



# Section 9. Appendices





# Long Prairie River One Watershed, One Plan



## What is One Watershed, One Plan?

- Voluntary program and plan to guide watershed managers as they work to protect and restore the watershed's resources
- Aligns water planning along watershed boundaries, including all the counties and soil & water conservation districts within the watershed
- Local priorities, locally driven
- Uses existing authorities and funding mechanisms (county and SWCD boards)
- After adopted, implementation funding from the state is obtained through a non-competitive process instead of competitive
- Program website:  
<https://bwsr.state.mn.us/one-watershed-one-plan>

# Watershed Highlights

- The watershed starts with the Alexandria Area Lakes. The Long Prairie River begins at Lake Carlos, flows through the City of Long Prairie, and near Motley it joins the Crow Wing River.
- Covers portions of five counties: Douglas, Otter Tail, Todd, Wadena, and Morrison.
- Primary towns include: Alexandria, Long Prairie, and Motley.
- Covers 571,712 acres (893 square miles)
- Transitions from lakes in the west to cultivated cropland in the middle, and lakes and forests in the east.

# Plan Highlights

- Implementation of the Long Prairie Comprehensive Watershed Management Plan is voluntary, and outreach and incentives will be used to assist with voluntary implementation on private lands.
- Simple and straightforward presentation of plan information.
- Goals have stacked benefits such as water quality (sediment, phosphorus, nitrogen reductions), habitat (acres of protected habitat), and climate resiliency (carbon storage and water storage).

## Alexandria Lakes Area (Douglas County)

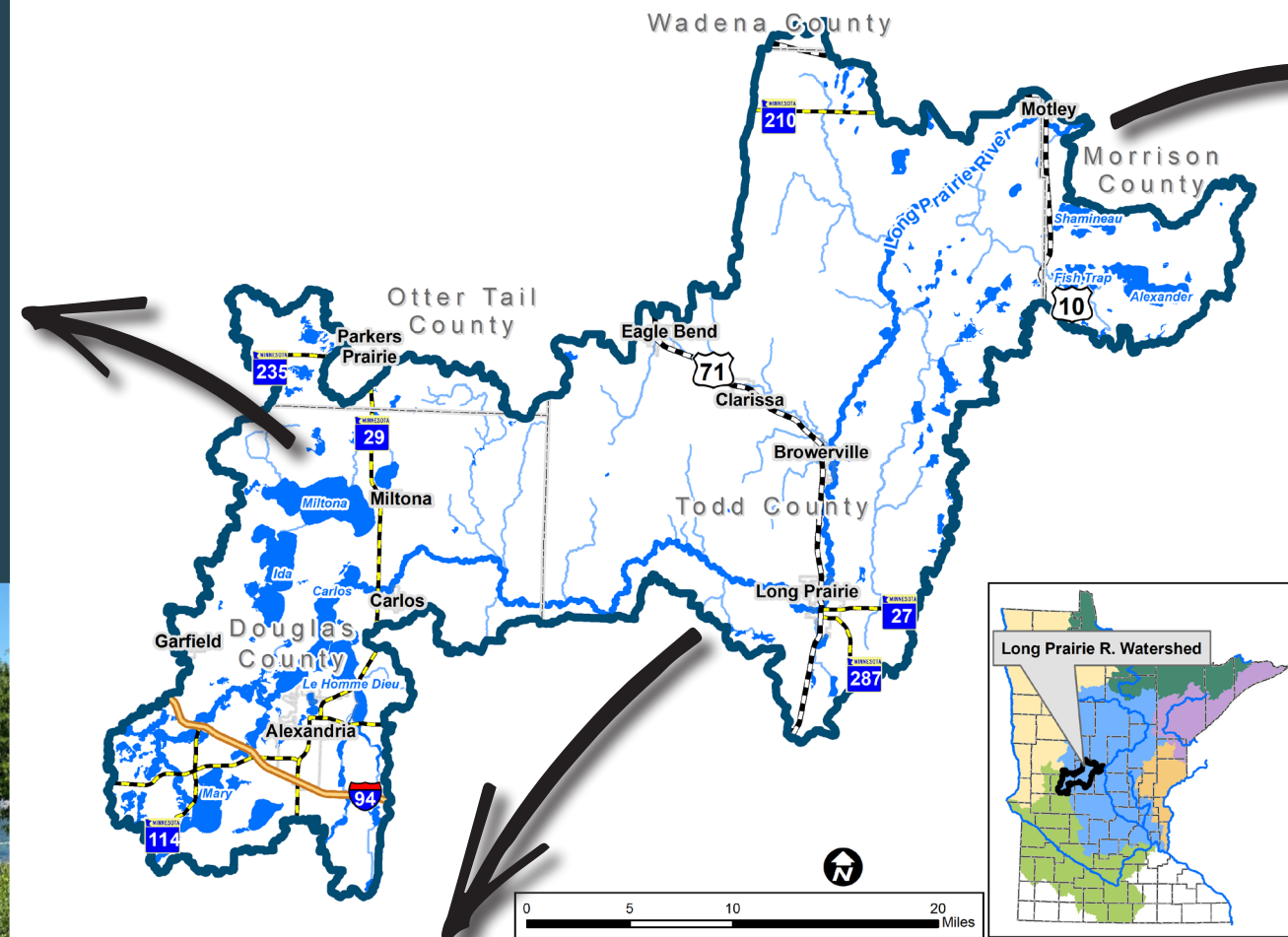
The Alexandria Lakes Planning Region is the source of the Long Prairie River, marked by its many high-value recreational lakes and the City of Alexandria.

### Main Goals:

The main goals for this area are to protect and improve lake water quality by managing stormwater from the City of Alexandria and developed lakeshore property and implementing agricultural best management projects.

### Outcomes:

- Lake water quality protected and improved.
- Nutrients entering streams and lakes are reduced.
- Runoff from increasing future precipitation is minimized.



## Turtle River • Shamineau • Fish Trap • Alexander • Crookneck Lakes (Morrison County)

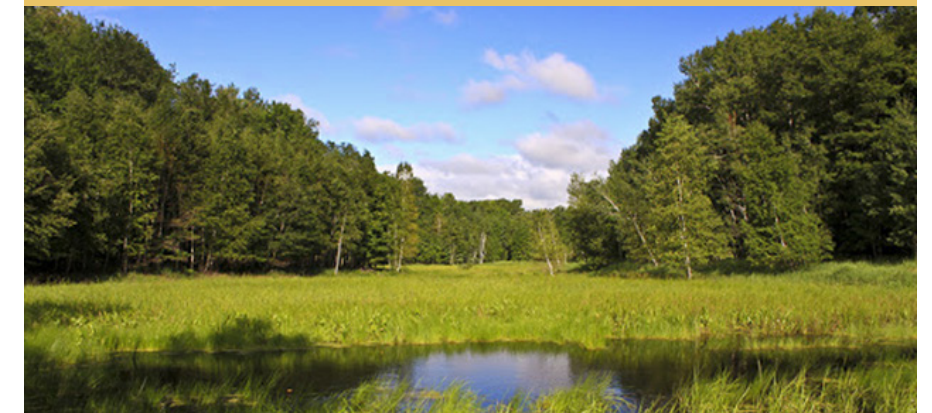
This Planning Region is marked by an abundance of large and small lakes and forests.

### Main Goals:

The main goals for this area are to protect and manage the existing forests, which protects lake water quality and groundwater recharge. Lake improvement projects are targeted to the lakes in this area as well including rain gardens, shoreline restoration, and agricultural best management practices.

### Outcomes:

- Forest habitat protected and improved.
- Lake and stream water quality protected.
- Groundwater quality protected.



## Long Prairie River • Eagle Creek • Moran Creek (Todd County)

The Long Prairie River Planning Region follows the Long Prairie River and has shallow groundwater, sandy soils, and a mix of agricultural practices. The Eagle and Moran Creeks Planning Region has primarily agricultural land use, forests, and wetlands.

### Main Goals:

The main goals for this area are to implement agricultural best management practices that will reduce nitrogen in groundwater, including nutrient management, irrigation water management, and cover crops. Other projects include bacteria reduction and forest and riparian protection.

### Outcomes:

- Soil health improved.
- Nutrients and bacteria entering streams and lakes reduced.
- Drinking water protected.
- Groundwater quantity conserved.



# Vision Statement

*Uniting the people of the Long Prairie Watershed in balancing agriculture, recreation, tourism, and timber with the protection of the environment for the future.*

## Long Prairie Watershed Collaboration



**For a Full Copy of the Plan, visit:**

<https://www.co.todd.mn.us/1w1p/>

**Further Questions or Comments**

**Contact Your Local SWCD:**

Douglas SWCD: 320-763-3191

Todd SWCD: 320-732-2644

Morrison SWCD: 320-631-3551





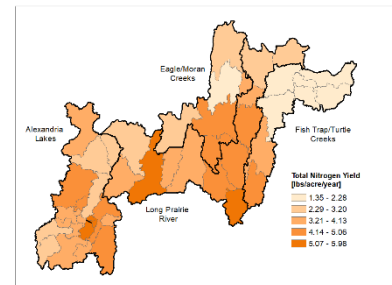
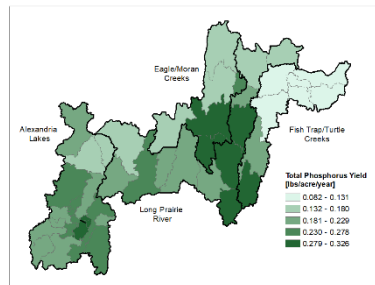
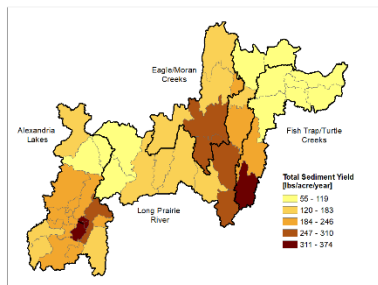
# Story of the Long Prairie River Water Quality

## Introduction

The Long Prairie River is not impaired for total suspended solids or nutrients as of 2022. Therefore, an evaluation of existing data was completed to determine which water quality parameters to focus on reducing through the Agricultural Land Management Goal (Section 5). This data search took an interesting road and resulted in a story to tell.

## Modeled Yield

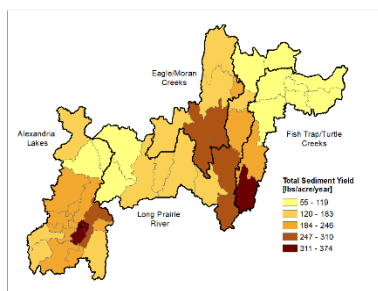
First, the yield, or amount of each parameter transported from each subwatershed (HUC12) was evaluated. The graphic below shows the yield per subwatershed from the HSPF model for sediment, phosphorus, and nitrogen. All these maps show similar subwatersheds yielding the most sediment, phosphorus and nitrogen.



## Water Quality Data

Next, historical water quality monitoring data was evaluated to see if each parameter was elevated in the Long Prairie River. Each parameter is summarized in boxes below along with the conclusion.

