) on April 26, 2017 and an amendment to the Plan was approved by BWSR on January 23, 2019; and

Whereas, the Red Lake River Planning Group entered into an Memorandum of Agreement (MOA) for Plan implementation in January of 2017; and

Whereas, the MOA has provisions for a qualifying party within the Red Lake River Watershed that is responsible for water planning and resource management according to Minnesota State Statutes desiring to become a member of the MOA to indicate its intent by adopting a governing board resolution that includes a request to the Policy Committee to join the Red Lake River Planning Group; and

Whereas, East Polk Soil and Water Conservation District (SWCD) is a qualifying party responsible for water planning and resource management according to Minnesota State Statutes with 59 square miles of land within the Red Lake River planning area.

Now; Therefore, Be it Resolved, East Polk SWCD desires to join the Red Lake River MOA and through this resolution extends a request to the Red Lake River Policy Committee to become a member of the Red Lake River Planning Group, and

Be it further resolved, East Polk agrees to abide by the terms and conditions of the MOA; including but not limited to the bylaws, policies, and procedures adopted by the Policy Committee.

CERTIFICATION

STATE OF MINNESOTA

I do hereby certify that the foregoing resolution is a true and correct copy of the resolution presented to and adopted by East Polk SWCD at a duly authorized meeting therefore held on June 13, 2024.

Board Chair: _____

East Polk Soil and Water Conservation District

APPENDIX B

New Data and Assessment Results

2021 LiDAR Data

The Red River Watershed Management Board hired Sanborn Map Company, Inc. to collect more than 20,000 square miles of Quality Level 1 LiDAR data for the Red River Basin. The flights to collect the data were conducted in 2021. A hard drive containing the new LiDAR was delivered to the RLWD on February 7, 2024. This new data will reveal changes to the landscape that have occurred since 2009 and new technologies relating to the data bring new possibilities for ways to use the data. Currently, 2009 LiDAR data is accessible, online, through an easy-to-use Map Portal on the International Water Institute website. Similarly, the 2021 data will also be accessible online, beginning with a Geodatabase Explorer website (credentials required for access) hosted by Sanborn.

The 2024 Red Lake River Watershed Based Implementation Funding (WBIF) calls for a LiDAR assessment of in-channel erosion that will inform prioritization of streambank and shoreline protection projects. Local staff learned in December 2023 that LiDAR data from the 2021 flights was at last delivered to Houston Engineering. The new LiDAR data will be distributed to partner agencies in January 2024. The data will be accessible, online, through Sanborn Geospatial. Contact Rob Sip, RRWMB Executive Director to acquire access credentials for the Sanborn online LiDAR viewer and tools. Data will be distributed to RRWMB watershed districts with portable hard drives. The ability to compare two precise digital elevation models that are separated by approximately twelve years sparks many possibilities, including the ability to identify areas with measurable erosion or deposition. Houston Engineering was hired to complete a LiDAR-based assessment of near channel erosion in the Clearwater River watershed. That existing scope of services will be modified to fit the needs of the Red Lake River Planning Area. The Red Lake River Planning Work Group will coordinate with a consultant to establish the scope of work.

- Deliverables (identified in the Clearwater River scope of services):
- Annual mass wasting of soil from near channel areas
- Hot spots for stream bank stabilization or restoration
- Annual loss of phosphorus from near channel sources
- Map of results for candidate areas for stream bank stabilization and/or restoration
- Technical memorandum summarizing results
- Meeting(s) to present the results
- Allowance for revisions to the final technical memorandum
- Delivers of final documents and DIS data products

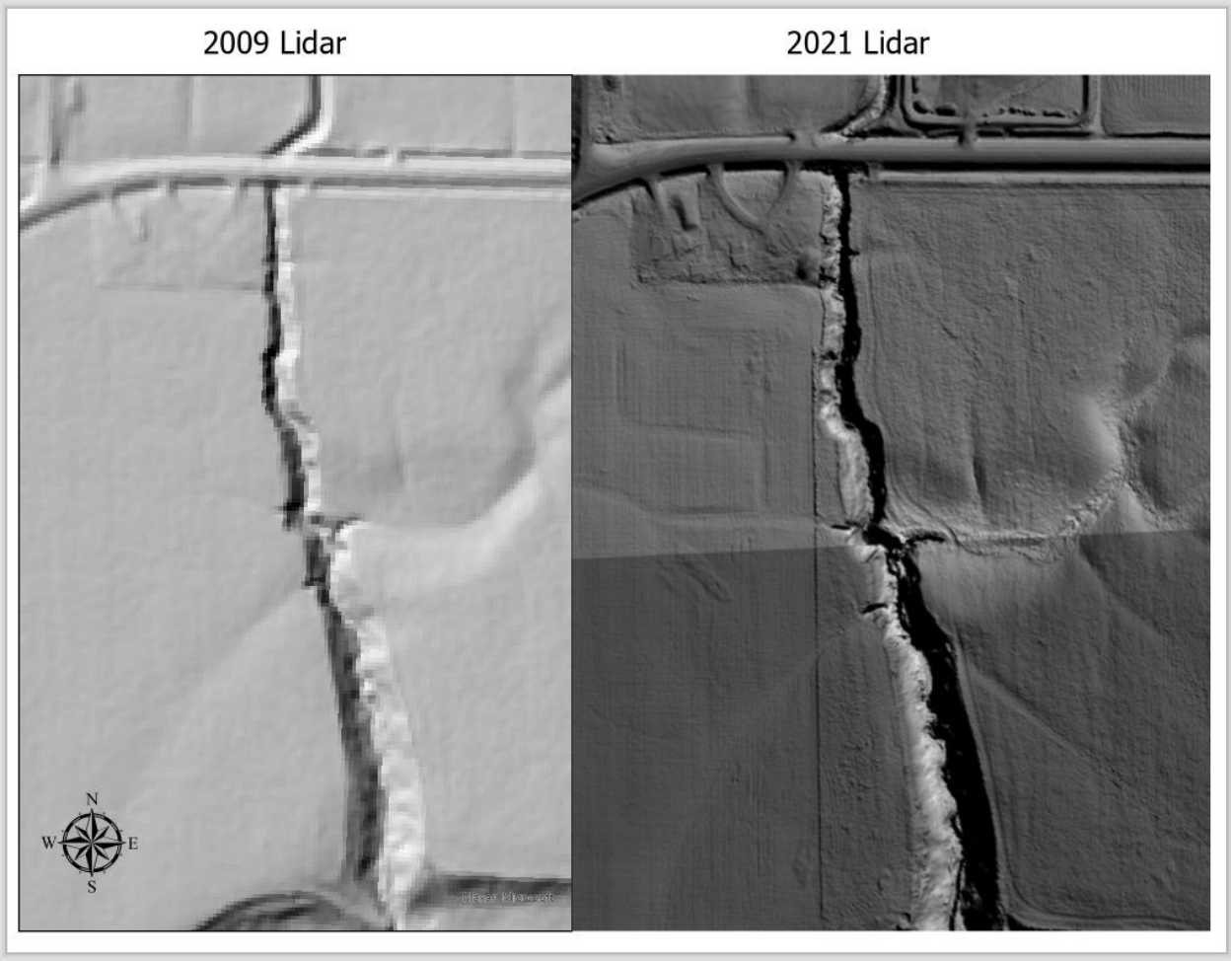


Figure 1. Side-by-side comparison of 2009 and 2021 LiDAR hillshade imagery for the Polk County Ditch 99 Outlet

Prioritize, Target, and Measure Application (PTMApp)

For the Red Lake River Planning Area version of PTMApp, best management practices (BMPs) were categorized as protection, infiltration, filtration, storage, and source reduction. More recent versions of PTMApp, like the tools created for the Clearwater River Watershed, feature an updated list of BMP types. Instead of broad categories, the new PTMApp setup can estimate the benefits of specific BMPs. The categories used for the Clearwater River include:

- Large wetland restoration
- Regional wetland/pond
- Nutrient management of groundwater
- Saturated buffer
- Forage and biomass planting
- Prescribed grazing
- Nutrient management for Nitrogen or Phosphorus

- No till
- Reduced till
- Conservation cover
- Cover crops
- Wetland shoreline restoration
- Critical area planting
- Grade stabilization
- Infiltration trench/small infiltration basin
- Multi-stage ditch
- Denitrifying bioreactor
- Filter strip
- Grassed waterways
- Farm pond
- Riparian herbaceous cover
- Drainage water management
- WASCOBs

In addition to the possibility of improving upon the list of categories, there is also an updated LiDAR DEM that could be used to update PTMApp if planning partners decide that is a worthwhile investment of time.

Consultants have also been developing additional tools to aid with 1W1P project development and tracking, like MS4Front and the “BEAST” spreadsheet.

Figure 2. The light blue lines in this map indicate priority locations for WASCOBs

Waters Used for Production of Wild Rice

Due to its importance to biological communities and as a cultural resource, the State of Minnesota has established a 10 mg/L sulfate water quality standard for waters that are used for production of wild rice. Only two waterbodies in the Red Lake River Watershed are on the Minnesota Pollution Control Agency's (MPCA) list of wild rice waters. Neither waterbody is located where it can be affected by projects implemented through this plan.

- **15-0202-00** This is a wetland that includes oxbow wetlands along the historic meanders of the Red Lake River, within 3.5 miles of the Lower Red Lake outlet. These wetlands are located within the Red Lake Nation, have limited polluted inflow, have not been monitored, and would not be targeted as priority water for sulfate pollutant reduction through this plan.
- **57-0051-00** The MPCA has coded the Thief River portion of the Thief River Falls reservoir so that it is associated with both the Thief River and Red Lake River watersheds. Pollutant concentrations in this portion of the reservoir (Long's Bridge to 8th Street, approximately) are not affected by pollutant loads or concentrations in the Red Lake River because this segment of the reservoir is located upstream of the Thief River's confluence with the Red Lake River.

Source Water Assessments

The Minnesota Department of Health and AECOM completed a source water assessment for the City of Thief River Falls in late 2023. A Surface Water Intake Protection Plan is also being developed. This 10-year plan will include a list of projects, expected changes in population, expected changes in land use, expected water quality changes, recommended actions, and funding sources.

The city currently draws its drinking water from the Red Lake River at the Thief River Falls dam. Therefore, the source water assessment area includes all of the Thief River Watershed and the Upper Red Lake River subwatershed. The most severe water quality issues generally originate in the Thief River Watershed. Water in the Red Lake River is much cleaner, statistically, when compared to water in the Thief River. The city has been seeking funding to move the intake upstream of the Red Lake River and Thief River confluence to avoid the water quality issues caused by water from the Thief River.

[Source to credit: Thief River Falls Times, December 27, 2023)

2012 – 2021 Water Quality Assessment Statistics

The Minnesota Pollution Control Agency (MPCA) most recently conducted an official water quality assessment of the Red Lake River Watershed after the 2014 monitoring season. The Red Lake River Watershed Restoration and Protection Strategy (WRAPS)

ranking of streams based on their proximity to water quality standards was based on that 2004-2014 water quality data (2014 was added to the analysis as a bonus year because the scheduled 2013 assessment was delayed by software issues). In 2022, RLWD staff completed a statistical assessment of 2012-2021 water quality data (using MPCA water quality assessment methods and data available in the state's EQuIS water quality database) that was available in the state's EQuIS database and had been collected in the years 2012-2021.

Compared to the assessment completed during development of the WRAPS, the rate of TSS standard exceedances had decreased in some reaches. The assessment identified potential new impairments of reaches that either met standards or were not assessed in 2014 and now fail to meet a water quality standard (Nearly Impaired +). Three potential new TSS impairments were identified along Chief's Coulee, Black River, and Grand Marais Creek. The final assessment decision on those waters will depend on water quality sampling results from 2022 through 2024, any changes to river nutrient region assignments, stream classifications, Professional Judgement Group discussion, and public comments. Chief's Coulee is classified by the MPCA as a general warm water stream, but functions as a stormwater drainage system. The Black River (09020303-529) and Grand Marais Creek (09020306-513) both had TSS exceedance rates very near the 10% impairment threshold, so data collected from 2022 through 2024 will greatly affect the direction in which the "scales are tipped" for that stream's impairment status. According to the TMDL, there is a change in the applicable water quality standard from the Red Lake River reach that ends at the Gentilly River (09020303-502, 30 m/L) and the next reach downstream that begins at Gentilly River (AUID 09020303-512, 65 mg/L). The change in expectations explains why the river seems to "improve" from one reach to the next at that location.

The application of TSS standards to tributaries of the Red Lake River between Red Lake Falls and Gentilly is questionable. The Red Lake River has been assigned a 30 mg/L standard, but some tributaries like the Black River and Cyr Creek, have been assigned a less protective 65 mg/L standard. If the water quality standards for tributaries are edited to that they are less than or equal to the standards of receiving waters, portions of Cyr Creek and Browns Creek could be added to the 303(d) List of Impaired Waters.

There was consistency between the WRAPS prioritization and the 2022 assesment checkup along the Black River. Assessment statistics were much worse in 2012-2022 than they were in 2004-2014. Recent data collection has identified multiple new nearly impaired reaches and some potential new impairments. The TMDL demonstrated that the known dissolved oxygen impairments were caused by lack of flow rather than pollutants. River eutrophication standards were not officially adopted at the time of the last MPCA water quality assessment, so the potential impairments and nearly impaired streams shown in the following pages are new revelations.

Parameter:	Total Suspended Solids	*E. coli* Bacteria	Dissolved Oxygen	River Total Phosphorus and River Eutrophication
Statistical Measurement:	Exceedance rate	Maximum monthly geomean	Percentage of days with <5 mg/L daily minimums (DO_5)	Summer average TP, BOD, Chl-a, and/or DO Flux
Nearly/Barely Range (Based on the 25th percentile of the absolute values of the differences between AUIDs' assessment statistics and applicable standards)	+/- 5 percentage points	+/- 33 MPN/100ml	+/- 6 percentage points	+/- 16 percentage points
Poor Quality (not impaired) =	n/a	n/a	>10%	> TP Std and > 1 Response Indicator Std
Restoration (Impaired) =	>15%	>185	>16%	>116% of TP Std
Barely Impaired =	<15%	<185	<16%	<116% of TP Std
Nearly Impaired+ =	>10%, not listed as impaired	>126, not listed as impaired	>10%, not listed as impaired	>TP Std & > a Response Variable Std, not listed as impaired
Nearly Impaired =	>5%	>67	>4%	>84% of TP Std
Highest Quality =	<5%	<67	<4%	<84% of Std
Statistical boundaries of prioritization categories are the 25th percentile of each parameter's assessment statistics.				

Assessment Unit ID	Waterbody Name	Reach Description	River Nutrient Region	Total Suspended Solids	*E. coli* Bacteria	Dissolved Oxygen	River Total Phosphorus and River Eutrophication
09020303-501	Red Lake River	Burnham Cr to Heartsville Coulee	South	Restoration (Impaired)	Highest Quality	Highest Quality	Nearly Impaired
09020303-502	Red Lake River	Black R to Gentilly R	Central	Restoration (Impaired)	Insufficent Data	Highest Quality	Insufficent Data
09020303-503	Red Lake River	Heartsville Coulee to Red River	South	Restoration (Impaired)	Highest Quality	Highest Quality	Highest Quality
09020303-504	Red Lake River	CD 96 to Clearwater R	South	Restoration (Impaired)	Nearly Impaired	Highest Quality	Nearly Impaired
09020303-505	Penn. CD 96	CD 96 to Red Lake River	South	Highest Quality	Restoration (Impaired)	Nearly Impaired	Highest Quality
09020303-506	Red Lake River	CD 99 to Burnham Creek	South	Barely Impaired	Highest Quality	Highest Quality	Highest Quality
09020303-509	Red Lake River	Thief River to Thief River Falls Dam	South	Highest Quality	Highest Quality	Highest Quality	Highest Quality
09020303-512	Red Lake River	Gentilly R to CD 99	South	Barely Impaired	Highest Quality	Highest Quality	Highest Quality
09020303-513	Red Lake River	Thief River Falls Dam to CD 96	South	Highest Quality	Highest Quality	Highest Quality	Highest Quality
09020303-515	Burnam Creek	Polk CD 15 to Red Lake River	South	Highest Quality	Highest Quality	Nearly Impaired+	Nearly Impaired
09020303-515	Burnam Creek	Polk CD 15 to Red Lake River	Central	Nearly Impaired+	Highest Quality	Nearly Impaired+	Nearly Impaired+
09020303-525	Kripple Creek	Unnamed Cr to Gentilly R	South	Nearly Impaired	Restoration (Impaired)	Highest Quality	Nearly Impaired
09020303-526	Kripple Creek (CD 66)	Unnamed ditch to Unnamed Cr	South	Insufficent Data	Insufficent Data	Highest Quality	Insufficent Data
09020303-528	Little Black Riv	Unnamed Ditch (channelized portion) to Black River	South	Highest Quality	Nearly Impaired+	Nearly Impaired+	Highest Quality
09020303-528	Little Black Riv	Unnamed Ditch (channelized portion) to Black River	Central	Highest Quality	Nearly Impaired+	Nearly Impaired+	Nearly Impaired
09020303-529	Black River	Little Black R to Red Lake R	South	Nearly Impaired+	Restoration (Impaired)	Nearly Impaired+	Nearly Impaired
09020303-529	Black River	Little Black R to Red Lake R	Cental	Nearly Impaired+	Restoration (Impaired)	Nearly Impaired+	Nearly Impaired

Poor Quality = AUID failed to meet numerical standards due to non-pollutant factors, but it is not on the Draft 2022 List of Impaired Waters.

Restoration (Impaired) = AUID is listed on the Draft 2018 List of Impaired Waters

Barely Impaired = AUID failed to meet numerical standards, but is relatively close to the impairment threshold

Nearly Impaired = AUID met numerical standards, but only by a small margin

Nearly Impaired+ = Failed to meet numerical standards, but has not yet been listed as impaired.

Highest Quality = AUID met numerical standards by a relatively significant margin

Assessment Unit ID	Waterbody Name	Reach Description	River Nutrient Region	Total Suspended Solids	*E. coli* Bacteria	Dissolved Oxygen	River Total Phosphorus and River Eutrophication
09020303-536	Polk CD 1	CD 60 to Red Lake R	South	Highest Quality	Nearly Impaired	Nearly Impaired	Nearly Impaired
09020303-539	Browns Creek	Unnamed Ditch to Black River	South	Highest Quality	Nearly Impaired+	Highest Quality	Insufficent Data
09020303-539	Browns Creek	Unnamed Ditch to Black River	South	Nearly Impaired+	Nearly Impaired+	Highest Quality	Insufficent Data
09020303-541	Penn. CD 21	Unnamed Cr to Red Lake R	South	Highest Quality	Nearly Impaired	Nearly Impaired+	Nearly Impaired+
09020303-542	Judicial Ditch 60	Lateral Ditch 4 to Red Lake River	South	Insufficent Data	Insufficent Data	Poor Quality	Insufficent Data
09020303-545	Br 5 CD 96	Br 2 CD 96 to CD 96 main	South	Insufficent Data	Insufficent Data	Nearly Impaired+	Insufficent Data
09020303-547	Penn. CD 43	Unnamed ditch to Red Lake R	South	Insufficent Data	Insufficent Data	Nearly Impaired+	Insufficent Data
09020303-550	Heartsville Coulee	CD 115 to Red Lake River	South	Highest Quality	Highest Quality	Poor Quality	Nearly Impaired+
09020303-551	Burnham Creek	CD 106 to Polk CD 15	South	Highest Quality	Nearly Impaired+	Nearly Impaired+	Highest Quality
09020303-552	Burnham Creek	Br 1 CD 72 to CD 106	South	Insufficent Data	Insufficent Data	Nearly Impaired+	Insufficent Data
09020303-554	Gentilly River	CD 140 to Red Lake R	South	Highest Quality	Restoration (Impaired)	Nearly Impaired+	Highest Quality
09020303-556	Cyr Creek	CR 14 to Red Lake R	South	Highest Quality	Restoration (Impaired)	Nearly Impaired+	Nearly Impaired+
09020303-556	Cyr Creek	CR 14 to Red Lake R	Central	Nearly Impaired+	Restoration (Impaired)	Nearly Impaired+	Nearly Impaired+
09020303-557	Black River	Headwaters to -96.4328 to 48.0146	South	Nearly Impaired	Nearly Impaired+	Nearly Impaired+	Nearly Impaired
09020303-557	Black River	Headwaters to -96.4328 to 48.0146	Central	Nearly Impaired	Nearly Impaired+	Nearly Impaired+	Nearly Impaired+
09020303-558	Black River	-96.4328 48.0146 to Little Black R	South	Highest Quality	Barely Impaired	Poor Quality	Nearly Impaired
09020303-558	Black River	-96.4328 48.0146 to Little Black R	Central	Highest Quality	Barely Impaired	Poor Quality	Nearly Impaired+

Poor Quality = AUID failed to meet numerical standards due to non-pollutant factors, but it is not on the Draft 2022 List of Impaired Waters.

Restoration (Impaired) = AUID is listed on the Draft 2018 List of Impaired Waters

Barely Impaired = AUID failed to meet numerical standards, but is relatively close to the impairment threshold

Nearly Impaired = AUID met numerical standards, but only by a small margin

Nearly Impaired+ = Failed to meet numerical standards, but has not yet been listed as impaired.

Highest Quality = AUID met numerical standards by a relatively significant margin

Assessment Unit ID	Waterbody Name	Reach Description	River Nutrient Region	Total Suspended Solids	*E. coli* Bacteria	Dissolved Oxygen	River Total Phosphorus and River Eutrophication
09020303-560	Red Lake River	Headwaters to Clearwater/Pennington Co line	Central	Highest Quality	Highest Quality	Highest Quality	Highest Quality
09020303-560	Red Lake River	Headwaters to Clearwater/Pennington Co line	North	Nearly Impaired	Highest Quality	Highest Quality	Highest Quality
09020303-561	Red Lake River	Clearwater/Pennington Co line to CD 39	Central	Highest Quality	Highest Quality	Highest Quality	Highest Quality
09020303-561	Red Lake River	Clearwater/Pennington Co line to CD 39	North	Nearly Impaired+	Highest Quality	Highest Quality	Nearly Impaired
09020303-562	Red Lake River	CD 39 to Thief River	Central	Highest Quality	Highest Quality	Highest Quality	Highest Quality
09020303-562	Red Lake River	CD 39 to Thief River	North	Nearly Impaired+	Highest Quality	Highest Quality	Highest Quality
09020303-563	Chief's Coulee	Headwaters to Red Lake River	North	Nearly Impaired+	Nearly Impaired+	Nearly Impaired+	Nearly Impaired
09020303-902	Penn. CD 70 (pre-	T154 R43W S31 to Red Lake River	Central	Highest Quality	Nearly Impaired	Highest Quality	Nearly Impaired+
09020306-507	Grand Marais Creek	Headwaters to Polk CD 2	South	Highest Quality	Nearly Impaired	Poor Quality	Nearly Impaired
09020306-509	RLWD Ditch 15	Headwaters to Polk CD 66	South	Highest Quality	Nearly Impaired+	Poor Quality	Nearly Impaired
09020306-510	N Br CD 66	Headwaters to Polk CD 66	South	Highest Quality	Insufficent Data	Insufficent Data	Insufficent Data
09020306-513	Grand Marais Creek	Diversion ditch to Red R	South	Nearly Impaired+	Nearly Impaired+	Nearly Impaired+	Nearly Impaired+
09020306-515	Polk CD 2	CD 66 to Grand Marais Cr	South	Highest Quality	Restoration (Impaired)	Nearly Impaired+	Nearly Impaired
09020306-522	Grand Marais Creek Cutoff	Grand Marais Cr to Red R	South	Poor Quality	Poor Quality	Insufficent Data	Poor Quality

Poor Quality = AUID failed to meet numerical standards due to non-pollutant factors, but it is not on the Draft 2022 List of Impaired Waters.

Restoration (Impaired) = AUID is listed on the Draft 2018 List of Impaired Waters

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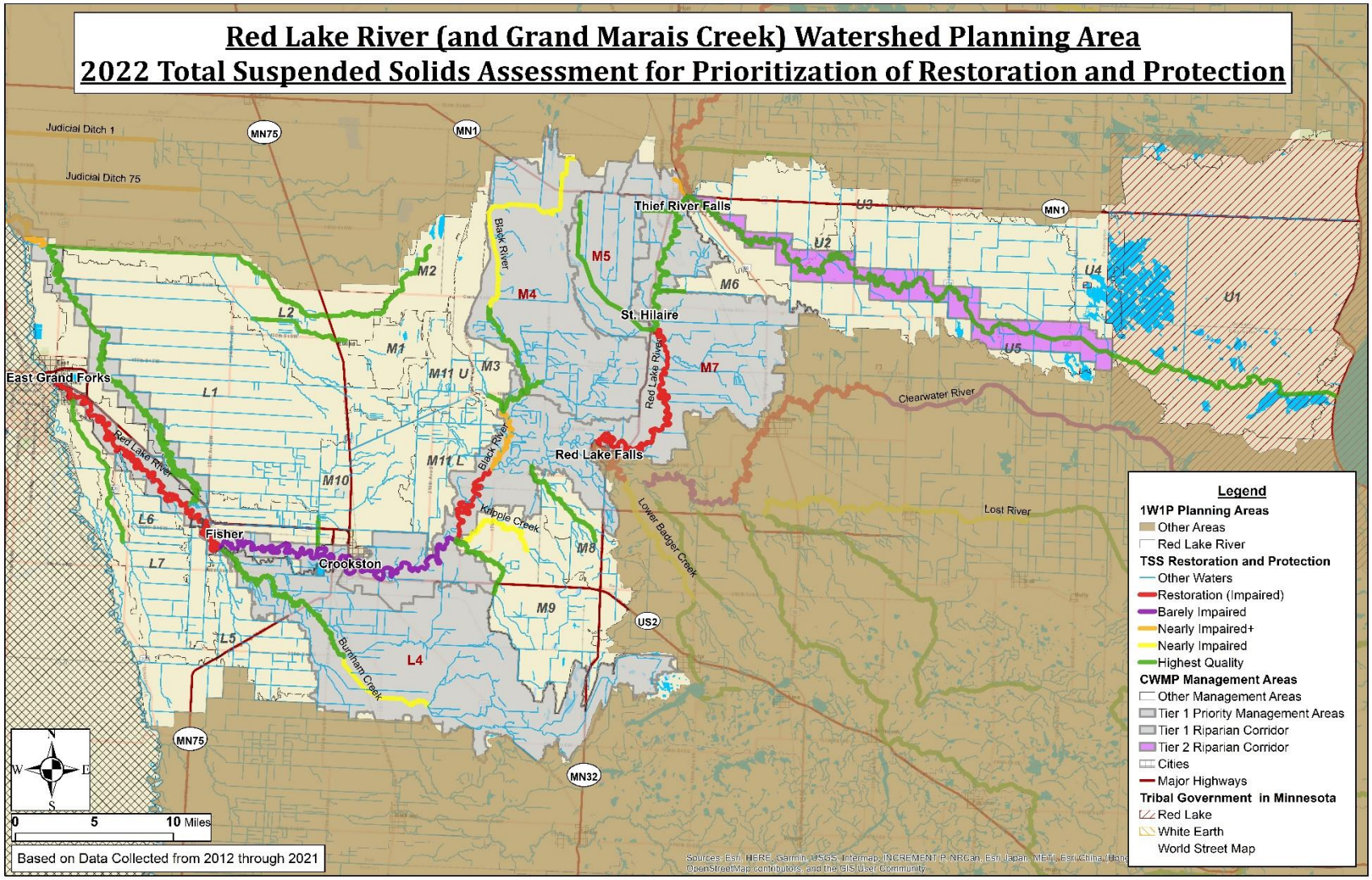
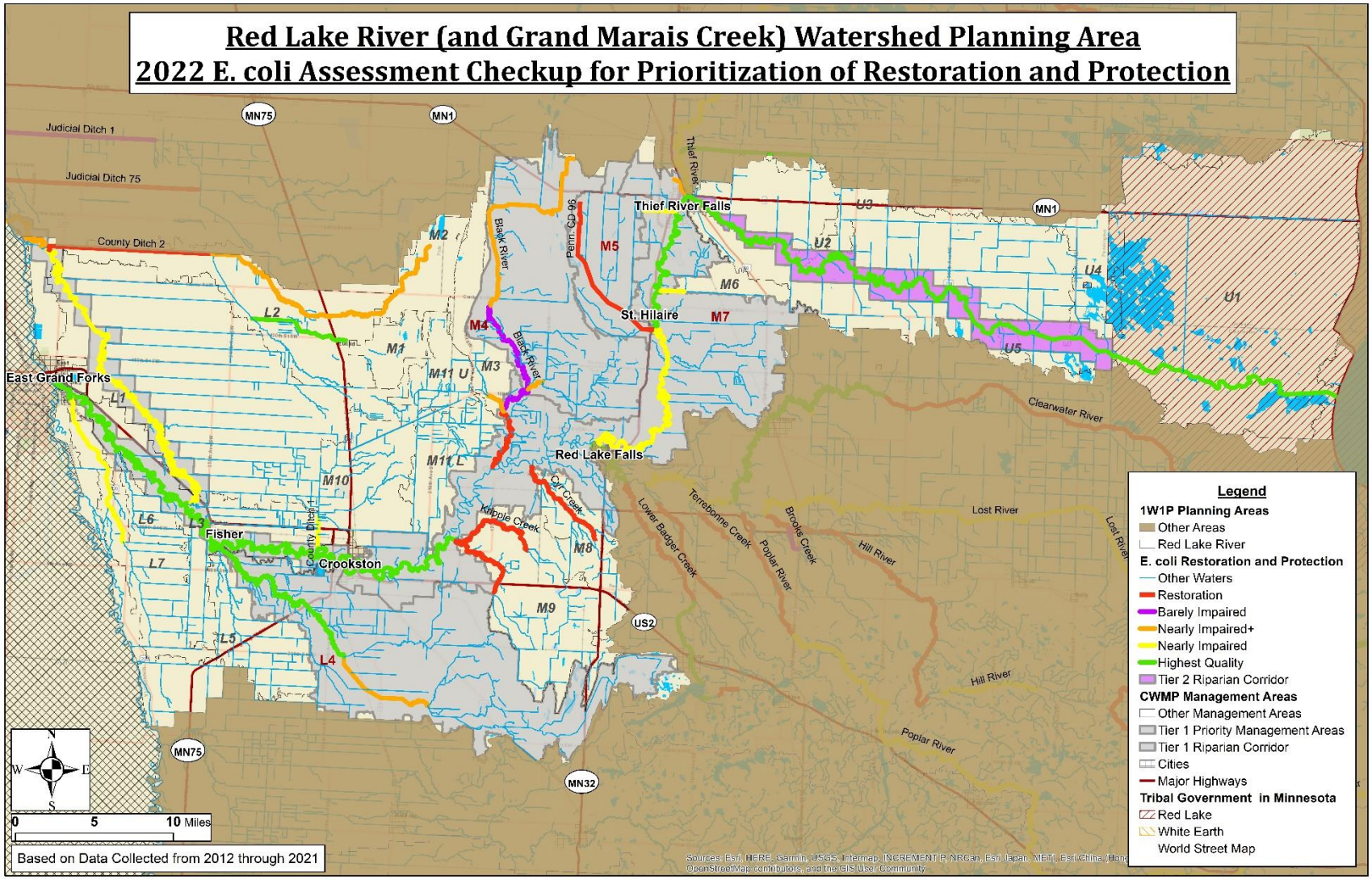
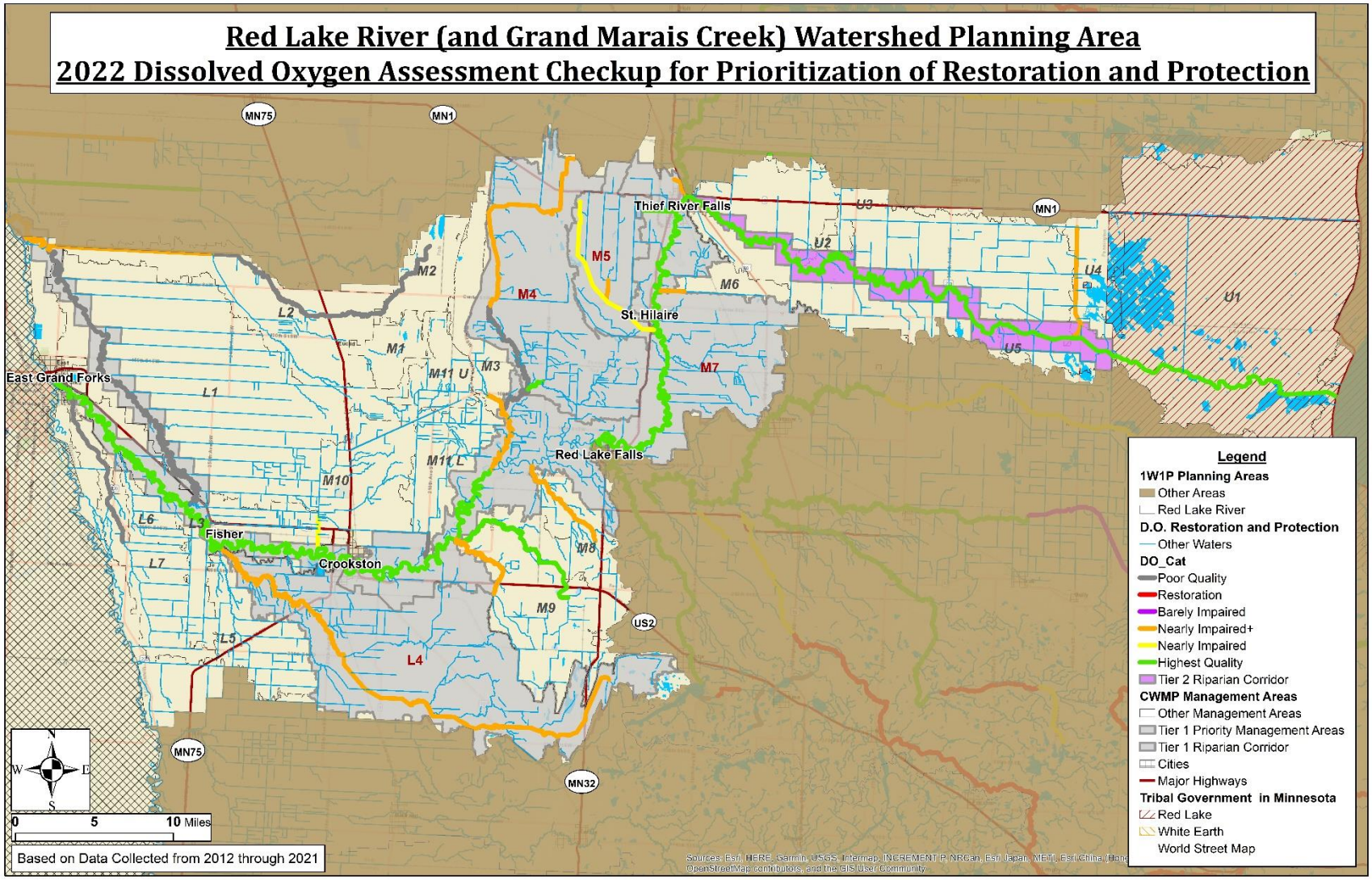
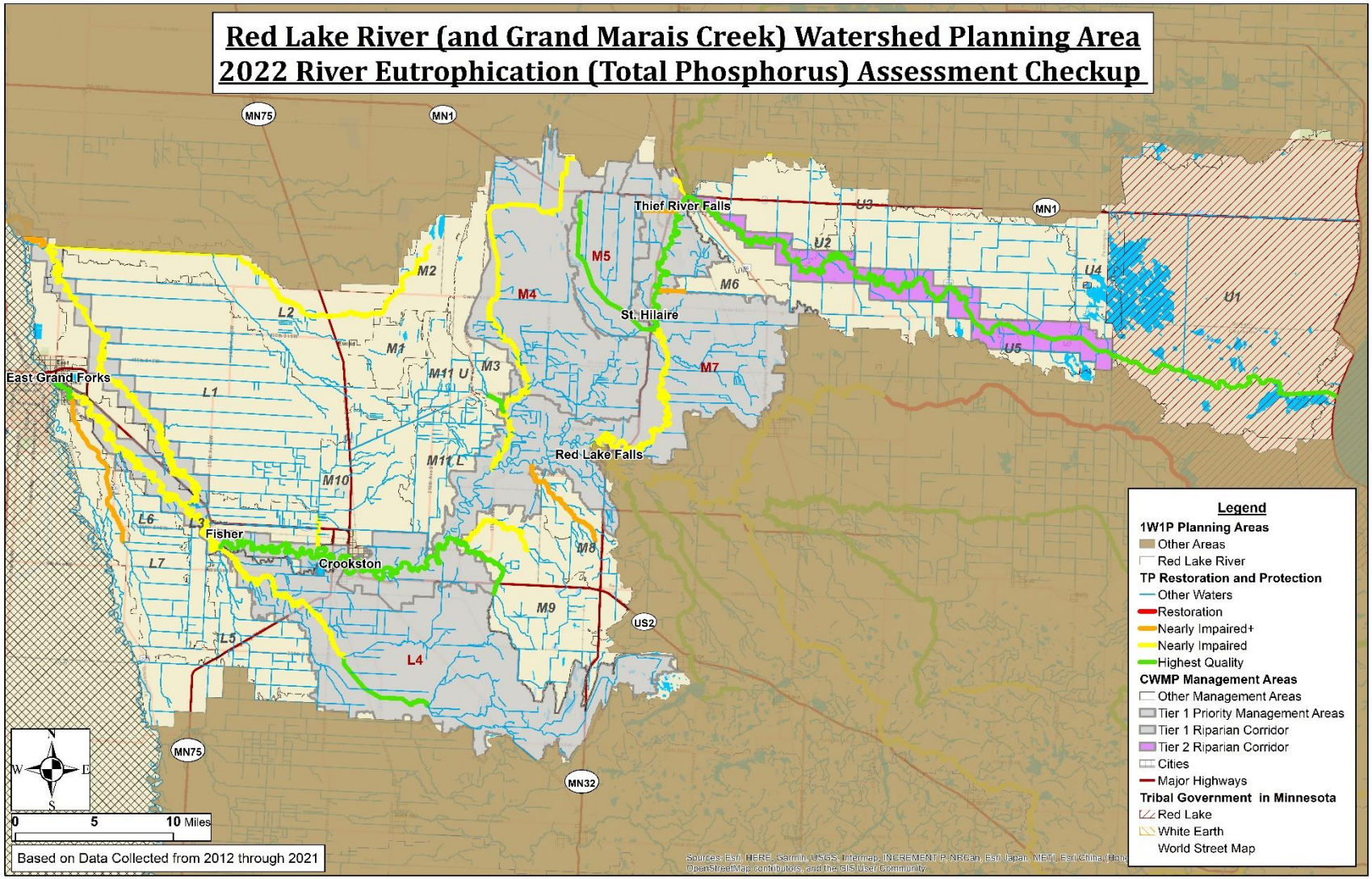