### Sediment



### What we know:

- TSS averages 6 mg/L (standard is 30 mg/L)
- There are no turbidity impairments
- Flow duration curves show no increase in erosive flows from historical to modern times
- *Conclusion: Ag BMPs will help with sediment (multiple benefits) but sediment isn't the main issue here.*



Long Prairie River

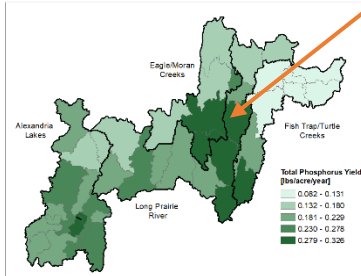
Credit: Luan Thomas-Brunkhorst



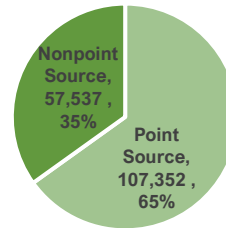
# Phosphorus

## What we know:

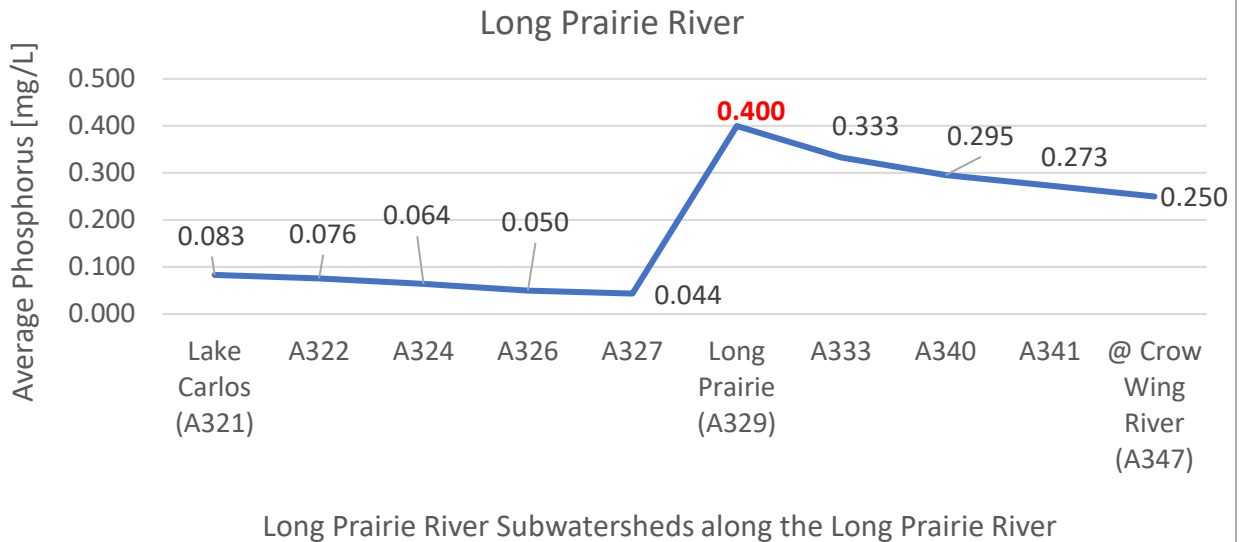
- TP averages 0.101 mg/L (standard is 0.100 mg/L) north of Browerville



Point Sources vs. Nonpoint Sources @ A340



■ Point Source ■ Nonpoint Source



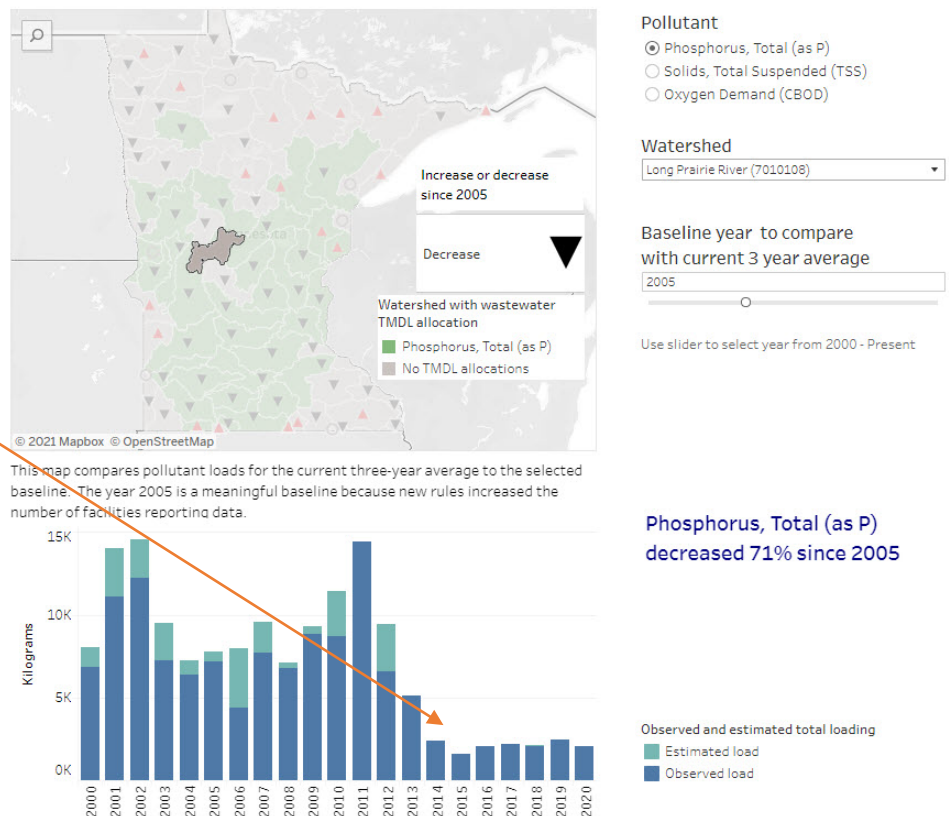
The figure above shows that from Lake Carlos to the City of Long Prairie, the total phosphorus concentrations in the Long Prairie River are low, and after the City of Long Prairie they are high (over the state standard of 0.100 mg/L). The HSPF model shows five point sources in the subwatershed containing the City of Long Prairie, and the proportion of phosphorus loading to the Long Prairie River from point sources is 65%. These numbers reflect 2011-2012 monitoring data.

Data on the Minnesota Pollution Control Agency’s (MPCA) website shows major improvements in point source discharge to the Long Prairie River since 2014. The MPCA and City of Long Prairie confirmed that two packing plants near the city do not discharge to the Long Prairie River anymore but discharge to the Long Prairie Waste Water Treatment Plant instead. The City of Long Prairie also completed major upgrades to their Waste Water Treatment Plant to handle a higher volume of discharge. For more details, visit: <https://www.longprairie.net/news/p/item/36120/upgraded-wastewater-treatment-plant-fully-online>

The MPCA will begin intensive watershed monitoring in the summer of 2022, which will further document any improvements in the water quality of the river since these point source upgrades.

**MPCA confirmed improvements have been made**

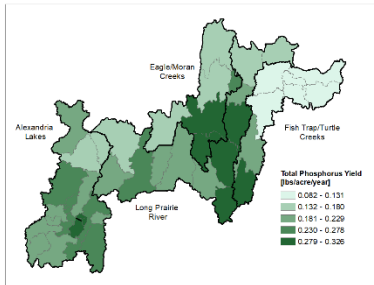
Wastewater treatment plant progress for Phosphorus, Total (as P) (kg) since 2005



Graphic above from: <https://www.pca.state.mn.us/water/wastewater-treatment-plant-progress>



# Phosphorus



## What we know:

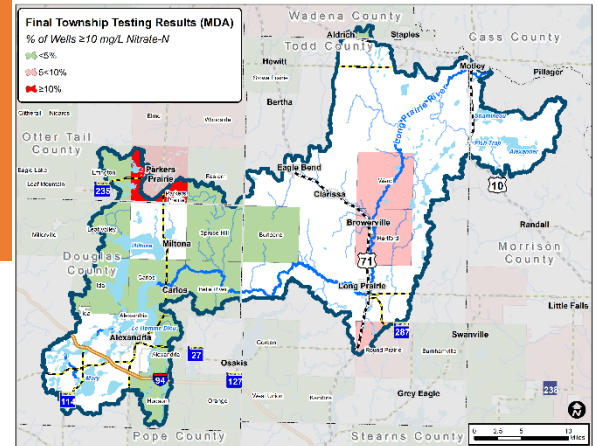
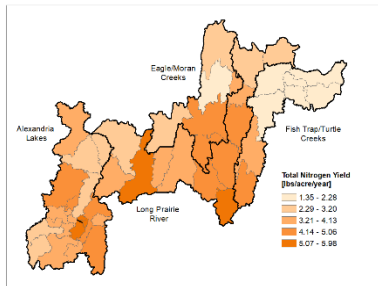
- TP averages 0.101 mg/L (standard is 0.100 mg/L) north of Browerville
- Most of the loading is from point sources
- This will be addressed in the next MPCA Intensive Monitoring round (2022)
- *Conclusion: Ag BMPs will help with phosphorus, but aren't the main source of phosphorus in the river (~11% of the source)*



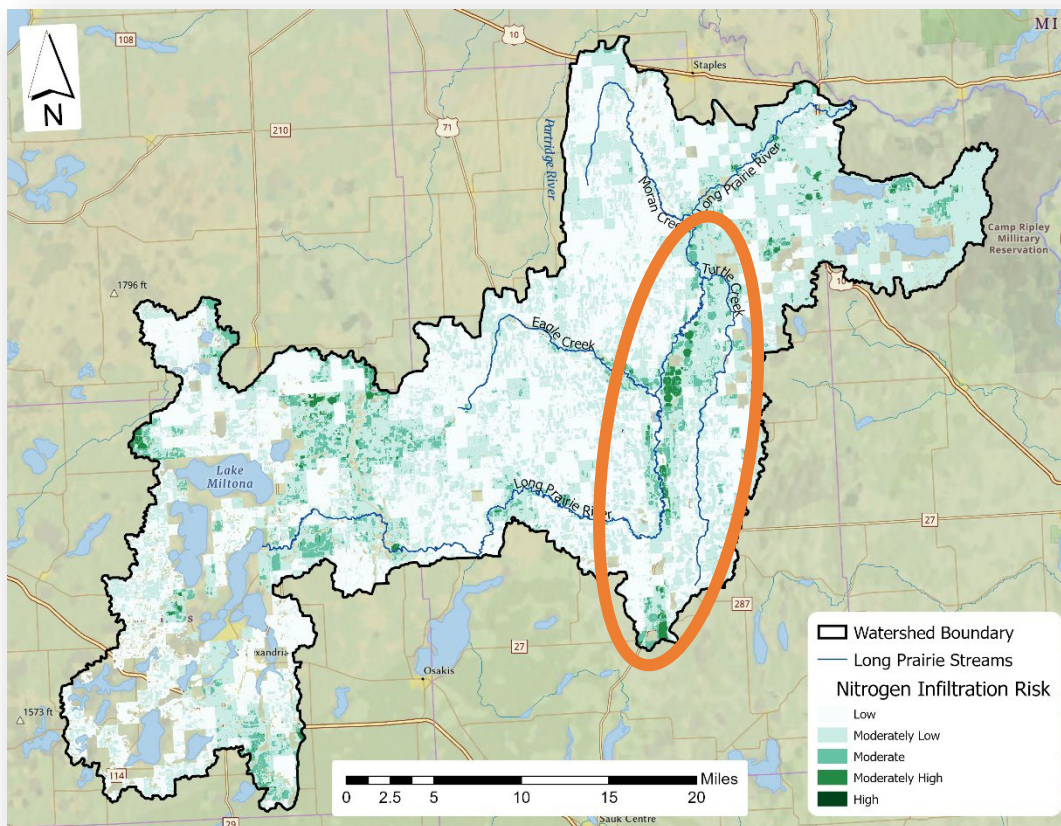
# Nitrogen

## What we know:

- Ward, Hartford, and Round Prairie Townships have 5-10% of wells tested over the 10 mg/L drinking water nitrate standard
- *Conclusion: nitrate is getting into the groundwater from the surface*



Overall Conclusion: Target Agricultural Best Management Practices for Nitrate Reduction in Groundwater





## Appendix C. Nitrogen Infiltration Risk Analysis

# Technical Memorandum

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**To:** Long Prairie River Watershed Planning Partnership  
**From:** Scott Kronholm, PhD, Houston Engineering, Inc.  
**Subject:** Nitrogen Infiltration Risk and Groundwater Recharge Value Maps  
**Date:** August 4, 2021  
**Project:** 8897-0001

### PURPOSE AND METHOD

A risk-based map, showing the relative risk of areas on the landscape with regard to the amount of nitrogen potentially reaching groundwater, is needed as an implementation aide and to guide the placement of structural conservation practices. Currently available geo-spatial products (e.g., pollution sensitivity of near surface materials ([http://www.dnr.state.mn.us/waters/programs/gw\\_section/mapping/platesum/mha\\_ps-ns.html](http://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/mha_ps-ns.html)) are solely based upon hydrologic consideration; (e.g., potential groundwater recharge rates or thickness of the surficial material and estimated travel time to a depth of 10-feet). These products fail to consider land use, and specifically the nitrogen input pathways on the landscape. This analysis includes specific consideration of the total estimated nitrogen (mass) input based on land use and the potential for denitrification as water infiltrating from the surface travels through surficial materials. A limitation of the analysis is that it fails to estimate the fate and transport of nitrate-nitrogen and uses total nitrogen (TN) as a surrogate. Improvement to the risk map is possible with the investment of additional resources to reflect the fate and transport of nitrate-nitrogen. This analysis also does not compute a magnitude of nitrogen reaching groundwater, but instead assigns a relative risk factor (high, moderate, low). This was chosen due to the uncertainty in the fate and transport of TN.

The method used to develop the risk map and assess the susceptibility of groundwater to nitrogen is based upon three factors; 1) the potential groundwater recharge magnitude; 2) the estimated annual TN input (a mass balance term) based on a 4-year crop rotation (2017-2020) or, in the absence of a defined rotation, the land cover type and; 3) the soil denitrification potential as nitrogen (assumed to be in part nitrate-nitrogen) carried by water moves through the soil horizon. **Table 1** shows the sources of the geo-spatial information used in developing the risk map.