Red Lake River (and Grand Marais Creek) Watershed Planning Area
2022 Total Suspended Solids Assessment for Prioritization of Restoration and Protection
Judicial Ditch 1
Judicial Ditch 75
MN75
MN1
Thief River Falls
St. Hilaire
East Grand Forks
Red Lake Falls
Fisher
Crookston
MN32
US2
Red Lake River
Black River
Clearwater River
Lost River
Lower Badger Creek
Knipple Creek
Burnham Creek
M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
M11 L
M11 U
L1
L2
L4
L5
L6
L7
U1
U2
U3
U4
U5
N
W
E
S
0
5
10 Miles
Based on Data Collected from 2012 through 2021
Legend
1W1P Planning Areas
Other Areas
Red Lake River
TSS Restoration and Protection
Other Waters
Restoration (Impaired)
Barely Impaired
Nearly Impaired+
Nearly Impaired
Highest Quality
CWMP Management Areas
Other Management Areas
Tier 1 Priority Management Areas
Tier 1 Riparian Corridor
Tier 2 Riparian Corridor
Cities
Major Highways
Tribal Government in Minnesota
Red Lake
White Earth
World Street Map


Red Lake River (and Grand Marais Creek) Watershed Planning Area
2022 E. coli Assessment Checkup for Prioritization of Restoration and Protection
MN75
MN1
Judicial Ditch 1
Judicial Ditch 75
County Ditch 2
East Grand Forks
Fisher
Crookston
County Ditch 1
Thief River Falls
Thief River
Penn. CD 96
Black River
St. Hilaire
Red Lake Falls
Cyr Creek
Knipple Creek
Clearwater River
Lost River
Terrebonne Creek
Lower Badger Creek
Brooks Creek
Poplar River
Hill River
US2
MN32
L1
L2
L3
L4
L5
L6
L7
M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
M11 L
M11 U
U1
U2
U3
U4
U5
N
W
E
S
0
5
10 Miles
Based on Data Collected from 2012 through 2021
Legend
1W1P Planning Areas
Other Areas
Red Lake River
E. coli Restoration and Protection
Other Waters
Restoration
Barely Impaired
Nearly Impaired+
Nearly Impaired
Highest Quality
Tier 2 Riparian Corridor
CWMP Management Areas
Other Management Areas
Tier 1 Priority Management Areas
Tier 1 Riparian Corridor
Cities
Major Highways
Tribal Government in Minnesota
Red Lake
White Earth
World Street Map

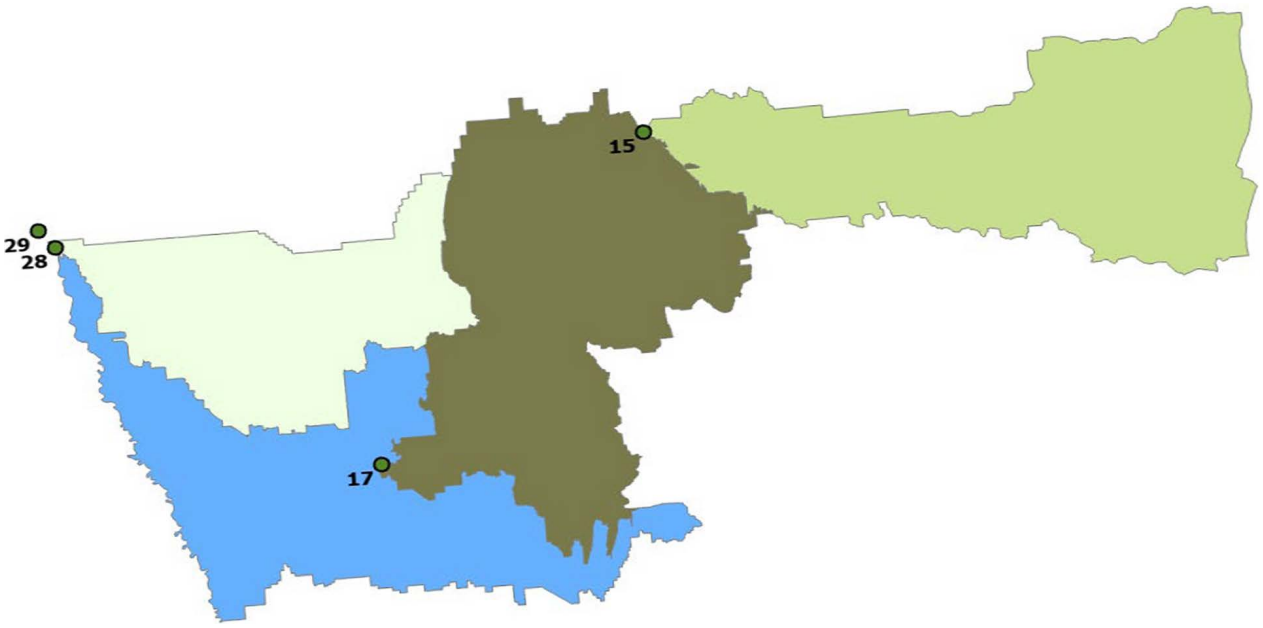

Red Lake River (and Grand Marais Creek) Watershed Planning Area
2022 Dissolved Oxygen Assessment Checkup for Prioritization of Restoration and Protection
MN75
MN1
Thief River Falls
St. Hilaire
Red Lake Falls
East Grand Forks
Fisher
Crookston
US2
MN32
M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
M11 U
M11 L
L1
L2
L3
L4
L5
L6
L7
U1
U2
U3
U4
U5
N
W
E
S
0
5
10 Miles
Based on Data Collected from 2012 through 2021
Legend
1W1P Planning Areas
Other Areas
Red Lake River
D.O. Restoration and Protection
Other Waters
DO_Cat
Poor Quality
Restoration
Barely Impaired
Nearly Impaired+
Nearly Impaired
Highest Quality
Tier 2 Riparian Corridor
CWMP Management Areas
Other Management Areas
Tier 1 Priority Management Areas
Tier 1 Riparian Corridor
Cities
Major Highways
Tribal Government in Minnesota
Red Lake
White Earth
World Street Map


Red Lake River (and Grand Marais Creek) Watershed Planning Area
2022 River Eutrophication (Total Phosphorus) Assessment Checkup
MN75
MN1
Thief River Falls
St. Hilaire
Red Lake Falls
East Grand Forks
Fisher
Crookston
US2
MN32
M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
M11 U
M11 L
L1
L2
L3
L4
L5
L6
L7
U1
U2
U3
U4
U5
N
W
E
S
0
5
10 Miles
Based on Data Collected from 2012 through 2021
Legend
1W1P Planning Areas
Other Areas
Red Lake River
TP Restoration and Protection
Other Waters
Restoration
Nearly Impaired+
Nearly Impaired
Highest Quality
CWMP Management Areas
Other Management Areas
Tier 1 Priority Management Areas
Tier 1 Riparian Corridor
Tier 2 Riparian Corridor
Cities
Major Highways
Tribal Government in Minnesota
Red Lake
White Earth
World Street Map

APPENDIX C

Goal Calculation Tools

PTMApp Tables



Resource Point 15 (Upper Red Lake River) Summary of sediment load reduction based on filtered practices

sediment load from table_p_res_catchment (or sum of catchment R_SQ2_02 for custom area):	14,133	tons
Potential resource point goal (5%)	707	tons
Potential resource point goal (10%)	1,413	tons
Catchment loading to resource point 75th percentile value:	2.21	
Catchment loading to resource point 67th percentile value:	1.14	
Catchment loading to resource pt per acre - 75th percentile value	0.08	
Catchment loading to resource pt per acre - 67th percentile value	0.04	

cumulative sediment load from all catchments within resource point drainage area:	27,903	tons
Potential catchment based goal (5%)	1,395	tons
Potential catchment point goal (10%)	2,790	tons
Catchment loading 75th percentile value:	4.89	
Catchment loading 67th percentile value:	2.73	
Catchment loading per acre - 75th percentile value	0.18	
Catchment loading per acre - 67th percentile value	0.12	

Table 1. Load reduction statistics for each practice at the **priority resource point** (R_SQ2_02).

Practice Type	Count	Sediment Load Reduction (tons)		
		25th percentile	50th percentile	75th percentile
Storage	898	0.24	0.49	1.4
Filtration	2,508	0.3	0.65	1.3
Biofiltration	886	1.3	1.98	3.12
Infiltration	268	0.61	1.09	1.94
Protection	1,630	0.3	0.59	1.23
Source Reduction	2,561	0.56	1.17	2.58

Table 2. Load reduction statistics for each practice at the **catchment outlet** (C_SQ2_02).

Practice Type	Count	Sediment Load Reduction (tons at field edge)		
		25th percentile	50th percentile	75th percentile
Storage	898	0.46	0.93	2.66
Filtration	2,508	0.64	1.36	2.64
Biofiltration	886	2.71	4	6.02
Infiltration	268	1.5	2.08	3.65
Protection	1,630	0.64	1.23	2.41
Source Reduction	2,561	1.24	2.39	5.12

Table 3. Practices needed to achieve 5% priority resource point goal.

Practice Type	**Number of Practices Needed in each category on its own**		
	25th percentile	50th percentile	75th percentile
Storage	2,944	1,442	505
Filtration	2,356	1,087	544
Biofiltration	544	357	226
Infiltration	1,158	648	364
Protection	2,356	1,198	575
Source Reduction	1,262	604	274

Table 4. Practices needed to achieve 5% catchment goal.

Practice Type	**Number of Practices Needed in each category on its own**		
	25th percentile	50th percentile	75th percentile
Storage	3,033	1,500	524
Filtration	2,180	1,026	528
Biofiltration	515	349	232
Infiltration	930	671	382
Protection	2,180	1,134	579
Source Reduction	1,125	584	272

Table 5. Build scenario table. Input the number of practices of each type to explore how different combinations reduce loading at the priority resource point.

Practice Type	# of practices	percent of total	estimated load reduction (tons)	$/ton sediment
Storage	1	1.2%	1.4	25,411
Filtration	10	12.3%	13	1,125
Biofiltration		0.0%	0	20,635
Infiltration		0.0%	0	61,691
Protection	50	61.7%	61.5	9,298
Source Reduction	20	24.7%	51.6	11,215
Total	81	100.0%	127.5	
		percent reduction	0.9%	
		percent of 5%	18.0%	
		percent of 10%	9.0%	

Table 6. Build scenario table. Input the number of practices of each type to explore how different combinations reduce loading at the catchment outlet.

Practice Type	# of practices	percent of total	estimated load reduction (tons)	$/ton sediment
Storage	1	1.2%	2.66	13,581
Filtration	10	12.3%	26.4	548
Biofiltration	0	0.0%	0	11,158
Infiltration	0	0.0%	0	35,341
Protection	50	61.7%	120.5	4,821
Source Reduction	20	24.7%	102.4	5,796
Total	81	100.0%	251.96	
		percent reduction	0.9%	
		percent of 5%	18.1%	
		percent of 10%	9.0%	

Resource Point 15 (Upper Red Lake River) Summary of sediment load reduction based on filtered practices

Table 7. Present value cost quartile values for each practice type.

Practice Type	Present value cost at catchment outlet			Mean PV cost top 50th percentile	Mean PV top 50th percentile practices at catchment
	25th percentile	50th percentile	75th percentile		
Storage	4,445	11,626	28,115	35,575	36,126
Filtration	784	1,184	2,068	1,463	1,446
Biofiltration	34,945	46,539	66,500	64,381	67,169
Infiltration	48,938	78,301	125,673	119,680	128,996
Protection	3,928	6,903	11,643	11,436	11,619
Source Reduction	6,857	12,278	25,593	28,935	29,678

Table 8. Cost effectiveness for each practices type (annual cost per ton of sediment reduction over 30 years).

Practice Type	Cost effectiveness at catchment outlet (30yr annualized)		
	25th percentile	50th percentile	75th percentile
Storage	193	352	610
Filtration	14	27	62
Biofiltration	316	384	483
Infiltration	783	1,067	1,544
Protection	119	177	272
Source Reduction	135	177	234

Table 9. Present value costs of implementing scenario built in Table 5.

Practice Type	Scenario Costs			Cost top 50th percentile	Cost top 50th percentile practices at catchment
	25th percentile	50th percentile	75th percentile		
Storage	4,445	11,626	28,115	35,575	36,126
Filtration	7,840	11,840	20,680	14,630	14,460
Biofiltration	0	0	0	0	0
Infiltration	0	0	0	0	0
Protection	196,400	345,150	582,150	571,800	580,950
Source Reduction	137,140	245,560	511,860	578,700	593,560
Total cost 10-yr	345,825	614,176	1,142,805	1,200,705	1,225,096
Annual	34,583	61,418	114,281	120,071	122,510

Part 2 - Estimated phosphorus and nitrogen load reduction associated with Table 5 sediment scenario

Phosphorus load to resource point 36,056
Nitrogen load to resource point: 997,955

Phosphorus load to catchment outlet: 40,111
Nitrogen load to catchment outlet: 1,174,089

Table 10. Estimated phosphorus and nitrogen load reductions for scenario at the priority resource point.

Practice Type	Expected load reduction - secondary (assume implementation of top50th			
	Phosphorus Median	P Load reduction	Nitrogen Median	N Load reduction
Storage	2.12	2	59.57	60
Filtration	1.43	14	40.23	402
Biofiltration	5.11	0	166.76	0
Infiltration	1.31	0	59.37	0
Protection	1.46	73	28.34	1,417
Source Reduction	4.7	94	37.63	753

Total Reduction (lbs) 183 2,631
Percent Reduction 0.5% 0.3%

Table 11. Estimated phosphorus and nitrogen load reductions for scenario at the catchment outlets.

Practice Type	Expected load reduction - secondary (assume top50th percentile practices for			
	Phosphorus Median	P Load reduction	Nitrogen Median	N Load reduction
Storage	2.34	2	65.49	65
Filtration	1.58	16	44.81	448
Biofiltration	5.77	0	186.44	0
Infiltration	1.55	0	69.21	0
Protection	1.59	80	30.96	1,548
Source Reduction	5.27	105	42.24	845

Total Reduction (lbs) 203 2,906
Percent Reduction 0.5% 0.2%

Resource Point 17 (Middle Red Lake River) Summary of sediment load reduction based on filtered practices

sediment load from table_p_res_catchment (or sum of catchment R_SQ2_02 for custom area):	35,562	tons
Potential resource point goal (5%)	1,778	tons
Potential resource point goal (10%)	3,556	tons

Catchment loading to resource point 75th percentile value:	5.96
Catchment loading to resource point 67th percentile value:	4.26
Catchment loading to resource pt per acre - 75th percentile value	0.13
Catchment loading to resource pt per acre - 67th percentile value	0.1

cumulative sediment load from all catchments within resource point drainage area:	77,035	tons
Potential catchment based goal (5%)	3,852	tons
Potential catchment point goal (10%)	7,704	tons

Catchment loading 75th percentile value:	14.39
Catchment loading 67th percentile value:	10.67
Catchment loading per acre - 75th percentile value	0.31
Catchment loading per acre - 67th percentile value	0.27

Table 1. Load reduction statistics for each practice at the **priority resource point** (R_SQ2_02).

Practice Type	Count	Sediment Load Reduction (tons)		
		25th percentile	50th percentile	75th percentile
Storage	1779	0.18	0.41	1.02
Filtration	6,502	0.23	0.5	1.05
Biofiltration	1971	0.89	1.7	3.25
Infiltration	585	0.39	0.71	1.22
Protection	4,185	0.26	0.55	1.16
Source Reduction	6,616	0.51	1.13	2.55

Table 2. Load reduction statistics for each practice at the **catchment outlet** (C_SQ2_02).

Practice Type	Count	Sediment Load Reduction (tons at field edge)		
		25th percentile	50th percentile	75th percentile
Storage	1,779	0.48	1.02	2.62
Filtration	6,502	0.6	1.32	2.65
Biofiltration	1,971	2.41	4.09	6.47
Infiltration	585	1.23	2.13	3.63
Protection	4,185	0.72	1.46	2.87
Source Reduction	6,616	1.43	2.93	6.03

Table 3. Practices needed to achieve 5% priority resource point goal.

Practice Type	**Number of Practices Needed in each category on its own**		
	25th percentile	50th percentile	75th percentile
Storage	9,878	4,337	1,743
Filtration	7,731	3,556	1,693
Biofiltration	1,998	1,046	547
Infiltration	4,559	2,504	1,457
Protection	6,839	3,233	1,533
Source Reduction	3,486	1,574	697

Table 4. Practices needed to achieve 5% catchment goal.

Practice Type	**Number of Practices Needed in each category on its own**		
	25th percentile	50th percentile	75th percentile
Storage	8,024	3,776	1,470
Filtration	6,420	2,918	1,453
Biofiltration	1,598	942	595
Infiltration	3,132	1,808	1,061
Protection	5,350	2,638	1,342
Source Reduction	2,694	1,315	639

Table 5. Build scenario table. Input the number of practices of each type to explore how different combinations reduce loading at the priority resource point.

Practice Type	# of practices	percent of total	estimated load reduction (tons)	$/ton sediment
Storage	20	3.5%	20.4	33,194
Filtration	20	3.5%	21	1,583
Biofiltration		0.0%	0	19,266
Infiltration		0.0%	0	106,013
Protection	330	57.9%	382.8	10,828
Source Reduction	200	35.1%	510	11,473
Total	570	100.0%	934.2	
		percent reduction	2.6%	
		percent of 5%	52.5%	
		percent of 10%	26.3%	

Table 6. Build scenario table. Input the number of practices of each type to explore how different combinations reduce loading at the catchment outlet.

Practice Type	# of practices	percent of total	estimated load reduction (tons)	$/ton sediment
Storage	20	3.5%	52.4	13,094
Filtration	20	3.5%	53	618
Biofiltration	0	0.0%	0	9,958
Infiltration	0	0.0%	0	35,391
Protection	330	57.9%	947.1	4,499
Source Reduction	200	35.1%	1206	5,000
Total	570	100.0%	2258.5	
		percent reduction	2.9%	
		percent of 5%	58.6%	
		percent of 10%	29.3%	

Resource Point 17 (Middle Red Lake River) Summary of sediment load reduction based on filtered practices

Table 7. Present value cost quartile values for each practice type.

Practice Type	Present value cost at catchment outlet			Mean PV cost top 50th percentile	Mean PV top 50th percentile practices at catchment
	25th percentile	50th percentile	75th percentile		
Storage	4,445	10,738	27,031	33,858	34,306
Filtration	784	1,266	2,228	1,662	1,639
Biofiltration	35,760	47,321	68,282	62,614	64,426
Infiltration	49,721	75,952	129,196	129,336	128,469
Protection	4,455	7,828	12,597	12,560	12,913
Source Reduction	7,304	13,012	26,982	29,255	30,149

Table 8. Cost effectiveness for each practices type (annual cost per ton of sediment reduction over 30 years).

Practice Type	Cost effectiveness at catchment outlet (30yr annualized)		
	25th percentile	50th percentile	75th percentile
Storage	153	313	557
Filtration	15	31	74
Biofiltration	274	381	626
Infiltration	780	1,137	1,835
Protection	110	169	269
Source Reduction	112	158	231

Table 9. Present value costs of implementing scenario built in Table 5.

Practice Type	Scenario Costs			Cost top 50th percentile practices at prp	Cost top 50th percentile practices at catchment
	25th percentile	50th percentile	75th percentile		
Storage	88,900	214,760	540,620	677,160	686,120
Filtration	15,680	25,320	44,560	33,240	32,780
Biofiltration	0	0	0	0	0
Infiltration	0	0	0	0	0
Protection	1,470,150	2,583,240	4,157,010	4,144,800	4,261,290
Source Reduction	1,460,800	2,602,400	5,396,400	5,851,000	6,029,800
Total cost 10-yr	3,035,530	5,425,720	10,138,590	10,706,200	11,009,990
Annual	303,553	542,572		1,070,620	1,100,999

Part 2 - Estimated phosphorus and nitrogen load reduction associated with Table 5 sediment scenario

Phosphorus load to resource point 86,381
Nitrogen load to resource point: 1,614,035

Phosphorus load to catchment outlet: 99,100
Nitrogen load to catchment outlet: 1,846,053

Table 10. Estimated phosphorus and nitrogen load reductions for scenario at the priority resource point.

Practice Type	Expected load reduction - secondary (assume implementation of top50th			
	Phosphorus Median	P Load reduction	Nitrogen Median	N Load reduction
Storage	1.89	38	52.67	1,053
Filtration	1.3	26	36.64	733
Biofiltration	4.95	0	158.79	0
Infiltration	1.45	0	64.83	0
Protection	1.5	495	29.3	9,669
Source Reduction	4.56	912	36.56	7,312

Total Reduction (lbs) 1,471 18,767
Percent Reduction 1.7% 1.2%

Table 11. Estimated phosphorus and nitrogen load reductions for scenario at the catchment outlets.

Practice Type	Expected load reduction - secondary (assume top50th percentile practices for			
	Phosphorus Median	P Load reduction	Nitrogen Median	N Load reduction
Storage	2.23	45	61.63	1,233
Filtration	1.54	31	43.04	861
Biofiltration	5.49	0	177.48	0
Infiltration	1.68	0	74.2	0
Protection	1.71	564	33.48	11,048
Source Reduction	5.32	1,064	42.64	8,528

Total Reduction (lbs) 1,704 21,670
Percent Reduction 1.7% 1.2%

Resource Point 28 (Lower Red Lake River) Summary of sediment load reduction based on filtered practices

sediment load from table_p_res_catchment (or sum of catchment R_SQ2_02 for custom area):	33,284	tons
Potential resource point goal (5%)	1,664	tons
Potential resource point goal (10%)	3,328	tons
Catchment loading to resource point 75th percentile value:	6.7	
Catchment loading to resource point 67th percentile value:	4.97	
Catchment loading to resource pt per acre - 75th percentile value	0.14	
Catchment loading to resource pt per acre - 67th percentile value	0.12	

cumulative sediment load from all catchments within resource point drainage area:	86,401	tons
Potential catchment based goal (5%)	4,320	tons
Potential catchment point goal (10%)	8,640	tons
Catchment loading 75th percentile value:	20.03	
Catchment loading 67th percentile value:	14.84	
Catchment loading per acre - 75th percentile value	0.36	
Catchment loading per acre - 67th percentile value	0.32	

Table 1. Load reduction statistics for each practice at the **priority resource point** (R_SQ2_02).

Practice Type	Count	Sediment Load Reduction (tons)		
		25th percentile	50th percentile	75th percentile
Storage	1181	0.17	0.41	1.13
Filtration	5,481	0.21	0.55	1.19
Biofiltration	1305	0.74	1.34	2.51
Infiltration	134	0.21	0.48	0.82
Protection	4,039	0.27	0.62	1.28
Source Reduction	5,914	0.62	1.38	2.94

Table 2. Load reduction statistics for each practice at the **catchment outlet** (C_SQ2_02).

Practice Type	Count	Sediment Load Reduction (tons at field edge)		
		25th percentile	50th percentile	75th percentile
Storage	1,181	0.61	1.41	3.96
Filtration	5,481	0.73	1.72	3.53
Biofiltration	1,305	3.43	5.22	8.59
Infiltration	134	1.1	2.38	4.04
Protection	4,039	0.91	1.88	3.63
Source Reduction	5,914	2.06	4.17	8.34

Table 3. Practices needed to achieve 5% priority resource point goal.

Practice Type	**Number of Practices Needed in each category on its own**		
	25th percentile	50th percentile	75th percentile
Storage	9,789	4,059	1,473
Filtration	7,925	3,026	1,398
Biofiltration	2,249	1,242	663
Infiltration	7,925	3,467	2,030
Protection	6,164	2,684	1,300
Source Reduction	2,684	1,206	566

Table 4. Practices needed to achieve 5% catchment goal.

Practice Type	**Number of Practices Needed in each category on its own**		
	25th percentile	50th percentile	75th percentile
Storage	7,082	3,064	1,091
Filtration	5,918	2,512	1,224
Biofiltration	1,259	828	503
Infiltration	3,927	1,815	1,069
Protection	4,747	2,298	1,190
Source Reduction	2,097	1,036	518

Table 5. Build scenario table. Input the number of practices of each type to explore how different combinations reduce loading at the priority resource point.

Practice Type	# of practices	percent of total	estimated load reduction (tons)	$/ton sediment
Storage		0.0%	0	46,632
Filtration	20	8.3%	23.8	1,293
Biofiltration		0.0%	0	26,359
Infiltration		0.0%	0	184,771
Protection	110	45.8%	140.8	9,970
Source Reduction	110	45.8%	323.4	10,590
Total	240	100.0%	488	
		percent reduction	1.5%	
		percent of 5%	29.3%	
		percent of 10%	14.7%	

Table 6. Build scenario table. Input the number of practices of each type to explore how different combinations reduce loading at the catchment outlet.

Practice Type	# of practices	percent of total	estimated load reduction (tons)	$/ton sediment
Storage	0	0.0%	0	13,845
Filtration	20	8.3%	70.6	435
Biofiltration	0	0.0%	0	8,114
Infiltration	0	0.0%	0	36,851
Protection	110	45.8%	399.3	3,674
Source Reduction	110	45.8%	917.4	3,937
Total	240	100.0%	1387.3	
		percent reduction	1.6%	
		percent of 5%	32.1%	
		percent of 10%	16.1%	

Resource Point 28 (Lower Red Lake River) Summary of sediment load reduction based on filtered practices

Table 7. Present value cost quartile values for each practice type.

Practice Type	Present value cost at catchment outlet			Mean PV cost top 50th percentile	Mean PV top 50th percentile practices at
	25th percentile	50th percentile	75th percentile		
Storage	4,445	12,767	38,018	52,694	54,825
Filtration	784	1,218	2,213	1,539	1,535
Biofiltration	37,064	50,538	71,422	66,160	69,699
Infiltration	53,244	82,216	134,286	151,512	148,878
Protection	4,526	8,241	13,109	12,761	13,338
Source Reduction	7,636	14,142	28,982	31,134	32,835

Table 8. Cost effectiveness for each practices type (annual cost per ton of sediment reduction over 30 years).

Practice Type	Cost effectiveness at catchment outlet (30yr annualized)		
	25th percentile	50th percentile	75th percentile
Storage	148	315	690
Filtration	11	23	61
Biofiltration	240	305	428
Infiltration	779	1,148	2,270
Protection	94	144	220
Source Reduction	98	139	178

Table 9. Present value costs of implementing scenario built in Table 5.

Practice Type	Scenario Costs			Cost top 50th percentile practices at	Cost top 50th percentile practices at
	25th percentile	50th percentile	75th percentile		
Storage	0	0	0	0	0
Filtration	15,680	24,360	44,260	30,780	30,700
Biofiltration	0	0	0	0	0
Infiltration	0	0	0	0	0
Protection	497,860	906,510	1,441,990	1,403,710	1,467,180
Source Reduction	839,960	1,555,620	3,188,020	3,424,740	3,611,850
Total cost 10-yr	1,353,500	2,486,490	4,674,270	4,859,230	5,109,730
Annual	135,350	248,649		485,923	510,973

Part 2 - Estimated phosphorus and nitrogen load reduction associated with Table 5 sediment scenario

Phosphorus load to resource point 76,708
Nitrogen load to resource point: 1,375,151

Phosphorus load to catchment outlet: 89,218
Nitrogen load to catchment outlet: 1,604,285

Table 10. Estimated phosphorus and nitrogen load reductions for scenario at the priority resource point.

Practice Type	Expected load reduction - secondary (assume implementation of top50th			
	Phosphorus Median	P Load reduction	Nitrogen Median	N Load reduction
Storage	2.12	0	59.62	0
Filtration	1.49	30	41.58	832
Biofiltration	5.21	0	173.05	0
Infiltration	1.42	0	66.86	0
Protection	1.54	169	30.34	3,337
Source Reduction	4.85	534	38.86	4,275

Total Reduction (lbs) 733 8,444
Percent Reduction 1.0% 0.6%

Table 11. Estimated phosphorus and nitrogen load reductions for scenario at the catchment outlets.

Practice Type	Expected load reduction - secondary (assume top50th percentile practices for			
	Phosphorus Median	P Load reduction	Nitrogen Median	N Load reduction
Storage	2.61	0	72.86	0
Filtration	1.78	36	50.03	1,001
Biofiltration	6.41	0	211.4	0
Infiltration	1.74	0	80.67	0
Protection	1.83	201	35.99	3,959
Source Reduction	6	660	48.06	5,287

Total Reduction (lbs) 897 10,246
Percent Reduction 1.0% 0.6%

Resource Point 29 (Grand Marais Creek) Summary of sediment load reduction based on filtered practices

sediment load from table_p_res_catchment (or sum of catchment R_SQ2_02 for custom area):	30,867	tons
Potential resource point goal (5%)	1,543	tons
Potential resource point goal (10%)	3,087	tons

Catchment loading to resource point 75th percentile value:	9.47
Catchment loading to resource point 67th percentile value:	7.26
Catchment loading to resource pt per acre - 75th percentile value	0.18
Catchment loading to resource pt per acre - 67th percentile value	0.16

cumulative sediment load from all catchments within resource point drainage area:	61,077	tons
Potential catchment based goal (5%)	3,054	tons
Potential catchment point goal (10%)	6,108	tons

Catchment loading 75th percentile value:	20.08
Catchment loading 67th percentile value:	15.73
Catchment loading per acre - 75th percentile value	0.34
Catchment loading per acre - 67th percentile value	0.31

Table 1. Load reduction statistics for each practice at the **priority resource point** (R_SQ2_02).

Practice Type	Count	Sediment Load Reduction (tons)		
		25th percentile	50th percentile	75th percentile
Storage	1067	0.29	0.7	2.07
Filtration	4,443	0.3	0.74	1.59
Biofiltration	1185	1.2	2.32	3.8
Infiltration	308	0.45	0.79	1.67
Protection	3,169	0.37	0.89	1.89
Source Reduction	4,685	0.84	1.78	3.92

Table 2. Load reduction statistics for each practice at the **catchment outlet** (C_SQ2_02).

Practice Type	Count	Sediment Load Reduction (tons at field edge)		
		25th percentile	50th percentile	75th percentile
Storage	1,067	0.65	1.58	3.81
Filtration	4,443	0.72	1.72	3.4
Biofiltration	1,185	3.49	5.17	7.87
Infiltration	308	1.49	2.61	4.89
Protection	3,169	0.92	1.96	3.76
Source Reduction	4,685	2.03	3.97	8.1

Table 3. Practices needed to achieve 5% priority resource point goal.

Practice Type	**Number of Practices Needed in each category on its own**		
	25th percentile	50th percentile	75th percentile
Storage	5,322	2,205	746
Filtration	5,145	2,086	971
Biofiltration	1,286	665	406
Infiltration	3,430	1,954	924
Protection	4,171	1,734	817
Source Reduction	1,837	867	394

Table 4. Practices needed to achieve 5% catchment goal.

Practice Type	**Number of Practices Needed in each category on its own**		
	25th percentile	50th percentile	75th percentile
Storage	4,698	1,933	802
Filtration	4,241	1,775	898
Biofiltration	875	591	388
Infiltration	2,050	1,170	625
Protection	3,319	1,558	812
Source Reduction	1,504	769	377

Table 5. Build scenario table. Input the number of practices of each type to explore how different combinations reduce loading at the priority resource point.

Practice Type	# of practices	percent of total	estimated load reduction (tons)	$/ton sediment
Storage	2	3.8%	4.14	30,718
Filtration	5	9.6%	7.95	964
Biofiltration		0.0%	0	18,029
Infiltration		0.0%	0	104,300
Protection	20	38.5%	37.8	7,145
Source Reduction	25	48.1%	98	8,979
Total	52	100.0%	147.89	
		percent reduction	0.5%	
		percent of 5%	9.6%	
		percent of 10%	4.8%	

Table 6. Build scenario table. Input the number of practices of each type to explore how different combinations reduce loading at the catchment outlet.

Practice Type	# of practices	percent of total	estimated load reduction (tons)	$/ton sediment
Storage	2	3.8%	7.62	16,783
Filtration	5	9.6%	17	444
Biofiltration	0	0.0%	0	9,361
Infiltration	0	0.0%	0	37,399
Protection	20	38.5%	75.2	3,789
Source Reduction	25	48.1%	202.5	4,590
Total	52	100.0%	302.32	
		percent reduction	0.5%	
		percent of 5%	9.9%	
		percent of 10%	4.9%	

Resource Point 29 (Grand Marais Creek) Summary of sediment load reduction based on filtered practices

Table 7. Present value cost quartile values for each practice type.

Practice Type	Present value cost at catchment outlet			Mean PV cost top 50th percentile	Mean PV top 50th percentile practices at
	25th percentile	50th percentile	75th percentile		
Storage	5,598	15,930	39,823	63,587	63,945
Filtration	784	1,242	2,175	1,533	1,510
Biofiltration	37,444	51,766	72,346	68,510	73,669
Infiltration	63,032	104,531	172,653	174,181	182,881
Protection	4,669	8,654	14,077	13,504	14,247
Source Reduction	8,238	15,343	33,045	35,197	37,182

Table 8. Cost effectiveness for each practices type (annual cost per ton of sediment reduction over 30 years).

Practice Type	Cost effectiveness at catchment outlet (30yr annualized)		
	25th percentile	50th percentile	75th percentile
Storage	157	348	743
Filtration	11	24	60
Biofiltration	261	316	412
Infiltration	865	1,236	1,878
Protection	96	147	228
Source Reduction	114	148	184

Table 9. Present value costs of implementing scenario built in Table 5.

Practice Type	Scenario Costs			Cost top 50th percentile practices at	Cost top 50th percentile practices at
	25th percentile	50th percentile	75th percentile		
Storage	11,196	31,860	79,646	127,174	127,890
Filtration	3,920	6,210	10,875	7,665	7,550
Biofiltration	0	0	0	0	0
Infiltration	0	0	0	0	0
Protection	93,380	173,080	281,540	270,080	284,940
Source Reduction	205,950	383,575	826,125	879,925	929,550
Total cost 10-yr	314,446	594,725	1,198,186	1,284,844	1,349,930
Annual	31,445	59,473		128,484	134,993

Part 2 - Estimated phosphorus and nitrogen load reduction associated with Table 5 sediment scenario

Phosphorus load to resource point 60,604
Nitrogen load to resource point: 1,140,379

Phosphorus load to catchment outlet: 68,888
Nitrogen load to catchment outlet: 1,288,706

Table 10. Estimated phosphorus and nitrogen load reductions for scenario at the priority resource point.

Practice Type	Expected load reduction - secondary (assume implementation of top50th			
	Phosphorus Median	P Load reduction	Nitrogen Median	N Load reduction
Storage	2.6	5	75.43	151
Filtration	1.52	8	43.25	216
Biofiltration	5.6	0	186.02	0
Infiltration	1.85	0	89.08	0
Protection	1.7	34	33.36	667
Source Reduction	5.86	147	47.01	1,175

Total Reduction (lbs) 193 2,210
Percent Reduction 0.3% 0.2%

Table 11. Estimated phosphorus and nitrogen load reductions for scenario at the catchment outlets.

Practice Type	Expected load reduction - secondary (assume top50th percentile practices for			
	Phosphorus Median	P Load reduction	Nitrogen Median	N Load reduction
Storage	3.05	6	88.58	177
Filtration	1.78	9	50.61	253
Biofiltration	6.73	0	217.67	0
Infiltration	2.31	0	111.41	0
Protection	1.97	39	38.97	779
Source Reduction	6.93	173	55.48	1,387

Total Reduction (lbs) 228 2,597
Percent Reduction 0.3% 0.2%

Planning Region - Sediment Reduction Summary

Practice Group	PRP15 (Upper RLR) Count	PRP15 (Upper RLR) Cost	PRP17 (Middle RLR) Count	PRP17 (Middle RLR) Cost	PRP28 (Lower RLR) Count	PRP28 (Lower RLR) Cost	PRP29 (GMC) Count	PRP29 (GMC) Cost
Storage	1	36,126	20	686,120	0	0	2	127,890
Filtration	10	14,460	20	32,780	20	30,700	5	7,550
Biofiltration	0	0	0	0	0	0	0	0
Infiltration	0	0	0	0	0	0	0	0
Protection	50	580,950	330	4,261,290	110	1,467,180	20	284,940
Source Reduction	20	593,560	200	6,029,800	110	3,611,850	25	929,550
Total (10-yr)	81	1,225,096	570	11,009,990	240	5,109,730	52	1,349,930
Total Annual	8	122,510	57	1,100,999	24	510,973	5	134,993

(Cost is from cell H60-H65. At Catchment)

	Grant Totals Count	Cost
10-yr	943	18,694,746
Annual	94	1,869,475

Priority Resource Point Load Reduction Summary

Sediment	Annual Load	14,133		35,562		33,284		30,867	
	Annual Load Reduction	128		934		488		148	
	Percent Reduction	0.9%		2.6%		1.5%		0.5%	
Phosphorus	Annual Load	36,056		86,381		76,708		60,604	
	Annual Load Reduction	183		1,471		733		193	
	Percent Reduction	0.5%		1.7%		1.0%		0.3%	
Nitrogen	Annual Load	997,955		1,614,035		1,375,151		1,140,379	
	Annual Load Reduction	2,631		18,767		8,444		2,210	
	Percent Reduction	0.3%		1.2%		0.6%		0.2%	

Catchment Load Reduction Summary

Sediment	Annual Load	27,903		77,035		86,401		61,077	
	Annual Load Reduction	252		2,259		1,387		302	
	Percent Reduction	0.9%		2.9%		1.6%		0.5%	
Phosphorus	Annual Load	40,111		99,100		89,218		68,888	
	Annual Load Reduction	203		1,704		897		228	
	Percent Reduction	0.5%		1.7%		1.0%		0.3%	
Nitrogen	Annual Load	1,174,089		1,846,053		1,604,285		1,288,706	
	Annual Load Reduction	2,906		21,670		10,246		2,597	
	Percent Reduction	0.2%		1.2%		0.6%		0.2%	

		Upper PR	Middle PR	Lower PR	Grand Marais PR	TOTAL
Source Reduction Practices	Count	20	200	110	25	
Avg. Acres (PTMApp)		46	46	51	57	
Total Soil Health Acre Goal		920	9200	5610	1425	17,155
Source Reduction - Sed.		102.4	1206	917	203	2428.4
Phosphorus		105	1064	660	173	2002
Nitrogen		845	8528	5287	1387	16047

Streambank and Shoreline Protection - Pollution Reduction Estimates

		Upper	Middle	Lower	Grand Marais	Total
200 tons/1,000 ft	Feet in Imp. Sch.	300	5000	3000	1000	
	Sed Red. Goal tons/year	**60**	**1000**	**600**	**200**	**1860**

COMET Planner (USDA) - Riparian Management Goal for Carbon Storage

COMET-Planner Report: Approximate Carbon Sequestration and Greenhouse Gas Emission Reductions

Project Name:

State: Minnesota

County: Red Lake

Date: 2025/7/3 10:9:26

NRCS Conservation Practices	Acreage	Carbon Dioxide	Nitrous Oxide	Methane	Total CO2 Equivalent
Convert Strips of Non-Irrigated Cropland to Permanent Unfertilized Grass/Legume Cover	3200	2943	541	0	3484
Totals	3200	2943	541	0	3484

*Negative values indicate a loss of carbon or increased emissions of greenhouse gases
**Values were not estimated due to limited data on reductions of greenhouse gas emissions from this practice

For more information on how these estimates were generated, please visit www.comet-planner.com.

Page 1 of 1 Version: 3.1.2

COMET Planner (USDA) - Soil Health Carbon Storage Estimate

COMET-Planner Report: Approximate Carbon Sequestration and Greenhouse Gas Emission Reductions

Project Name:

State: Minnesota

County: Red Lake

Date: 2025/7/3 9:21:25

NRCS Conservation Practices	Acreage	Carbon Dioxide	Nitrous Oxide	Methane	Total CO2 Equivalent
Intensive Till to No Till or Strip Till on Non-Irrigated Cropland	8578	2365	216	0	2581
Add Legume Seasonal Cover Crop (with 50% Fertilizer N Reduction) to Non-Irrigated Cropland	8577	1789	-625	0	1164
Totals	17155	4154	-409	0	3745

*Negative values indicate a loss of carbon or increased emissions of greenhouse gases
**Values were not estimated due to limited data on reductions of greenhouse gas emissions from this practice

For more information on how these estimates were generated, please visit www.comet-planner.com.

Page 1 of 1 Version: 3.1.2

Septic System Improvement Estimator

5. Results - The table below provides the *additional* removal of Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), Bacteria measured as Fecal Coliform, along the nutrients Nitrogen and Phosphorous based on the data entered above. The total removal is summarized for all the systems at the bottom.

Number	System Location Identifier	Pounds of BOD_5 per Year	Pounds of TSS per Year	Ton of TSS Per Year	Bacteria per Year (CFU)	Pounds of Phosphorus per Year	Pounds of Nitrogen per Year
1	PID # 1234	361	199	0.10	3.08E+13	4	5
	PID # 1235						

Total	361	199	0.10	3.08E+13	4	5

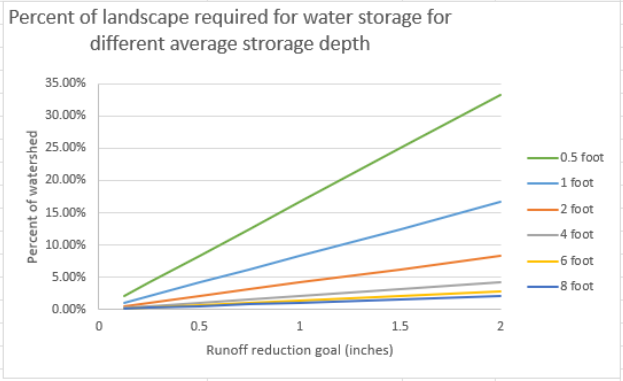
Flood Storage Calculations

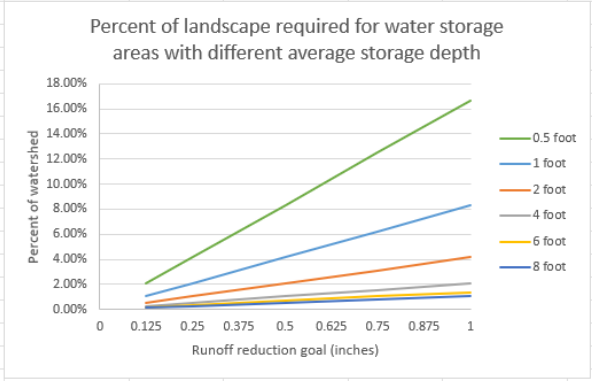
Estimated water storage based on inches of runoff

Enter watershed size in square miles: 26.8

Total Watershed size: 17,152 Acres

Inches of runoff	Water storage (ac-ft)	Area of land required based on average depth (in feet)													
		0.5		1		2		4		6		8		10**	
		Acres	% of Watershed	Acres	% of Watershed	Acres	% of Watershed	Acres	% of Watershed	Acres	% of Watershed	Acres	% of Watershed	Acres	% of Watershed
0.125	179	357	2.08%	179	1%	89	1%	45	0%	30	0%	22	0%	11	0.07
0.25	357	715	4.17%	357	2%	179	1%	89	1%	60	0%	45	0%	22	0.13
0.5	715	1,429	8.33%	715	4%	357	2%	179	1%	119	1%	89	1%	45	0.26
0.75	1,072	2,144	12.50%	1,072	6%	536	3%	268	2%	179	1%	134	1%	67	0.39
1	1,429	2,859	16.67%	1,429	8%	715	4%	357	2%	238	1%	179	1%	89	0.52
1.5	2,144	4,288	25.00%	2,144	13%	1,072	6%	536	3%	357	2%	268	2%	134	0.78
2	2,859	5,717	33.33%	2,859	17%	1,429	8%	715	4%	476	3%	357	2%	179	1.04





**water depths of 10 feet or greater can lead to temporary stratification and increased internal loading of P

Streambank Reduction Estimates

Streambank reduction estimates based on average implemented projects including this example.

North POD

To: Pennington SWCD

From: Logan Handyside

Date: 1/22/2026

Subject: Jerry Skjerven Streambank Water Pollution Reduction Estimate

Attached: BWSR Water Erosion Pollution Reduction Estimation and Exhibit

The BWSR Estimator Tools were developed in the 1990's to estimate field or project scale estimates of sediment, soil, and phosphorus reductions from typical BMPs installed with BWSR financial assistance. These estimators provide those reductions to the nearest water body of concern, but do not provide modeled pollutant loading estimates. The intended use of the estimators are to:

- Provide pollution reduction estimates for a limited set of common agricultural structural and vegetative practices,
- Estimates may be used for reporting outcomes for BWSR grant applications and individual project pollution reduction estimates may be required for eLINK reporting for BWSR Grants,
- Estimators may be used to help staff and board members determine feasibility, relevance, and appropriateness of practices that technical staff propose to undertake.

Currently, there are not many simple tools to use to calculate stream bank and near channel erosion processes. BWSR recommends continued use of the Stream and Ditch/Gully estimators for near channel erosion projects unless more detailed analysis has been completed.

Estimator Limitations for Streambanks

- Simple estimator for a complex issue.
- Benefits can be easily over-estimated, and it is critical to input multiple years in the estimator.
- Does not account for up and/or downstream conditions, channel incision, and processes.
- Does not account for stream bar formation or deposition of voided sediment.
- The Red Lake River is at the upper limits of what the estimator was intended for.

Soils at the immediate streambank are I16F which are fine sandy loams, loamy sands, loam, clay loams, and stratified loamy sand to silt loam. During construction, it was found that the soils were more of a loamy clay than sand or silt. I utilized the clay classification for the soil type which gives a more conservative estimate than the sand or silt would have.

The length of streambank we are looking to address measured 700' in length, the actual project length is 380' in length but the stream barbs will direct the river current away from the bank protecting the 700'. Comparing the Streambank Edge from 1991 to 2023 imagery and our site

survey, there was approximately 8’ – 29’ of streambank width that was lost over the period of 32 years. The bank height measured from our site survey varied from 5’ – 16’ with an average of 11 feet. Using this information measured on CADD and entering into the BWSR calculator I received the results below.

The BWSR Estimator Results:

ENTER THIS DATA ON eLINK INDICATORS TAB	
SEDIMENT (TSS) T/yr:	181.06
SOIL (estimated savings) T/yr:	181.06
PHOSPHORUS (est. reduction) lbs/yr:	208.22

Respectfully Submitted,

Logan Handyside, PE

Pennington SWCD – North POD

Cell: 218-261-0390

Email: logan.handyside@pennington.mnswcd.org

Resources and References:

BWSR_Water_Erosion_Pollution_Reduction_Estimator_2.0

BWSR Appropriate Application and Use PDF

MnGeo Imagery Services

North POD

North POD

Stormwater Projects Reduction Estimates

Stormwater reduction estimates are based on average of planned projects from the Thief River Falls Water Quality Study.

	TSS	TP	TKN
Projects	3	3	3
Estimate per project	3 tons/year	15 lbs/year	54 lbs/year
Totals	9 tons/years	45 lbs/year	162 lbs/year

Table 7: Proposed BMP annual water quality benefit for TSS and TP

BMP ID	BMP Name	TSS Removal Efficiency	TSS Removal (tons/yr)	TSS Removal Value ($/ton)	TP Removal Efficiency	TP Removal (lbs/yr)	TP Removal Value ($/lb)
1	Sports Field UG Reuse	34%	2.3	$4,610	12%	5.7	$1,860
2	Hartz Wearhouse Pond	82%	2.4	$2,580	53%	9.4	$660
3	Hartz Park Filter	75%	4.2	$5,710	53%	24.9	$960
4	Hwy 59 Pond	35%	20.6	$810	11%	56.3	$290
5	Arctic Cat Wetland	93%	4.3	$2,400	65%	19.0	$540
6	Downtown Tree Trench	95%	0.4	$36,500	75%	2.0	$7,300
7	Sherwood Ave Filter	82%	1.8	$4,890	60%	9.7	$910
8	Fairgrounds Pond	86%	2.7	$2,560	54%	11.2	$620
9	Oxbow Wetland	96%	3.3 *	$4,850	65%	24.4 *	$660
10	NCTC 1 Biofiltration	95%	0.4	$11,500	72%	2.0	$2,300
11	NCTC 2 Pond w/Reuse	87%	3.3	$3,120	63%	15.2	$680
12	Labree & 12th St Pond	80%	1.2	$2,500	49%	4.8	$630
	Totals:		**47.0**			**185.0**	

Table 8: Proposed BMP annual water quality benefit for TKN and HC

BMP ID	BMP Name	TKN Removal Efficiency	TKN Removal (lbs/yr)	TKN Removal Value ($/lb)	HC Removal Efficiency	HC Removal (lbs/yr)	HC Removal Value ($/lb)
1	Sports Field UG Reuse	11%	24	$440	31%	106	$100
2	Hartz Wearhouse Pond	47%	37	$170	75%	106	$60
3	Hartz Park Filter	49%	107	$220	69%	202	$120
4	Hwy 59 Pond	8%	219	$80	28%	925	$20
5	Arctic Cat Wetland	57%	74	$140	85%	195	$50
6	Downtown Tree Trench	68%	8	$1,830	89%	19	$770
7	Sherwood Ave Filter	56%	42	$210	76%	87	$100
8	Fairgrounds Pond	47%	43	$160	77%	120	$60
9	Oxbow Wetland	56%	77 *	$210	86%	121 *	$130
10	NCTC 1 Biofiltration	65%	8	$580	88%	19	$240
11	NCTC 2 Pond w/Reuse	57%	62	$170	81%	151	$70
12	Labree & 12th St Pond	43%	19	$160	73%	56	$50
	Totals:		**720**			**2,106**	

* Increase in removal from existing conditions (i.e. the removal in existing wetland was subtracted from the removals provided by the proposed reconstructed wetland)

RUSLE2 Worksheet Erosion Calculation Record

USDA NRCS Natural Resources Conservation Service

RUSLE2 Worksheet Erosion Calculation Record

Info:

Owner name	*Tract #*	*Field name*
Owner name	**Tract number**	**Field number**

Location	*Soil*	*T value, t/ac/yr*	*Slope length (horiz), ft*	*Avg. slope steepness, %*
USA\Minnesota\Pennington County	SSURGO\Pennington County, Minnesota\I24A Grimstad fine sandy loam, 0 to 2 percent slopes, aspen parkland\Grimstad Fine sandy loam 75%	5.0	150	2.0

R Factor	*Annual precip*	*10-yr 24-hr rainfall*	*In Req area?*
73	21.5	3.5	No

Alternatives:

Description	*Base management*	*Contouring*	*Strips / barriers*	*Diversion/terrace, sediment basin*
	CMZ 01\c.Other Local Mgt Records\1W1P	default	(none)	(none)
	CMZ 01\c.Other Local Mgt Records\default	default	(none)	(none)

Alternatives Results:

Description	*Cons. plan. soil loss*	*Annual total biomass removal, lb/ac*	*Soil conditioning index (SCI)*	*SCI OM subfactor*	*SCI FO subfactor*	*SCI ER subfactor*	*STIR value*	*Wind & irrigation-induced erosion for SCI, t/ac/yr*	*Equiv. diesel use, gal/ac*	*Energy use, BTU/ac*	*Fuel cost, US$/ac*
Conventional	0.28	0	0.473	0.47	0.26	0.89	74.4	0	9.3	1300000	43
Warm Season Grass	0.0000027	0	3.06	6.2	0.98	1.00	2.44	0	0.32	44000	0

Before harvesting crop residue for off-site uses, the following issues need to be considered:

- Impact on wind and water erosion, runoff, and residue cover needed to comply with conservation programs
- Value of nutrients removed in crop residue and impact on fertilizer and lime requirement
- Need of crop residues to maintain soil organic matter
- Effect of reduced ground cover on soil water availability
- Effect on yield
- Impact of residue harvest on soil compaction from additional field operations
- Availability of manure to replace carbon and nutrients removed with crop residue
- Need to use cover crops to provide ground cover and control erosion and runoff plus provide additional carbon to the soil system
- Availability of equipment to effectively harvest residue

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The **STIR** value is the **Soil Tillage Intensity Rating**. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

APPENDIX D

RLWD Rules, Regulations, Guidance for Water Management Districts, and SWCD Statute 103C Table of Chapters

RED LAKE WATERSHED DISTRICT

RULES AND GUIDANCE DOCUMENT

Amended Rules

Adopted: August 27, 2015

RED LAKE WATERSHED DISTRICT

DISTRICT RULES
AND GUIDANCE DOCUMENT

TABLE OF CONTENTS

FOR QUESTIONS, COMMENTS, OR FURTHER INFORMATION:
Red Lake Watershed District
Myron Jesme or Loren Sanderson
218-681-5800
jesme@wiktel.com
loren@wiktel.com

RED LAKE WATERSHED DISTRICT
DISTRICT RULES

PERMITTING PROCEDURES, FEES AND FINANCIAL ASSURANCES RULE

Adopted August 27, 2015
Effective September 30, 2015

1. POLICY. The District permit requirement is not intended to delay or inhibit development. Rather permits are needed so that the managers are kept informed of planned projects, can advise and in some cases provide assistance, and can ensure that land disturbing activity and development occurs in an orderly manner and in accordance with the overall plan for the District. All interpretations of these rules and permit decisions under these rules will incorporate and be consistent with District purposes set forth in Minnesota Statutes section 103D.201.

2. PERMIT REQUIREMENT. Any person or agency of the State of Minnesota or political subdivision undertaking an activity for which a permit is required by the District rules must first submit a permit application. The application must be submitted on the form provided by the District or the substantial equivalent, and must include all exhibits required by the applicable District rule(s). Application forms are available on the District web site at: www.redlakewatershed.org.

   A. All permit applications must bear the original signature of the landowner.

   B. No land-disturbing activity to which a District permit requirement applies may be commenced prior to receiving authority from the District, its administrator or staff.

   C. Permit decisions will be made by the Board of Managers, except as specified in 3. PERMIT decisions may be delegated by the Board of Managers to staff or the District administrator for decision after consultation and review by the Board member representing that particular area of the District. If a permit is approved by staff or administrator, the permit will still be approved by the Board before being issued. The Board will review a staff or administrator permit decision at the applicant's request. Permit decisions may approve or deny an application and may impose reasonable conditions on approval. Conditions may include, consistent with the rules, requirements for financial assurances and maintenance agreements or declarations, and may require that these documents be properly executed or recorded before permit issuance.

   D. A permit is valid for one year from the date the permit is approved, with or without conditions, unless specified otherwise or the permit is suspended or revoked.

   E. To request an extension or transfer of a permit, the permittee must notify the District in writing prior to the permit expiration date and provide an explanation for the extension or transfer request. The District may impose different or additional conditions on an extension or deny the extension in the event of a material change in circumstances, except that on the first extension, a permit will not be subject to additional or different requirements solely because of a change in District rules. New or revised rule requirements will not be imposed on an extension of a permit where the permittee has made substantial progress toward completion of the permitted work. If the activities subject to the permit have not substantially commenced, no more than one extension may

be granted. An applicant wishing to continue to pursue a project for which permit approval has expired must reapply for a permit from the District and pay applicable fees.

F. A permittee may transfer a permit to another party only upon approval of the District, which will be granted if:

1) the proposed transferee agrees in writing to assume responsibility for compliance with all terms, conditions and obligations of the permit as issued;
2) there are no pending violations of the permit or conditions of approval; and
3) the proposed transferee has provided any required financial assurance necessary to secure performance of the permit.

The District may impose different or additional conditions on the transfer of a permit or deny the transfer if it finds that the proposed transferee has not demonstrated the ability to perform the work under the terms of the permit as issued. Permit transfer does not extend the permit term. The District may suspend or revoke a permit issued under these rules wherever the permit is issued on the basis of incorrect information supplied to the District by the applicant,

G. A permit applicant consents to entry and inspection of the subject property by the District and its authorized agents at reasonable times as necessary to evaluate the permit application or determine compliance with the requirements of a District permit or rule(s).

H. A District permit is permissive. Obtaining a permit from the District does not relieve the applicant from responsibility to comply with any procedures or approvals that may be required by Minnesota Statutes chapter 103E or any other rules, regulations, requirements or standards of any applicable federal, state, county, township, local government or subdivision thereof, or local agency.

I. The District further requires as a condition of all permits that they be notified when said permitted work is completed.

3. DISTRICT WIDE PERMITS. The District may issue District-wide permits, approving certain routine activities or specific classes of projects where a standard design has been approved by the District, as long as the work is conducted in compliance with applicable District-wide rule requirements.

A. Each District-wide permit activity or project classification will be subject to such specific requirements as the Board may establish.

B. A hearing will be held before any District-wide permit activities or project classification are issued or established.

4. RECONSIDERATION.

A. Before a permit decision is final for the purpose of appeal under Minnesota Statutes §103D.537, an applicant may request that the Board of Managers reconsider its decision. The applicant may submit a notice of reconsideration on a form provided by the District that includes concurrence in an extension of the time for District permit action under Minnesota Statutes §15.99. The notice must be submitted within 10 days of the permit

decision and at least one day before the date by which a permit decision must be rendered under §15.99. Within 10 days of submitting the notice, the applicant must in writing enumerate for the District the specific findings or conditions for which reconsideration is requested, along with any additional submittals or argument supporting applicant's request.

B. The District will give the applicant due notice of when the Board of Managers will reconsider the permit decision. The Board of Managers will adopt findings on reconsideration. The District will not take longer than 120 days to issue a final decision including reconsideration, unless a further extension is approved by the applicant.

C. The permit decision is final if an applicant fails to timely file notice under paragraph 4.A, if the applicant otherwise waives the right of reconsideration, or if the Board of Managers is unable to reconsider the permit decision before the expiration of the District's time for review under §15.99. Otherwise, the Board of Managers' decision on reconsideration is the final decision.

D. District costs incurred for reconsideration are permit administration costs for which an applicant may be responsible under Section 5 of this rule.

5. "AFTER THE FACT" PERMIT. An "After The Fact" permit may be considered by the District and granted to an individual, if the "After The Fact" permit submission is the first submission provided to the District by said person or entity for the work that has been done. If a person or entity has had a prior written warning given to them in regard to their failure to follow the permitting rule requirements, a $500.00 late filing fee shall be assessed against said person or entity for the "After The Fact" permit submission. Said late filing fee assessment is in addition to any other conditions or requirements that may ordered by the District in regard to repair or restoration of non-permitted work by said persons or entity in regard to an approval or disapproval of an "After The Fact" permit application. In addition to the remedies provided in Minnesota Statute 103D.545 and other remedies provided for in these rules, in those instances where work has been performed before a permit has been approved, the District may require that the property be returned to its original condition before consideration of the "After The Fact" permit application. The District may also require the applicant to pay actual engineering and attorney's fees, allowed by law, incurred by the District in dealing with the un-permitted work.

6. FINANCIAL ASSURANCE. The managers, at their discretion, may require an applicant to file a bond, letter of credit or other escrow deposit in a form approved by the District as a condition of permit issuance. The amount of the financial assurance required will be set in accordance with a schedule established and maintained the Board of Managers by resolution. When the permitted activities are certified as having been completed in compliance with the District permit and rules, the financial assurance will be released.

A. If the District determines that the permitted activities have not been completed in compliance with the permit and District rules, the Board of Managers may determine that the assurance is forfeited and the District may use the funds to take such actions the District deems necessary to bring the subject property into compliance with the permit and District rules, to prevent or mitigate harm to protected resources or other property, to abate or restore damages, or otherwise to ensure conditions in compliance with an applicable District permit and/or the District rules. If financial assurance funds prove insufficient to complete necessary work, the District may complete the work and assess the permit holder and/or property owner for any excess costs.

B. No financial assurance will be required of any agency of the United States or of any governmental unit or political subdivision of the State of Minnesota. The District may require that the District be named as a beneficiary in the financial assurance of the agency's contractor.

PERMITTING PROCEDURES, FEES AND FINANCIAL ASSURANCES

Guidance to District Rule

The Permitting Procedures, Fees and Financial Assurances District Rule sets forth the basic process for property owners to apply for watershed district permits and for district processing of applications. These procedures are intended to assure that the District's process is fair, thorough, and effective.

A. Policy

The policy statement at section 1 of the rule states that the District's regulatory program is intended to balance two interests. First, the District has an interest, and indeed a statutory mandate - Minnesota Statutes §103D.341 - to reasonably regulate and monitor activities within its boundaries that may affect water resources. Second, it wishes to do so without unnecessary burdens on those who wish to make use of their property responsibly. A District and its staff will keep both of these interests in mind in carrying out its regulatory program.

B. Application Submittal

Key elements of the rule for application submittal, at section 2, are as follows:

- The rule states explicitly that activity subject to District rules may not occur until a permit has been applied for and issued or authority given by the District to proceed.

- The landowner must sign the application form. The applicant and permittee should always be the party who is indicated in the county land records as the owner of the property on which the activity is to occur. If another party (such as a contractor or intended property buyer) is the District's contact, it should be identified as the agent for the landowner and the District should document its authority to represent the landowner. This insures: (a) that any activity pursuant to a District permit occurs with the knowledge of the landowner and (b) that if compliance action is necessary, the District or the contractor will have access to the property.

- The application must be made on a form supplied by the District. State law (Minnesota Statute §15.99) stipulates that once an application is submitted, the District must approve or deny the application within a specified time frame (60 days) or else the permit is deemed granted. Therefore it is important that an application be clearly identified as an application, and not, for example, merely a pre-application inquiry. The time limit in Minnesota Statute §15.99 begins upon the District's receipt of a written request containing all information required by law or by a previously adopted rule, ordinance, or policy of the District, including the applicable application fee. If the District receives a written request that does not contain all required information, the 60-day limit starts over only if the District sends written notice within 15 business days of receipt of the request telling the requester what information is missing. Additional information associated with an incomplete application is available for review per Minn. Stat. §15.99.

- When a landowner submits an application, it operates as a grant of permission for the District to enter the property. Entry typically will be needed for the District to evaluate the permit application and, once a permit is issued, to monitor activity for permit compliance. The watershed law (Minnesota Statutes §103D.335, subdivision 14) already authorizes the District to enter lands "to make surveys and investigations to accomplish the purposes of the watershed district." This

appears to give the District adequate legal authority to enter private property, outside of constitutionally protected areas such as those in or adjacent to homesteads. The rule language is consistent with this authority.

- A permit may be approved subject to certain conditions that must be fulfilled before the permit is valid. (While other conditions may apply to the manner in which the work itself is conducted after a permit is issued). The District rule states that a permit extends for one year after permit approval and/or issuance. To state it another way, all activity on the land that is subject to the permit (not including subsequent ongoing maintenance) must be completed within a year. This means that it is the permittee's burden to, as soon as possible, meet any conditions that must be fulfilled before permit issuance. This prevents the situation wherein an approved permit is indefinitely open because the permittee has never fulfilled such pre-conditions and the permit has never actually issued.

C. Permit Extension and Transfer

However, because it may take time for pre-issuance conditions to be met, and because even without such conditions a project may take more than a year to complete, the District rules include a process for a permit to be extended. An applicant must request extension before the permit has expired. An extension presents a situation where there is a need for balancing of interests as described earlier. On the one hand, once a District has evaluated an application and determined that proposed work can be done in compliance with the District's rules, a landowner should be able to complete the work without unexpected new costs or barriers. On the other hand, the District does not want land in a disturbed state indefinitely and, as an administrative matter, does not want a permit open indefinitely. Further, because the District's rules may evolve over time to reflect new knowledge and policies, the District has an interest in limiting the extent to which future land disturbance is "grandfathered" under old rules and does not have to meet new standards.

The model permit extension terms balance these considerations as follows:

- A permit may be extended for an indefinite number of years, at the District's discretion, provided the work has been "substantially commenced." However, if the work has not been substantially commenced by the end of the second permit year (two years), it may not be extended and the landowner will need to make a new application.

- The District may deny or place new conditions on an extended permit for a "material change in circumstances." This allows the District to ensure that the permit continues to protect water resources if there is new knowledge or information relevant to the work since the permit was approved or last extended. The term "material" is intended to give some protection to the landowner, and means that the District will not change the "rules of the game" unless the change is both significant and relevant.

- Further, on the first extension, a change in the District's rules occurring since permit approval will not count as a "material" change. This insulates a permittee from a change in the rules for a two-year period of time after a permit is approved. If a permittee seeks a second extension and the District rules have changed in the interim, the District may apply new conditions as needed for the work to conform to the new rules.

- However, once the permittee has made "substantial progress" on the work, a request for permit extension will not be subject to a rule change occurring since permit approval or the prior extension.

Similarly, the District rule allows for a permittee to transfer the permit to a third party. It is advised that the permit always "runs with the land," so the typical reason for a permit to be transferred is because the property is being conveyed. The general principle that the rule reflects is that permit transfer should not be burdened. However, the rule conditions this principle on the following:

- The transferee, in writing, must assume all permit obligations. This avoids the situation where a permittee is excused from permit obligations and ceases to have authority over the land, but the new landowner disclaims knowledge of the permit responsibilities.

- At the time of permit transfer, the work must comply with the permit. First, it is important to document that the site was in compliance when a permit transferee assumes compliance responsibility. This precludes the transferee's later claim that the site was non-compliant on the earlier permittee's watch, and that the transferee was unaware of or should not be responsible for it. Also, practically speaking, property transfer is an effective moment to require that site condition be corrected, as it will be made a condition of sale.

- If the District holds a financial assurance, it will need a substitute assurance from the permit transferee and will return the existing one to the transferor permittee.

Finally, the District rule allows the District to deny or impose conditions on a permit transfer if it has doubts about the proposed transferee that are relevant to whether the transferee can perform the work in compliance with the permit. This clause probably won't apply very often, but gives the District the ability to exercise its judgment if certain work is sensitive or the proposed transferee has been shown to be irresponsible in the past. The District will have to decide what is sufficient evidence to support special conditions in this circumstance.