Generating the risk map requires a two-step process. The first step is applying **Equation 1** to the geo-spatial data layers:



$$\text{EQ 1} \quad \frac{(\text{Estimated Total N Input} * \text{Potential Annual Groundwater Recharge Rate})}{[\% \text{ Potential Denitrification} * (\text{Estimated Total N Input} * \text{Potential Annual Groundwater Recharge Rate})]}$$

The estimated TN Input (4-year mean; pounds-N/year) is based on the cropland nitrogen balance data of Mulla et al. (2013) and represents the TN input mass applied to a 4-year crop rotation. **Table 2** shows typical TN values for single crop types (see **Table 2**). For crops not listed in **Table 2**, a comparable crop value was used (e.g. the spring wheat value was used for rye crops). For barren and idle land, a value of 116.5 lb-N/acre/year was used. A value of 124.9 lb-N/acre/year was used for other land use types. The potential annual groundwater recharge rate (inches/year) is based on a 1-km scale water balance model completed by the United States Geological Survey (Smith and Westenbroek, 2015).

The first term of the equation, although dimensionally meaningless, is intended to represent the potential mass of nitrogen reaching groundwater carried by water.

**Table 1. Data type, source and spatial resolution of the data used to develop the Nitrogen Infiltration Risk Map. Any necessary data pre-processing for use in this analysis is also shown.**

Data Type	Data Source	Spatial Resolution	Additional Information and Data Pre-processing Needs
Groundwater Recharge	US Geological Survey (USGS)	1 kilometer	<ul style="list-style-type: none"> <li>Data represents mean annual potential recharge rates (inches/year) for years 1996-2010</li> <li>For 'No data' cells along the project boundary (data gaps which existed in the original Minnesota Department of Natural Resources (MNDNR) dataset), recharge rates in these cells were estimated based on the mean of adjacent cells</li> <li>For 'No data' cells not along the project boundary – no analysis occurred as these were flagged as 'No data' in the original dataset</li> </ul>
Land Use and Agricultural Crop Rotations	USDA National Agricultural Statistics Service (NASS)	30 meter	<ul style="list-style-type: none"> <li>Crop rotations available for years 2008-2020</li> </ul>
Soil Hydrologic Group	USDA Natural Resource Conservation Service (NRCS) Gridded Soil Survey Geographic Database (gSSURGO)	10 meter	<ul style="list-style-type: none"> <li>Cells without data typically overlay water and were not analyzed</li> </ul>



Table 2. Estimated Total Nitrogen Inputs (lb – N/acre/year) (derived from Mulla et al., 2013).

Crop Type	Planted Seeds (Elemental N)	Atmospheric Deposition (inorganic N)	Symbiotic Nitrogen Fixation (elemental N)	Nonsymbiotic Fixation (elemental N)	Mineralization	Inorganic Fertilizer (non-manure)	Sum of Total Nitrogen Inputs (lb-N/acre/year)
Potatoes	23.40	8.40	50.00	2.00	64.50	195.00	343.30
Corn	0.30	8.40	50.00	2.00	64.50	140.00	265.20
Spring Wheat	3.46	8.40	50.00	2.00	64.50	107.00	235.36
Sugar Beets		8.40	50.00	2.00	64.50	83.00	207.90
Barley	1.49	8.40	50.00	2.00	64.50	66.00	192.39
Oats	2.80	8.40	50.00	2.00	64.50	48.00	175.70
Alfalfa		8.40	50.40	2.00	64.50	10.00	135.30
Other Hay		8.40	50.00	2.00	64.50	10.00	134.90
Soybean	4.00	8.40	50.00	2.00	64.50	3.00	131.90
Barren/Idle		8.40	50.00	2.00	64.50		124.9
Grass / Legume		8.40	43.50	2.00	64.50		118.40
Other			50.00	2.00	64.50		116.50

The second term in the equation represents the potential for denitrification within the surficial materials as water travels vertically from the land surface to the surficial aquifer. The percent potential denitrification term is applied as a function of hydrologic soil group, which can be used as a surrogate for the depth to the surficial aquifer and the travel time. No land was assumed to be tiled. Thus, dual soil classes A/D, B/D, and C/D, were treated as if they were undrained (and therefore D type soils). The percent of inorganic nitrogen denitrified by hydrologic soil group is shown in Table 3.

Table 3. Percent potential denitrification (used in Equation 1) as a function of hydrologic soil group.

Hydrologic Soil Group(s)	Mulla et al. (2013) Soil Characterization	% of Inorganic N Denitrified (non-tile)
A	Excessive to well drained (sandy, loam, muck)	3
B	Somewhat poorly drained (loam)	20
C	Poorly drained	30
D	Very poorly drained	30



The second step in the process is placing the values computed using **Equation 1**, into a relative risk category as shown in **Table 4**. The relative risk categories were created by dividing the data into equal interval bins using the values computed with Equation 1.

**Table 4. Assignment of Relative Risk Category based on Equation 1**

Relative Risk Category	Range for value estimated in Equation 1
High Risk	> 80% of maximum value
Moderately High Risk	60% to < 80%
Moderate Risk	40% to < 60%
Moderately Low Risk	20% to < 40%
Low Risk	< 20% of maximum value

Finally, the relative risk was analyzed in conjunction with potential annual groundwater recharge rate to find areas that are of high value for groundwater recharge. Areas that have high or moderately high recharge potential and moderately low or low nitrogen infiltration risk were considered high value recharge areas.

## PRODUCT RESULTS AND USE

**Figures 1, 2 and 3** show the specific input values (binned similarly to relative risk category) used in **Equation 1** for the plan area. **Figure 4** shows the Nitrogen Infiltration Risk Map, indicating areas across the landscape that are more susceptible to high nitrogen infiltration. **Figure 5** shows the Groundwater Recharge Value Map which highlights areas on the landscape that have moderately high to high groundwater recharge potential, but low to moderately low nitrogen infiltration risk. Data shown in **Figures 4 and 5** can be used to help guide the placement of specific structural conservation practices (e.g. storage or infiltration practices) or landscape management practices. For example, infiltration practices can be targeted to those areas with low nitrogen infiltration risk and high groundwater recharge potential to encourage clean groundwater recharge. Infiltration practices can also be eliminated/removed in areas with high nitrogen infiltration risk to prevent groundwater contamination.

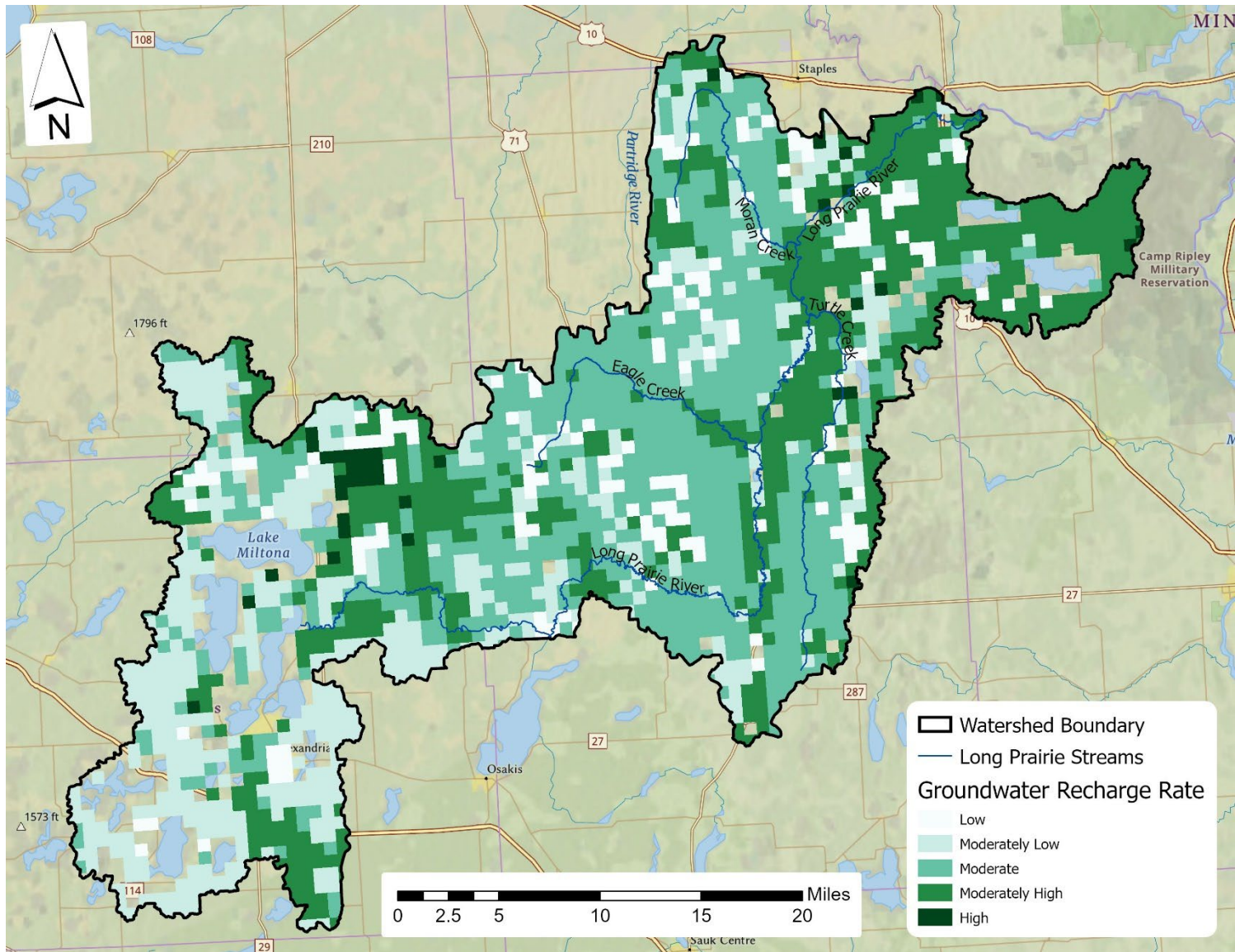


Figure 1. Potential groundwater recharge rate within the Long Prairie River Watershed



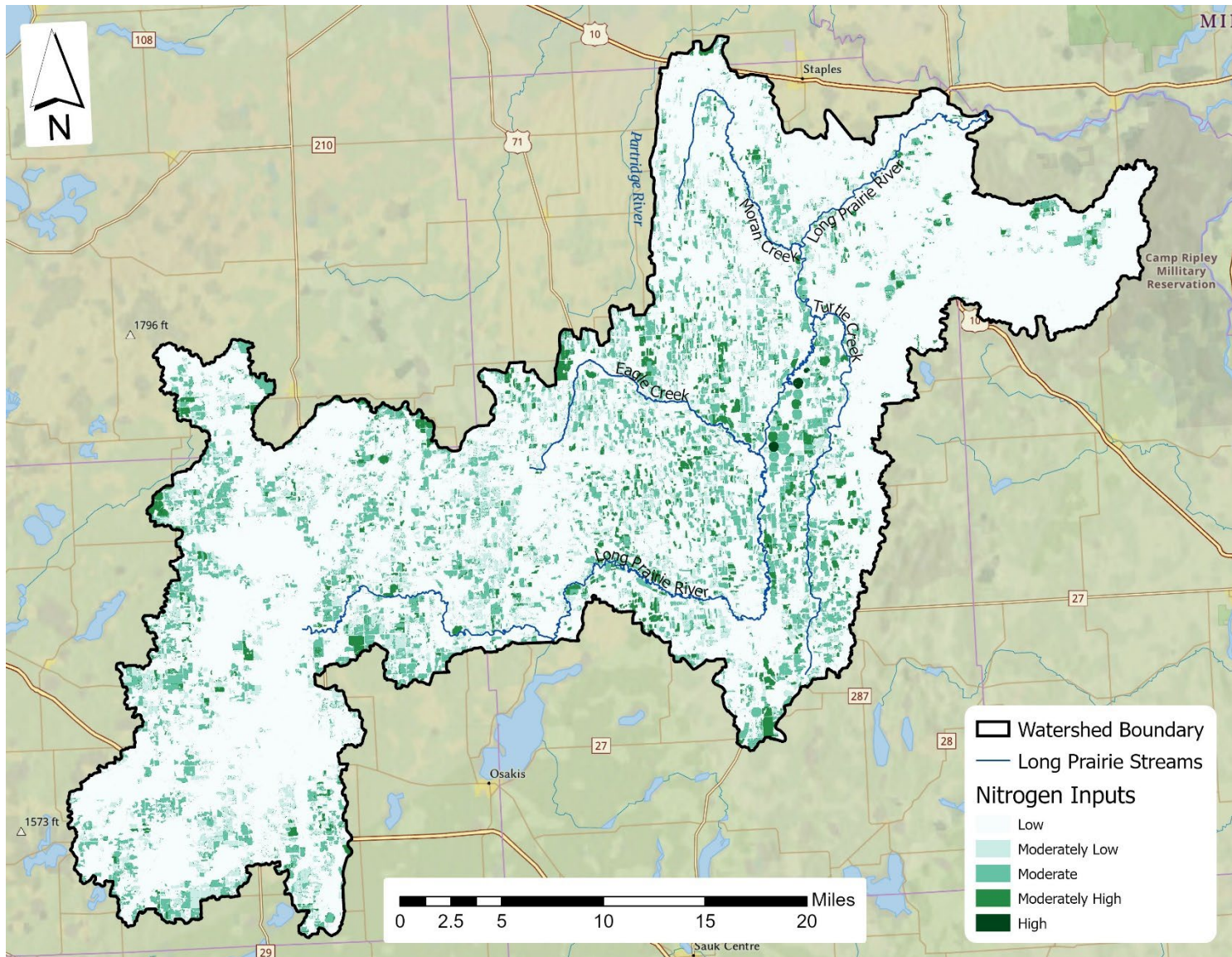


Figure 2. Mean Total Nitrogen Input (lbs-N/acre/year) based on a 4-year crop rotation (2017-2020) within the Long Prairie River Watershed