D. Standards Without Need for Permit Process

The District rule, at section 3, creates the authority for a District to issue what are termed "District-wide permits." A District-wide permit can be an efficient mechanism for a District to impose standards on a certain type of activity without requiring everyone performing that activity to navigate the ordinary permit process. Typically this would apply to a class of activity that does not create a large risk of water resource impact and that, because it is simple or straightforward, does not generally require project-specific evaluation and project-specific conditions.

A District-wide permit may allow the District to do three things: (a) apply a set of standard conditions to the defined activity sufficient to provide basic necessary water resource protection (for example, if the activity involves minor land disturbance, the general permit may require basic erosion and sediment control); (b) make a record of where in the watershed the work is occurring, allowing for the work to be monitored as necessary and also giving the District information about cumulative effects; and (c) exercise jurisdiction over the work in the event a particular case does create a risk of water resource harm.

E. Reconsideration

At section 4, the District rule includes a process for an applicant to ask the board of managers to reconsider a District permit decision. This reconsideration is intended as a requirement before the applicant may appeal the decision to a court under Minnesota Statutes §103D.537.

If an applicant challenges a permit action, the District will always be in the strongest position to defend its decision if there are detailed findings to support a permit denial, or to support conditions included in a permit approval. The United States Supreme Court underscored this point in its decision in *Koontz v St. Johns River Water Management District*, U.S. No. 11-1447; 570 U.S. (2013). The Court held that land-use agencies imposing conditions on the issuance of development permits must have a rational relationship and rough proportionality with the impacts of the proposed development.

Because most permit actions are not contested, it doesn't make sense for every such action to rest on extensive staff or consultant work and detailed findings. The reconsideration process is intended to allow for the District to devote the resources to such efforts only as to those aspects of a permit that are in fact contested. The District rule requires an applicant to give a District fair notice of its objection to the denial or conditions, and ensures that the applicant has a full opportunity to address the board of managers in that regard. The District rule also provides that a District may recover its additional permit review costs incurred in the reconsideration process.

This process must be carefully managed so that the District does not violate Minnesota Statutes §15.99, which as noted places a strict deadline on a District's final permit decision. The District rule states that if the reconsideration process cannot be completed within the section 15.99 (120 days) time frame, then the applicant is not required to complete the reconsideration step before exercising its appeal right. It is especially important for Districts to manage the permit process so that decisions are timely within these deadlines, and adequate time is anticipated for reconsideration of contentious permit conditions.

F. Permit Fee

Minnesota Statutes §103D.345, subdivision 2, states that a watershed district may require a permit fee that covers the actual cost for the District to process a permit application and then to monitor compliance with the issued permit. This includes staff and consultant costs (including attorney costs, as allowed by law) and related administrative costs. At section 5, the rule basically incorporates the statutory language. However if all rules are followed by the applicant while applying for a District permit, all fees will be waived and there will be no charge for the permit.

G. Financial Assurance

Section 6 of the district rule incorporates the Minnesota Statutes §103D.345, subdivision 4, authority given to watershed districts to require that a permittee give a bond to ensure its performance under the permit. The District rule uses the term "financial assurance" rather than "bond" to allow a permittee to use other means of assurance including letters of credit and cash escrows. As is recommended for the permit fee, the required amount of financial assurance for a particular type and scale of project would be set in a schedule that could be reviewed and adjusted by the board of managers as needed, without a formal rulemaking.

The rule further sets forth fairly straightforward terms for how the assurance will be used by the District, the enforcement costs that the assurance may be used to fund, and the release and return of unused funds once the work is completed in accordance with the permit terms. The rule explicitly states that if District costs exceed the amount of a financial assurance, the permittee will be responsible to reimburse for those excess costs. The District would have to pursue such a claim by an independent legal action, if necessary.

The rule provides that a financial assurance will not be required if the permittee is a federal, state or local unit of government. The watershed law does not specifically exempt governmental agencies from the District's authority to require a financial assurance. However, the practice of watershed districts

generally is not to impose such a requirement. It is reasoned that public permittees, in general, are more reliable in meeting permit requirements and that where a particular permittee is not, it remains accessible and is not going to disappear or go into bankruptcy. Further, the cost of a bond or letter of credit would just be an additional taxpayer cost. Notwithstanding, the rule states that if the public permittee requires a bond of its contractor, the District is to be named a beneficiary. The reasoning here is that this gives protection to the District without measurable added cost.

H. Permit Approval Authority

Finally, section 2 of the District rule states that the board of managers will decide permits, except as may be delegated to the administrator or staff. A district board of managers may be quite comfortable delegating the authority for permit decisions to its administrator or staff for simpler permits or those likely to be less controversial. Allowing the administrator or staff to approve certain permits reduces the time and cost for applicants and frees the board of managers agenda for other matters. The delegation would occur by a board resolution that defines the limits of the delegation.

With the reconsideration process at section 4, if a permittee objects to a permit decision of the administrator or staff, it will come before the board for review. A district can include other procedures in its rules, or in the delegation resolution, that would, for example, allow a board member or an interested member of the public other than the applicant to ask that the board consider an application in a given instance.

RED LAKE WATERSHED DISTRICT
RULES AND REGULATIONS

SURFACE DRAINAGE AND FLOOD MITIGATION

Adopted August 27, 2015
Effective September 30, 2015

DEFINITIONS

Board of Managers shall mean Board of Managers of the Red Lake Watershed District

District shall mean the Red Lake Watershed District

Dike shall mean a bank or mound of earth, berm or obstruction that is built or placed in a manner which will affect the flow of water and especially to protect an area from flooding.

Drainage Way shall mean a natural or artificial channel which provides a course for the flow of water, whether that flow be continuous or intermittent.

Flood Mitigation shall mean managing and control of flood water movement, such as redirecting flood run-off through the use of floodwalls and flood gates, rather than trying to prevent floods altogether.

Improve has the meaning set forth at Minnesota Statutes §103E.215, subdivision 2, which states that improvement means tiling, enlarging, extending, straightening, or deepening of an established and constructed drainage system.

Managers shall means the Red Lake Watershed District Board of Managers

Private Drainage Way shall mean a drainage way other than a public drainage way, which includes but is not limited to private tile drainage and surface drainage systems constructed along roadways.

Public or Legal Drainage Way shall mean a drainage way under the jurisdiction of the drainage authority pursuant to Minnesota Statutes chapter 103E.

Surface Drainage shall mean removal of surface water by development of the slope of the land utilizing systems of drains to carry away the surplus water.

Tile Drainage shall mean an agriculture practice that removes excess water from soil subsurface.

1. POLICY. It is the policy of the Board of 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 the District's present and future residents. Further, it is the policy of the Board of Managers to regulate new construction, improvement, repair and maintenance of public and private drainage ways for the following purposes:

A. To preserve the capacities of drainage systems to accommodate future needs.

B. To improve water quality and minimize localized flooding.

C. To minimize the loss of drainage capacity.

D. To avoid drainage conditions that cause or aggravate erosion or sedimentation of downstream drainage ways or waterbodies.

E. To ensure that parties responsible for accumulation of debris, soil and sediment in drainage ways maintain those drainage ways.

2. REGULATION

A. A permit must be obtained from the District before undertaking any of the following:
   i. Excavation of a new private drainage way located within any public right of way;
   ii. Work below the top of bank of an existing public, legal or private drainage way located within any public right of way that disturbs soil or alters the dimensions or hydraulic profile of the channel;
   iii. Constructing, installing or altering a road or utility crossing beneath or over a public or legal drainage way; or
   iv. Constructing, altering or removing a dike which alters the flow of water.

B. Section A notwithstanding, no permit from the District is required:
   i. To construct, establish or perform maintenance on an existing private drainage way, as long as the private drainage way is located outside of any public right of way.
   ii. To repair or replace tile drainage to the same size of tile as previously existed.
   iii. To perform emergency work on any private drainage way located within a public right of way to avoid substantial property damage due to flooding, subsidence or other cause, in which case the District must be notified of the work and the reasons for the emergency action, as soon as possible. If at all possible, efforts to notify the District should be made before performing any emergency work. Any emergency work performed without the District's and governmental roadway authority's permission is performed at the owners own risk.
   iv. To disturb surface soils in the course of ordinary cultivation or other agricultural activity. This may include general field ditching.

C. The requirements of this rule are in addition to other applicable laws and procedures, including those of Minnesota Statutes chapter 103E. This rule is to provide for management of waters in the public interest and does not displace in whole or part any private legal rights a property owner or other person may have with respect to the use and drainage of waters.

D. A contractor or equipment operator is responsible to ascertain whether a permit is required by this rule and, if so, that it has been obtained.

3. SURFACE DRAINAGE. The following criteria apply to applications under this rule other than those for the construction, alteration or removal of a dike:

A. An applicant may not dispose of or alter the flow of surface water so as to unreasonably burden another landowner with surface flow.

B. Surface water will not be artificially directed from upper land to and across lower land without adequate provision on the lower land for its passage.

C. Surface water will not be artificially directed into a legal drainage system from land not assessed to that system unless express authority from the drainage authority is obtained as defined under Minnesota Statutes 103E.401.

D. Temporary storage and retention basins on the parcel or parcels proposed to be drained will be used to the extent feasible for upstream storage and to maintain peak flows, prevent erosion and avoid increased demand on public drainage systems.

E. An applicant shall control erosion and downstream siltation by the following means:
   i. All work involving exposed or stockpiled soil or materials subject to erosion will conform to an erosion and sediment control plan approved by the District.
   ii. Open drainage ways will be stabilized with vegetation above the low water mark or other best management practices to reduce channel erosion.
   iii. To reduce sediment transport, where feasible drainage will be discharged through marsh lands, swamps, retention basins or other treatment facilities prior to release into the receiving public water. Where feasible, a retention basin will overflow to a wide, shallow grassed waterway.
   iv. Drainage ways will be constructed with side slopes designed in accordance with proper engineering practice to minimize erosion, giving due consideration to the intended capacity of the drainage way; its depth, width and elevation; and the character of the soils to be drained.
   v. Water inlets, culvert openings and bridge approaches must have adequate shoulder and bank protection to minimize land and soil erosion.
   vi. Channels and outfalls must be designed to be stable.
   vii. Consideration for establishment of a grass filter strip 16.5 feet in width where possible and maintained on each side of a new private drainage way and on each side of an existing private drainage way which is subject to work for which a permit is required by this rule.

F. The proposed activity may not adversely affect downstream water quality or quantity.

4. DIKES**.** The following criteria apply to the construction, alteration or removal of a dike:

A. The dike may not unreasonably restrict flow onto down gradient property.

B. The dike may not be constructed or maintained within the 100-year floodplain unless plans and specifications, signed by a registered engineer, are submitted showing that:

i. The work will not impede 100-year flood flows outside of the delineated retention area, or raise the 100-year flood level or increase flood peak downstream;
ii. Overflow sections are designed to handle overtopping during major floods without significant erosion or risk of failure and without sandbagging or other manual measures before or during a flood; and
iii. The capacity of pumping facilities to remove surface water stored behind a dike is consistent with Minnesota Hydrology Guide criteria.

C. Operational procedures must prohibit pumping when the agricultural dike is overtopped during a rain or snow-melt event until downstream flood peaks have occurred.

D. Outlet drainage must be sized to the applicable capacity in the Minnesota Hydrology Guide (Curve 1) for agricultural drainages, or other technical specifications established by the District.

E. A permit to construct or maintain an agricultural dike will be conditioned on the applicant's granting the District the right in perpetuity to:
i. Enter onto property to assure landowner has installed and is maintaining traps/gates to restrict or eliminate outflow from the diked area during and after overtopping flood events; and
ii. Enter on the subject property to inspect traps/gates during and after an overtopping flood event.

5. EXHIBITS. The following exhibits may be requested to accompany the permit application. Two copies, (standard paper size of 8.5 inches by 11 inches), which include:

A. Map showing location of project and tributary area.

B. Plans and specifications for the project.

C. Existing and proposed cross sections and profile of affected area.

D. Description of bridges or culverts required.

E. List of owners of properties benefitted or affected by the proposed work.

F. Such other submittals as the District reasonably may require to evaluate whether the proposed activity meets the standards of this rule.

SURFACE DRAINAGE AND FLOOD MITIGATION

Guidance to District Rule

The Surface Drainage and Flood Mitigation district rule identifies the changes to surface water flows that will require a permit from the watershed district, and sets forth the standards it will apply in order to determine whether those changes are permitted. A watershed district's consideration of this district rule in particular will benefit from the district engineer's advice to assure that critical water management concerns in the local watershed are addressed.

A. Policy

The policy statement at section 1 serves several purposes. First, it communicates to property owners why the watershed district is choosing to regulate surface drainage and assists those owners in designing their proposed surface drainage alterations in a way that will be consistent with district goals. Second, when the board of managers must exercise judgment during permitting decisions, it will refer to the policy statement in order to align its decisions with the stated policies. Third, in the event of a legal challenge to a permit decision, the underlying policies of the rule will guide the judge. If the permit decision aligns with those policies, the judge will give greater deference to the board's decision and the district's legal position will be stronger.

The proposed policies reflect the following goals for surface drainage management:

- To preserve capacity in public drainage systems into which lands assessed benefits for those systems discharge. Note that the drainage law (Minnesota Statutes chapter 103E) does not control the volume that may flow from assessed benefited lands into the system or the rate of that flow. However, a watershed district under its regulatory authority (Minnesota Statutes chapter 103D) may regulate both volume and peak flow off of lands benefited into a drainage system to provide drainage benefits equitably to all lands paying into the system.

- To limit the movement of soils into channels and preserve the integrity of channel banks, in order to limit maintenance costs for public ditch systems and limit the transport of sediment, nutrients and other pollutants to downstream receiving waters.

- To protect the structural integrity of public drainage systems from destabilizing hydraulic forces.

- To prevent unassessed benefited lands from draining into public or private drainageway systems, in order to preserve system capacity for those property owners bearing the cost of those systems, and in the interest of equity.

B. Regulation

The regulation section identifies proposed changes to the landscape that require a permit from the watershed district. The separation between those activities that require a permit from those that don't is made with reference to the four policies identified in the preceding section. What this section does is identify those activities that, if not done properly, can cause impacts to public drainage systems and downstream waters that, as the policies spell out, the watershed district is trying to prevent. The goal is to exercise watershed district oversight of those activities while, to the extent possible, avoiding imposing permitting burdens on other activities that don't pose a substantial risk of impact.

In addition, this section strives to define activities that require permits, and those that don't, as precisely as possible. Ambiguity in knowing what does and does not require a permit is a burden on property owners and can be a source of legal conflict. This doesn't mean that all ambiguity can be eliminated, but where possible it should be minimized.

The District rule first describes the activities that require a permit, and then carves out from those descriptions certain exemptions. The District rule sets forth specific descriptions of activities that require a permit. In summary, they include:

- diking.
- Any work in or over a public surface drainage system or within any right of way of a governmental roadway.

The following activities that otherwise would meet one of these criteria are exempted from the permit requirement:

- Ordinary maintenance of a private drainage way.
- Emergency work on a non-public drainageway or channel necessary to avoid significant property damage. The District rule requires advance notice to and approval from the watershed district for work in a private drainage way located within a public right of way. Notice to and approval from the proper governmental roadway entity is also necessary. However, it is recognized that certain situations may arise which require immediate action. In these cases, any emergency work performed without proper notice and approval is done at the owner's own risk.
- Ordinary cultivation or other ordinary agricultural activity.

The District rule contains an explicit reminder that it does not eliminate any other legal requirements or constraints applicable to the proposed work. As regards the drainage code, this means, for example, that a landowner performing work in a public channel may not obstruct flows; that a new outlet into a public system or the connection of unassessed lands is prohibited without drainage authority approval; and that the drainage authority retains all authority under the drainage law to do work within public systems and assess the costs.

The rule also explicitly affirms that it does not displace any private property rights in water flow, or any rights to be protected from such flows. The rule reflects the responsibility of the watershed district to manage surface drainage for the general public benefit. But the District does not act as an arbiter, for example, as between adjacent property owners. So if a property owner excavates a channel or alters their land in a way that affects the flow of water onto adjacent property, property owner may need a permit from the watershed district, but the property owner will be responsible to ensure that they are not infringing on the rights of the adjacent owner by increasing, relocating or diverting flows across the neighboring property.

Finally, this section of the District rule states that a contractor or equipment operator is equally responsible to ensure that there is compliance with the rule. If there is enforcement, this protects a watershed district against claims by a property owner that it wasn't aware of what a contractor was doing, or claims of a contractor that the property owner had assured it that all permits and approvals were in order. It allows a watershed district to look to the property owner, or the party actually doing the work on the land, or both, to restore and remediate the impacts of any unpermitted work. The property owner and the contractor then can sort out responsibility and cost between themselves.

C. Criteria for Surface Drainage Changes

This section applies to all activities subject to permits except for diking and subsurface tile drainage, and states the criteria against which a permit application will be evaluated.

The criteria in the District rule relate back to the policies enumerated in Section 1 of the rule. They are as follows:

- Flows - volume or peak - onto adjacent property may not unreasonably increase.
- Unassessed lands may not be drained into a public system without obtaining express permission from the drainage authority in accordance with 103E.401.
- To the extent reasonable, flows resulting from proposed changes must be retained on-site before discharge, or discharged to off-site retention - natural or artificial - in order to mitigate flow changes and limit downstream sediment transport.
- Erosion and sedimentation in drainage systems will be minimized through a number of means, as feasible:
    - An erosion and sediment control plan must be submitted and approved;
    - Channels must be vegetated above low-water mark;
    - Channel banks must be designed with proper slopes;
    - Hydraulic forces must be assessed and provided for in the design;
    - Grass filter strips establishment should be considered wherever channel work is conducted.
- Finally, there is a general requirement that downstream flows or water quality may not be adversely affected.

The last criterion, in particular, is general, which leaves discretion in the hands of the District. However, risk of impact or adverse effects can be very specific to each particular situation, and this criterion rests on the need for a watershed district to be able to protect surface drainage systems as necessary in the context of each specific set of circumstances.

Note that the procedural rules include a step by which an applicant may ask the board of managers to reconsider a permit decision before it is appealed. Where the board denies a permit, or includes certain conditions in the permit, this reconsideration step is the opportunity for the District, through its engineer, to re-examine the facts of their decision and to closely review their findings about potential impacts.

D. Criteria for Dikes

This section states the criteria against which a permit application for a dike will be evaluated. These criteria, as well, related back to Section 1 and are as follows:

- Flows onto adjacent property may not be diverted to an unreasonable extent.
- Retention may not contribute to an increase in down gradient flood peak, and there must be downstream capacity for any change in the hydrograph of flow.
- The dike structure must be designed so that, without additional stabilizing measures, it will withstand flood conditions without erosion or risk of failure.
- The structure outlet, and basin drawdown pumping capacity, must be sized and designed in accordance with the criteria contained in the Minnesota Hydrology Guide.
- The applicant must submit and follow operational procedures that prohibit drawdown pumping during a flood event until downstream flood peaks have receded.

The District rule also provides that as a condition of a permit, the property owner must grant the watershed district a perpetual right to install, maintain and operate traps or gates to prevent outflows from the diked area during and after flood events that cause the dike to be overtopped.

It is noted that here, too, there will be a need to assess the specific circumstances and to apply some judgment in applying these criteria in each case. Again, the reconsideration step in the procedural rule allows for the level of analysis that is necessary if the District and an applicant do not reach concurrence on a given proposal.

E. Exhibits

This section lists application submittal requirements. The basic submittal requirements that may be requested are: (a) maps and information to locate the project; (b) topographic, elevation, dimensional and flow data necessary to evaluate the hydrologic, hydraulic and flood impact of a proposed change in the landscape; and (c) a listing of potentially affected owners.

A watershed district may require any other submittals that it reasonably needs to evaluate a proposed activity for compliance with the rule criteria. This allows the district to keep its mandatory submittals reasonably limited, and to tailor the submittal burden on an applicant to what is needed in order to evaluate the applicant's specific proposal. This presumes that district staff will work with an applicant to identify necessary submittals. If an applicant fails or refuses to supply what the district requests, the district may be unable to properly evaluate an application, and this may be a legal basis to deny the permit.

Minnesota Statutes §15.99 requires a permitting agency, including a watershed district, to act on a permit application within the time specified in the statute. This time starts to run when the district receives the application, unless within 15 business days of receipt, the district advises the applicant that the application is incomplete. In light of this statute, it always is important that a district promptly review an application and determine whether it is complete. This becomes even more important if the district relies on a "catch-all" provision, since an application that otherwise contains required submittals is complete unless and until the district identifies other information that is necessary.

F. Definitions

This section defines certain terms used in the rule. Specifically, it defines "drainage way" as pertaining only to surface drainage systems, which may include tile portions, and establishes the terminology to distinguish between public and private systems. It also: (a) defines drainage system "improvement" as having the same meaning as under Minnesota Statutes chapter 103E.

RED LAKE WATERSHED DISTRICT
DISTRICT RULE

SUBSURFACE TILE DRAINAGE

Adopted August 27, 2015
Effective September 30, 2015

1. POLICY. It is the policy of the Board of Managers to promote the sound construction and management of subsurface tile drainage systems in order to minimize downstream flooding and maximize soil storage and agricultural productivity.

2. REGULATION

A. No person shall install or construct any non-incidental subsurface tile drainage system**, after the effective date** of adoption of these rules, without obtaining a required permit from the Watershed District.

3. CRITERIA. An application for a permit must meet the following requirements:

A. All subsurface tile drainage systems must protect from erosion and include RLWD approved erosion control measures.

B. All subsurface tile outlets including lift station pumps, must be located out of a legal drainage system and governmental roadway right of way unless approved by District and must be visibly marked.

C. It is recommended that after harvest, tile outlet controls, including lift station pumps, be opened or turned on to remove water from the system unless downstream culverts are freezing.

D. Obtaining a permit from the RLWD Managers does not relieve the applicant from the responsibility of obtaining any other additional authorization or permits required by law. (Ex: NRCS, SWCD, Township, County, State, etc.)

E. Upon completion of the project, "As Built" plans must be provided to the District.

F. Consideration must be made for turning off pumps for short period of times during the summer so maintenance can be performed on public, legal and private drainageways, such as road ditches or private natural field drains.

4. EXHIBITS. The following exhibits may be requested to accompany the permit application. Two copies, (standard paper size of 8.5 inches by 11 inches), which include:

A. Legal description and site map and/or GPS coordinates to accurate scale showing location of all tiles, surface water inlets, outlet(s), lift stations, pumps, and flow control devices;

B. Land area to be tiled (acres);

RED LAKE WATERSHED DISTRICT
DISTRICT RULE

Pursuant to authority granted by Minnesota Statutes section 103D.341

RULE XX
ENFORCEMENT RULE

Adopted August 27, 2015
Effective September 30, 2015

1. MANNER OF ENFORCEMENT. In the event of a violation or threatened violation of a District rule, permit, order or stipulation, or a provision of Minnesota Statutes chapter 103D, the District may take action to prevent, correct or remedy the violation or any harm to water resources resulting from it. Enforcement action includes but is not limited to injunction; action to compel performance, abatement or restoration; and prosecution as a criminal misdemeanor in accordance with Minnesota Statutes sections 103D.545 and 103D.551.

2. INVESTIGATION OF NONCOMPLIANCE. The District's authorized representatives may enter and inspect a property in the watershed to determine the existence of a violation or threatened violation as described in section 1, above.

3. ADMINISTRATIVE COMPLIANCE ORDER. The District may issue a preliminary compliance order without notice or hearing when it finds a violation or threatened violation as described in section 1, above, and that the violation or threatened violation presents a serious threat of adverse effect on water resources. A preliminary compliance order may require that the property owner or responsible contractor cease the land-disturbing activity; apply for an after-the-fact permit; and take corrective or restorative action. A preliminary compliance order is not effective for more than ten days. The Board of Managers by resolution may delegate to District staff the authority to issue preliminary compliance orders.

A. BOARD HEARING. After due notice and a hearing at which evidence may be presented, the Board of Managers shall make findings. If the Board finds a violation as described in section 1, above, it may issue a compliance order of indefinite duration that may require the property owner or responsible contractor to cease land-disturbing activity; apply for an after-the-fact permit; take corrective or restorative action; reimburse the District for costs under Minnesota Statutes section 103D.345, subdivision 2; and/or be subject to any other remedy within the District's authority. A compliance order may supersede a preliminary order or may be issued without a prior preliminary order.

4. LIABILITY FOR ENFORCEMENT COSTS. To the extent provided for by Minnesota Statutes section 103D.345, subdivision 2, a property owner or responsible contractor is liable for investigation and response costs incurred by the District under this rule, including but not limited to the costs to inspect and monitor compliance, engineering and other technical analysis costs, legal fees and costs, and administrative expenses.

5. CONTRACTOR LIABILITY. Any individual, firm, corporation, partnership, association or other legal entity contracting to perform work subject to one or more District rules will be responsible to ascertain that the necessary permit has been obtained and that the work complies with the permit, rules and statutes and any applicable District orders or stipulations. A contractor that, itself or through a subcontractor, engages in an activity constituting a violation or threatened violation under section 1, above, is a

responsible contractor for purposes of this rule.

ENFORCEMENT

Guidance to District Rule

The Enforcement district rule advises property owners and contractors of the steps the watershed district may take to address a violation or threatened violation of a district rule, permit or other binding district requirement.

1. Manner of Enforcement

This paragraph states the scope of watershed district authority to take enforcement action, and the forms that action may take. Largely, it restates §§103D.545 and 103D.551 of the Minnesota Statutes, the two provisions of the watershed law that provide the foundation for district enforcement. In short, watershed districts may bring action to stop or prevent a violation, to require compliance and action to fix the consequences of a violation, to recover enforcement expenditures, and to charge a violation as a criminal misdemeanor. Notably, apart from a small fine that may be imposed for a misdemeanor, watershed districts do not have the authority to impose or recover a financial penalty.

Note that the paragraph refers not only to a violation of a district rule, permit, or other regulatory requirement, but also to a threatened violation. If a threatened violation does not lead to an actual violation, the district would not be entitled to an order requiring the responsible party to take action. However, if the facts are supportive, the District may issue an order, or obtain a court injunction, to stop the action that threatens violation. The proposed text allows for a district, in consultation with its legal counsel, to determine in any given case the available and preferred remedies.

2. Investigation of Noncompliance

This paragraph advises that the district's duly authorized and delegated representatives, without prior notice to or permission of the property owner, may enter land within the watershed to inspect for compliance with district rules, permits and other regulatory requirements. This re-states Minnesota Statutes §103D.335, subdivision 14, which states:

> The managers may enter lands inside or outside the watershed district to make surveys and investigations to accomplish the purposes of the watershed district. The watershed district is liable for actual damages resulting from entry.

The district need not know or even suspect that a violation is occurring, nor is its authority limited to lands on which activity taking place is subject to a district permit. The statute permits entry onto any lands as the district finds appropriate in order to effectively carry out its regulatory function.

Note that the statute gives this authority to "[t]he managers." We believe it is reasonable to read the term "managers" as meaning, more broadly, the district's representatives - managers, staff, contract personnel -

both because the term "managers" is used elsewhere in the watershed law simply to refer to the district as a whole and because, as a matter of common sense and necessity, it is not only the district managers themselves who are in the field performing regulatory inspections and oversight on behalf of the district.

The statutory authority under subdivision 14 to enter private property cannot override the U.S. and Minnesota Constitutions, and therefore is limited by the constraints those documents place on entry. Specifically, except under certain limited circumstances, district representatives cannot enter enclosed structures or outside areas that directly surround a residence and its associated structures (garage, shed, etc.). Also, while the statute authorizes entry without notice to or agreement of the landowner, a district may adopt procedures under which it limits the practice of unannounced entry for reasons such as inspector safety and landowner relations. In implementing its inspection authority, a district should coordinate closely with its legal counsel to establish its inspection procedures and practices.

3. Administrative Compliance Order

Under the watershed law, a district board of managers is given the power to issue orders relating to permits and permit compliance. This authority is implemented in paragraph 4, described further below.

However, a condition that is causing or threatening harm to water resources may need attention immediately, or at least before the board of managers practically can be convened to hear a matter and issue an order. For that reason, it is desirable for district staff to be able to exercise the authority to issue an order at the time a violation is observed.

There are two concerns about staff's issuance of legally binding orders in the field. One is a "due process" concern: that the authority of a public agency to issue a legally binding order without giving the recipient notice and a chance to be heard is legally limited. The second is that the authority to issue orders lies in the board of managers and must be specifically delegated to district staff. Historically, court cases have limited the ability of a public decision-making body to delegate its authority to staff. The law is concerned when, by doing so, the body is transferring its broad judgment and discretion to staff.

The model language attempts to address both of these concerns:

- With respect to the due process concern, the district rule requires the district to find that there is a violation or imminent violation that poses a serious water resource threat. In other words, order authority is to be exercised only when it is necessary to avert an important impact that otherwise would occur if no action could be taken until the managers were able to meet.

  Also, the rule states that a staff order has effect only for ten days. The intent is that a staff order allows for harm to be prevented and the status quo to be maintained, only until the board of managers has a reasonable opportunity to convene and hear the facts with notice to, and participation of, the affected property owner. The "ten days" in the district rule is not a specific legal requirement; a board of managers may choose a different duration based on the frequency of its regular meetings and its ability to convene for a special meeting. However, the longer this period is, the more legally vulnerable the delegation to staff may be. Optimal practice is for the district administrator to coordinate with the board president so that the time and place of the board hearing can be included in the staff order itself.

- Regarding the delegation concern, the rule requires that delegation be accomplished by written resolution of the board. In this resolution, the board should consider spelling out constraints on

staff's authority so that the level of discretion given to staff is only so much as is absolutely necessary to achieve the purpose of the delegation, that is, to protect the resource until the board is able to give notice and hold a hearing. This may include, for example, requiring that an order contain specific findings as to what the violation is, what the actual or threatened impact is, and why that impact is serious. The resolution also may direct that permittee action demanded by the order be only what is necessary to prevent the resource impact until the board has the opportunity to hear the matter.

If a board of managers is not comfortable delegating order authority to its staff, there are options. For example, the district may simply institute a structured procedure for staff to issue a formal document in the nature of a "notice of probable violation" in place of a legally binding order. The notice would identify the apparent violation and impact, and would advise of recommended compliance actions, but would not purport to order that those actions be taken. Instead, it would advise of a compliance hearing by the board of managers and notify that the hearing will occur unless the suggested actions are timely taken. If the responsible party did not agree with staff's determination that there was a violation, it could choose not to take the recommended action, and wait to present its case to the board.

While a watershed district order is legally binding, a district can enforce that order only by going to a state district court judge. To have the strongest legal position in front of the judge, a district is always advised to have an order issued not just by its staff, but by its board of managers. This means that even if staff has issued a field order, the board will want to hold a hearing and issue a superseding order before going to court. Therefore there is not always a great difference between a staff order and a staff notice.

A. Board Hearing

This paragraph provides for a board hearing before a district compliance order (other than a preliminary order) may be issued. Because a district order may impose substantial cost on a property owner or contractor - by delaying work, requiring restoration action or imposing district costs - the law requires that the potential recipient of an order be given notice and an opportunity to appear and present evidence to the board before the board makes findings. The law does not specify how many days' notice must be given, how notice must be given, or the specific procedures that must be afforded at the hearing beyond an "opportunity to be heard." District legal counsel should be consulted on these details, and whether they should be included in the rule language or simply followed as district practice.

The paragraph also makes clear that on the basis of a finding of violation, a board of managers may order any remedy "within the District's authority." These remedies include: (a) a directive to cease and desist until an after-the-fact permit is applied for and issued: (b) a requirement that the responsible party bring the activity into compliance and/or take steps to remediate impacts from a violation; and (c) reimbursement of the district for its costs incurred in compliance monitoring and enforcement. As noted previously, a watershed district cannot impose a monetary penalty. Also, of course, the district cannot itself conduct criminal proceedings; a misdemeanor action would need to be brought in state district court by the proper law enforcement agency.

Finally, the paragraph makes clear that the board has the authority to consider and issue an order, whether or not there is a preliminary, staff-issued field order. If there is not actual or threatened harm to justify a staff order, then the district may simply notice and hold a board compliance hearing. Typically, this will follow staff efforts to work with a violator to secure compliance, but it can occur whenever the board of managers deems appropriate and need not follow informal or formal staff action.

4. Liability for Enforcement Costs

Paragraph 5 of the district rule states that a property owner or responsible contractor will be responsible for district costs to investigate and respond to a violation of a district rule, permit or other regulatory requirement to the extent that Minnesota Statutes §103D.345, subdivision 2, allows. This statute says that a watershed district may charge an "inspection fee." It then states how the fee may be calculated:

> The inspection fee must be used to cover actual costs related to a field inspection. Inspection costs include investigation of the area affected by the proposed activity, analysis of the proposed activity, services of a consultant, and any required subsequent monitoring of the proposed activity. Costs of monitoring an activity authorized by permit may be charged and collected as necessary after issuance of the permit.

Accordingly, if there has been an inspection, then the cost of the inspection, any analysis related to it, and any subsequent monitoring related to it may be recovered from the property owner or other responsible party. It further says that consultant costs related to the inspection, and to subsequent analysis and monitoring, are recoverable costs as well. This would include engineering and other technical consultants, but also may be read to include fees paid to district legal counsel for assistance in evaluating compliance and carrying out enforcement procedures. To recover these costs, it is important for a district to keep careful records of them.

Enforcement may result in a variety of costs to a district - staff hours, administrative and consultant costs, sampling and analysis costs, manager per diems for special meetings, contract costs for restoration work undertaken by the district, and potentially costs for court proceedings. The proposed rule language does not take a position on the precise extent to which each of these falls within the scope of the statute. Each district should determine its position with the advice of district legal counsel (for example, attorney fees for court proceedings may be excluded from the scope of §103D.345, subdivision 2, by virtue of separate treatment in §103D.545, subdivision 3). Note also that in the absence of the authority to impose a fine, a watershed district's ability to require that a responsible party reimburse its costs may be a measurable financial incentive for early compliance.

5. Contractor Liability

The watershed law requires that watershed districts adopt and apply rules governing activities that may injure water resources, but it does not anywhere state who is subject to enforcement in the event a rule, or a permit issued under the rules, is not followed. It is good practice to require the property owner of record to be the named permit applicant, so that the authority to perform the proposed work is established and the district always has an official location where the permittee can be located. Further, in the event of noncompliance, it will be necessary for the property owner to be accountable for the violation to ensure that there is legal access to the property for any compliance work that is needed. In this case, it is reasoned that if a contractor has actually performed the work that does not comply, the property owner has a contract relationship with the contractor that will allow the property owner to demand that the contractor address the violation and hold the property owner harmless for costs.

However, there is nothing in the watershed law that prevents a district from also holding directly accountable the contractor that, itself or through its subcontractor, is responsible for the violation. A district may decide that it will have more leverage to gain compliance if both the property owner and the

contractor are directly subject to district orders and enforcement proceedings. If the district encounters a situation where the property owner appears to be innocent of the violation, holding the contractor responsible as well allows the district to take enforcement action directly against the contractor with minimum imposition on the property owner.

Paragraph 6 establishes that a contractor also is responsible for a violation if it, or its subcontractor, performed the activity constituting the violation. This section defines the term "responsible contractor" as it is used throughout the rule to denote a contractor that may be subject to enforcement.

WATER MANAGEMENT DISTRICTS

Guidelines for Watershed Districts Creating and Implementing Water Management Districts

Purpose

Create Water Management Districts within Watershed District Watershed Management Plans to provide an equitable mechanism for funding targeted and specific watershed "Projects" addressing local resource concerns and priorities.

How Water Management Districts Work

Fee and funding mechanism is developed on the basis of benefitor contribution as it relates to a particular pollution characteristic or to a particular water resource issue. For example, the fee can be based on land contribution of water volume if it is a flooding or water storage issue or it can be based on phosphorus contribution if it is a water quality issue that is being addressed in the "Project".

Principles/Clarifications:

- Water Management Districts and their charge systems must be established under M.S. § 103D.729.
- Water Management District charges may only be used to pay the costs of "Projects" initiated under M.S. §§ 103B.231, 103D.601, 103D.605, or 103D.611.
- Stormwater "Projects" under M.S. § 103D.730 must be initiated and ordered to be implemented through formal hearing and adoption processes.
- The mechanisms and principles of M.S. § 444.075 must be followed for the development of Water Management District charges established through M.S. § 103D.729.
- For Water Management Districts established in perpetuity, Watershed Districts must establish a local appeal process and evaluate the Water Management District in each ten-year plan amendment.

Water Management Districts ***must:***

- Be established only for "Projects" that are **initiated and ordered to be implemented** through formal hearing and adoption processes.

Water Management Districts ***should:***

- Be closely tied to hydrologic boundaries, but may consider ecological, economic, social, geopolitical and land use factors for creation purposes.
- Be defined by an area of "Project" need or benefit.

Water Management Districts ***should not:***

- Contain more area than is reasonably related to the need, purpose, benefit or outcome of the "Project" for which it is established.
- Overlap or cover the entire watershed district, except in unique circumstances.

Water Management District Charges ***should:***

- Be considered as an option to fund "Projects" that are initiated and ordered to be implemented through formal hearing and adoption processes.
- Utilize a contribution basis as the mechanism for fee structures.
- Define the total "Project" amount to be raised, or define the annual cap of charges to be collected.
- Be of defined duration.

Water Management District Charges ***should not:***

- Resemble an ad valorem tax or be based on property values.
- Be collected in anticipation of "Projects" that 'might happen' or for "Projects" not formally established and ordered by the WD managers.

Implementing Water Management Districts and Water Management District Charge Systems - M.S. § 103D.729

Step 1 **Amend Watershed District Plan to create a water management district.**
Amendment must include:
- A description of area to be in the water management district.
- The amount to be raised by charges (total amount is necessary if fixed time for water management district to be in force, otherwise annual maximum (cap) amount if water management district is established in perpetuity).
- The method that will be used to determine the charges.
- The length of time the water management district will be in force (perpetuity is acceptable).

Step 2 **Approval of Plan amendment under M.S. § 103D.411 or as part of a revised Plan under M.S. § 103D.405.**
- Revised Plan, or petition and amendment, sent to BWSR.
- BWSR gives legal notice, and holds hearing if necessary.
- BWSR approves plan or amendment.
- BWSR notifies Watershed District managers, counties, cities and SWCDs.
- Watershed District maintains file of all properties within the water management district.

Step 3 **Watershed District establishes project(s) in the water management district.**
- Projects implemented must be ordered by the Watershed District managers.
- Order for "Project" must specify funding method(s).
- Watershed District must notify counties, cities and towns within the affected area at least 10 days prior to a hearing or decision on "Projects" implemented under this section of statute.

Step 4 **Watershed District refines methodology for computing charges based on final "Project" scope.**

Step 5 **Watershed District determines and sets charges** for all properties within the water management district after identifying scope of "Project" and deciding method(s) of funding "Project".

Step 6 **Watershed District develops collection mechanism.**
- Request county to collect.
- Contract with private vendor (e.g. electric cooperative).
- Billing and collection by Watershed District.

Step 7 **Watershed District establishes a separate revenue fund** for proceeds collected from the fee or stormwater utility charges.

Step 8 **Resolution of Disputes.** Local governments may request BWSR to resolve disputes pursuant to M.S. § 103D.729, Subd. 4, except a local appeal process must be completed first for disputes involving water management districts established in perpetuity.

BWSR Guidelines, December, 2010

The primary authors of this guidance are:
- Julie Blackburn, Assistant Director
- Jim Haertel, Supervisor, Metro Region

This document is available on the BWSR website and may be revised periodically. Check the website for the most current version.
www.bwsr.state.mn.us/planning

For additional information contact:
Travis Germundson, 651-297-4958,
travis.germundson@state.mn.us.

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Memo

To:	Red Lake Watershed District Board of Managers		
From:	Nate Dalager, P.E.	Project:	Plan Amendment – Water Management District
cc:			
Date:	November 10, 2010	Job No:	131515

Re: Plan Amendment - Establishment of a Water Management District for the Thief River Falls Flood Damage Reduction Project

Introduction

Pennington County Ditch #1 (CD 1) has been a source of agricultural and urban flooding problems for years. Since its construction 100 or more years ago, the ditch has routinely flooded out of its banks in spite of cleanouts and culvert replacements. In 2005, the Pennington County Board of Commissioners, Thief River Falls City Council, RLWD, and others requested that HDR Engineering conduct a drainage study and provide a report of findings. Due to funding limitations and procedural uncertainties related to Minnesota (MN) ditch law, no entity was able to advance the project forward until a landowner ditch improvement petition was received by the Red Lake Watershed District (RLWD) in 2009.

In response to the landowner petition, the RLWD has approved the Preliminary Survey Report and Detailed Survey Report in accordance with MN Statute 103E. These reports explain the project in detail and are available for review from the RLWD upon request.

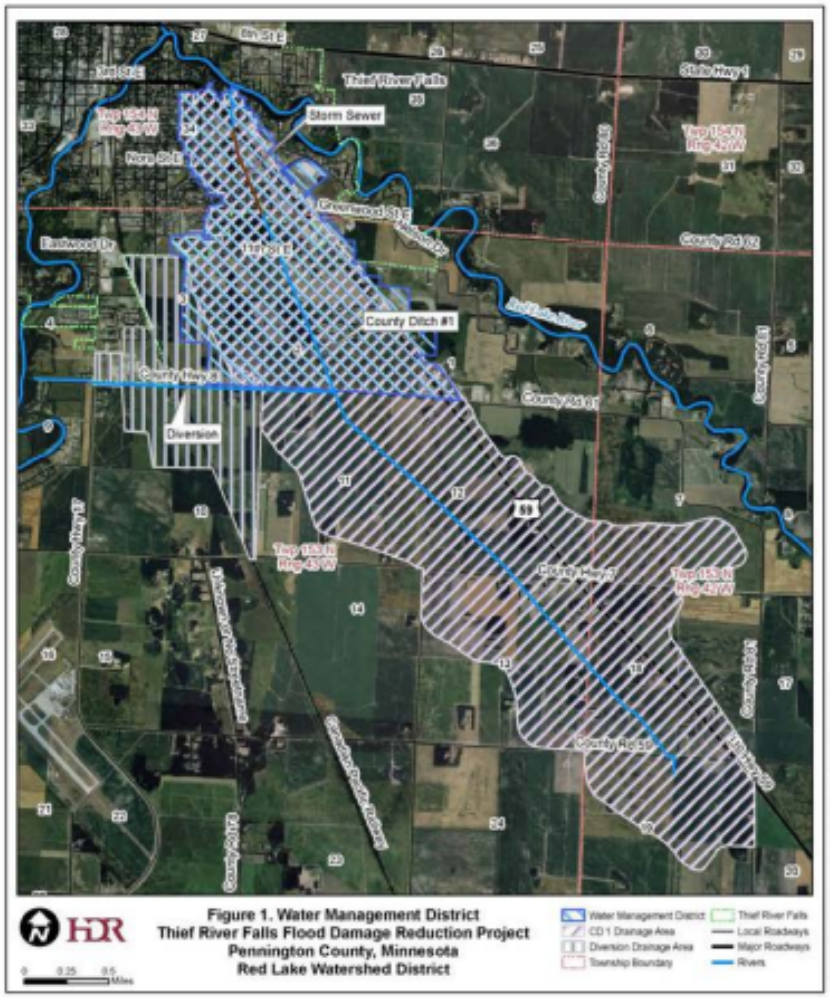
Because of the severity of the flooding problem and the complexity and cost of the proposed CD 1 improvement within the urban environment, the RLWD established the Thief River Falls Flood Damage Reduction (FDR) Project in accordance with MN Statute 103D.605. As part of the funding strategy for the project, the RLWD is hereby proposing to amend Section 7.1.6.2 of its watershed plan in accordance with MN Statute 103D.411 to establish a Water Management District (MN Statute 103D.729) with the purpose of collecting revenue and paying for a portion of the costs of the Thief River Falls Flood Damage Reduction Project. This memo will outline the following as required by the amendment procedure:

- Area included in the Water Management District (WMD)
- The amount of the necessary charges
- The method used to determine the charges
- The length of time that the Water Management District will remain in force

HDR Engineering, Inc. | 324 2nd St. East, Thief River Falls, MN 56701 | Phone (218) 681-6100, Fax (218) 681-6252, www.hdrinc.com

Water Management District Area

The area encompassed by the proposed Water Management District extends from CSAH 8 at the south (upstream) end, to the northern extents of CD 1 outletting into the Red Lake River within the City of Thief River Falls. The outer boundary of the WMD follows property lines, because any property that has partial drainage or protection benefits from the project will be included in the Water Management District. The WMD is approximately 1,070 acres in area and is a mix of agricultural, commercial, industrial, and residential properties. See Figure 1 below for a map of the WMD boundary.



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Thief River Falls, MN 56701
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www.hdrinc.com

Amount of Charges

The project has been estimated to cost $3 million, and is broken down into two distinct components:

- ditch improvement; and
- flood damage reduction project

The ditch improvement consists of an improvement of the ditch grade, cross-section, and culverts, and is estimated to cost approximately $1,000,000. The ditch improvement component of the project will be paid for by benefitted landowners as determined by the viewers in the re-determination of benefits process.

The flood damage reduction component is estimated to cost $2,000,000, and consists of a diversion down the CSAH 8/Challenger roadside ditch and the installation of storm sewer through the City, from Greenwood Street to the TH 59/1st St E intersection. The FDR project component will be paid for by contributions from the RLWD, the State of Minnesota FDR program, and the funds that the Water Management District would ultimately collect. The charges collected by the Water Management District for the construction of its portion of the flood damage reduction component shall consist of 30% of all costs associated with the FDR project, not to exceed $700,000.

Table 1 below describes the breakdown of the project funding.

Table 1. Project Funding Breakdown

Project Component	Funding Source
Ditch Improvement	Benefitted Landowners
Flood Damage Reduction	35% Red Lake Watershed District
	35% State of MN - FDR Program
	30% WMD charges

Method for Determining Charges

The method used to determine the amount of charges each parcel will pay to the Water Management District will closely follow the method that the City of Thief River Falls uses to determine its monthly storm water utility charges. The monthly charge is determined by an approximation of the volume of storm water runoff from a parcel. Runoff volume is a factor of the parcel's area, and the portion of the area that has impervious surfaces, such as rooftops, parking lots, driveways, and sidewalks. Each parcel that falls within the WMD boundaries will be placed into a land use classification, and assigned a Residential Equivalency Factor (REF) for each classification as follows in Table 2 below.

Table 2. Residential Equivalency Factor (REF)

Land Use Classification	Residential Equivalency Factor (REF)
Single Family	1.0
Manufactured Home	1.0
Multi-Family Residential	1.5
Commercial/Industrial	1.5
Schools/Churches/Institutional	1.5
City-Owned Land	1.0
Vacant/Vegetative/Agricultural/Unimproved	0.1 with cap

Then, the formula for determining the monthly charge is as follows:

Water Management District Charge = (REF) x size of parcel (acres) x fee per acre

The fee per acre will be determined upon a more detailed analysis of the final charges.

Length of Time in Force

The initial charges for the WMD for construction of the TRF FDR Project shall be assessed and recovered over a period not to exceed 20 years. In addition to the initial cost recovery period of 20 years, the WMD will remain in-place perpetually in order to assess fees for maintaining the WMD's share of the flood damage reduction portion of the project. The managers may assess all the parcels of property and municipal corporations previously assessed for project construction of the TRF FDR project, to establish a maintenance fund for the project. The assessment for the WMD maintenance fund may not be made when the fund exceeds 20 percent of the original cost of construction for the Thief River Falls Flood Damage Reduction project.

Conclusion

In accordance with MN Statute 103D.729, this plan amendment proposal shall be forwarded to the City of Thief River Falls, Pennington County, and appropriate state agencies for review and comment. The Board of Water and Soil Resources will hold a public hearing in conjunction with the RLWD to receive testimony on the proposed plan amendment providing for the establishment of a Water Management District.

This chapter has been affected by law enacted during the 2025 Regular Session. More info...

CHAPTER 103C. SOIL AND WATER CONSERVATION DISTRICTS

Official Publication of the State of Minnesota
Revisor of Statutes

APPENDIX L
Agency Responses

BOARD OF WATER AND SOIL RESOURCES

May 31, 2024

Red Lake River Planning Group
C/O Peter Nelson, Pennington SWCD
201 Sherwood Ave S.
Thief River Falls, MN 56701

Dear Red Lake River Planning Group,

Thank you for providing the opportunity to provide priority issues and plan expectations for the amendment of the Red Lake River Comprehensive Watershed Management Plan under Minnesota Statutes section 103B.801.

The Board of Water and Soil Resources (BWSR) has the following overarching expectations for the plan amendment:

Process

The amendment process must follow the requirements outlined in the *One Watershed, One Plan Operating Procedures*, version 3.0, adopted by the BWSR Board on August 24, 2023, available on the BWSR website: https://bwsr.state.mn.us/one-watershed-one-plan-policies. More specifically, the plan renewal amendment process must:

- Incorporate the assessment results.
- Provide opportunity for participation by optional participants described in section II.
- Be developed with public input, including notification requirements described in section IV.A.II.
- Comply with the most current version of the One Watershed, One Plan – Plan Content Requirements.

Plan Content

The amended plan must meet the requirements outlined in *One Watershed, One Plan – Plan Content Requirements*, version 3.0, adopted by the BWSR Board on August 24, 2023, available on the BWSR website: https://bwsr.state.mn.us/one-watershed-one-plan-policies. More specifically, the amended plan must have:

- A thorough analysis of issues, using available science and data, in the selection of priority resource concerns.
- Sufficient measurable goals to indicate an intended pace of progress for addressing the priority issues.
- A targeted and comprehensive implementation schedule, sufficient for meeting the identified goals.
- A thorough description of the programs and activities required to administer, coordinate, and implement the actions in the schedule; including work planning and evaluation.

BWSR has the following specific priority issues:

- **Non-point source loading (sediment, nutrient, and bacteria) to surface waters** – Improving and protecting water quality should continue to be a primary goal within the planning area. Impaired waters and prioritized protection waters have been identified by the MPCA in the Watershed Restoration and Protection Strategies (WRAPS) process and an updated Water Quality Assessment was completed by Red Lake WD staff in 2022. The State's Nonpoint Priority Funding Plan (NPFP) recommends that highest priority waters for protection and restoration are those which are listed as impaired but nearly meet standards, and those waters not listed as impaired that barely meet standards. The NPFP outlines a criteria-based process to prioritize Clean Water Fund investments which can be found at http://www.bwsr.state.mn.us/reports.
- **Drainage system instability and inadequacy** - Drainage system instability and inadequacy contribute to flood damages and influence surface water quality throughout the planning area. The planning partners are encouraged to identify and prioritize specific resources impacted by this issue and develop implementation strategies consistent with multipurpose drainage management principles and the Basin Technical and Scientific Advisory Committee papers related to surface and sub-surface drainage. This would ensure that the amended plan provides comprehensive solutions to drainage water management.
- **Unstable river and stream channels** – Rivers and streams in the planning area provide outlets for many drainage systems and habitat for diverse aquatic communities. Many streams and rivers in the planning area are unstable, and bed and bank erosion contribute to water quality issues. The planning partners are strongly encouraged to prioritize specific resources impacted by this issue and utilize a holistic approach to identifying solutions, including removal of watershed disturbances that are causing the instability. Recognizing and prioritizing this issue and specific stream reaches and their associated corridors in the amended plan would help ensure that projects protecting and restoring natural watercourses are part of the partnership's long-term plan.
- **Flood damage** – Flood damage has been a priority issue in the planning area for a long time. The Red River Watershed Management Board and the 1998 Mediation Agreement have established flood damage reduction as a primary goal in the Red River Basin. Continuing to recognize flood damage as a priority issue will help ensure that the amended plan includes goals and recommends practices consistent with Technical and Scientific Advisory Committee technical papers, particularly Technical Paper 11. The planning partners are also encouraged to identify and prioritize specific infrastructure and areas of the watershed impacted by this issue. The amended plan should recognize and build on past work to reduce flood damages to increase the resiliency of watershed resources to increasing precipitation trends and resulting flooding.
- **Altered hydrology** – The hydrologic conditions of the planning area have changed over time as documented by the Minnesota DNR in the Evaluation of Hydrologic Change Technical Summary for the Red Lake River Watershed. These hydrologic changes, as well as other factors, have contributed to instability of natural and artificial watercourses, degradation of wetland habitats, loss of agricultural productivity, and increased risk of flood damages. Continuing to recognize altered hydrology as a priority issue in the amended plan would help ensure that a driving factor behind many related issues is directly addressed in plan implementation.

- **Productivity of agricultural land** – Productive agricultural land is a highly valuable resource and an economic driver of the planning area. Identifying and prioritizing productive agricultural lands, setting goals, and implementing practices for protection and improvement of agricultural land productivity (soil health, drainage water management, field windbreaks, etc.) can be a strength of the amended plan, especially when these practices are applied in areas that provide benefits to multiple priority issues.
- **Loss and degradation of wetland and upland habitat** – The planning area provides many opportunities to restore drained wetland basins, which will augment base flows, attenuate peak flows, improve water quality, and restore habitat. A variety of data and tools are available to help identify and prioritize restorations to achieve watershed management goals. Over the next five years, nearly 30,000 acres of CRP are scheduled to expire within Pennington, Polk, and Red Lake counties (not all in planning area). These expiring contracts have the potential to impact many of the priority issues listed above. The amended plan should recognize this issue, its potential impacts, and develop implementation strategies that the partnership may use to work with producers to manage those acres. BWSR has established a program for RIM easements that accomplish water quality and habitat priorities in comprehensive watershed management plans. Getting specific about habitat goals in the amended plan will improve eligibility for this funding.

BWSR encourages the partnership to continue to prioritize actions that address multiple resource concerns and provide multi-purpose benefits. Many implementation actions will provide multiple benefits and contribute to achieving multiple goals. The amendment process should recognize opportunities to achieve multiple goals in priority areas and target actions in these areas. This approach should ensure implementation of comprehensive projects and help partners secure funding from a variety of sources.

We commend the partners for their continued participation in comprehensive watershed management planning. We look forward to working with you through the rest of the plan amendment process. If you have any questions, please feel free to contact me at matt.fischer@state.mn.us, or 218-766-6496.

Sincerely,

Matt Fischer

Board Conservationist

EC: Tammy Audette (Red Lake WD), Tanya Waldo (Red Lake SWCD), Nicole Bernd (West Polk SWCD), Rachel Klein (East Polk SWCD), Jacob Snyder (Polk County), Rachel Olm (HEI), Stephanie Klamm (DNR), Zach Gutknecht (MPCA), Dan Disrud (MDH), Reid Christianson (MDA), Ryan Hughes (BWSR), Julie Westerlund (BWSR), Henry Van Offelen (BWSR)

DEPARTMENT OF HEALTH

Protecting, Maintaining and Improving the Health of All Minnesotans

May 31, 2024

Peter Nelson
Pennington SWCD District Manager
201 Sherwood Ave S
Thief River Falls, Minnesota 56701
Sent to peter.nelson@pennington.mnswcd.org

Dear Mr. Nelson:

Subject: Red Lake River Comprehensive Watershed Management Plan

Thank you for the opportunity to submit comments regarding water management issues for consideration in the One Watershed, One Plan (1W1P) amendment planning process for the Red Lake River Watershed Planning Area. The Minnesota Department of Health (MDH) looks forward to continued work with the local government units, stakeholders, and other agency partners on this watershed planning initiative.

MDH's mission is to protect, maintain, and improve the health of all Minnesotans. An important aspect to protecting community health is the protection of drinking water sources. MDH is the agency responsible for implementing programs under the federal Safe Drinking Water Act (SDWA).

Source Water Protection (SWP) is the framework MDH uses to protect drinking water sources. The broad goal of SWP in Minnesota is to protect and prevent contamination of public and private sources of groundwater and surface water sources of drinking water using best management practices and local planning. Core MDH programs relevant to watershed planning are the State Well Code (MR 4725), Wellhead Protection (MR 4720) and surface water / intake protection planning resulting in a strong focus in water resource management and protecting drinking water sources.

One of the three high level state priorities in Minnesota's Nonpoint Priority Funding Plan is to "Restore and protect water resources for public use and public health, including drinking water" which aligns with our agency's mission and recommendations to your planning process.

MDH Priority Concerns:

Prioritize Drinking Water Supply Management Areas (DWSMA) in the Red Lake River Watershed 1W1P.

DWSMA boundaries establish a protection area through an extensive evaluation that determines the contribution area of a public water supply well, aquifer vulnerability and provide an opportunity to prioritize specific geographic areas for drinking water protection purposes. DWSMA boundaries that extend beyond city jurisdictional limits or are established in Wellhead Protection (WHP) Action Plans for nonmunicipal public water supplies, like mobile home parks, can be a special focus for local partners prioritizing drinking water protection activities.

Aquifer vulnerability determines the level of management required to protect a drinking water supply and provides an opportunity to target implementation practices in accordance with the level of risk different land uses pose. The attached Public Water Supply Summary Spreadsheet highlights the primary drinking water protection activities for many DWSMAs in the watershed.

Prioritize Sealing Abandoned Wells

Unused, unsealed wells can provide a conduit for contaminants from the land surface to reach the groundwater sources of drinking water. This activity is particularly important for abandoned wells that penetrate a confining layer above a source aquifer.

Sealing wells is a central practice in protecting groundwater quality, however when resource dollars are limited it is important to evaluate private well density to identify the populations most at risk from a contaminated aquifer.

Prioritize Protection of Private Wells

Many residents of the Red Lake River Watershed rely on a private well for the water they drink. However, no public entity is responsible for water testing or management of a private well after drilling is completed. Local governments are best equipped to assist private landowners through land use management and ordinance development, which can have the greatest impact on protecting private wells. Other suggested activities to protect private wells include: hosting well testing or screening clinics, providing water testing kits, working with landowners to better manage nutrient loss, promoting household hazardous waste collection, managing storm water runoff, managing septic systems, and providing best practices information to private well owners.

Prioritize Protecting Noncommunity Public Water Supplies

Noncommunity public water systems provide drinking water to people at their places of work or play (schools, offices, campgrounds, etc.). Land use and management activities (maintaining/upgrading SSTS, well sealing, etc.) should consider effects on these public water

systems. Find information regarding noncommunity public water supplies in the watershed in reports titled Source Water Assessments (SWA) at: https://www.health.state.mn.us/communities/environment/water/swp/swa.html

Source Water Assessments provide a concise description of the water source - such as a well, lake, or river - used by a public water system and discuss how susceptible that source may be to contamination.

Support the development and implementation of comprehensive source water protection plans for the public water supply systems using surface water in the watershed.

The Thief River Falls and East Grand Forks communities (including Grand Forks) rely on surface water intakes within the planning area on the Red Lake River. Surface water based drinking water systems are highly susceptible to potential contamination. Turbidity issues during high flow and high precipitation as well as due to landscape and wetland drainage present challenges to these systems. Flooding conditions unique to the planning area also impact drinking water treatment capabilities due to operation limitations and increased contaminant transfer to source water. Recognizing those surface water bodies that are sources of drinking water in the watershed is important. Prioritize management activities to protect and restore drinking water sources.

Prioritize and promote groundwater conservation & recharge.

The Red Lake River Watershed has limited aquifer availability. Western portions of the planning area experience artesian flowing wells and a common practice is to allow these wells to overflow. Free discharge of groundwater may be an issue for the planning partnership to consider. Promote conservation practices that improve groundwater recharge and wise water use.

Targeting Groundwater & Drinking Water Activities in the 1W1P Planning Process

Limitation of Existing Tools –

Watershed models used for prioritizing and targeting implementation scenarios in the 1W1P, whether PTMapp, HSPF-Scenario Application Manager (SAM) or others, leverage GIS information and/or digital terrain analysis to determine where concentrated flow reaches surface water features. While this is an effective approach for targeting surface water contaminates, it does not transfer to groundwater concerns because it only accounts for the movement of water on the land's surface. Unfortunately, targeting tools are not currently available to model the impact on groundwater resources. The Minnesota Department of Health suggests using methodologies applied by the agency to prioritize and target implementation activities in the Source Water Protection program.

Using the Groundwater Restoration and Protection Strategies (GRAPS) Report –

MDH, along with its state agency partners, are developing a Groundwater Restoration and Protection Strategies (GRAPS) report for the Red Lake River Watershed. GRAPS will provide information and strategies on groundwater and drinking water supplies to help inform the local decision making process of the 1W1P. Information in a GRAPS Report can be used to identify risks to drinking water from different land uses. Knowing the risks to drinking water in a specific area allows targeting of specific activities.

- Prioritize Actions Identified in the Groundwater Restoration and Protection Strategies (GRAPS) report.

Using Wellhead Protection Plans –

- Identify Drinking Water Supply Management Areas (DWSMA) located in the watershed.
- Examine the vulnerability of the aquifer to contamination risk to determine the level of management required to protect groundwater quality. For example, a highly vulnerable setting requires many different types of land uses to be managed, whereas a low vulnerability setting focuses on a few land uses due to the long recharge time and protective geologic layer.
- Use the Management Strategies Table in a Wellhead Protection Plan to identify and prioritize action items for each DWSMA

Using Guidance Documents to Manage Specific Potential Contaminant Sources –

The MDH has developed several guidance documents to manage impacts to drinking water from specific potential contaminant sources. Topics include mining, stormwater, septic systems, feedlots, nitrates, and chemical and fuel storage tanks. This information is available at

https://www.health.state.mn.us/communities/environment/water/swp/resources.html

Attached you will find a listing of MDH data and information to help in the planning process. Thank you for the opportunity to be involved in this planning process. If you have any questions, please feel free to contact me at (218) 332-5195 or dan.disrud@state.mn.us.

Sincerely,

Daniel L. Disrud, REHS, Principal Planner
Source Water Protection Unit
Drinking Water Protection Section
2312 College Way
Fergus Falls, MN 56537

Attachments

ec: Carrie Raber, MDH GRAPS Coordinator
Trent Farnum, MDH Source Water Protection Research Scientist
Dereck Richter, MDH Surface Water Program Coordinator
Luke Pickman, MDH Source Water Protection District Hydrologist
Jenilynn Marchand, MDH Source Water Protection Planner North Supervisor
Steve Robertson, MDH Source Water Protection Unit Supervisor
Henry Van Offelen, BWSR Clean Water Specialist
Matt Fischer, BWSR Board Conservationist
Ryan Hughes, BWSR Northern Region Manager
Julie Westerlund, BWSR 1W1P Coordinator
Stephanie Klamm, DNR Area Hydrologist
Nathan Kestner, DNR Northwest Region Manager Ecological and Water Resources Division
Barbara Weisman, DNR Clean Water Operations Consultant
Zach Gutknecht, MPCA Watershed Project Manager
Jeff Risberg, MPCA Watershed Unit Coordinator
Margaret Wagner, MDA Pesticides and Fertilizer Management Section Manager
Reid Christianson, MDA Clean Water Technical Assistance Unit Supervisor

MDH Data and information:

- Drinking Water Statistics – Where do people get their drinking water in the Red Lake River Watershed? Approximately 25 percent obtain their drinking water from groundwater and 75 percent from surface water sources. This information can help you understand where people are obtaining their drinking water and develop implementation strategies to protect the sources of drinking water in the watershed.

- A spreadsheet of the public water supply systems in the watershed, status in wellhead protection planning, and any drinking water protection concerns or issues that have been identified in protection areas. This information can help you understand the drinking water protection issues in the watershed, prioritize areas for implementation activities, and identify potential multiple benefits for implementation activities.

    - Shape files of the Drinking Water Supply Management Areas (DWSMA) in the watershed are located at https://www.health.state.mn.us/communities/environment/water/swp/maps/index.htm. This information can help you prioritize and target implementation activities that protect drinking water sources for public water supplies.

MDH Figures:

- A figure detailing the "Pollution Sensitivity of Near-Surface Materials" in the Red Lake River Watershed. This information can help you understand the ease with which recharge and contaminants from the ground surface may be transmitted into the upper most aquifer on a watershed scale. Individual wellhead protection areas provide this same information on a localized scale. This can be used to prioritize areas and implementation activities.

- A figure detailing "Primary Aquifers by Section" in the Red Lake River Watershed. This data source displays the general distribution of aquifer use in the watershed, signaling where drinking water is at greatest risk to contaminants from the ground surface. This information allows for targeting of implementation activities to the sources of water people are drinking.

- A figure detailing "Pollution Sensitivity of Wells and Nitrate Results" in the Red Lake River Watershed Underlain by Geologic Sensitivity Ratings from Wells. This information takes what we know about the sensitivity of wells to contamination and combines it with nitrate results to highlight areas of the watershed where there is known nitrate contamination of the water people are drinking. This figure is intended to help prioritize implementation activities aimed at reducing nitrate levels in the sources of drinking water. MDH does not have record of any nitrate test results in drinking water that exceed Safe Drinking Water Act levels requiring action.

- A figure detailing “Arsenic Results” in the Red Lake River Watershed Underlain by Geologic Sensitivity Ratings from Wells. This information can help you understand which wells in the watershed contain elevated arsenic levels. Approximately 10% of wells in the planning area have been found to exceed the Safe Drinking Water Act level for arsenic.

- A figure detailing “DWSMA Vulnerability” in the Red Lake River Watershed. This information can help you understand which DWSMA is most vulnerable to contamination from the ground surface. This figure allows for targeting of implementation activities for public water suppliers.

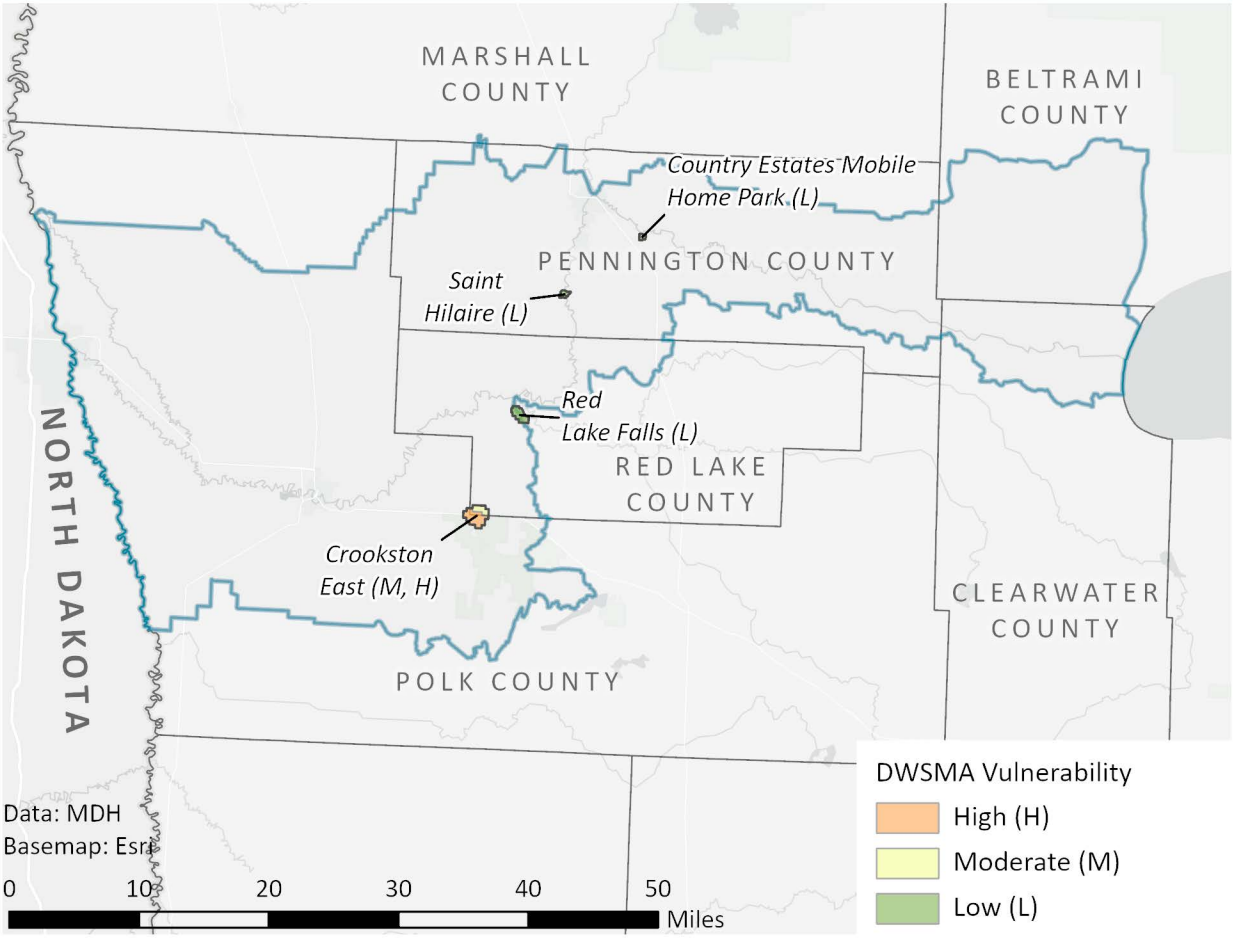
Red Lake River Watershed (Red Lake Sub-Basin)
Drinking Water Protection Concerns for Quality & Quantity

Risk	Name	County	Watershed	Subwatershed	DWP Plan	DWSMA Vulnerability	Drinking Water Protection Concerns
High potential contaminant risk due to surface water reliance as source for drinking water - Focus on potential land uses and contaminant sources that may impact water quality							
	Thief River Falls	Pennington	City of Saint Hilaire	City of Thief River Falls	SWA approved 2023 and SWIPP under development	High	Relocation of raw water intake, erosion control measures and emergency response planning recommended in the SWA. Current DWSMA also in the Thief River 1W1P planning area.
	East Grand Forks	Polk	Town of Buxton	Red Lake River	SWA developed in 2002 needs updating but is not scheduled.	High	Besides the East Grand Forks intake, the city of Grand Forks also operates an intake on the Red Lake River.
High potential aquifer contaminant risk due to connection with surface water - Focus on potential land uses and contaminant sources that may impact water quality							
	Crookston	Polk	City of Crookston	Gentilly River	Initial WHPP approved 2009 and amendment approved 2021	High	One of two DWSMAs in planning area. The East DWMA is Low Vulnerability and barely outside of planning area. Polk County portion of West DWSMA is High Vulnerability.
Moderate potential contaminant risk to aquifer - Focus on chemical or fuel storage, transportation corridors and sealing unused wells							
	Crookston	Red Lake	City of Crookston	Kripple Creek	Initial WHPP approved 2009 and amendment approved 2021	Moderate	One of two DWSMAs in planning area. Portion in Red Lake County mostly Moderate Vulnerability with some High. Sustainability for future demands a concern.
Low aquifer potential contaminant risk - Focus on sealing of unused wells							
	Aeseby Court	Pennington	Upper Red Lake River	County Ditch 1	Action Plan developed but on hold	Low	One primary well with unknown construction date. 5 additional located wells and 1 unlocated well also identified in the DWSMA.
	Basswood Court	Pennington	City of St Hilaire	City of Thief River Falls	Action Plan developed but on hold	Low	One primary well with another located well identified in the DWSMA.
	Country Estates Mobile Home Park	Pennington	Upper Red Lake River	County Ditch 1	Action Plan approved 2018	Low	Septic system within the Inner Wellhead Management Zone of system well needs ongoing compliance monitoring. No well log found for primary well.
	Red Lake Falls	Red Lake	City of Crookston	Town of Huot	Initial WHPP approved 2003, amended in 2015 and plan extended in 2023	Low	2 primary wells with a railroad well, a commercial well, and two domestic wells identified in the DWSMA.
	St Hilaire	Pennington	City of St Hilaire	City of St Hilaire	Initial WHPP approved 2003, amendment approved 2013 and plan extended 2022	Low	Two city cells with 4 additional unlocated wells and 2 domestic wells identified in DWSMA.