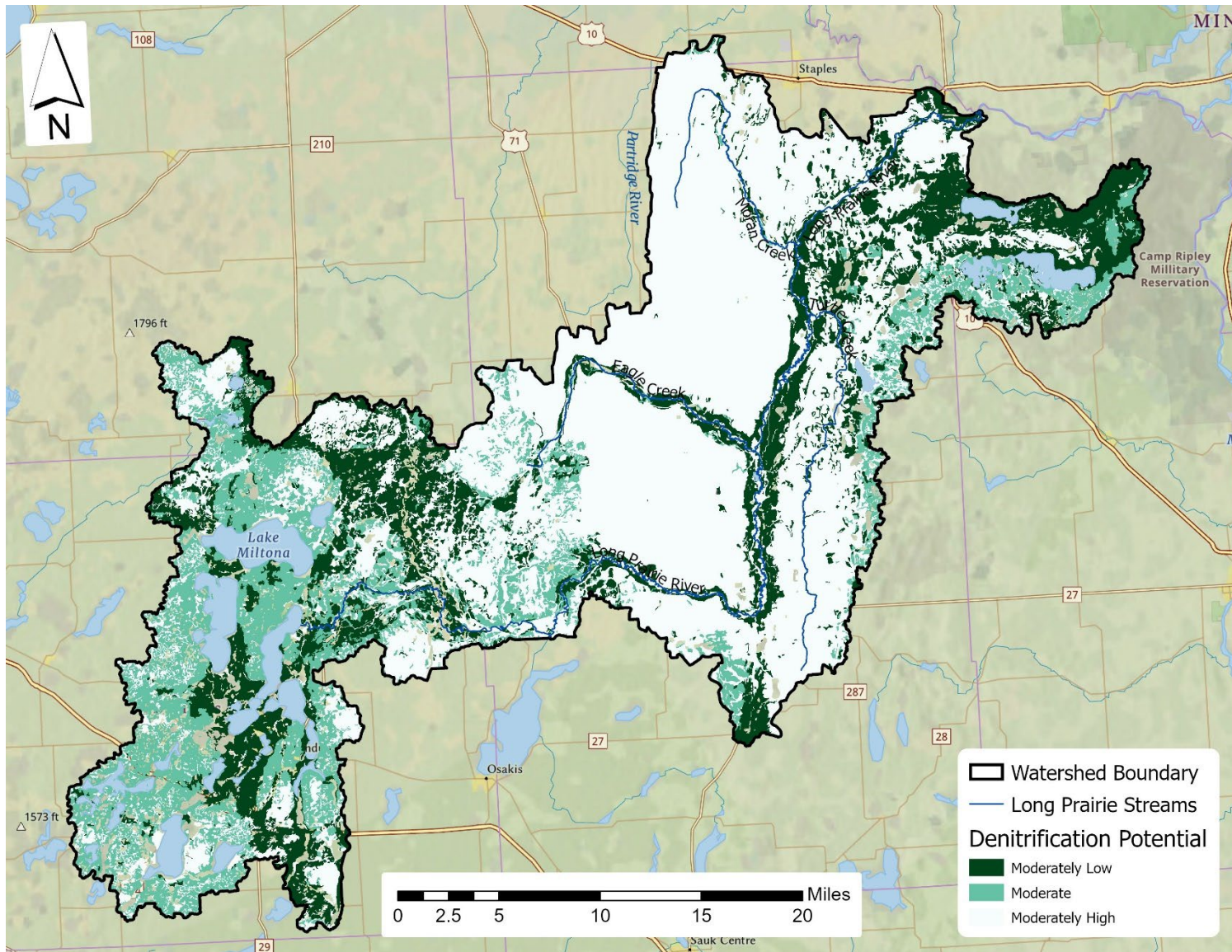


Figure 3. Soil denitrification potential within the Long Prairie River Watershed



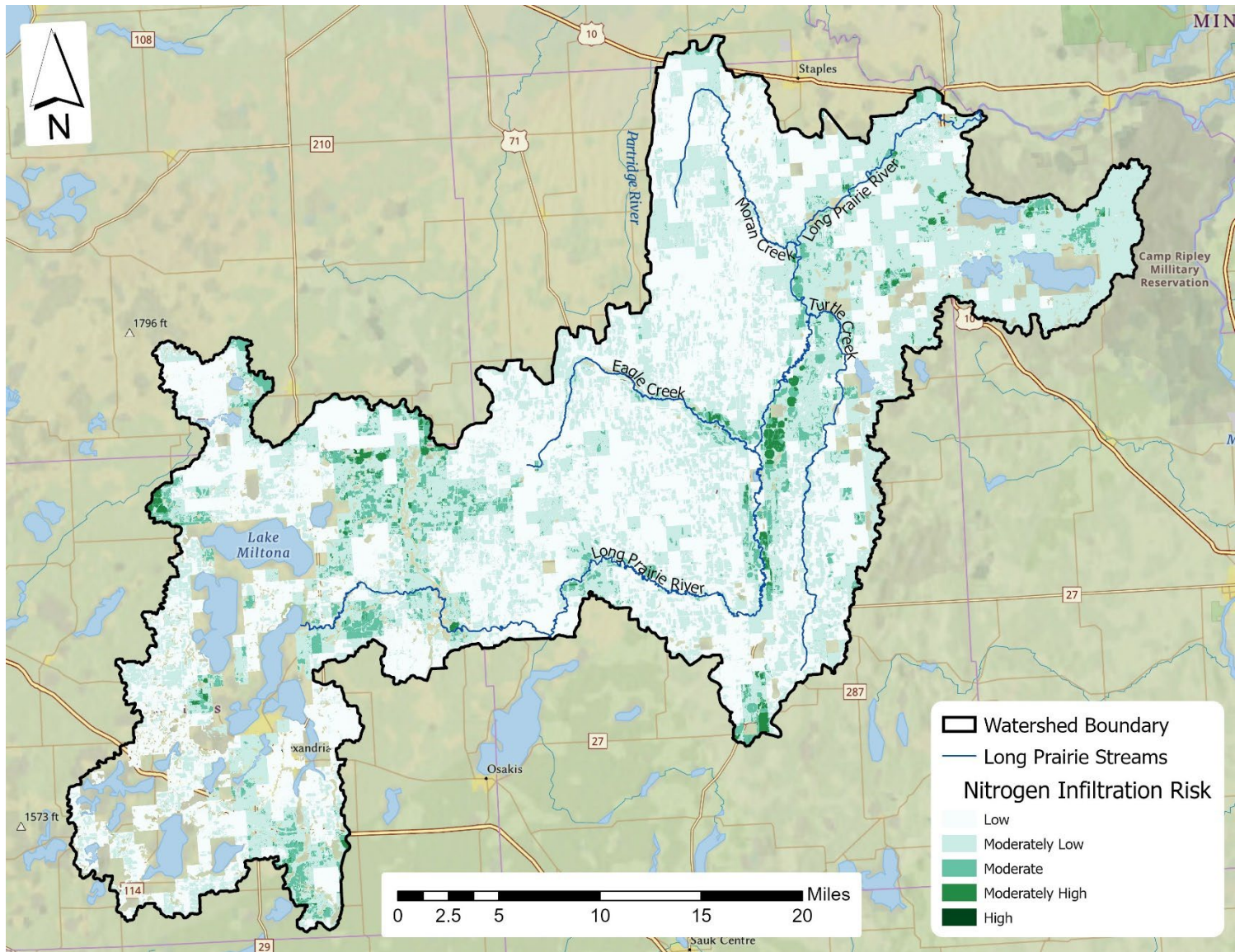


Figure 4. Total Nitrogen Infiltration Risk within the Long Prairie River Watershed



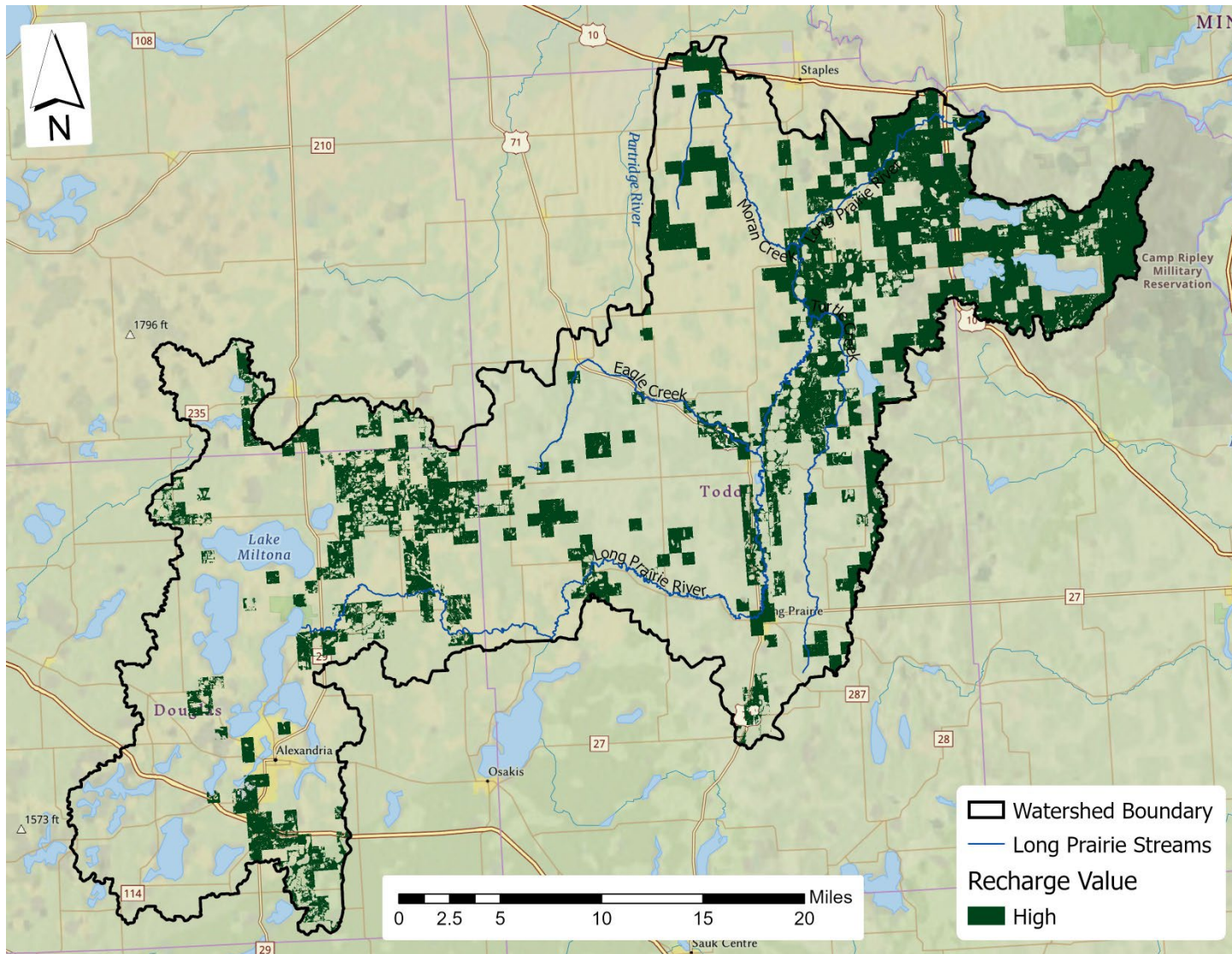


Figure 5. Areas of high recharge value (moderately high to high infiltration rate, low to moderately low nitrogen infiltration risk) within the Long Prairie River Watershed



## REFERENCES

Mulla, D. J., Galzki, J., Fabrizzi, K., Kim, K. I., & Wall, D. (2013). D4. Nonpoint Source Nitrogen Loading, Sources, and Pathways for Minnesota Surface Waters.

Smith, E.A., and Westenbroek, S.M., 2015, Potential groundwater recharge for the State of Minnesota using the Soil-Water-Balance model, 1996–2010: U.S. Geological Survey Scientific Investigations Report 2015–5038, 85 p., <http://dx.doi.org/10.3133/sir20155038>.

USDA National Agricultural Statistics Service Cropland Data Layer. (2021). Published crop-specific data layer [Online]. Available at: <https://nassgeodata.gmu.edu/CropScape/> (accessed July 29, 2021). USDA-NASS, Washington, DC.