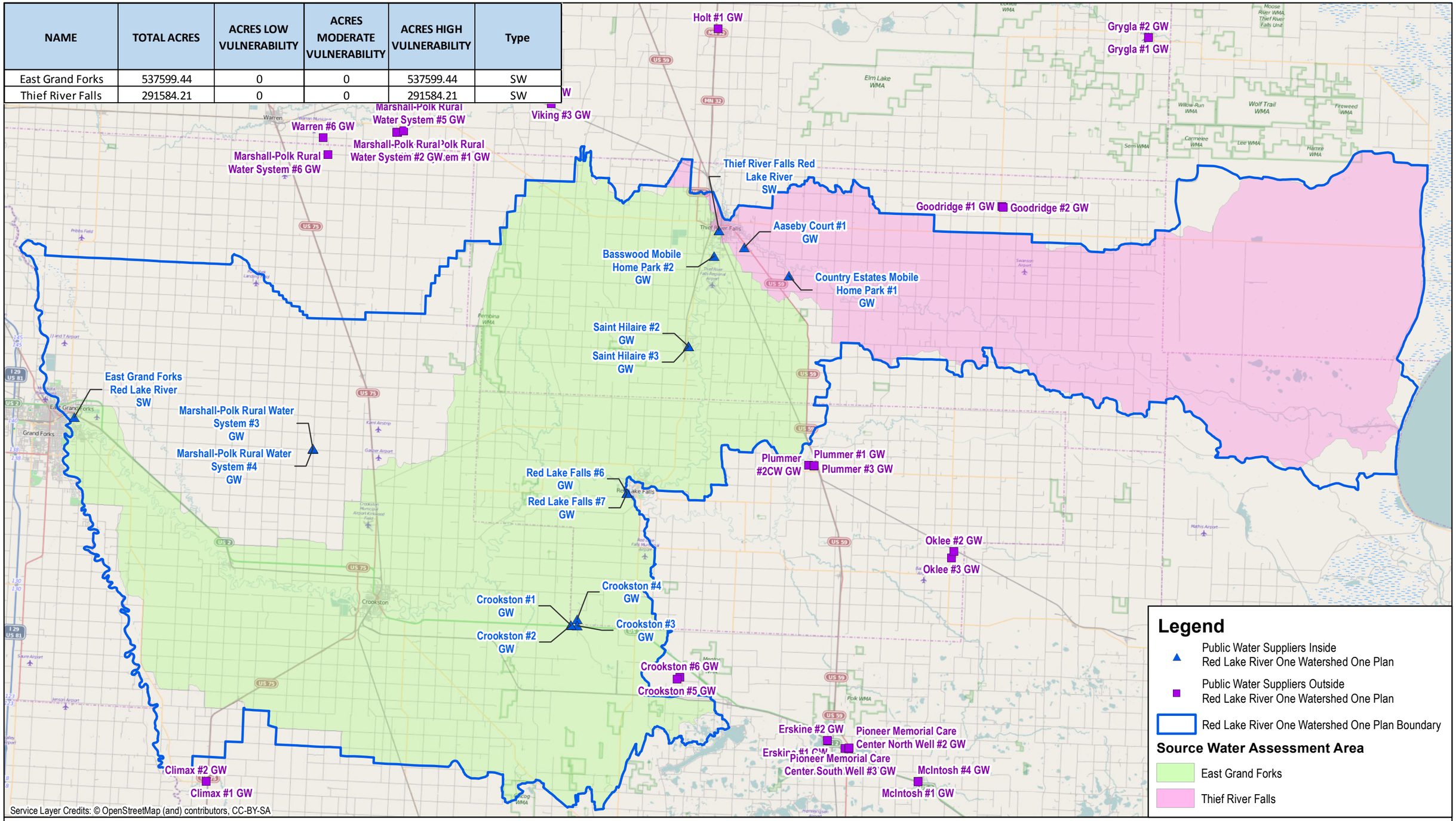
8 Community Public Water Systems
21 Transient Non-Community Public Supply Systems
0 Non-Transient Non-Community Supply Wells
1,737 known private wells

Acronyms:
DWP = Drinking Water Protection
DWSMA = Drinking Water Supply Management Area
WHPP = Wellhead Protection Plan
SWA = Source Water Assessment

Red Lake River - DWSMA Vulnerability

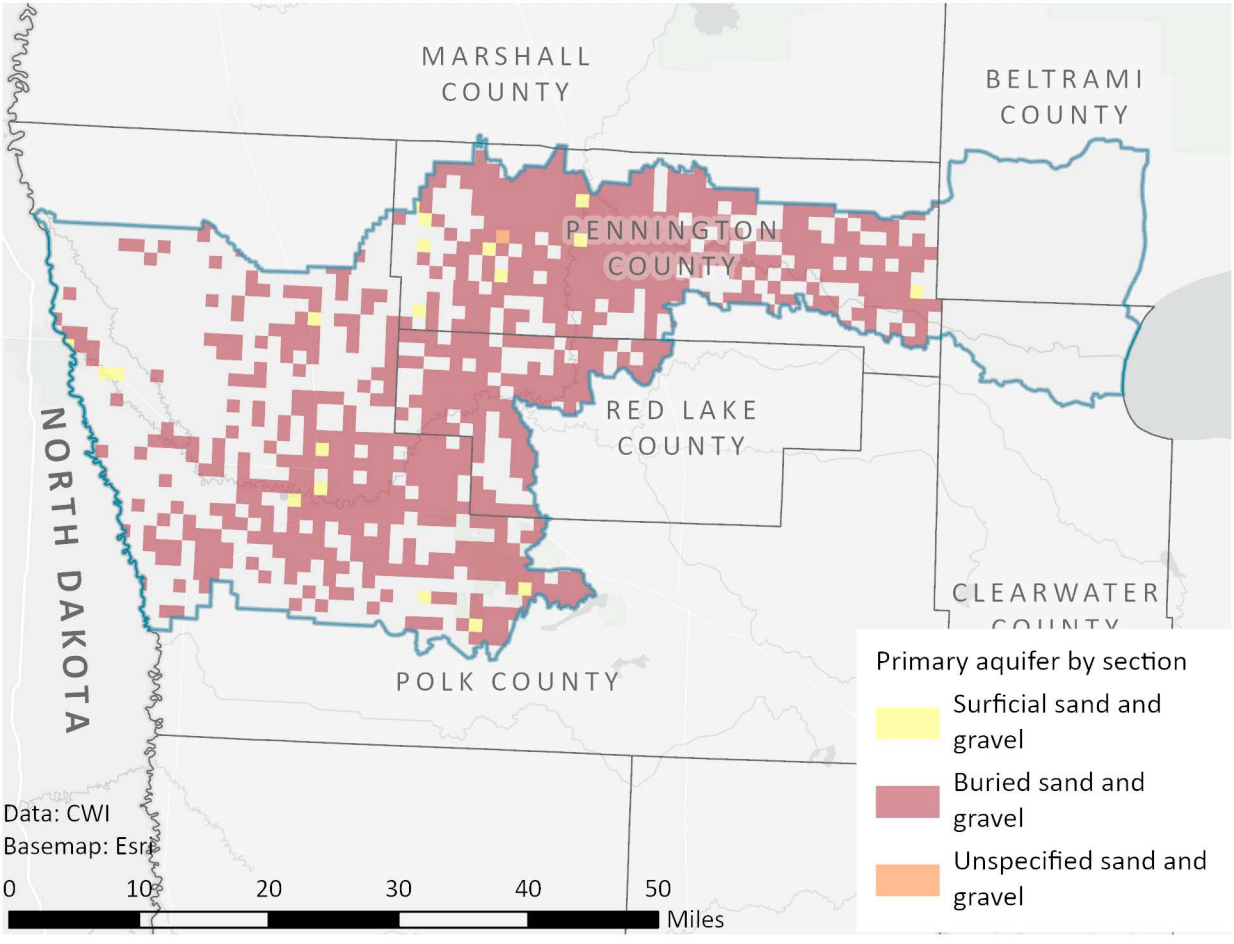


NAME	TOTAL ACRES	ACRES LOW VULNERABILITY	ACRES MODERATE VULNERABILITY	ACRES HIGH VULNERABILITY	Type
East Grand Forks	537599.44	0	0	537599.44	SW
Thief River Falls	291584.21	0	0	291584.21	SW

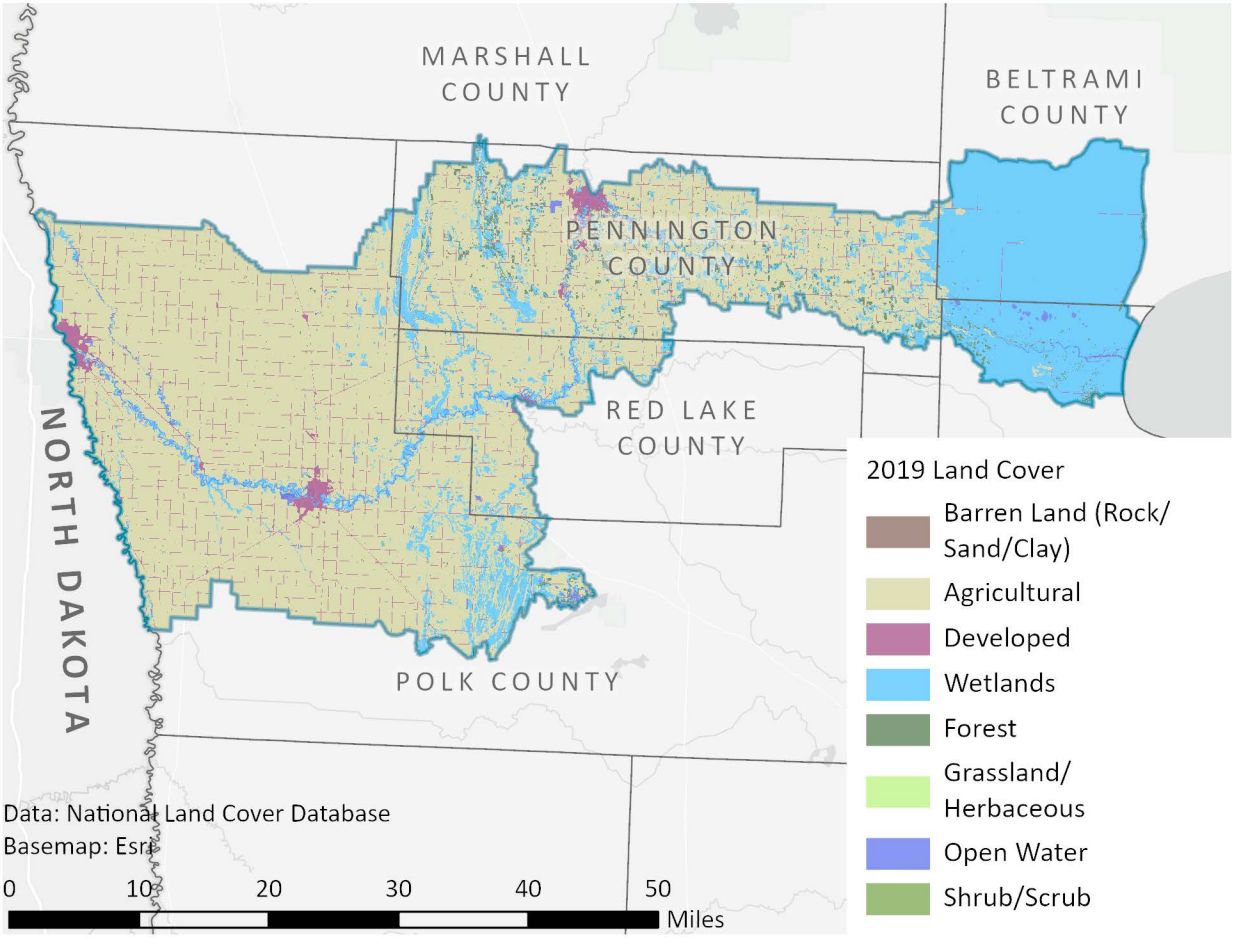


Red Lake River One Watershed One Plan Source Water Assessment Areas

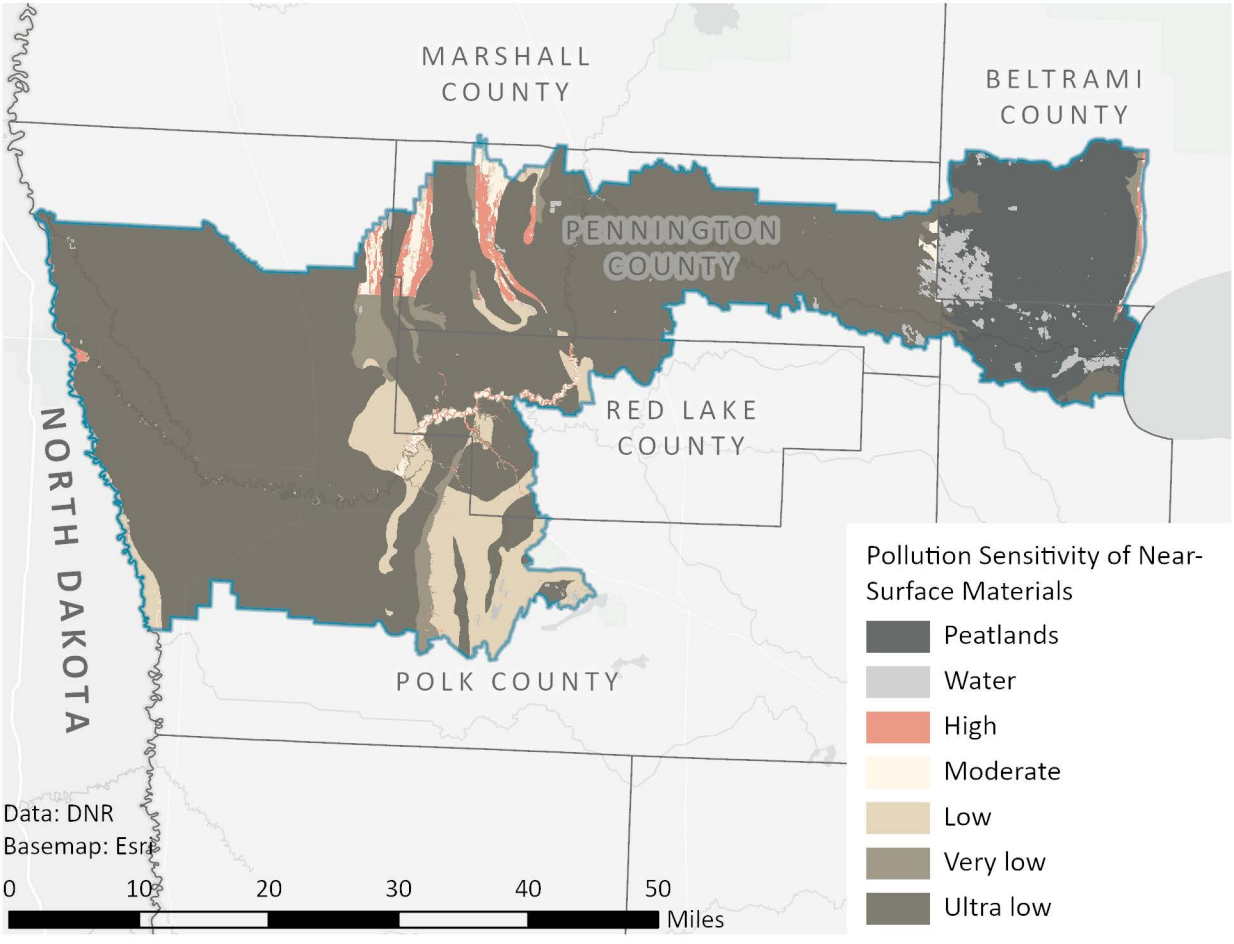
Red Lake River - Primary Aquifers



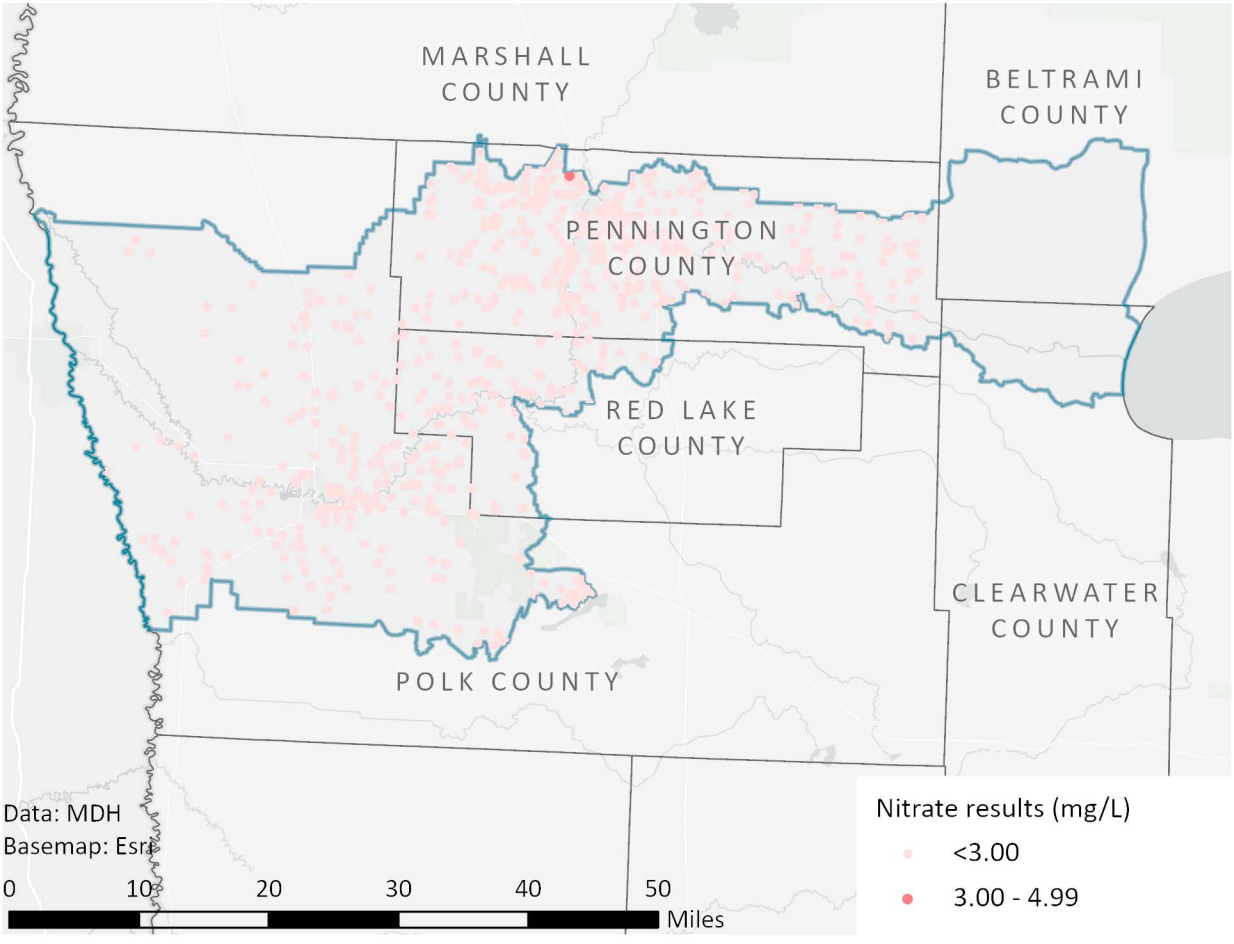
Red Lake River - Land Cover



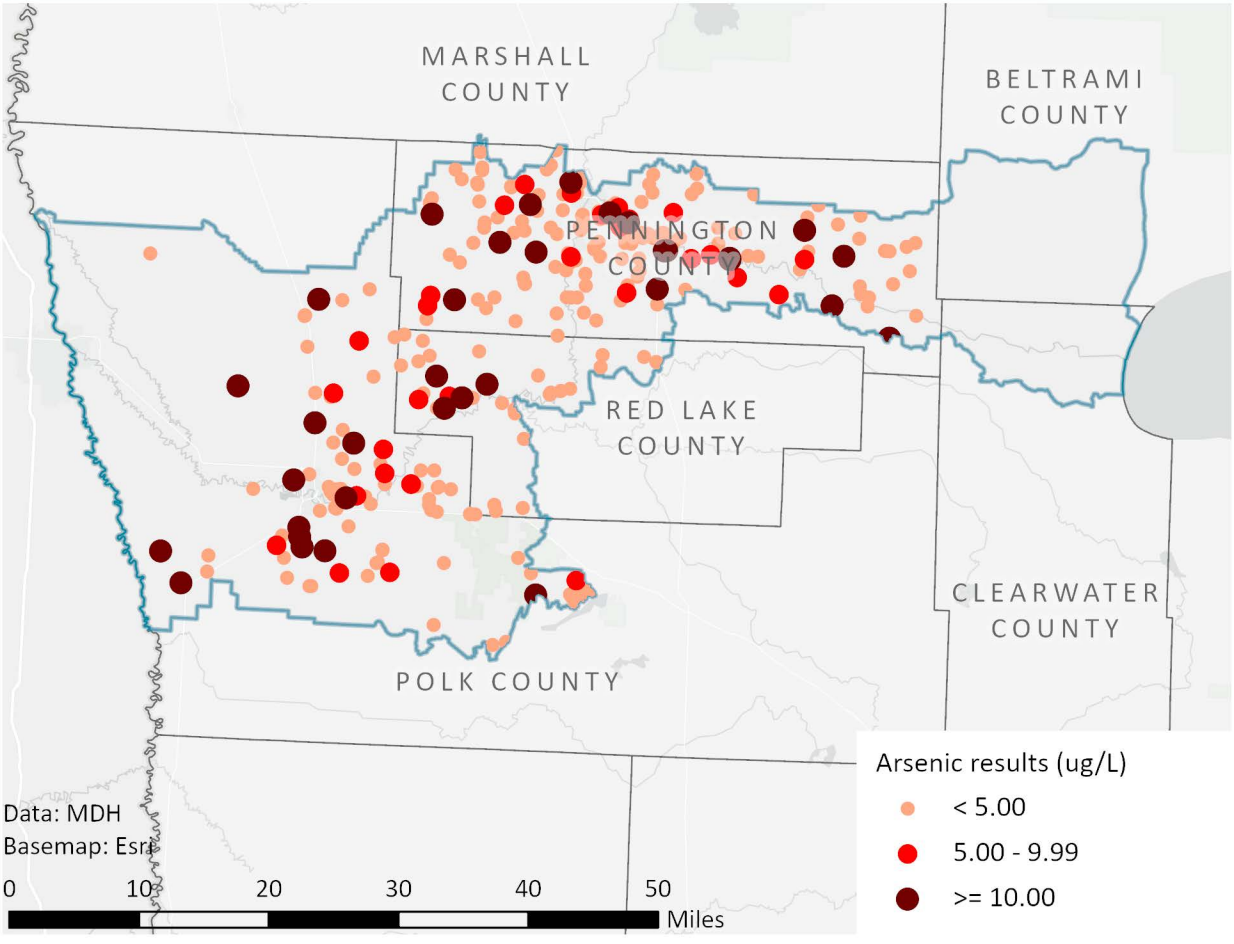
Red Lake River - Pollution Sensitivity of Near-Surface Materials



Red Lake River - Nitrate Results



Red Lake River - Arsenic Results



MINNESOTA POLLUTION CONTROL AGENCY

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May 30, 2024

Peter Nelson
Pennington SWCD District Manager
201 Sherwood Ave S.
Thief River Falls, MN 56701

RE: Notification of plan amendment and invitation to submit priority issues and plan expectations – Red Lake River

Dear Peter Nelson,

The Minnesota Pollution Control Agency (MPCA) appreciates the opportunity to provide input at the outset of the Red Lake River One Watershed One Plan (1W1P) amendment process. In coordination and cooperation with local, state, federal and tribal agencies, the MPCA has contributed significant time and resources in evaluating water quality issues in the Red Lake River and Grand Marais Creek Watersheds.

At the time the Red Lake River One Watershed One Plan was written, the Total Maximum Daily Load (TMDL) and Watershed Restoration and Protection Strategies (WRAPS) plans were being developed for the Grand Marais Creek and Red Lake River watersheds but were not completed. Due to the concurrence of the 1W1P and WRAPS processes, findings of the TMDL and WRAPS process informed the 1W1P process while implementation recommendations in the TMDL and WRAPS documents were influenced by the prioritization of actions for the 1W1P. The completed TMDLs and WRAPS are an accumulation of products and includes a series of reports, all of which are available for the 1W1P amendment.

The pursuant information in this letter is a summary of the TMDLs and WRAPS reports, to be incorporated into the Red Lake River One Watershed One Plan. For ease of access included below are the MPCA report's, hyperlinked to the agency webpage.

Grand Marais Creek	**Red lake River**
WRAPS report, MPCA 2019	WRAPS report, MPCA 2019
TMDL report, MPCA 2019	TMDL report, MPCA 2019
Stressor ID report, MPCA 2015	Stressor ID report, MPCA 2015
Monitoring and Assessment Report, MCPA 2016	Monitoring and Assessment Report, MCPA 2016

In addition, for your consideration, the MPCA has additional programs and opportunities for collaboration during the implementation of the Red Lake River One Watershed One Plan. While there are many partner agencies and organizations that produce other products that also support our goals of clean water, the following are only those for which the MPCA is the direct author or manager.

Grand Marais Creek and Red Lake River TMDL Summary

The Federal Clean Water Act required states to adopt water quality standards to protect the nation's waters. These standards define how much pollution can be in the surface and/or groundwater while still allowing it to meet its designated uses, such as for drinking water, fishing, swimming, irrigation, or industrial purposes. Many of Minnesota's water resources cannot currently meet their designated uses because of pollution problems from a combination of point and nonpoint sources.

Impaired Resources

The Grand Marais Creek TMDL report addresses bacteria in the form of Escherichia coli (*E. coli*) impairments in three watercourses located in the Grand Marais Creek Watershed that are on Minnesota's Draft 2016 303(d) list of impaired waters. The report also describes the non-pollutant causes of two dissolved oxygen (DO) impairments, three fish index of biological integrity (F-IBI) impairments, and two macroinvertebrate index of biological integrity (M-IBI) impairments. The DO, F-IBI, and M-IBI impairments were not addressed with calculated TMDLs because they were not caused by quantifiable pollutants. Please refer to Table 1-1 from the Grand Marias Creek TMDL for details of the impairments and TMDL approvals.

The Red Lake River Watershed TMDL report discusses 31 impairments of aquatic life and/or recreation found within 19 reaches of the Red Lake River and its tributaries. Turbidity and/or TSS impairments were found within six reaches of the Red Lake River. Bacteria (*E. coli*) impairments have been found in six tributary reaches of the Red Lake River. Impairments due to low DO levels have been identified in three tributaries of the Red Lake River. Two DO impairments are addressed in the Red Lake River TMDL. One DO impairment was recategorized for the 2018 List of Impaired Waters. Low IBI scores have resulted in M-IBI impairments for 7 reaches and F-IBI impairments for 10 reaches along tributaries of the Red Lake River. Please see Table 1-1 from the Red Lake River Watershed TMDL for details of the impairments and TMDL approvals.

A statewide TMDL for mercury has been approved by the EPA, and the MPCA will lead efforts on studies for polychlorinated biphenyls (PCBs). The MPCA recommends the Red Lake River Watershed Planning Group focus on addressing waters listed for pollutants/stressors other than mercury and PCBs in the amendment process.

Loading Capacities and Allocations

In the current Red Lake River One Watershed One Plan, the measurable goals for water quality, soil erosion and sedimentation issues were defined as the number of various BMPs that could be implemented with the planning timeframe. These goals and implementation actions should be refined with the loading capacities and allocations from each of the TMDLs. The load reductions can be found in Tables 4-1, 4-2, and 4-3 in the Grand Marais Creek Watershed TMDL and Tables 5-5, 5-7, 5-9, 5-12, 5-14, 5-16, 5-18, 5-20, 5-23, and 5-25 in the Red Lake River Watershed TMDL.

Grand Marais Creek and Red Lake River WRAPS Summary

The information in the WRAPS report can be valuable to understand water quality and water resource issues by providing information such as the relative magnitude and type of contributing pollutant sources and the relationships between water management practices and water quality conditions.

These documents are intended to support local working groups develop scientifically supported restoration and protection strategies development and implementation. The Grand Marais and Red Lake River WRAPS reports lay out goals, milestones, and responsible entities to address protection and restoration priorities in the watershed.

Based on output from modeling tools and input from the WRAPS technical advisory committees, locations of watershed implementation efforts for Grand Marais Creek are the restoration of Grand Marais Creek and protection of the headwaters, with a secondary priority of restoring Judicial Ditch 75 and County Ditch 2, and a lesser priority of restoring the lake plain ditch system and direct drainage of the Red Lake River.

Priority implementation strategies in the Grand Marais Creek Watershed were developed based on input from local partners during the April 2016 WRAPS TAC meeting. The partners determined many of the strategies were done on a watershed-wide basis, due to the uniformly, highly altered nature of the watershed, and are summarized as:

- Restoring stream and ditch connectivity to increase base flow and remove/modify migration barriers such as beaver dams and flood control structures that are improperly sized or designed.
- Increasing buffer width adjacent to waterbodies and crop rotation by encouraging operators with incentives and rewards.
- Restoring the natural channel of Grand Marais Creek through habitat enrichment and erosion control projects.

In the case of the Red Lake River WRAPS, several tools and practical operations were used to rank and identify areas that are in need of projects to reduce nonpoint source pollution. Priority is given to streams closest to being restored and those closest to being impaired. Highlighted in the report are target areas most in need of projects/practices that reduce pollution and improve habitat. The report also provides guidance and “measuring sticks” to assess the watershed’s health and success of actions taken.

Members of the Red Lake River WRAPS Technical Advisory Committee created a list of strategies to restore impaired waters and provide protection where water quality is good. An extensive list appears in Section 3.3 of the Red Lake River Watershed WRAPS Report. Here are the key strategy summaries from the list:

- Establish and improve the quality of vegetative buffers and protect riparian corridors.
- Reduce erosion from ditch outlets, overland flow, stream downcutting, and streambanks.
- Improve agricultural drainage management and water storage.
- Improve in-stream habitat, base flows, and stream connectivity for aquatic organism passage.
- Reduce pollutants in stormwater runoff within cities.
- Improve septic system compliance and grazing management, and limit cattle access to streams.

Lastly, as part of WRAPS development, a Hydrological Simulation Program—Fortran (HSPF) model is built for each major watershed. Following construction of the model, a Scenario Application Manager (SAM) utility may be developed. This utility allows a water planner to evaluate the water quality effects of a range of scenarios (e.g., increase in perennial cover; conversion of forest to agriculture).

The application does not require modeling expertise; however, knowledge of the assumptions associated with and appropriate uses for an HSPF model is recommended.

Opportunities for 1W1P Collaboration and Coordination with the MPCA

The MPCA can provide financial and technical assistance to local government and other water resource managers to address nonpoint-source water pollution through programs such as the State Clean Water Partnership (CWP) and Federal Clean Water Act Section 319 programs. Eligible applicants include tribes, townships, cities, counties, watershed district, watershed management organizations, or joint powers board whose members are townships, cities, or counties. The following sections provide an overview of programs that can be incorporated into the implementation of the Red Lake River One Watershed One Plan.

Red Lake River and Black River EPA Nine Element Plan

The MPCA provides financial and technical assistance to local government and other water resource managers to address nonpoint-source water pollution through the state Clean Water Partnership (CWP) and Federal Clean Water Act Section 319 programs. The requirements emphasize the use of watershed-based plans that contain the nine minimum elements documented in the guidelines and EPA's Handbook for Developing Watershed Plans to Restore and Protect our Waters (EPA 2008). The MPCA passes through approximately $2.8 million dollars in Section 319 grants annually to local governments and organizations to implement BMPs and adopt strategies to mitigate NPS pollution. Funding for the selected Focus Watersheds will continue in subsequent years for implementation projects. The goal of the Small Watersheds Program is to achieve the water quality objectives in the selected watersheds.

The Black River, County Ditch (CD) 96, and the mainstem of the Red Lake River between Thief River Falls and Crookston, Minnesota, was selected to be a priority to implement a nine-element watershed plan. The plan focuses on three waterbodies the Black River, Pennington CD 96, and the mainstem of the Red Lake River between Thief River Falls and Crookston. The concentration of effort will be on the tributaries to the mainstem; however, it is expected that those practices will also impact the water quality of the mainstem Red Lake River. These stream sections were selected due to the likelihood of success of restoration—most of the waterbodies are considered barely impaired.