## Appendix D. Goal Calculations

### Introduction

This section outlines the data used for goal calculations and targeting and is meant to supplement Section 5. Measurable Goals. Table 1 summarizes the data and models used to calculate goal numbers and the data used to target practices on the landscape. Then each goal is address in detail over the next few pages.

Table 1. Summary of goal development and targeting data.

Goal	Goal Data/Model Used	Targeting Data
 <b>Agricultural Land Management</b>	HSPF SAM	Nitrogen Infiltration Risk: where there is the most risk of nitrogen infiltrating to the groundwater.
 <b>Forest Management</b>	Landscape Stewardship Plan	Risk Adjacency Quality (RAQ) maps: where privately-owned forests have the best impact on water and habitat quality.
 <b>Phosphorus Reduction</b>	HSPF SAM*	Phosphorus runoff analysis: where the most phosphorus is running off the landscape into lakes.
 <b>Drinking Water Protection</b>	MDH Data	Well sealing - Watershed-wide Nitrogen Infiltration Risk in Drinking Water Supply Management Areas
 <b>Bacteria Reduction</b>	Monitoring Data	Within 300 feet of streams: where there is the most risk of bacteria entering the stream.
 <b>Runoff Reduction</b>	Gage data at the City of Long Prairie	Restorable wetlands analysis: where there is suitable soil for wetland restoration.

HSPF SAM is a watershed model managed by the MPCA: Hydrologic Simulation Program FORTRAN (HSPF) Scenario Application Manager (SAM).

## Agricultural Land Management Goal

A scenario was run in HSPF SAM to determine reductions for the Agricultural Land Management Goal (Section 5). The acre numbers for goals were based on the land with the highest risk of nitrogen infiltration to the groundwater. The scenario was based on implementing 45% nutrient management, 45% cover crops, and 10% structural agricultural practices on those acres. This is just one plausible scenario based on Steering Committee and Advisory Committee discussions. Actual implementation of these practices will likely vary (Table 2). Progress in implementation will be tracked by acres of cover crops, nutrient management, irrigation water management, and acres treated by structural agricultural practices such as water and sediment control basins. If more than one practice is implemented on the same acres, more benefits could be reported, but the acres treated doesn't change.

Table 2. Reductions per reach for the HSPF scenario see Figure 1 for the locations of each HSPF reach.

HUC12 (last 3)	HSPF ID	Goal Acres	Sediment (tons/year)			Nitrogen (tons/year)			Phosphorus (tons/year)			DWSMA
			Base	Reduction	%	Base	Reduction	%	Base	Reduction	%	
101	<b>R:307</b>	1,145	1,615.4	<b>52.8</b>	3.3%	74,403	<b>919</b>	1.2%	4,371	<b>66.9</b>	1.5%	
107	<b>R:315</b>	1,102	1,299.0	<b>43.7</b>	3.4%	63,821	<b>856</b>	1.3%	3,614	<b>59.1</b>	1.6%	
201	<b>R:322</b>	1,206	542.5	<b>7.7</b>	1.4%	70,823	<b>806</b>	1.1%	5,972	<b>35.8</b>	0.6%	
202	<b>R:323</b>	2,352	678.2	<b>15.5</b>	2.3%	77,331	<b>1570</b>	2.0%	3,709	<b>70.0</b>	1.9%	
206	<b>R:328</b>	673	1,695.9	<b>56.0</b>	3.3%	58,110	<b>836</b>	1.4%	3,601	<b>63.6</b>	1.8%	Long Prairie
207	<b>R:329</b>	1,014	2,340.8	<b>68.5</b>	2.9%	592,310	<b>1,178</b>	0.2%	139,934	<b>87.4</b>	0.1%	
303	<b>R:332</b>	367	4,837.9	<b>29.2</b>	0.6%	171,027	<b>461</b>	0.3%	13,786	<b>35.3</b>	0.3%	Clarissa
701	<b>R:333</b>	1,494	1,948.3	<b>88.0</b>	4.5%	82,223	<b>1,687</b>	2.1%	5,120	<b>118.6</b>	2.3%	
401	<b>R:334</b>	72	2,078.5	<b>8.5</b>	0.4%	60,987	<b>103</b>	0.2%	4,031	<b>7.9</b>	0.2%	
402	<b>R:335</b>	290	1,847.8	<b>23.8</b>	1.3%	62,520	<b>372</b>	0.6%	4,169	<b>27.3</b>	0.7%	
702	<b>R:340</b>	664	463.1	<b>5.2</b>	1.1%	22,315	<b>199</b>	0.9%	1,296	<b>12.0</b>	0.9%	
702	<b>R:341</b>	664	1,116.0	<b>12.8</b>	1.1%	51,760	<b>440</b>	0.9%	3,066	<b>24.5</b>	0.8%	
602	<b>R:342</b>	714	370.9	<b>6.8</b>	1.8%	28,629	<b>570</b>	2.0%	1,265	<b>27.3</b>	2.2%	
Totals		11,090	<b>20,834</b>	<b>418</b>	2.0%	<b>1,416,258</b>	<b>9,998</b>	0.7%	<b>193,936</b>	<b>636</b>	0.3%	



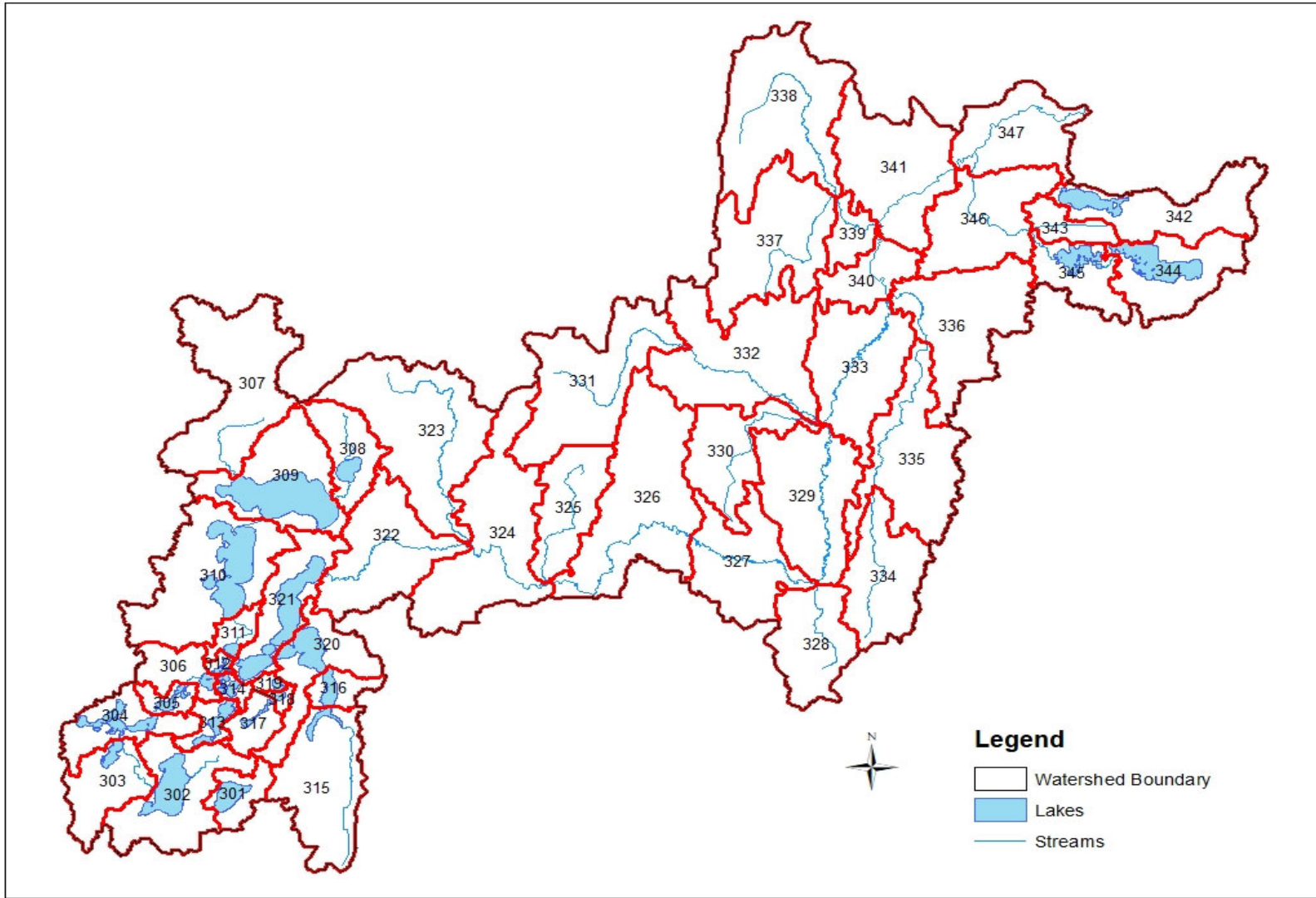


Figure 1. HSPF reaches corresponding to Table 2.

## Targeting

Agricultural best management practices will be targeted to the parcel level in the areas with moderately high and high nitrogen infiltration risk (Figure 2)

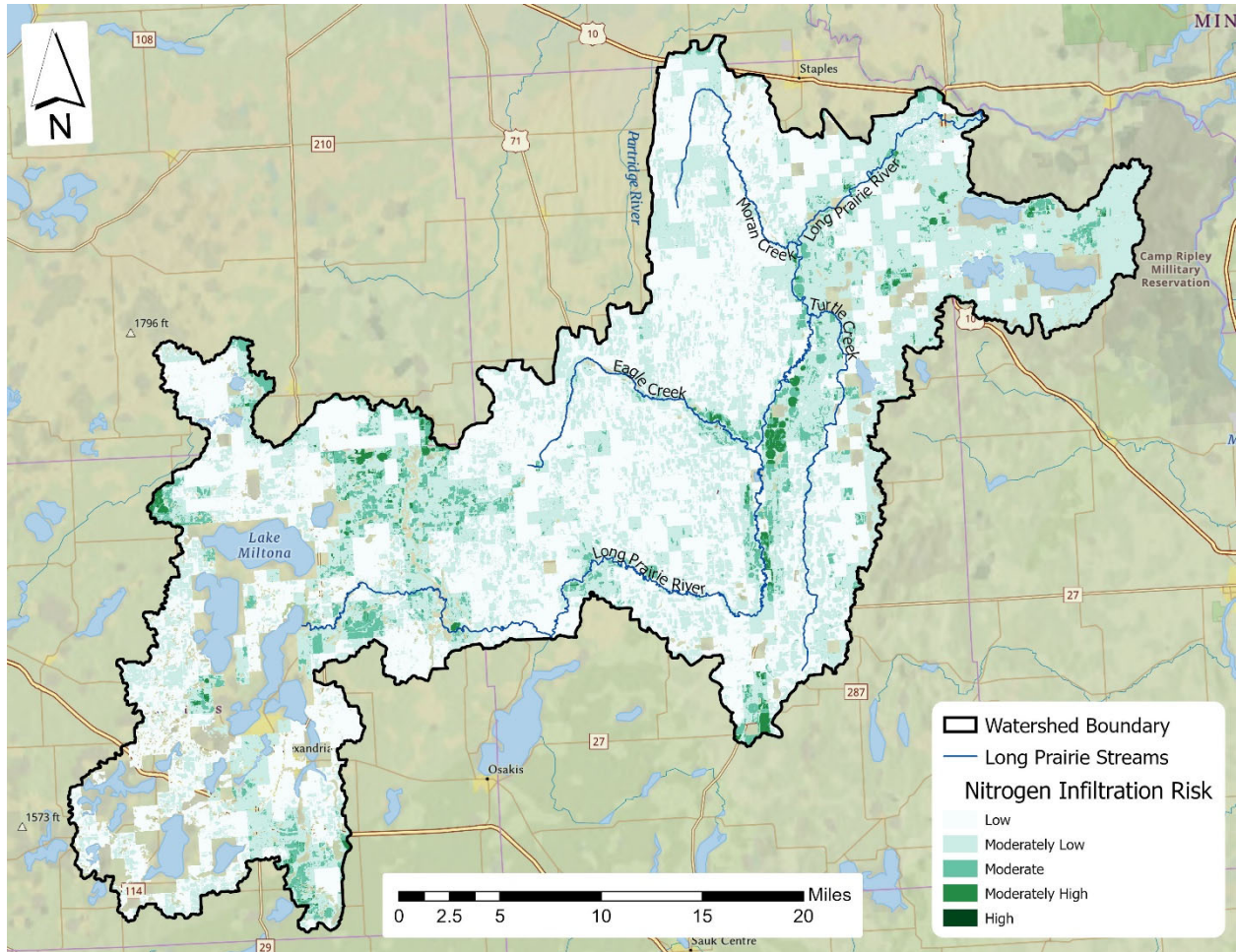


Figure 2. Nitrogen infiltration risk analysis, HEI, Appendix C.

As Agricultural Land Management Practices are implemented, benefits can be tracked with this BMP Benefits Calculator.

Benefits Calculator			
BMP	Sediment tons/acre/yr	Nitrogen lbs/acre/year	Phosphorus lbs/acre/year
Nutrient Management	0	0.62	0.15
Cover Crop	0.012	2.01	0.12
WASCOB	0.017	2.28	0.4

\*from MPCA HSPF data viewer

## Bacteria Goal

The bacteria data in the Long Prairie Watershed are from the last MPCA Assessment in 2011-2012. Based on those data, the Bacteria Goal priority stream reaches in the watershed are nearly or barely impaired (Table 3). Working on these reaches during implementation meets the Non-Point Pollution funding plan priorities by focusing on nearly/barely impaired stream reaches (Figure 3). In addition, these are the areas with the most active feedlots (Figure 4).

Table 3. *E.coli* exceedences per monitoring site (data from 2011-2012).

		Acute Standard: 1,250 <i>E.coli</i> units Exceedences	Chronic Standard: 126 Exceedences	Geometric Mean (126 Standard)
<b>EAGLE CREEK</b>	<b>S000-723</b>	2	7	214
<b>UNNAMED CREEK</b>	<b>S001-780</b>	4	16	534
<b>LONG PRAIRIE RIVER</b>	<b>S002-900</b>	0	4	93
<b>TURTLE CREEK</b>	<b>S002-901</b>	0	5	59
<b>MORAN CREEK</b>	<b>S002-903</b>	1	12	191
<b>LONG PRAIRIE RIVER</b>	<b>S002-905</b>	0	3	66
<b>LONG PRAIRIE RIVER</b>	<b>S002-910</b>	1	3	71

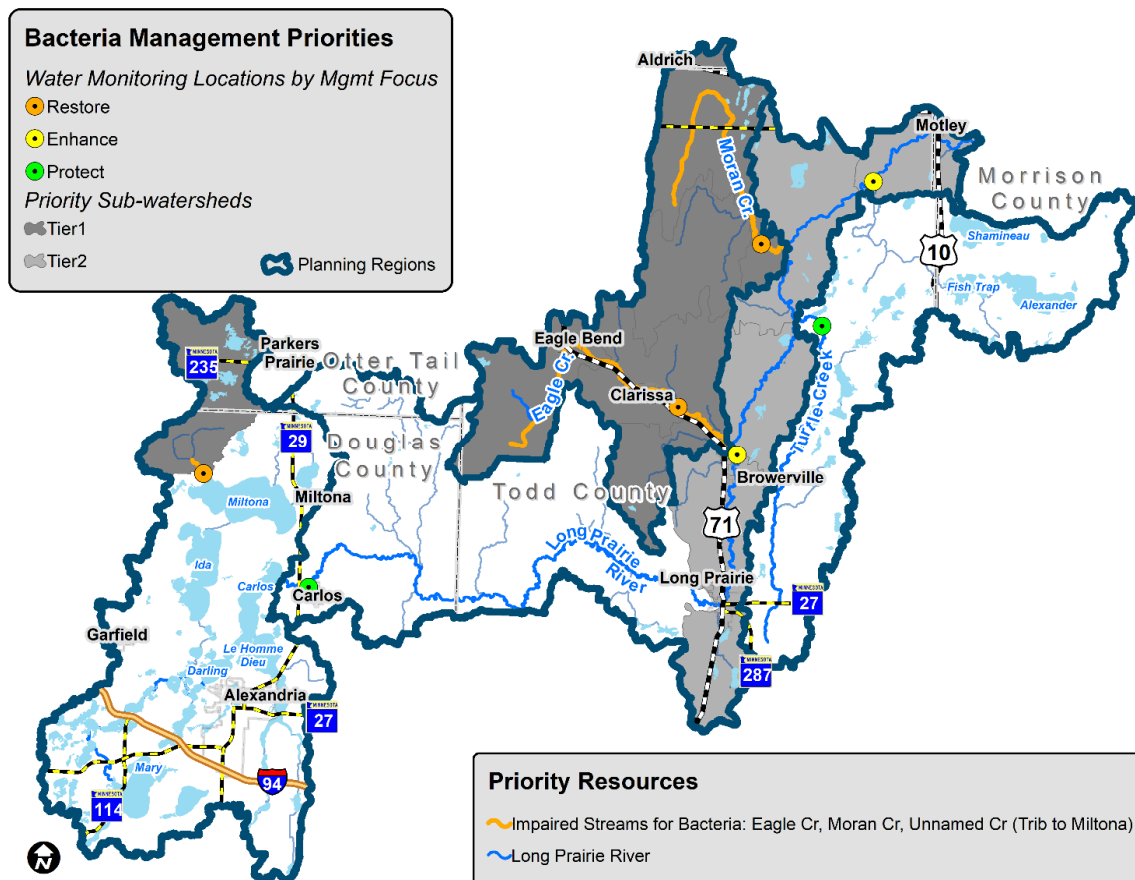


Figure 3. Bacteria Management priorities in the Long Prairie Watershed based on available data.

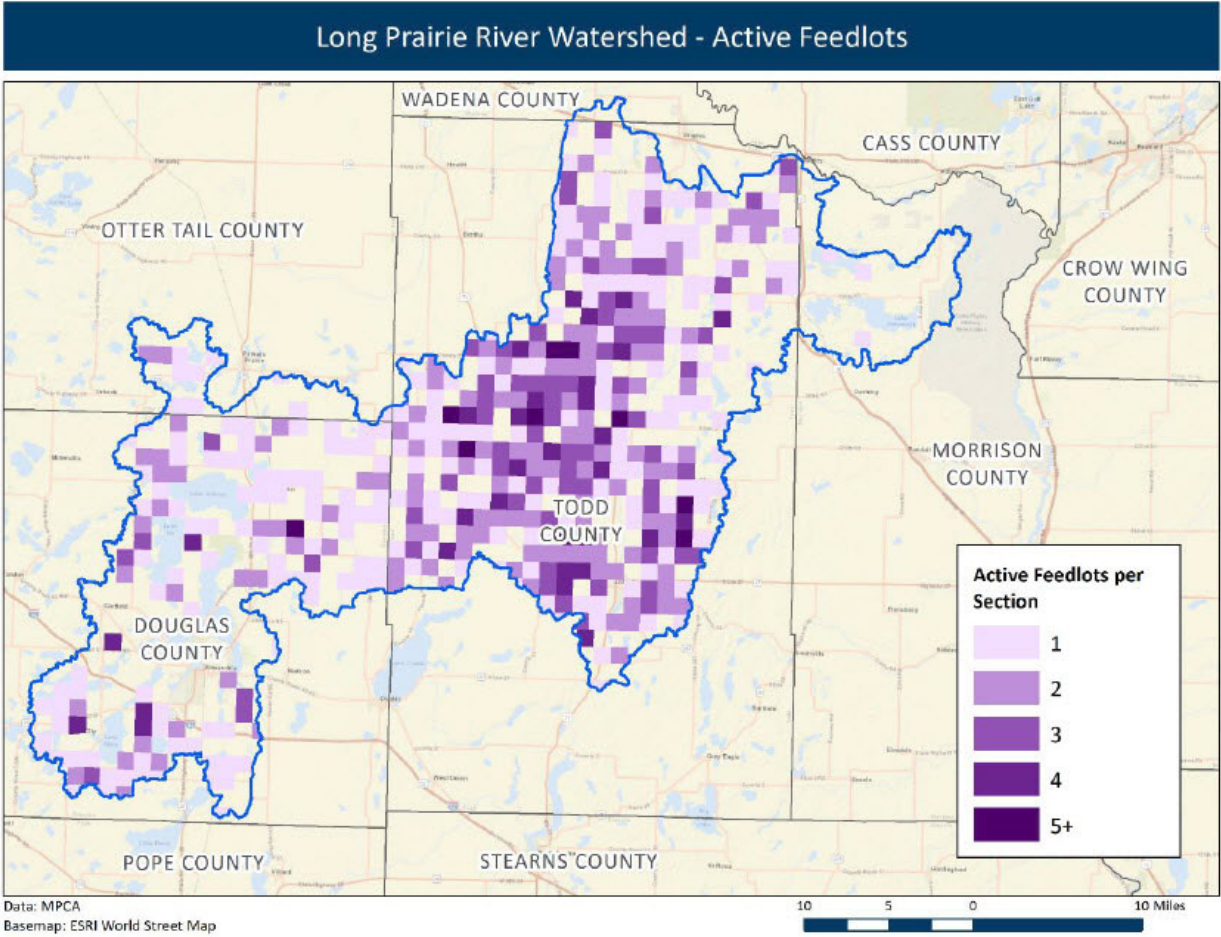


Figure 4. Active feedlots in the Long Prairie Watershed (there are a total of 911 active feedlots in the watershed). Map from the Groundwater Restoration and Protection Strategy report.

**Targeting**

Bacteria reduction projects will be targeted within 500 feet of priority streams. Monitoring planned for the summer of 2022 will track progress in bacteria reductions in priority streams.



## Storage Goal

To determine a storage goal for the watershed, first, the flow duration curve at the Long Prairie gage site was evaluated (Figure 5).

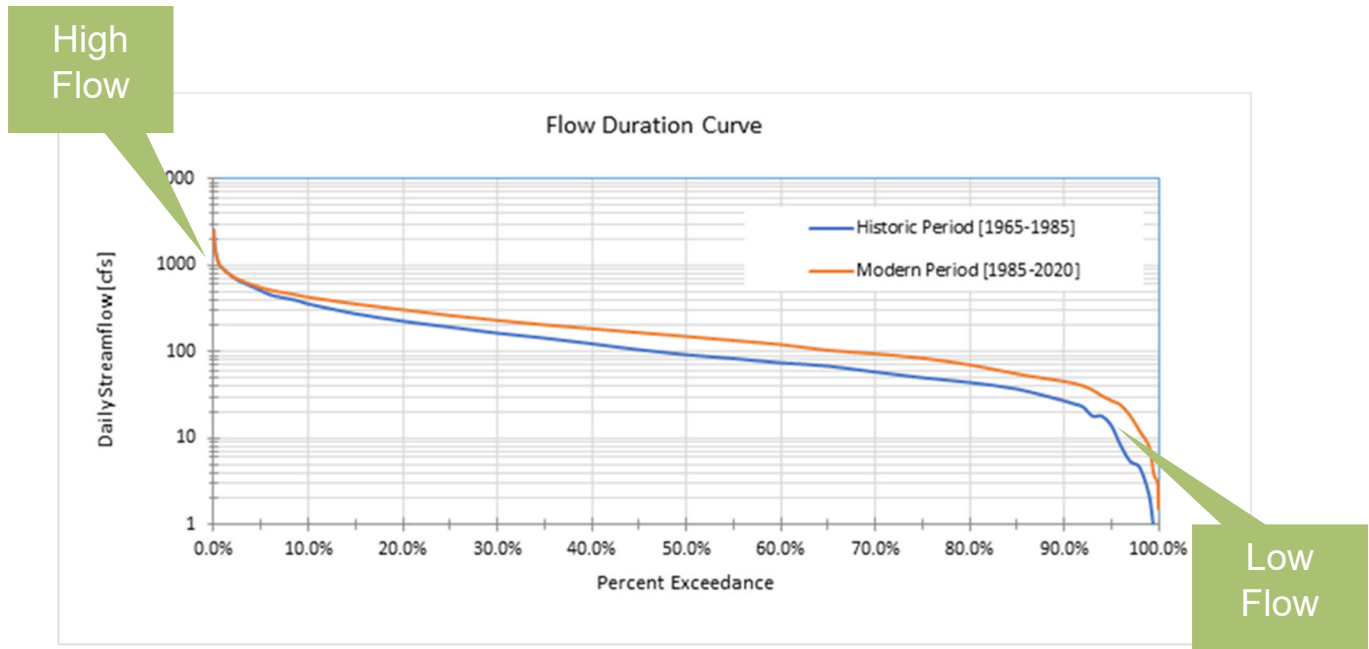


Figure 5. Flow duration curve based on USGS gage data. The gage is located at Long Prairie and the data were extrapolated this over the whole watershed. There are no other daily gages in the Long Prairie Watershed.

### Conclusions from Figure 5:

- Area between curves is the change in the total flow from historic to present (average flow \* time period). It is likely impossible to make this up from past losses and would impact low flows.
- Peak events aren't changing over time. There's lots of storage at the headwaters in lakes, lots of remaining wetlands, permeable/sandy soils along Long Prairie River.
- All the flows above the 1.5 year peak flow volume is negative, so this shows no change in erosive volumes.
- Getting more rainfall (increasing precip trend), but the wetlands and groundwater are muting it. Lots of infiltration is occurring.