The EPA approved the plan in April of 2020, and has set the stage to further the previous and current restoration activities to achieve the water quality goals. The first workplan concluding February 2024, was an important piece of the funding puzzle for three large erosion control projects: 2020-21 Water Quality Features of the Black River Impoundment Project (side water inlets (SWIs) and channel stabilization), 2022-2023 Voyageur's View Streambank Stabilization Project, and 2023 Polk County Ditch 99 Outlet Stabilization. We anticipate the second round of funding to be available Fall of 2024 and will have similar funding levels as the first workplan.

Climate-Resilience Initiatives

The effects of climate change are being felt across the state, from overwhelmed infrastructure, damaged property, dying trees, and culturally important native species, to excessive heat, worsening air quality, and other health threats. The MPCA has solicited project proposals to distribute funding for climate planning projects to communities across Minnesota. The funding provides an opportunity for these

communities to assess vulnerabilities and begin planning for the effects of Minnesota's changing climate in three areas:

- How to increase resilience to stormwater and reduce localized flood risk.
- How to improve the resilience of wastewater systems.
- How to reduce human health effects and adapt community services, ordinances, and public spaces to the changing climate.

In addition, The MPCA has also requested proposals for projects that develop or implement plans of action that enable local jurisdictions to adapt to extreme weather events and a changing climate (i.e., already becoming warmer and wetter with more damaging rains and cold weather warming; and expected to have more extreme heat and drought in the future), and/or to reduce the local jurisdiction's contributions to the causes of climate change. Up to approximately $2.3 million dollars in funding was available to be awarded during FY24 for local climate action planning and implementation projects, with the potential for additional funding.

Point Source Implementation Grant

Managing wastewater and stormwater is important for the health and safety of any community, with significant environmental and wildlife benefits. Financing is available for public entities that are looking to expand or improve their water infrastructure. Projects are prioritized based on several factors, including:

- the type of water the project discharges to and whether it's in need of specific protections or pollutant reductions.
- if the project will help correct certain kinds of water quality problems.
- if the project will reduce the volume of stormwater being discharged.

Point Source Implementation Grants are grants provided to local governments through the Clean Water Legacy Fund that can cover up to 80% of your project costs with a maximum of $7 million dollars. In order to be eligible for a Point Source Implementation Grant, your stormwater project must:

- Contribute towards meeting wasteload reductions prescribed under a total maximum daily load (TMDL) plan required by Section 303(d) of the federal Clean Water Act. This requirement comes from Minn. Stat. 446A.073. You can find the statute here: Revisor 446A.073

- In order to have a required wasteload allocation under a TMDL, you must be a permitted Municipal Separate Storm Sewer System (MS4). Additionally, the project must be located within the bounds of the MS4. You can look at the boundaries of permitted MS4s with the MPCA mapper tool found here: Stormwater Mapping Tool – MS4 Program

Surface Water Assessment Grants (SWAGs)

The primary objective of this program is to determine the health of lakes and streams in Minnesota. Through funded projects, local partners collect surface water quality data used to identify lakes and streams that need restoration or protection strategies. The MPCA focuses these strategies at the major watershed scale. SWAGs provide funding for staff hours, training, supplies and equipment, and lab analysis. Where possible, volunteers are encouraged to participate in coordination with local partners to

assist with monitoring efforts. Through SWAGs, local partners have provided water-quality data for lake and stream sites throughout the state. To date, the MPCA has awarded 215 grants and agreements totaling $11.5 million dollars.

Clean Water Partnership Loans

The MPCA accepts proposals for water resource projects to be funded through the CWP Loan Program. Proposals can be accepted from local governmental units and tribal nations interested in leading a project for protection or improvement of groundwater or surface water bodies from nonpoint sources (NPS) activities that are identified in state-approved watershed plan or strategy report (e.g., WRAPS, 1W1P, Nine Key Element (NKE) plans, etc.). Eligible activities are projects, activities, or equipment that provide a new or improved benefit to water quality such as installation of a new practice, an activity, or a piece of equipment that will directly relate to water quality improvement, upgrade of existing equipment to increase its efficacy to address pollutants, or the upgrade of subsurface sewage treatment systems (SSTS).

Smart Salting Training

Smart Salting training helps improve operator effectiveness and reduce chloride pollution while keeping roads, parking lots, and sidewalks safe. Participating organizations have been able to reduce their salt use by 30 to 70 percent. In addition, the training has been shown to prevent chloride contamination in lakes, rivers, and streams.

The MPCA has recently updated and redesigned its Smart Salting tool to help communities and organizations across the state evaluate sources of chloride impacting local water resources. The Smart Salting tool also provides support and guidance on how to address those sources. The Smart Salting tool can help organizations and communities address chloride pollution by supporting a customized approach for their specific needs.

MPCA Data Services

Numerous programs throughout the MPCA create and maintain spatial data and develop tools to serve our environmental protection and restoration work. The MPCA spatial data is available to partners and researchers who use geographic information system (GIS) software to make maps or serve other needs. Many of the resources also include comma-separated values (csv) files that do not require GIS software.

- MPCA ArcGIS Online includes interactive maps and other content from the MPCA.
- MPCA Web Map Services Directory includes map services that you can include in your own maps.

In addition, various tools have been developed and can be used by the 1W1P partnership to provide insight and consistencies in setting goals and developing measurable actions.

- Profile - mpca.data.services | Tableau Public is a platform to explore reports, data, and tools developed by the MPCA, agency wide. Some tools of specific interest could be:
    - Watershed Pollutant Load Reduction Calculator | Tableau Public – is a tool to estimate typical river nutrient pollution reductions expected with adoption of new practices on the land.

- CWAA - Best management practices by watershed | Tableau Public - this tool summarizes reported nonpoint best management practices (BMPs) from NRCS, BWSR, MDA, and MPCA in a given watershed over a specified time series.

Environmental Justice

The MPCA is committed to making sure that pollution does not have a disproportionate impact on any group of people – the principle of environmental justice. There are several tools available to determine where underserved communities could receive the most benefit from implementation efforts. Please consider engaging our assistance in identifying these areas. See the MPCA website MPCA and environmental justice | Minnesota Pollution Control Agency (state.mn.us) for more information regarding environmental justice.

Again, thank you for the opportunity to provide input at the outset of the Red Lake River One Watershed One Plan amendment process. If we may be of further assistance, please contact Zach Gutknecht at 218.846.8146 or zachrie.gutknecht@state.mn.us at the MPCA's Detroit Lakes regional office.

Sincerely,

Zachrie Gutknecht

This document has been electronically signed.

Zachrie Gutknecht
Environmental Specialist
Watershed Division

ZG:lr

cc: Matt Fischer, BWSR, Bemidji (electronic)
Molly Costin, MPCA

Good afternoon, Peter:

Red Lake County SWCD would like to request that **Woodland Stewardship (Forestry); be added as a priority resource to the Red Lake River amended CWMP.** I am sure there will be more ideas but if you have started recording priorities could you please add this to the list.

Thank you and Have a Great Day!!

Tanya Waldo, District Manager

Red Lake County SWCD

2602 Wheat Drive - Suite 103

Red Lake Falls, MN 56750

(218) 253-2593 - work

(218) 204-0641 - cell

APPENDIX F

RLWD Flood Damage Reduction Strategy

Flooding is a major problem within much of the RLWD. This problem is primarily related to geology, topography, weather and land use. The Flood Damage Reduction Work Group (FDRWG) in Minnesota seeks to provide PTs and others with science-based and consensus-based tools to enable more effective FDR within the basin.

A fundamental premise is that FDR along the main stem of the Red River and the lower reaches of its major tributaries (glacial lakebed region) is substantially dependent on the types and locations of FDR and related measures implemented upstream. Flooding in the glacial lakebed region of the basin is substantially affected by runoff timing and volume from upstream areas. Runoff timing and volume are, in turn, substantially affected by the topography, soils, precipitation and land use within different regions of the basin, as well as by the types and locations of FDR and NRE measures that may be implemented. [*A basin-wide FDR framework is outlined in FDRWG Technical and Scientific Advisory Committee (TSAC) Paper #11, which will better enable a coordinated approach to integrate various FDR and associated NRE measures that are most effective for achieving the overall goals envisioned by the Red River Basin Mediation Agreement adopted in December 1998.]*

The goal of this framework identified in TSAC Paper #11 is to implement various types of FDR measures individually, or in concert, at locations for which they are best suited to achieve FDR benefits locally and in the watershed, while also contributing to reduction of main stem flooding risk. This framework includes FDR measures that are also NRE measures and promotes multi-purpose projects as outlined below.

There are critical concepts about runoff timing and volume in relation to flood peaks on the main stem of the Red River and facts about variations in topography, soils, precipitation and evaporation within the Minnesota portion of the basin, as foundations for defining the expected peak flow reduction effects of implementing various FDR measures within different areas of the RLWD. Available geologic, topographic, meteorologic and historical flood data, as well as computed runoff travel times, are used to illustrate these concepts and to define "early," "middle," and "late" runoff areas within the RLWD.

A wide array of alternative FDR measures are identified, categorized and discussed, including pros, cons and general recommendations for the best areas in which to implement these measures to optimize overall FDR benefits. A summary table is presented for the identified array of FDR measures with ratings of potential for peak flow reduction on the main stem when these measures are implemented in early, middle, or late runoff areas relative to the main stem. It should be noted that there are a number of measures, such as abandonment of flood-prone areas and the retirement of flood-prone lands that can be implemented within these areas. Such measures should be given careful consideration when evaluating the overall effectiveness of proposed solutions.

Summary of Flood Damage Reduction Measures

FDR measures can be grouped into the four general categories outlined below. These categories and measures are listed here and discussed in more detail in subsequent sections.

Reduce Flood Volume

- Restore or create wetlands (providing infiltration and evapotranspiration)
- Use cropland best management practices (BMPs) to increase infiltration and evapotranspiration
- Convert cropland to prairie or other types of perennial grassland (e.g., Conservation Reserve Program (CRP) and Reinvest in Minnesota (RIM), to increase infiltration and evapotranspiration)
- Convert land use to forest (forested areas generally have the lowest runoff coefficients, due to high interception and evapotranspiration)
- Other beneficial uses of stored runoff

Increase Conveyance Capacity

- Channelization (increasing the flow capacity of existing channels or flowages)
- Drainage (creating new or improved conveyance capacity)
- Diversions (of flood waters around a current damage area)
- Setting back existing levees (to restore floodway capacity)
- Increasing road crossing capacity

Increase Temporary Flood Storage

- Impoundments (with or without a normal pool, to detain water in excess of downstream channel capacity)
- Restored or created wetlands (functioning as impoundments)
- Drainage (to lower surface water and groundwater levels, which increases infiltration and temporary storage in the upper soil horizons)
- Culvert sizing (to increase temporary storage by widespread metering of runoff close to its source)
- Setting back existing levees (to restore floodplain storage areas)
- Overtopping levees (to utilize diked floodplain storage capacity when critically needed)

Protection/Avoidance

- Urban levees
- Farmstead levees
- Agricultural levees
- Evacuation of the floodplain (removing people and flood-prone facilities and converting to more flood-compatible land uses)
- Floodproofing
- Flood warning and emergency response planning

Many projects will combine two or more of these methods. Specific application of each method is dependent on design and location.

- Reducing runoff volume is always beneficial, especially if done in the middle and upper parts of a watershed.
- Increasing flood storage is most beneficial in the middle and upper parts of a watershed.
- Increasing conveyance is most beneficially done in the lower parts of a watershed.

- Protection measures are most beneficially applied in the middle and lower parts of a watershed.

Many of these methods have been used extensively throughout the RLWD. Most still have application as part of future FDR projects. The challenge for watershed district managers is to develop projects containing one or more of these methods while adhering to the flood damage and natural resource protection goals and principles established by the working group. Similarly, the challenge for natural resource managers, especially in the Red River Basin, is to incorporate FDR goals to the greatest extent possible in their development and operational plans.

Flood Damage Reduction Strategies

Accomplishing the broad FDR described above will require consideration of a full range of structural and non-structural strategies. Specialized strategies such as adequate flood warning systems and ring dikes will help prevent loss of human life and damage to farm structure, homes and communities. Meeting other goals will require strategies that reduce overland flooding, provide storage and/or maintain or provide adequate conveyance. The work group agreed that a combination of strategies may be needed to maximize the effectiveness of any particular strategy. These strategies potentially include:

Wet Dams

- A dam constructed to maintain a permanent pool of water while providing temporary storage of stream flows for flood control. It may also provide wildlife habitat and recreation.
- Can be designed with gated or automatic draw-down control outlet structures.
- A constant source of inflow is needed for pool maintenance.
- A management plan incorporating downstream predicted peak-flows is essential to maximize FDR potential.

Dry Dams

- A dam constructed for temporary storage of stream flows during flood events.
- Can be designed with gated or automatic draw-down control outlet structures.
- Duration of designed storage depends on downstream channel capacity.
- A management plan incorporating downstream predicted peak-flows is essential to maximize FDR potential.

On-stream Storage

- A structure placed across the cross-section of a stream's topography causing flood flows to form a pool.
- Utilizes existing landscape features to maximize control capability.
- May cause alterations to pre-project plant communities in a summer storm event.
- Allows for control of flows from entire watershed above the point of construction.

Off-stream Storage

- A storage structure placed adjacent to a water course to receive diverted flood flows.
- Potential for construction and effectiveness dependent on the area topography.
- Allows for maintaining a free-flowing stream in non-flood flow conditions and can ensure a stream flow during flood events.

- Duration of storage can be extended to ensure maximum downstream benefits.
- Allows for control of flows from entire watershed above the point of construction.

Note: On/off stream storage can have either gated or un-gated outlet controls. With gated storage the project's management plan can adapt to future conditions. With fixed draw-down features, the release of stored water is pre-determined.

Flood Storage Wetlands

- An outlet control structure is constructed on previously drained wetland which may contain a permanent pool.
- Some natural wetland functions can be restored and maintained.
- Can reduce the runoff from a watershed's contributing area in direct relation to the size of the temporary pool created thereby reducing downstream discharges.
- Secondary goals may be wildlife enhancement, water quality improvement, stream flow stabilization, provide infiltration for groundwater recharge and reduce erosion.

Wetland Restoration

- Wetlands restored to pre-drainage hydrology and appropriate native vegetation.
- May provide flood storage benefits based on hydrologic setting, outlet configuration and antecedent moisture conditions.

River Corridor Restoration

- The area adjacent to a stream is restricted to non-rotational farming practices or within a city is designated as a green belt and zoned against building activity.
- Effectiveness based on degree of flow control accomplished.
- Can be effective in reducing streambank erosion and downstream sediment deposition.
- Provide a haven and travel route for wildlife.
- Reduces downstream flow velocities and allows for restoration of natural ecosystem.
- May provide additional floodplain storage during flood events.

Setback Levees

- Levees (dikes) are built parallel to and a reasonable distance (e.g., meander belt width) away from water courses to contain flows and increase riparian storage of above-bank flows.
- Can prevent flooding of adjacent land and resulting cross-country sheet-flooding.
- May increase downstream flows by removing traditional routing and storage.
- May create an impediment to drainage of adjacent land and minor watershed outlets.

Riparian Buffer Strips

- The land adjacent to streams is permanently seeded/planted to appropriate vegetation.
- Reduces erosion and filter runoff from affected land.
- Reduces cropland losses by taking land out of annual production.
- Provides a haven/travel corridor for wildlife and access for stream maintenance.

Dredging and Channelization

- Channel modification or removal of accumulated sediment to increase channel capacity.
- May increase downstream flows.
- May reduce flooding due to increased channel flow efficiency and timing of discharge.
- Disrupts stream ecology and equilibrium and may cause downstream erosion and sedimentation.

Storage Easement

- Compensation is paid to landowners for the public or private benefit of storing water on their land.
- Offsets lost land value do to required land use change.
- Provides and incentive for project development where needed.

Retirement of Land

- Converts land from agricultural production to permanent vegetation.
- Reduces surface runoff during and/or after precipitation storm events.
- Significantly reduces erosion of soil from affected area.
- Provides for wildlife habitat.

Land Use

- Land use changes may alter downstream flows.
- Increased areas of intensively cultivated crops may increase storm event runoff.
- Land use changes are influenced by economics and federal, state and local policy.
- Flood plain land uses compatible with periodic flooding may accomplish FDR.

Best Management Practices

- A practice or combination of practices that are determined to be the most effective and practicable means of treating a resource problem at levels compatible with environmental quality goals.

Gating Ditches

- Adjustable controls are placed on culverts in channels to regulate stream flow.
- Topography of the affected area determines the technically appropriate control used.

Culvert Sizing

- Graduated sizing of culverts within a ditch system to provide a degree of control.
- Equity is an important consideration.
- The smaller the drainage area is, the more effective culvert sizing can be in accomplishing meaningful, effective control.

Drainage

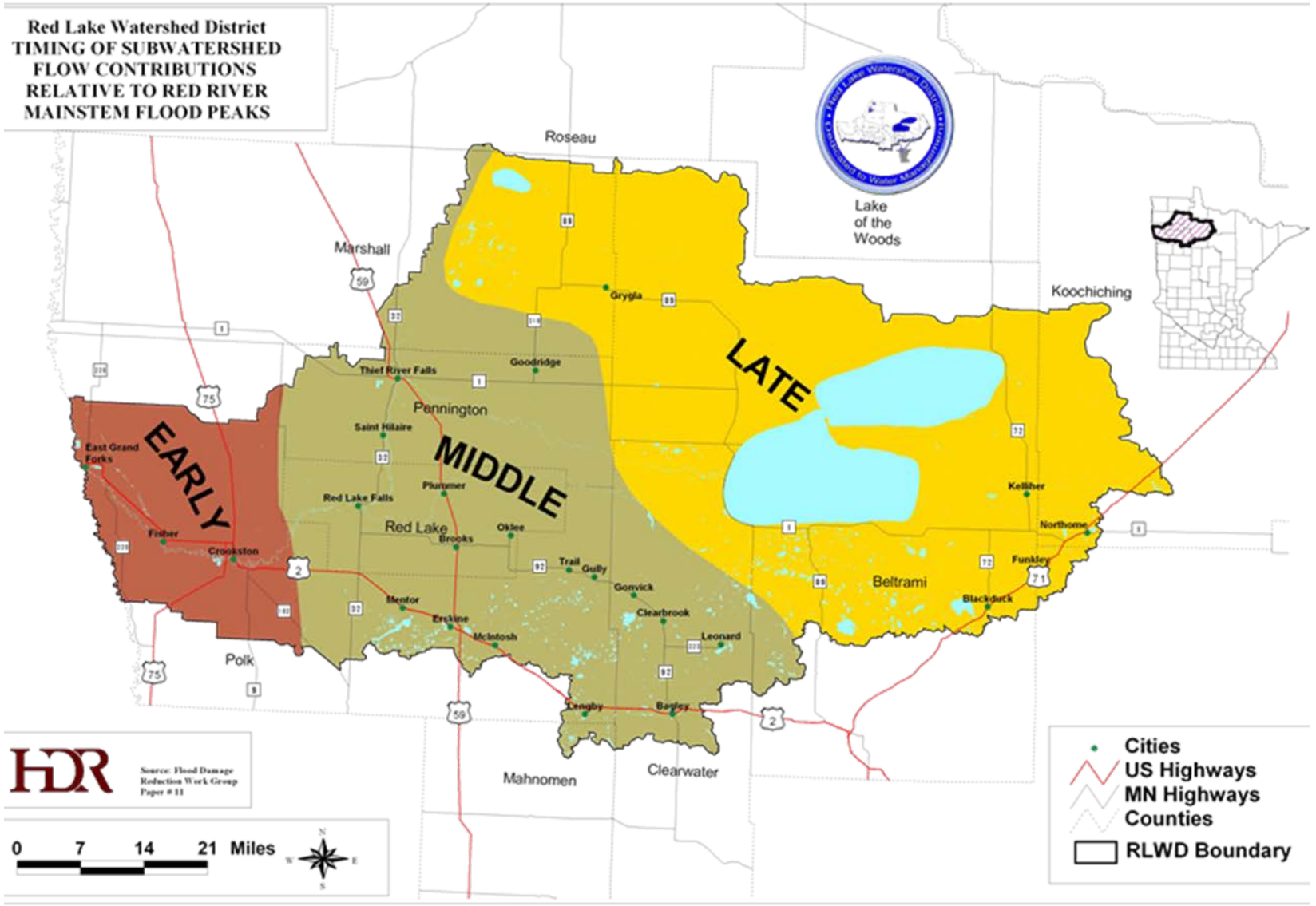
- Modification of the hydrology of the land by providing drainage-ways to convey surface or subsurface water from cultivated or occupied areas.
- Water conveyed by drainage of agricultural land in the higher elevation areas of a watershed may increase downstream flows.

In **Table M1**, FDR measures are rated in terms of appropriateness for local and downstream FDR, based on location in the watershed in relation to timing of runoff to the main stem. A plus sign (+) indicates application of a particular FDR measure would normally have a positive effect downstream on the main stem of the Red River or the lower reaches of its major tributaries (i.e., it would result in a reduction in downstream peak flows). A minus sign (-) indicates a likely negative effect on downstream flooding, and a zero (0) indicates a likely insignificant effect on downstream flooding. Double plus signs (++) and double negative signs (--) indicate more substantial positive or negative effects on downstream flooding.

Table M-1 Expected Peak Flow Reduction Effects on the Red River Main Stem of FDR Measures Applied in Early, Middle and Late Areas Upstream

Flood Damage Reduction Measure	Early* Upstream Area	Middle* Upstream Area	Late* Upstream Area
1) Reduce Flood Volume	+	++	++
a) Wetlands	+	+	++
b) Cropland BMPs	+	++	++
c) Conversion to grassland	+	++	++
d) Conversion to forest	+	++	++
e) Other beneficial uses of stored water	+	++	++
2) Increase Conveyance Capacity	+	-	--
a) Channelization	+	-	--
b) Drainage	+	-	--
c) Diversion	+	Variable	-
d) Setting back existing levees (to increase conveyance capacity)	+	-	--
e) Increasing bridge capacity	+	-	-
3) Increase Temporary Flood Storage	Variable	++	+
a) Gated impoundments	+	++	++
b) Ungated impoundments	-	+	+
c) Restored or created wetlands	-	+	+
d) Drainage	-	+	++
e) Culvert sizing	-	+	+
f) Setting back existing levees (to increase floodplain storage)	+	++	+
g) Overtopping levees	++	+	Variable
4) Protection/Avoidance	Variable	Variable	Variable
a) Urban levees	-	-	-
b) Farmstead levees	-	-	-
c) Agricultural levees	-	-	-
d) Evacuation of the floodplain	-	-	-
e) Floodproofing	-	-	-
f) Warning and emergency response	-	-	-

**Location of FDR measure relative to the Red River main stem at the international border*


Red Lake Watershed District
TIMING OF SUBWATERSHED
FLOW CONTRIBUTIONS
RELATIVE TO RED RIVER
MAINSTEM FLOOD PEAKS
Roseau
Lake
of the
Woods
Marshall
Koochiching
Grygla
Goodridge
Thief River Falls
Pennington
Saint Hilaire
East Grand
Forks
EARLY
MIDDLE
LATE
Plummer
Red Lake Falls
Red Lake
Oklee
Brooks
Fisher
Crookston
Trail
Gully
Gonvick
Mentor
Erskine
McIntosh
Clearbrook
Leonard
Kelliher
Northome
Funkley
Beltrami
Blackduck
Polk
Mahnomen
Clearwater
Cengby
Bagley
Source: Flood Damage
Reduction Work Group
Paper # 11
0 7 14 21 Miles
Cities
US Highways
MN Highways
Counties
RLWD Boundary

Section 1 – General Authority and Process

Overview

Pursuant to section 8.1.3 of this plan, the Red Lake Watershed District (RLWD) plans on using Water Management Districts (WMD) as one of several funding mechanisms for the implementation of activities to solve local and regional problems and issues. The provisions for collection of charges (MS 103D.729 and 444.075) allow a watershed district, through the amendment of its plan or during a plan update, the authority to establish one or more WMDs for the purpose of collecting revenues and paying the costs of projects initiated under MS 103B.231, 103D.601, 103D.605, 103D.611, or 103D.730. Appendix J of this plan contains the Board of Water and Soil Resources (BWSR) guidance for the establishment of WMDs and includes the previously established Thief River Falls Flood Damage Reduction Project Water Management District. Appendix J, however, includes several unrelated items of importance to this plan including RLWD Rules and Soil and Water Conservation District (SWCD) statutory authority, chapter 103C. This appendix N is dedicated solely to WMDs established or to be established by further amendment to this plan. Section 1 of this appendix N outlines the authority and processes for establishment of WMDs, including review of proposed WMDs and plan amendments by the One Watershed One Plan (1W1P) planning and policy committees. Current and future WMDs will be included as subsequent sections to this appendix N.

To establish a WMD, a plan update or amendment must describe the area to be included, the amount of the necessary charges, the methods used to determine the charges, and the length of time the WMD will remain in effect. After adoption, the plan update or amendment must be filed with the county auditor and county recorder of each county affected by the WMD. The WMD may be dissolved by the same procedures as prescribed for the establishment of the WMD – i.e. by plan update or amendment.

A distinguishing element of the WMD charge over an assessment, or ad valorem tax is that the watershed district exercises authority, similar to that of a municipality, to establish and impose a system of charges based on a prescribed method, such as a property's contribution of storm water and/or pollutants to a receiving body of water, conveyance or management system; or the extent of relief or protection afforded to property by an impoundment, conveyance or diversion. Thus, funds generated by utilizing a WMD charge can be based upon a mechanism related to the cost of the project in managing a burden created by the property or in providing protection to the property rather than the value of the property (ad valorem tax) or special economic benefit conferred (assessment). Ultimately the WMD provides a supplemental financing tool, within a prescribed area, for the RLWD and is especially useful in situations where project components are required to address a locally generated need or problem.

Review and Establishment Process

Because this plan is a 1W1P based plan, WMD establishment, whether as part of a 10-year plan update or as a plan amendment, must follow the guidance provided in the BWSR One Watershed, One Plan Operating Procedures, version 2.0, effective 3-28-2018 (Board Decision #18-14) or its successor. The amendment process must also be consistent with the Operating Agreement for this plan which specifies the role of the Planning Workgroup and Policy Committee, confers upon the Planning Workgroup authority to develop and recommend plan amendments and confers upon the Policy Committee authority to review and adopt amendments as approved by the BWSR.

For WMD establishment by amendment, the following procedure will be followed:

1. **Initial Review by the Planning Workgroup:** The Planning Workgroup, as established in the Operating Agreement for this plan, consists of representatives from each SWCD partially or wholly within the 1W1P area and representatives of the RLWD. The Planning Workgroup shall either develop or be provided a copy of the proposed amendment for initial review. After review, the Planning Workgroup shall provide notice of the proposed amendment to the Plan Review Authorities and the public.

2. **Notice to Plan Review Authorities and Public:** Plan Review Authorities, including the Department of Agriculture, the Department of Health, the Department of Natural Resources, the Pollution Control Agency, the Board of Water and Soil Resources, SWCDs, other watershed districts and counties, cities, and towns partially or wholly within the One Watershed Plan area shall be provided notice and a copy of the proposed amendment along with a request for comments to be provided to the Planning Workgroup within 60 days of the notice. The public shall be noticed of the proposed amendment by publication in a newspaper in general circulation within the 1W1P area. The publication must state the general nature of the proposed amendment, provide the public information on how to obtain or view a copy of the proposed amendment and state that comments on the proposed amendment may be provided to the Planning Workgroup.

3. **Final review and referral by the Planning Workgroup:** Upon expiration of the 60 day comment period, the Planning Workgroup will conduct a final review of the proposed amendment and make necessary revisions based on the comments received, if any. The Planning Workgroup may adopt responses to the comments received. After final review and revisions, the Planning Workgroup shall refer the proposed amendment, along with all comments and responses, to the Policy Committee along with the Planning Workgroup's recommendation on approval. A copy of the Planning Workgroup's referral shall also be transmitted to the BWSR.

4. **Hearing of the Policy Committee:** The Policy Committee, as established in the Operating Agreement for this plan, will schedule and hold a public hearing on the proposed amendment no sooner than 14 days after receiving the Planning Workgroup's referral and recommendation. Notice of the public hearing shall be given by mail to the BWSR, Plan Review Authorities and the Planning Workgroup. Notice of the public hearing shall also be published in a newspaper in general circulation within the 1W1P area. A record shall be kept of the hearing to include an audio recording of the proceedings and copies of all written correspondence, comments or responses generated in the proceedings.

5. **Notice to Plan Review Authorities:** Following the public hearing, the Policy Committee shall provide a copy of the final proposed amendment along with its findings and recommendation regarding plan approval to the Plan Review Authorities and request that final comments, if any, be submitted to BWSR in advance of the BWSR consideration of the proposed amendment.

6. **Referral and Recommendation to BWSR:** Following the public hearing, the Policy Committee shall submit the final proposed amendment to BWSR for final review and approval. The submittal to BWSR must include the audio recording of the public hearing, a copy of all written comments and responses received on the proposed amendment and the Policy Committee's findings and recommendation on approval of the proposed amendment. After review, the BWSR Board, or a committee thereof, shall render a decision approving or disapproving the amendment in accordance with its operating procedures.

7. **Local Adoption:** If BWSR approves the proposed amendment, the Policy Committee, according to the authorities granted to it in the Operating Agreement for this plan, shall adopt a resolution, within 120 days of BWSR Board approval, adopting the amendment. A copy of the resolution to adopt the amendment must be sent to BWSR. Notice of the adopted amendment shall be published in a newspaper in general circulation within the 1W1P area along with notice of appeal rights as outlined below. Unless appealed, the plan amendment is effective 30 days after first publication of the Policy Committee resolution adopting the amendment.

Implementation of Charges

Prior to implementing any charges within a WMD established in this plan, the Policy Committee must file a copy of the WMD plan amendment with the county auditor and county recorder of each county affected by the water management district. Along with the amendment, the Policy Committee may provide additional information to the auditors or recorders that is necessary to identify properties subject to charges within the water management district. With the consent of a city, charges to properties within the jurisdictional boundary of a city may be consolidated and presented to the city for payment.

Prior to the imposition of charges, the RLWD shall hold a public hearing in conjunction with a project's establishment. At the public hearing, the RLWD Board shall present the amount of the necessary charges, the methods used to determine charges, and the length of time the WMD will remain in force. The RLWD Board shall also provide information on the amount of charges to individual parcels within the WMD. In addition to other notices required by statute, the RLWD Board must, ten days prior to a hearing or decision on projects to be paid in whole or in part by WMD charges, provide notice to the city, town, or county within the WMD. The city, town, or county receiving notice shall submit to the managers concerns relating to the implementation of the project. The managers shall consider the concerns of the city, town, or county in the decision on the project.

WMDs established under this plan are intended to be perpetual for the life of this plan and any subsequent revisions, unless dissolved by plan amendment or update. Initial charges, if any, will be effective for a duration consistent with the time necessary to repay the capital cost of projects to be paid for, in whole or in part by charges within the WMD. Thereafter and upon hearing, WMD charges may be reinitiated to generate revenue to pay for project maintenance.

Local Appeal

Local Appeal Procedure: Because WMDs established under this plan are proposed to be perpetual, the following local appeal procedure is established from the resolution adopting a plan amendment establishing a WMD:

1. Upon receipt of the Order of the BWSR authorizing a plan amendment establishing a WMD, the Policy Committee shall publish notice of its resolution adopting the plan amendment in a newspaper in general circulation in the part of the 1W1P area where the WMD is located.

2. Any landowner affected by the WMD may, within 30 days of first publication of notice of the resolution, appeal the establishment of the WMD to the Policy Committee by filing a letter stating the basis for the appeal.

3. Within 30 days of receiving a letter of appeal, the Policy Committee shall hold a hearing on the appeal, giving the appellant an opportunity to be heard and to present evidence why the WMD should not be established. The hearing shall be noticed as required for a special meeting under statutes chapter 103D.

4. The hearing shall be recorded in order to preserve a record for further review. The record of the appeal shall include the recording, any documentary evidence provided by the appellant and all records related to the establishment of the WMD.

5. Within 30 days of the hearing, the Policy Committee shall adopt and mail findings and an order on the appeal to the appellant and the BWSR.

6. Further appeal, if any, shall be as provided in Statutes Chapter 103D and existing authorities and procedures of the BWSR Board.

Section 2 – Thief River Falls Flood Damage Reduction Project Water Management District

The following is reprinted from Appendix J, pages J-29 to J-32

HDR | ONE COMPANY *Many Solutions*℠

Memo

To:	Red Lake Watershed District Board of Managers		
From:	Nate Dalager, P.E.	Project:	Plan Amendment – Water Management District
cc:			
Date:	November 10, 2010	Job No:	131515

Re: Plan Amendment - Establishment of a Water Management District for the Thief River Falls Flood Damage Reduction Project

Introduction

Pennington County Ditch #1 (CD 1) has been a source of agricultural and urban flooding problems for years. Since its construction 100 or more years ago, the ditch has routinely flooded out of its banks in spite of cleanouts and culvert replacements. In 2005, the Pennington County Board of Commissioners, Thief River Falls City Council, RLWD, and others requested that HDR Engineering conduct a drainage study and provide a report of findings. Due to funding limitations and procedural uncertainties related to Minnesota (MN) ditch law, no entity was able to advance the project forward until a landowner ditch improvement petition was received by the Red Lake Watershed District (RLWD) in 2009.

In response to the landowner petition, the RLWD has approved the Preliminary Survey Report and Detailed Survey Report in accordance with MN Statute 103E. These reports explain the project in detail and are available for review from the RLWD upon request.