Therefore, the Technical Advisory recommended focusing the storage goal on building resiliency for increasing precipitation trends, not trying to make up lost storage.

The DNR provided numbers from their hydrology study that indicate the change point was 1985 (Table 4).

Table 4. Long Prairie Watershed hydrology data (DNR).

Long Prairie Watershed Ann. Avg. (1972-2019)			
	Discharge (in.)	Precip (in.)	Runoff Ratio
Pre 1985	4.5	26.4	16.8
Post 1985	6.2	27.8	22.1
Δ	1.7	1.4	5.3

The precipitation trend in the watershed is an increase of 0.4 inches/decade (DNR)

- Multiply by the watershed area
- Multiply by the runoff ratio above (0.221)

= 4,212 acre-feet storage looking forward

### Targeting

Currently, an analysis for the Bank Service Area 5 Compensation Planning Framework is being completed by ISG for BWSR to identify areas for wetland restoration for banking. The results of this analysis in the Long Prairie River Watershed can be used for targeting wetland restorations to reach the storage goal (Figure 6).

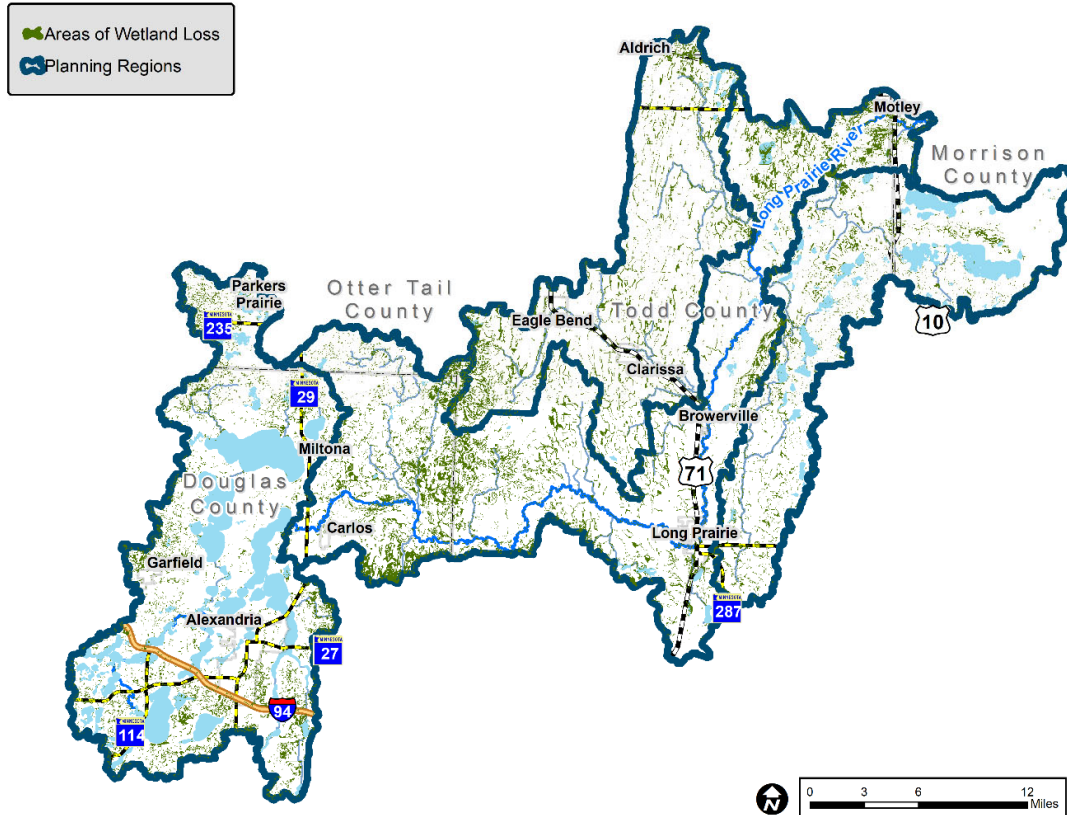


Figure 6. Wetland loss analysis for the Compensation Planning Framework (ISG).

The Compensation Planning Framework (CPF) is a report which analyzes baseline conditions and develops prioritization methodology for the implementation of the In-Lieu Fee (ILF) Program. As required by both the Federal Mitigation Rule and the Minnesota Wetland Conservation Act (WCA), the CPF must designate areas of high priority for wetland replacement. These are areas of the state where preservation, enhancement, restoration, or creation of wetlands have high public value (Rodacker & Smith, 2018). The CPF informs wetland mitigation opportunities on the major watershed scale by using local and regional planning efforts and reports which are readily available to the public. Initially, the ILF and CPF will be focused on credit generation and wetland restoration or preservation opportunities for the Local Government Road Wetland Replacement Program (LGRWRP) which is administered by the Minnesota Board of Water and Soil Resources (BWSR).



## Forest Management Goal

The Forest Management Goal is based on the Long Prairie River Watershed Landscape Stewardship Plan (LSP). Through a series of meetings, the LSP planning group determined priority areas to work on forest management and protection, and also set acre-goals for each minor watershed (Figure 7) (Appendix E).

In the 1W1P process, the LSP goals were narrowed down further to focus on priority lakes and priority groundwater recharge areas (Figure 8). The 10-year 1W1P goal is to reach 50% progress towards the LSP goal for just the priority subwatersheds in Figure 8 (Table 7).

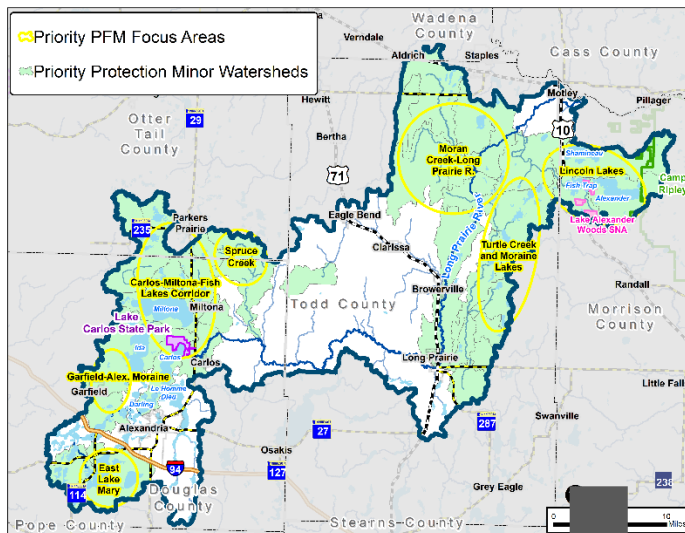


Figure 7. Priority minor watersheds in the LSP.

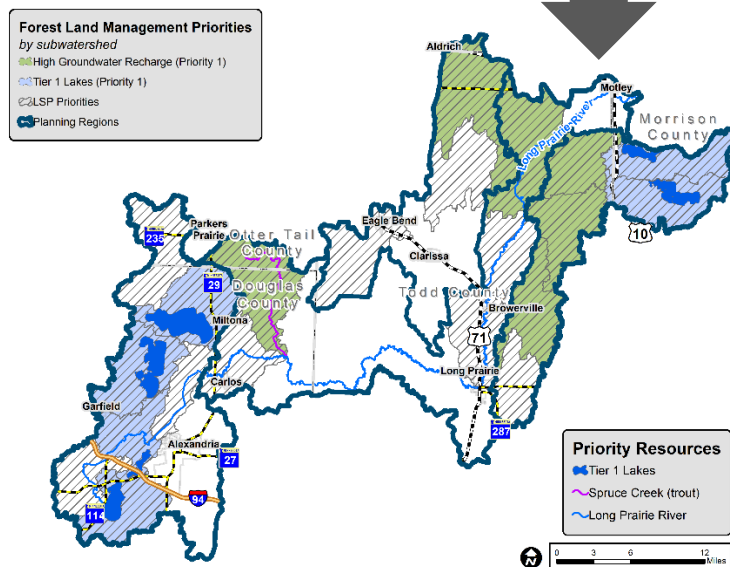


Figure 8. Priority minor watersheds in the 1W1P.

Table 5. Goal calculation numbers per 1W1P priority minor watershed.

Planning Region Class	Fish Trap/Turtle Creeks					Eagle/Moran Creeks High GW Recharge	Long Prairie River High GW Recharge		Alexandria Lakes Tier 1 Lake			
	Tier 1 Lake		High GW Recharge									
Minor Watershed	70101080601	70101080602	70101080603	70101080403	70101080402	70101080502	70101080702	70101080202	70101080102	70101080103	70101080106	70101080104
Total Acreage	19,746	17,351	15,067	18,390	18,656	27,766	25,497	24,709	23,148	21,236	13,992	18,308
Protected Land	14,028	9,381	4,999	8,109	6,076	9,242	7,395	9,216	10,841	7,696	5,025	6,723
Forest Stewardship Plans	2,699	984	1,070	3,853	1,071	3,776	1,667	455	488	103	0	47
<b>Protection Goal</b>	<b>430</b>	<b>2,765</b>	<b>1,782</b>	<b>2,006</b>	<b>1,972</b>	<b>3,691</b>	<b>4,202</b>	<b>963</b>	<b>1,437</b>	<b>798</b>	<b>565</b>	<b>601</b>
Remaining	2,589	4,221	7,216	4,423	9,537	11,056	12,233	14,075	10,382	12,638	8,402	10,938

Table 6. Goal totals per Planning Region.

	<b>Long-Term Goal:</b> Acres needed to reach LSP Goal for all LSP Minor Watersheds Figure 7	Total Acres needed to reach LSP Goal in 1W1P Priority Minor Watersheds Figure 8	<b>Short-Term Goal:</b> 50% progress in 1W1P Priority Minor Watersheds Figure 8
<b>Fish Trap/Turtle Creek</b>	10,782	8,954	4,477
<b>Long Prairie River</b>	8,981	5,164	2,582
<b>Eagle/Moran Creeks</b>	6,144	3,691	1,846
<b>Alexandria Lakes</b>	8,698	3,400	1,700



## Targeting

Practices for the Forest Goal will be targeted using the Risk Adjacency Quality (RAQ) scoring maps developed during the LSP. An example is shown below (Figure 9). This targeting is parcel-level within each minor watershed. Local governments have these GIS files to work from during implementation.

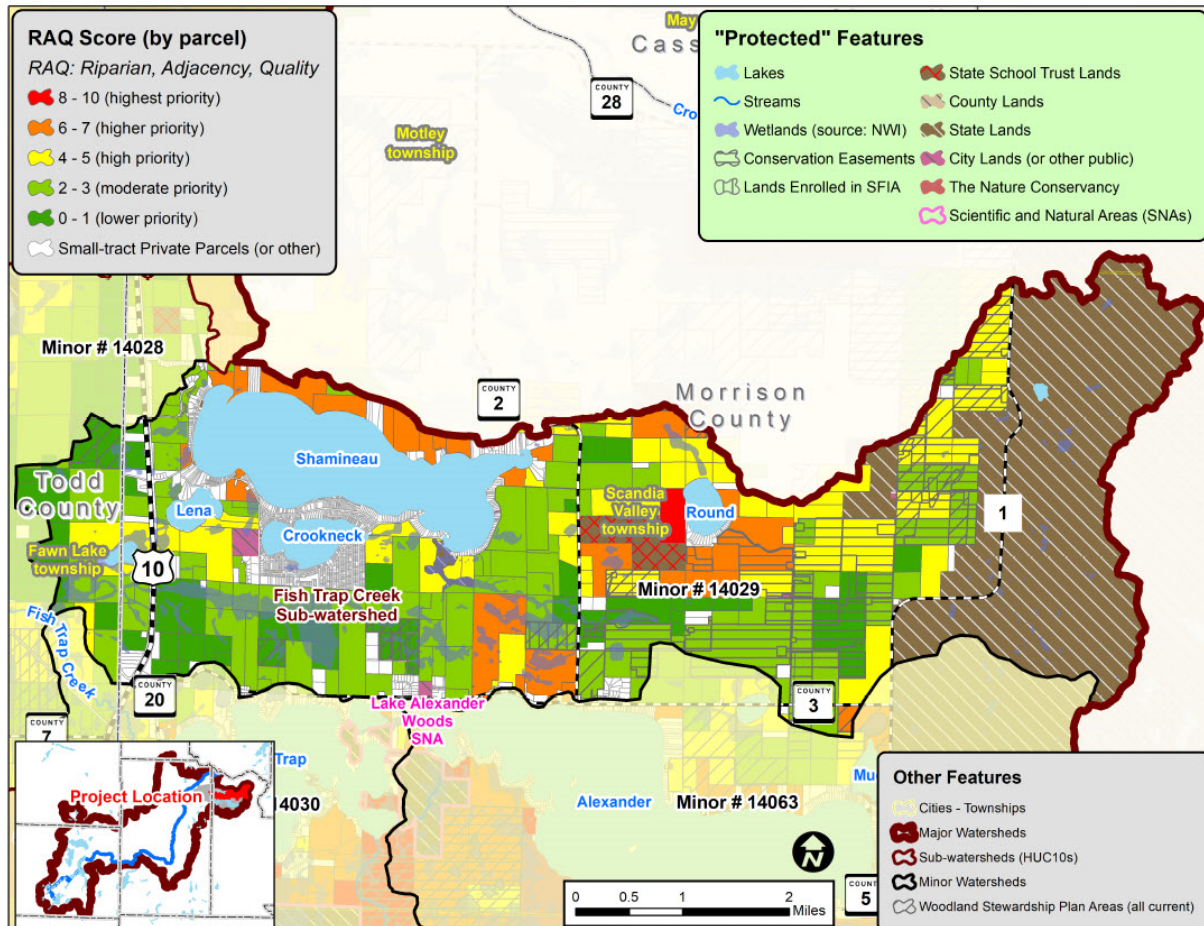


Figure 9. RAQ scoring map for the Lake Shamineau minor watershed.