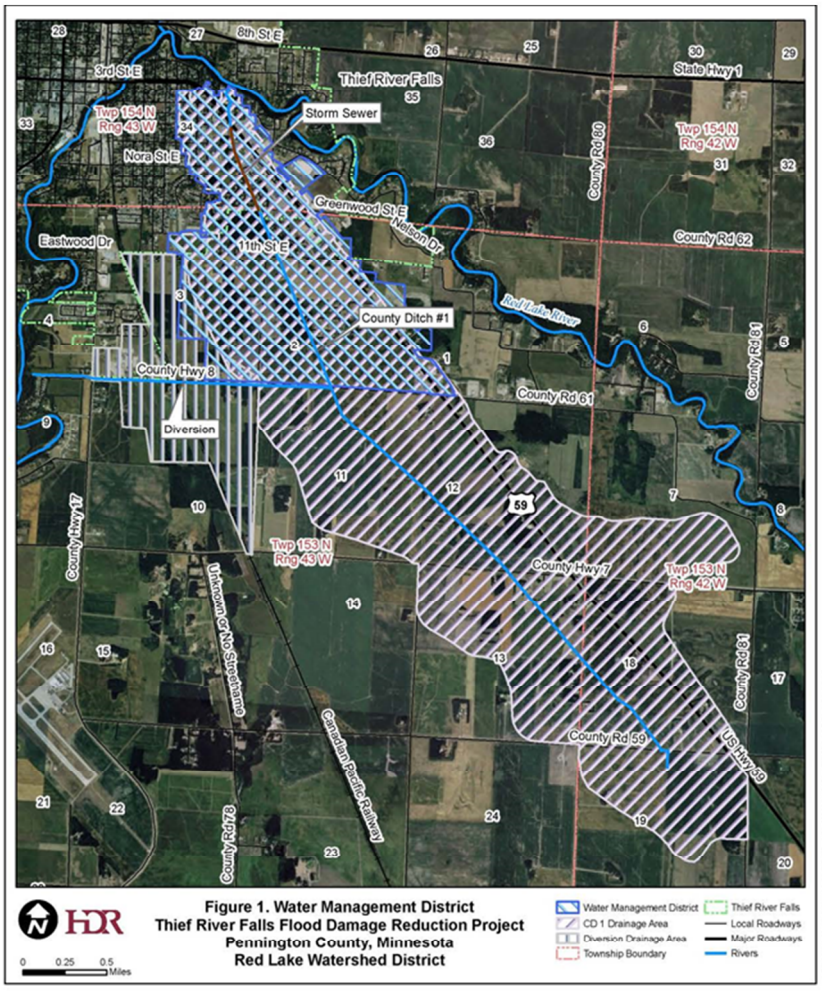
Because of the severity of the flooding problem and the complexity and cost of the proposed CD 1 improvement within the urban environment, the RLWD established the Thief River Falls Flood Damage Reduction (FDR) Project in accordance with MN Statute 103D.605. As part of the funding strategy for the project, the RLWD is hereby proposing to amend Section 7.1.6.2 of its watershed plan in accordance with MN Statute 103D.411 to establish a Water Management District (MN Statute 103D.729) with the purpose of collecting revenue and paying for a portion of the costs of the Thief River Falls Flood Damage Reduction Project. This memo will outline the following as required by the amendment procedure:

- Area included in the Water Management District (WMD)
- The amount of the necessary charges
- The method used to determine the charges
- The length of time that the Water Management District will remain in force

HDR Engineering, Inc. | 324 2nd St. East, Thief River Falls, MN 56701 | Phone (218) 681-6100, Fax (218) 681-6262, www.hdrinc.com

Water Management District Area

The area encompassed by the proposed Water Management District extends from CSAH 8 at the south (upstream) end, to the northern extents of CD 1 outletting into the Red Lake River within the City of Thief River Falls. The outer boundary of the WMD follows property lines, because any property that has partial drainage or protection benefits from the project will be included in the Water Management District. The WMD is approximately 1,070 acres in area and is a mix of agricultural, commercial, industrial, and residential properties. See Figure 1 below for a map of the WMD boundary.



Amount of Charges

The project has been estimated to cost $3 million, and is broken down into two distinct components:

- ditch improvement; and
- flood damage reduction project

The ditch improvement consists of an improvement of the ditch grade, cross-section, and culverts, and is estimated to cost approximately $1,000,000. The ditch improvement component of the project will be paid for by benefitted landowners as determined by the viewers in the re-determination of benefits process.

The flood damage reduction component is estimated to cost $2,000,000, and consists of a diversion down the CSAH 8/Challenger roadside ditch and the installation of storm sewer through the City, from Greenwood Street to the TH 59/1st St E intersection. The FDR project component will be paid for by contributions from the RLWD, the State of Minnesota FDR program, and the funds that the Water Management District would ultimately collect. The charges collected by the Water Management District for the construction of its portion of the flood damage reduction component shall consist of 30% of all costs associated with the FDR project, not to exceed $700,000.

Table 1 below describes the breakdown of the project funding.

Table 1. Project Funding Breakdown

Project Component	Funding Source
Ditch Improvement	Benefitted Landowners
Flood Damage Reduction	35% Red Lake Watershed District
	35% State of MN - FDR Program
	30% WMD charges

Method for Determining Charges

The method used to determine the amount of charges each parcel will pay to the Water Management District will closely follow the method that the City of Thief River Falls uses to determine its monthly storm water utility charges. The monthly charge is determined by an approximation of the volume of storm water runoff from a parcel. Runoff volume is a factor of the parcel's area, and the portion of the area that has impervious surfaces, such as rooftops, parking lots, driveways, and sidewalks. Each parcel that falls within the WMD boundaries will be placed into a land use classification, and assigned a Residential Equivalency Factor (REF) for each classification as follows in Table 2 below.

Table 2. Residential Equivalency Factor (REF)

Land Use Classification	Residential Equivalency Factor (REF)
Single Family	1.0
Manufactured Home	1.0
Multi-Family Residential	1.5
Commercial/Industrial	1.5
Schools/Churches/Institutional	1.5
City-Owned Land	1.0
Vacant/Vegetative/Agricultural/Unimproved	0.1 with cap

Then, the formula for determining the monthly charge is as follows:

Water Management District Charge = (REF) x size of parcel (acres) x fee per acre

The fee per acre will be determined upon a more detailed analysis of the final charges.

Length of Time in Force

The initial charges for the WMD for construction of the TRF FDR Project shall be assessed and recovered over a period not to exceed 20 years. In addition to the initial cost recovery period of 20 years, the WMD will remain in-place perpetually in order to assess fees for maintaining the WMD's share of the flood damage reduction portion of the project. The managers may assess all the parcels of property and municipal corporations previously assessed for project construction of the TRF FDR project, to establish a maintenance fund for the project. The assessment for the WMD maintenance fund may not be made when the fund exceeds 20 percent of the original cost of construction for the Thief River Falls Flood Damage Reduction project.

Conclusion

In accordance with MN Statute 103D.729, this plan amendment proposal shall be forwarded to the City of Thief River Falls, Pennington County, and appropriate state agencies for review and comment. The Board of Water and Soil Resources will hold a public hearing in conjunction with the RLWD to receive testimony on the proposed plan amendment providing for the establishment of a Water Management District.

Section 3 – Thief River Falls – West Side Flood Damage Reduction Project Water Management District

Introduction

Pennington County Ditch #70 (CD 70) is located north and west of the City of Thief River Falls (City). The system drains areas north and west of the City, as well as areas within the City. CD 70 currently provides an estimated 2-year or less level of service for drainage in agricultural areas and an estimated 10-year level of service for drainage in residential/commercial areas. Currently, much of the system does not completely drain following wet weather events due the inconsistent grade, channel size, and excess vegetation in the ditch. These conditions result in long periods of inundation on adjacent agricultural and commercial land from minor rainfall events. Although much of the area may be located outside of the 100-year floodplain, there are vital properties within the 11 mile drainage area that must be protected from a 100 year event.

In 2017 the Red Lake Watershed District (RLWD) partnered with the City and Pennington County (County) to study alternatives that would alleviate the flooding along CD 70. Upon the completion of the Flood Damage Reduction Analysis, the City and County filed petitions under Minnesota Statute 103D.705 to the RLWD for the design and construction of a proposed flood damage reduction project.

The RLWD established the Thief River Falls Westside Flood Damage Reduction Project in accordance with Minnesota Statute 103D.605. As part of the funding strategy for the Project, the RLWD proposes to establish a Water Management District (WMD) for the project in order to provide an efficient mechanism for collecting a local share of project costs. This section outlines the following requirements for the establishment of a WMD:

- Area included in the Water Management District;
- The amount of the necessary charges;
- The method used to determine the charges; and
- The length of time that the Water Management District will remain in force.

Water Management District Area

The area encompassed by the proposed Thief River Falls-West Side Flood Damage Reduction Project WMD extends from the north (upstream) end of CD 70, to the outlet into the Red Lake River, as well as portions of the County Ditch 1 drainage area. The outer boundary of the WMD follows the drainage area boundaries or the benefitted area property lines, whichever is greater, because any property that has partial drainage or protection benefits from the Project will be included in the WMD. The WMD is approximately 10,670 acres in area and is a mix of agricultural, commercial, industrial, and residential properties. See Figure N-1 for a map of the WMD location. A listing of parcels affected by the WMD is included under a separate heading below.

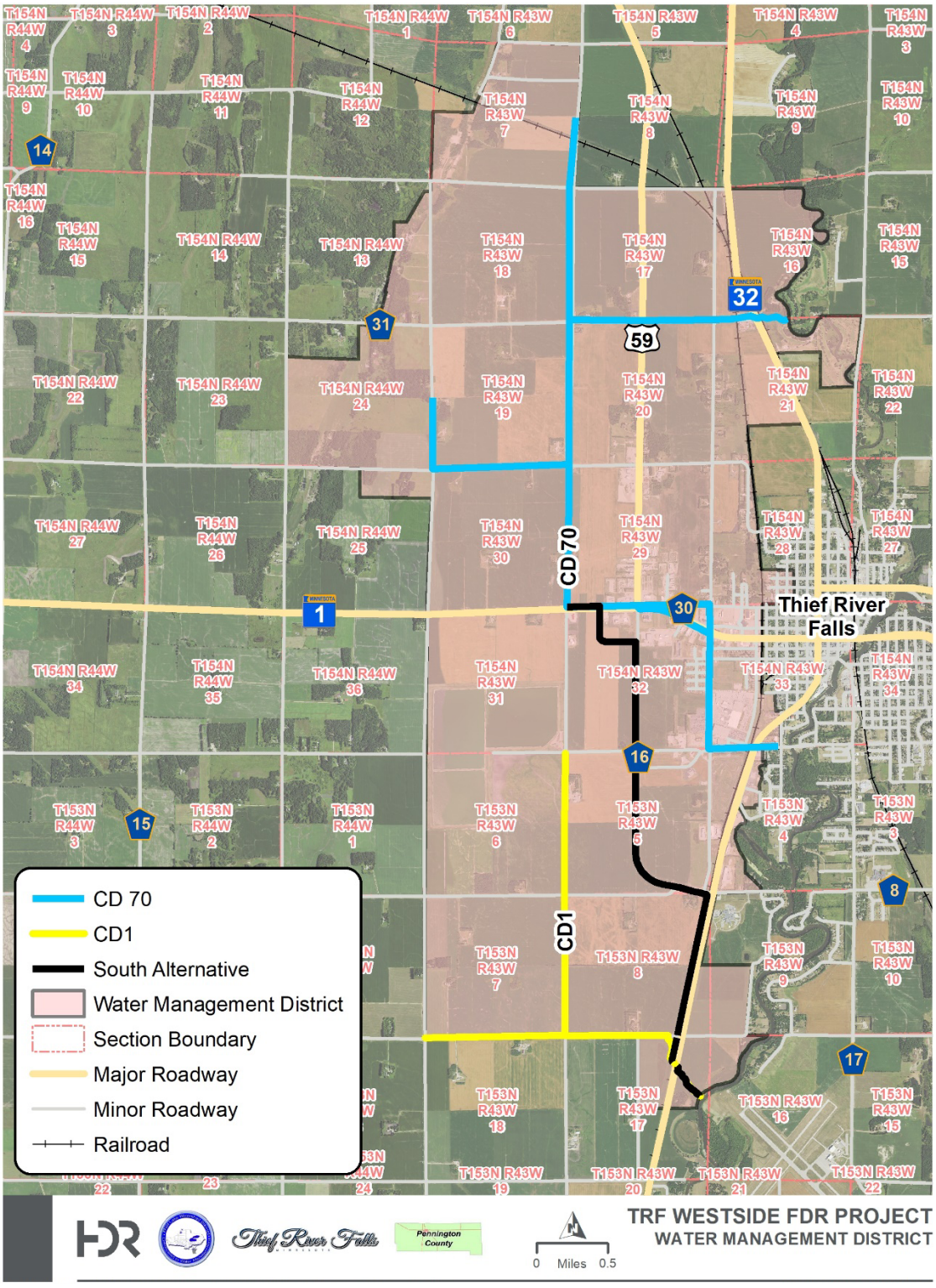


Figure N-1: Water Management District Location

Amount of Charges

The Project has been estimated to cost $6 million. The Project will be paid for by contributions from the RLWD, the State of Minnesota FDR program, Pennington County, the City of Thief River Falls, Minnesota Department of Transportation, and the funds collected from the WMD. The charges collected by the WMD for the construction of its portion of the flood damage reduction component shall consist of approximately 17% of all costs associated with the Project, not to exceed $1,000,000. Table N-1 describes the breakdown of the Project funding.

Table N-1: Project Funding Breakdown

Funding Source	Project Participation
RLWD, City, County, MnDOT	$2.5 Million (41.6%)
State of MN – FDR Program	$1.5 Million (25%)
Red River Water Management Board	$1.0 Million (16.7%)
Water Management District	$1.0 Million (16.7%)

Method for Determining Charges

The method used to determine the amount of charges each parcel will be assessed towards the WMD is based on the Pre-Project and Post-Project flood damage protection conditions (level of service) for each acre or fraction thereof in the water management district. The level of service is defined as the ability for a area of land to drain 12 hours after the storm event has ended. Subwatersheds within the drainage area of the Project were analyzed for a 2-year (2.49 inches), 10-year (3.77 inches), and 25-year (4.69 inches) 24 hour duration summer storm event. Based on the pre- and post-project level of service, a level of service factor (LSF) was assigned.

Table N-2: Level of Service Improvement Categories

Level of Service Improvement (LSI)	Level of Service Factor (LSF)
2 Year – 2 Year	Outlet Improvement (Base Rate = 1.0)
10 Year – 10 Year	Outlet Improvement (Base Rate = 1.0)
25 Year – 25 Year	Outlet Improvement (Base Rate = 1.0)
10 Year – 25 Year	2.0
2 Year – 10 Year	3.0
2 Year – 25 Year	4.0

The base rate will be determined by the following formula:

(Base Rate x (Outlet Improvement LSF) x Total LSI Parcels (Acres)) + (Base Rate x (10Yr-25Yr LSF) x Total LSI Parcels (Acres)) + (Base Rate x (2Yr-10Yr LSF) x Total LSI Parcels (Acres)) + (Base Rate x (2Yr-25Yr LSF) x Total LSI Parcels (Acres)) = $1.0 Million Max

The formula used for determining the total charge per parcel is as follows:

Water Management District Charge = (LSF) x Base Rate x Size of Parcel in Acres Contributing to the Project Drainage Area

**Parcels outside of the City of Thief River Falls are capped at a maximum assessment of 20 acres per parcel.*

**The minimum LSF within the City limits is 2.0 due to urban impervious surface and associated drainage benefits provided by the Project.*

Perpetual District; Duration of Charges, Subsequent Charges

The water management district shall be perpetual for the life of this plan and any subsequent revisions, unless dissolved by plan amendment or revision. The initial charges for the WMD for construction of the Project shall be extended and recovered over a period not to exceed 20 years. In addition to the initial cost recovery period of 20 years. Subsequent maintenance charges within the WMD may be extended to establish and maintain a maintenance fund. The balance of a maintenance fund may not exceed 20 percent of the original cost of construction for the Project, consistent with the limitations found in statutes section 103D.631.

Affected Parcels

A list of parcels of record that are located in the WMD are located in the office of the Red Lake Watershed District and the Pennington County Recorder.

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Section 4 – Black River Impoundment Project Water Management District

Introduction

The Black River Impoundment Project's primary purpose is to provide flood damage reduction within the Black River sub-watershed. Reducing peak flows will reduce risk of flood damage to local public transportation facilities, erosion of agricultural and private lands upstream and downstream of the impoundment site, improve water quality, and improve the operation efficiency of the downstream Schirrick Dam on the Black River.

The Red River Watershed Management Board (RRWMB) funded a comprehensive plan for expanded distributed detention strategies for Minnesota membered watershed districts throughout the Red River Basin. This plan is summarized in the Red River Basin Commission's (RRBC) Long Term Flood Solutions (LTFS) Basin Wide Flow Reduction Strategy Report, and it concluded with a goal to reduce the Red River of the North (Red River) peak flow and volume by 20% during a flooding event comparable to the 1997 flood. To accomplish this, the report set forth guidelines while working with each of the watersheds to develop district specific strategies.

The Red Lake Watershed District's Expanded Distributed Detention Strategy recommended 58 locations of off channel retention and 8 locations of on channel retention to help achieve the goals set forth in the RRBC LTFS Basin Wide Flow Reduction Strategy Report. The Black River Sub-Watershed encompasses several of the identified 58 locations. To begin the development of a flood control impoundment project, the RLWD investigated preliminary alternatives for the Black River sub-watershed. Four preliminary impoundment site alternatives were reviewed within the Black River sub-watershed. The selected alternative was carried forward due to cooperation from local landowners and the potential storage capabilities of the site. Privately owned agricultural lands were made available by either fee title or permanent flowage easements to the RLWD for the impoundment site. The RLWD board proceeded with further engineering investigation of the selected alternative.

In addition to the impoundment site and associated structures, approximately 12 miles of diversion ditches are being proposed to efficiently direct runoff into the impoundment site; maximizing the impoundments contributing drainage area. All project costs associated with the impoundment and diversion ditches will be funded as part of the overall flood damage reduction project. The RLWD is proposing to establish a Water Management District (WMD) as part of an overall funding strategy for long term operation and maintenance of the project. See Figure N-2 for the locations of the project facilities and properties effected by the WMD.

The following section outlines the requirements for the establishment of a WMD:

- Define Water Management District Area
- Establish the amount of necessary charges
- Describe the method for determining charges
- Establish the length of time the WMD will remain in force

Water Management District Area

The WMD area proposed for this project is generally bounded at the northerly limits by CSAH 7 and CSAH 12, a width approximately 1 mile east and 1 mile west of the intersection with CSAH 7, CSAH 13 and CSAH 12. The southerly limits are generally bounded by Pennington County Road 55 from the intersection with Pennington County Road 68, east for approximately 4 miles. The westerly limits of the proposed WMD is approximately Pennington County Road 68 from the intersection with CSAH 3, north approximately 3 miles, east 1 mile and north 1 mile along CSAH 12. The easterly limits follow the ridge line approximately 3 miles east

of Pennington County Road 68. The WMD area is bounded by either the limits of the drainage area or the limits of the benefitted area, whichever is greater. This is due to the opinion that any property having partial drainage or protection benefits will be include in the WMD. The WMD is approximately 10,288 acres of predominant agricultural land. Figure N-2 displays a more detailed boundary of the WMD area. A listing of parcels affected by the WMD is included under separate heading below.

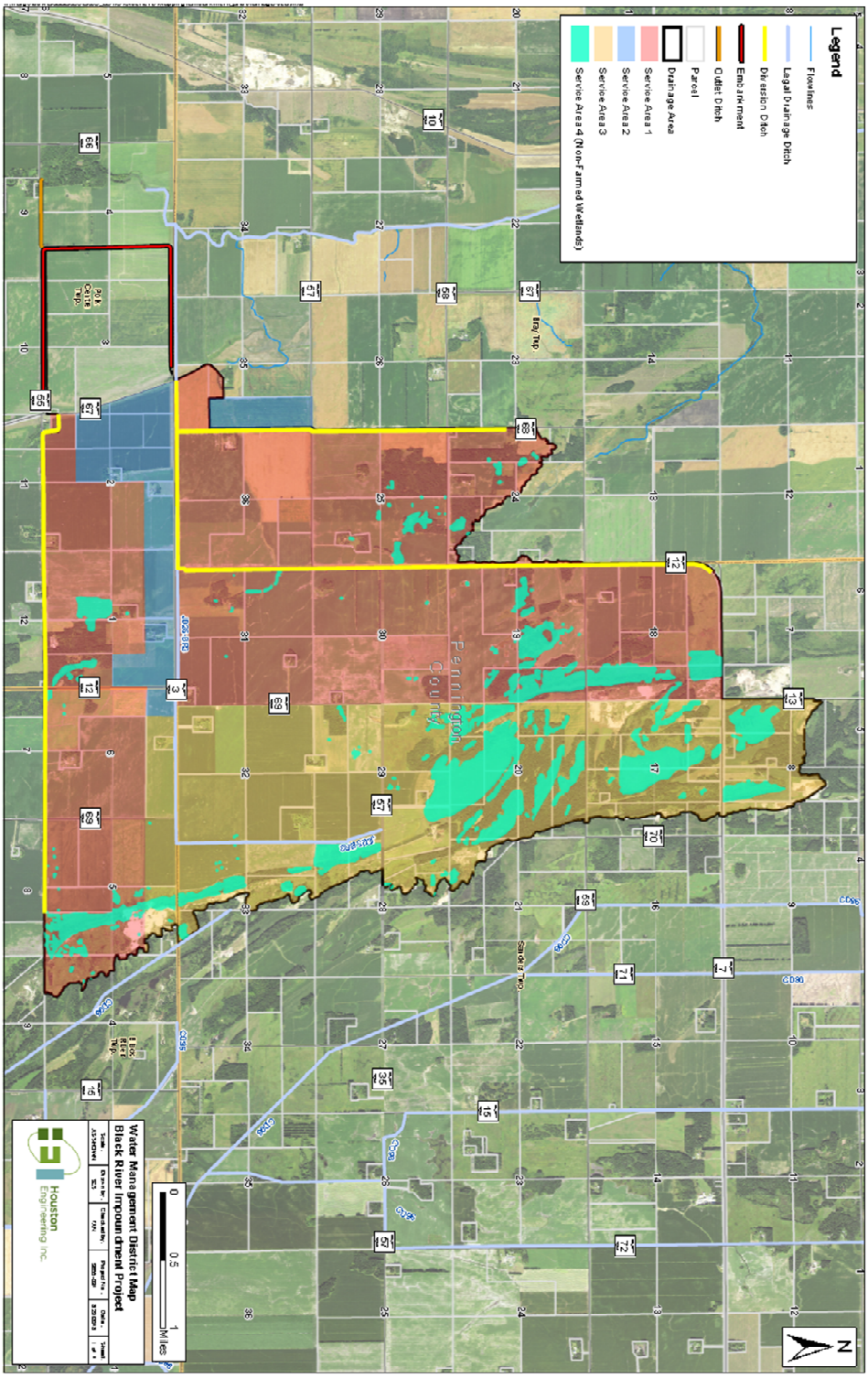

Figure N-2: Water Management District Location

Amount of Necessary Charges

The construction of the Black River Impoundment Project is being proposed for funding through a combination of sources other than WMD Charges. These funding sources include the RLWD, State of Minnesota Flood Damage Reduction Program, and the RRWMB. However, for long term operations and maintenance of the project, the RLWD is proposing to use WMD charges as the primary funding mechanism.[1] Operations and maintenance is anticipated to include, but not be limited to, administration, inspection, vegetation management and mowing, repair, component replacement and reconstruction, and any other work deemed necessary by the RLWD to protect or preserve the function of the project. The RLWD anticipates a maximum annual operation and maintenance cost not exceed $75,000 for the project. Thus, the total of annual WMD charges will not exceed $75,000 during the life of the project.

Method for Determining Charges

Landscape level land modification has contributed to the rate and volume of run-off within the project area and has created the need for regional rate and volume control in order to meet the rate and volume reduction goals of the RRBC LTFS Basin Wide Flow Reduction Strategy. Relative contribution to the need for the project was determined based on parcel proximity and parcel land use in relation to various conveyance infrastructure (diversion ditches) to the impoundment area. Parcel proximity with direct drainage to the diversion ditches are classified as Service Area 1. Service Area 1 reflects the highest level of service for the project, which correlates to the highest charge rate. Reduced charge rates were determined for parcels with limited access as outlined below. Parcels that have indirect drainage to the diversion ditches through culverts or modified drainage are classified as Service Area 2. Parcels that have no direct access to the diversion ditches but have indirect drainage along CSAH 3 or CSAH 12 are classified as Service Area 3. Parcels within Service Area 1 through 3 that are designated non-farmed wetlands as referenced under the National Wetland Inventory (NWI) are classified as Service Area 4. The WMD level of service summary is outlined in Table N-3 and Figure N-2.

Table N-3: Level of Service Summary Black River Impoundment

Service Area	Level of Service Factor (LSF)
1	5.33
2	4.00
3	2.67
4	1.00

The base rate will be determined by the following formula:

(Base Rate x 5.33 x Service Area 1 (Acres)) + (Base Rate x 4.00 x Service Area 2 (Acres)) + (Base Rate x 2.67 x Service Area 3 (Acres)) + (Base Rate x 1.00 x Service Area 4 (Acres)) = $75,000 Maximum

The formula used for determining the total charge per parcel is as follows:

Water Management District Charge = LSF Value x Base Rate x Size of Parcel Contributing to the Project Drainage Area (Acres)

[1] Long term operations and maintenance funding may be supplemented with other revenue sources as deemed appropriate by the RLWD Board of Managers.

Length of Time Water Management District Will Remain in Force

No charged assessment will be made to the WMD for the initial project cost. In order to generate revenue for future operation and maintenance, the WMD shall be perpetual for the life of this plan and any subsequent revisions, unless dissolved by plan amendment or revision. The imposition of charges for future operations and maintenance is subject to the fund limitations found in Minnesota Statute 103D.631.

Affected Parcels

A list of parcels of record that are located in the WMD are located in the office of the Red Lake Watershed District and the Pennington County Recorder.

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APPENDIX H

HEI LiDAR Analysis Technical Memo

HOUSTON engineering, inc.

Technical Memorandum

To: Corey Hanson, Red Lake Watershed District

From: Moriya Rufer and Nathaniel Baeumler
Houston Engineering, Inc.

Subject: Estimate Elevation Change at Landscape Scale using LiDAR.

Date: 06/30/2025

Project: 3655-0118

OVERVIEW

The Red Lake River and Thief River watersheds worked with Houston Engineering, Inc. (HEI) to create geospatial data that would help the watersheds identify areas on the landscape that have had significant elevation change between the two most recently available Light Detection and Ranging (LiDAR) datasets across the state of Minnesota (2008 and 2021).

HEI created two sets of deliverables, one set for Red Lake watershed and one set for Thief River watershed. The two sets each include two products:

1. A minus grid showing the difference in elevation between the two years of LiDAR data
2. A polygon layer that was hand digitized to overlay on top of the requested river corridors* to avoid interpreting change in water level as a change in elevation
3. This memo outlines how to use deliverables one and two to determine mass loss over the two time periods from the landscape.

The river corridors include 272 river miles (Figure 1). Specific segments were:

Red Lake River Watershed:

- Red Lake River from 310th St SE to the Red River confluence in Grand Forks

Thief River Watershed:

- Thief River from Mud Lake to Thief River Falls
- Thief River from Thief Lake to Boundary Rd
- Mud River from Gunpowder Rd NW to 330th Ave NE

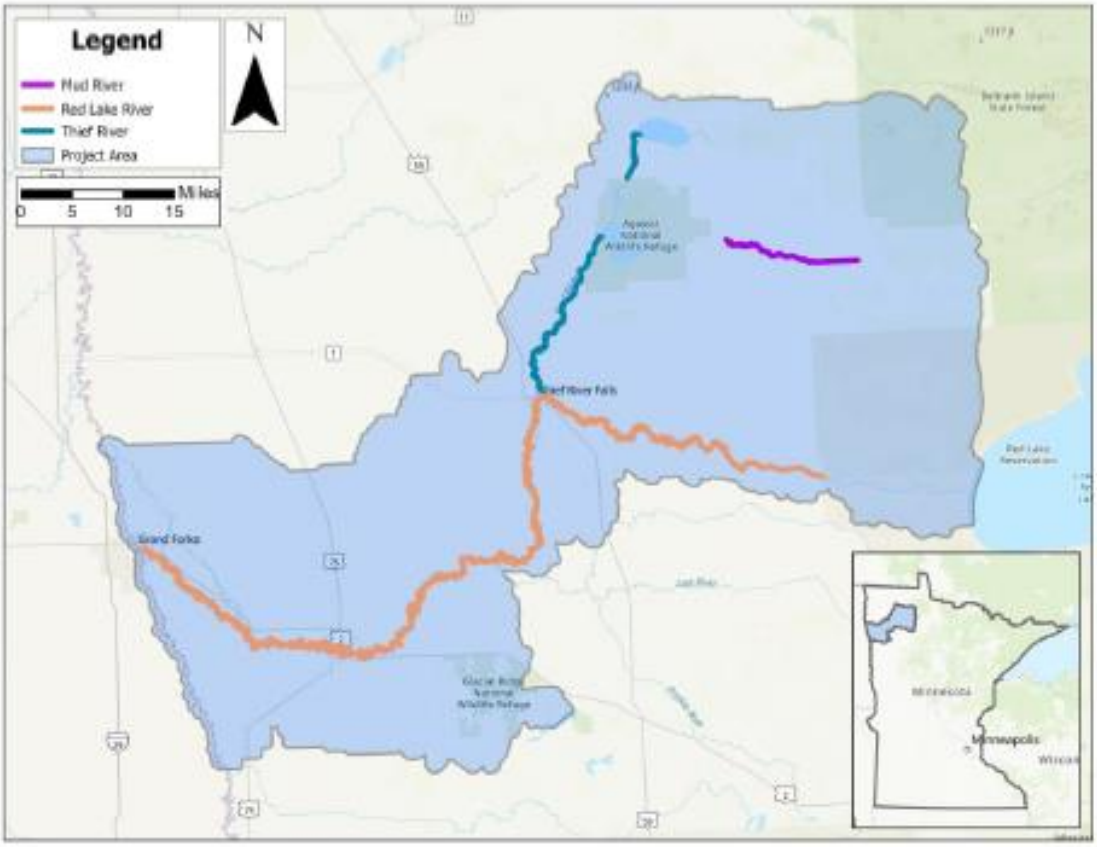

Figure 1: Project Location

METHODOLOGY

The two digital elevation model (DEMs) were obtained from The International Water Institute. The 2021 DEM was resampled from a 1x1 m to a 3x3 m using the bilinear resampling technique in ArcGIS, to match the 2008 DEM. Both DEMs were confirmed to be in NAD 83 UTM 14N. Overlaying and snapping the two DEMs together enabled raster math to be completed where the 2021 DEM was subtracted from the 2008 DEM to obtain a "minus grid" (deliverable one). The minus grid shows the difference between the two sets of elevation data. A negative value in the grid cell represents a loss in elevation in 2021 when compared to 2008, and a positive value in the grid cell represents a gain in elevation in 2021 compared to 2008.

Water elevation was manually digitized for both watershed areas (locations defined in the overview section) to determine the maximum water level between the two LiDAR datasets. Polygons were created as the deliverables for this project (deliverable two) to show the maximum water level between the years. The polygons overlay the largest extent of the water level between the two datasets. One polygon was created for the Red Lake River watershed area and one was created for the Thief and Mud Rivers. Hillshade rasters were developed to help identify water level and used alongside the developed minus grids (deliverable one), and publicly available satellite imagery to develop this deliverable.

LiDAR metadata notes that the elevation data meets the American Society for Photogrammetry and Remote Sensing (ASPRS) Positional Accuracy Standard for Digital Geospatial Data. Below, a table shows the accuracy level for both vegetated and non-vegetated surface areas for the two datasets.

Table 1: RMSE Information

Dataset	Vegetated Surface Area RMSE		Non-Vegetated Surface Area RMSE	
	Horizontal (cm)	Vertical (cm)	Horizonal (cm)	Vertical (cm)
2008[1]	N/A	13.5 +/-26.5	N/A	11.8 +/- 23.1
2021[2]	97.5	12.1 +/-24.7	97.5	7.7 +/- 15.2
Combined[3]	N/A	~ 18.1	N/A	~ 14.1

[1] Data from Block B LiDAR 3rd Party Quality Assessment Report from International Water Institute (2008). Non-urban area classifications from the report were considered vegetated surface area, and the rest were considered non-vegetated.

[2] Data from metadata documentation obtained with the LiDAR data from USGS.

[3] Using residual sum of squares, the combined vertical error for vegetated surface and non-vegetated surface is estimated to be 18.1 cm and 14.1 cm respectively. The +/- margin of error does not carry through for residual sum of squares.

HOW TO USE DATA FOR ESTIMATING SOIL LOSS

The deliverables provided in this contract can be used to estimate elevation differences between two time periods (by using the minus grid for each watershed). These minus grids can help answer watershed scale questions of bank erosion, large changes in elevation related to wetland losses, mining operations, or other questions that may be pertinent to environmental resource planning and monitoring.

If the minus grid shows a positive value, that means that over the two time periods, there was deposition, raising the elevation of the landscape for that area. If there is a negative value, that means that there was elevation loss, suggesting that landscape material was lost from that location between the two time periods.

Two additional deliverables were provided (water level polygons) which can be used to overlay the minus grids or DEMs to mask the maximum extent of the water level in the data for the listed stream sections in the overview section of this document. Masking the water level between the two time periods reduces noise within the data, allowing for a cleaner interpretation of the desired end product.

To estimate the total volume lost, the Board of Soil and Water Resources Pollution Reduction Estimator Calculation (BWSR tool) can be used. This tool estimates sediment and phosphorus loss for various types of erosion. In order to estimate the lost sediment and phosphorus, the BWSR tool requires the following information:

- Soil type (pre-selected from a dropdown list)
- Volume voided (as calculated from minus grid – in cubic feet)
- Estimated number of years erosion of voided space occurred (years)

By filling out those three pieces of information, the BWSR tool will estimate the sediment and phosphorus masses lost from the volume voided. In instances where there may be 50% clay and 50% silt, putting in half the volume voided for each soil type and running the tool twice may be helpful in getting a more accurate result.

To obtain the volume voided: in ArcGIS Pro

1. identify the area of interest by drawing a polygon around it and saving the polygon as the area of interest. This polygon should capture the area that you are trying to estimate the volume of voided losses (or gains).
2. open the *zonal statistics as table* tool and:
    1. input the newly created polygon from step one into the "input raster or feature zone data" location.
    2. Zone field will autopopulate to OBJECTID
    3. Input the minus grid raster showing the change in elevation between the two years of data
    4. Name the output table appropriately
    5. Statistics Type: All – this will give you more information than you need but may be interesting to see. You want to review the "sum" column which will sum up all of the raster minus grid cells within the AOI polygon created in step one.
    6. The "sum" column shows the overall elevation change across the entire AOI, providing you with the change in the "Z" direction in feet.
        - Convert the sum column, your Z (vertical) sum from feet to meters
        - Multiply the Z value in meters by 9 (3x3 meter raster grid)*
    7. You now have the volume voided in cubic meters. Convert to cubic feet, and enter that value into the volume voided cell of the BWSR tool

*if using this technique for other minus grids, ensure you take into account the raster grid size of the minus grid. Your multiplier will change depending on the size of the raster. If it is a 1x1m grid, your multiplier will be 1. If it is a 5x5m grid, your multiplier will be 25.

Estimate Years Taken to Lose Volume:

you can estimate the years lost for the BWSR tool by either:

1. Assuming it was slowly being lost over the entire time period (2008-2021) of 9 years
2. Use satellite imagery software like Google Earth history to identify what year major losses may have taken place in.

The BWSR tool inputs have now all been entered and you will see estimated sediment and phosphorus losses on the right side of the tool screen.

CONCLUSION

Using the provided minus grids and the step-by-step instructions for the BWSR tool, this memo provides a way to interpret sediment and phosphorus losses from the landscape. Maximum water extent polygons were digitized which can be used to overlay on the minus grids or digital elevation models to help reduce the noise in the dataset of expected elevation change due to water elevation differences between the LiDAR years.

APPENDIX I

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