## Lake Phosphorus Reduction Goal

The goals for each lake were determined by running an HSPF SAM modeling scenario to see the best possible phosphorus reduction to the lake if all the agricultural and urban lands around the lake had BMPs installed (Long-Term Load Goal Reduction, Table 5.1). Some lakes, such as Alexander and Fish Trap, already have very low phosphorus concentrations and a mostly forested watershed, therefore major reductions are likely not feasible. The management approach for these lakes is to protect the existing forest around the lake (Forest Management Goal). The lakes in the Alexandria Area have good potential for measurable phosphorus reductions.

### Targeting

In order to target agricultural and urban best management practices, a terrain analysis was conducted to determine where the most phosphorus was coming off the landscape. This analysis targeted practices to the catchment level (Figures 11 and 12).

In addition, concentrated flow path data can be used to target stormwater control. These GIS data sets were provided to the local governments for implementation. An example of the flow path data is shown in Figure 10.

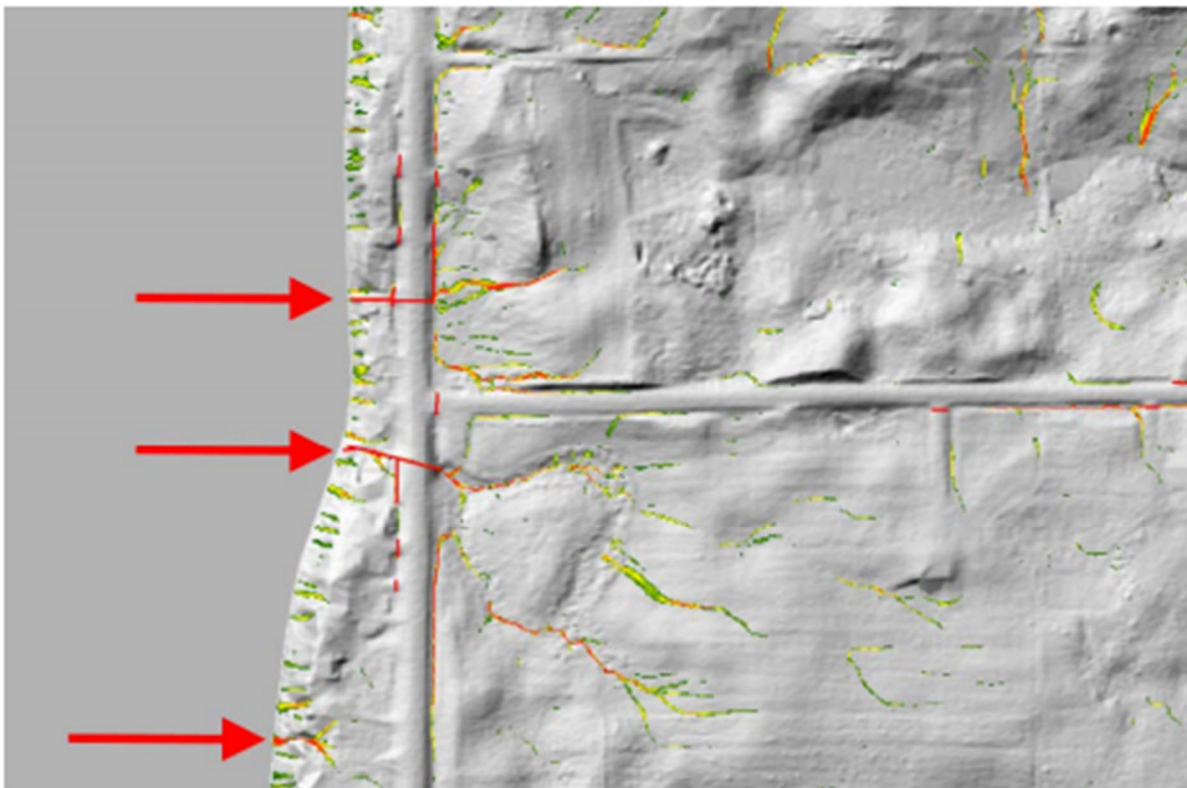


Figure 10. Example of terrain analysis mapping showing concentrated flow paths.



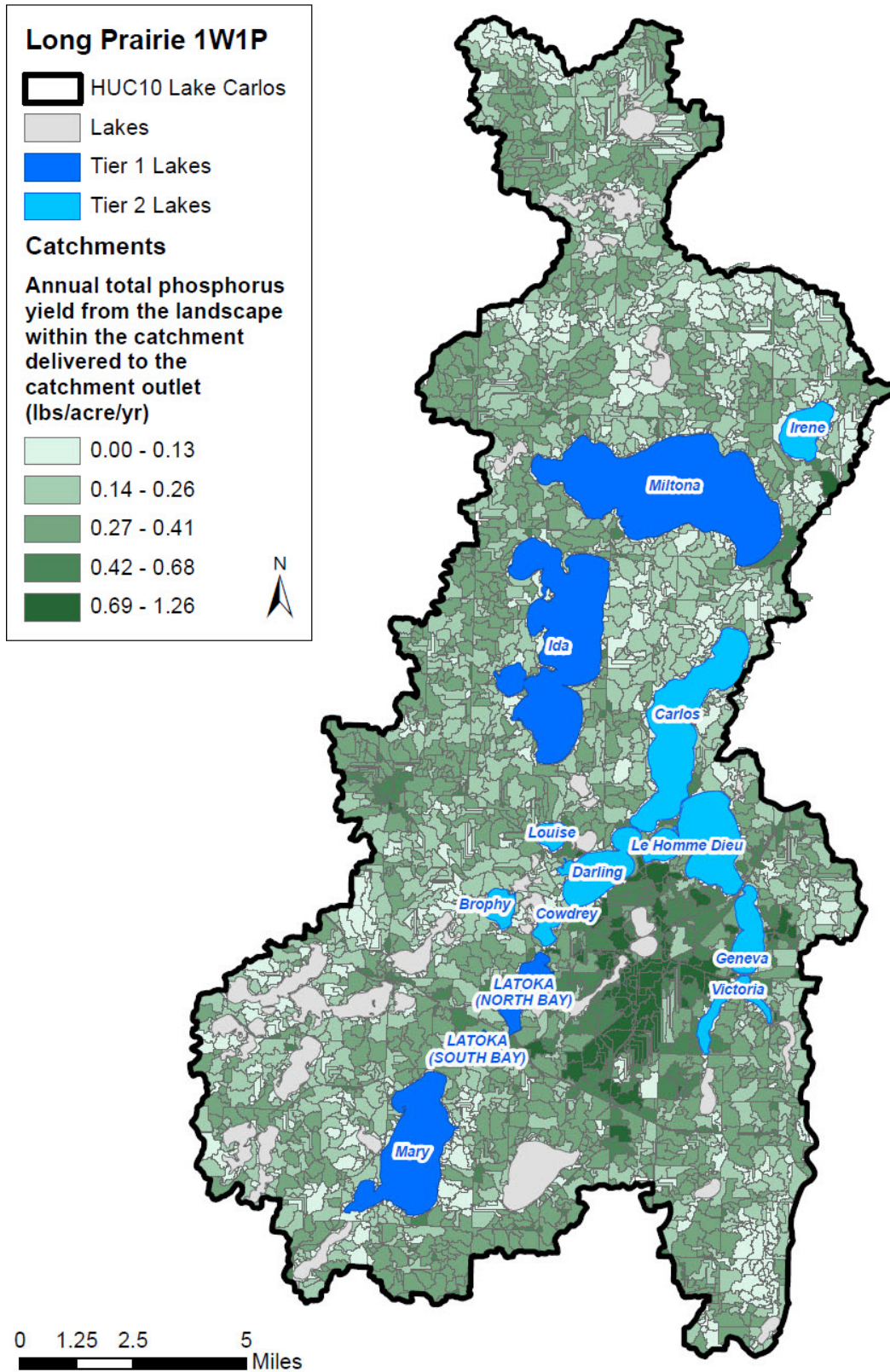


Figure 9.11. Phosphorus targeting in the Alexandria Planning Region.

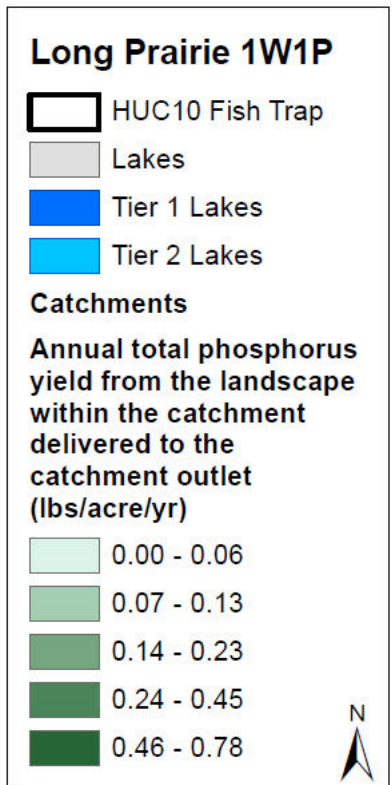
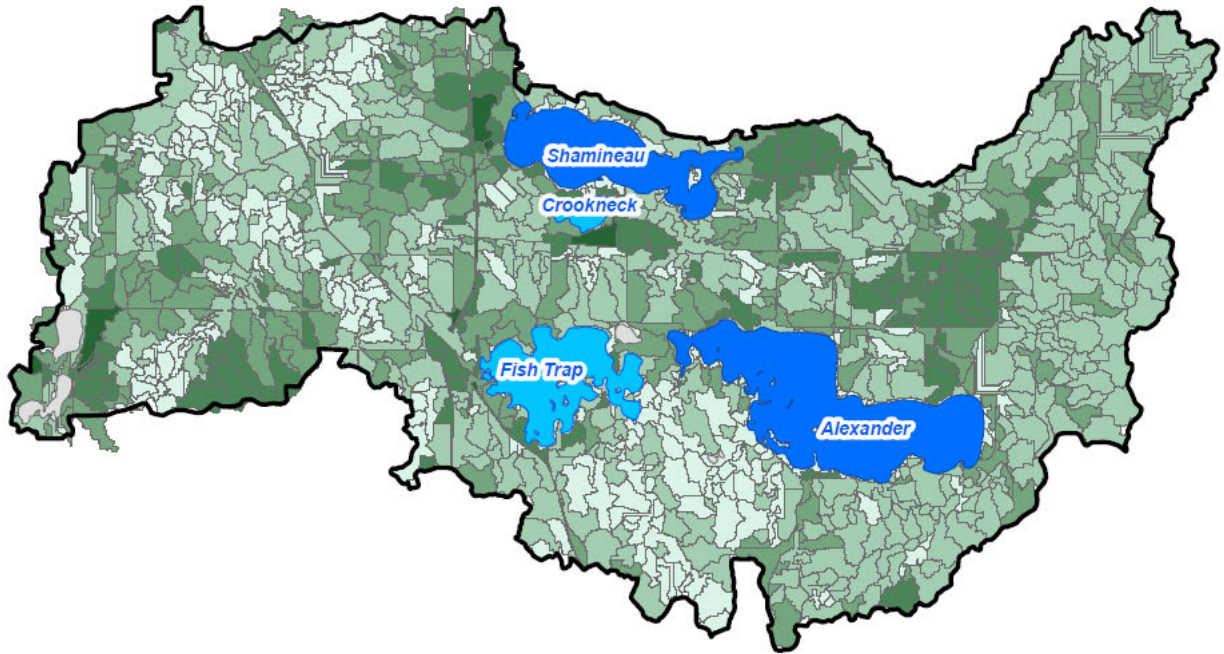


Figure 12. Phosphorus targeting by catchment for Morrison County lakes.

## Drinking Water Protection Goal

### Targeting

In the Drinking Water Protection Goal, sealing unused wells is a watershed-wide activity. Agricultural best management practices are targeted within and around the Clarissa DWSMA because it is vulnerable to nitrate infiltration (Figure 13). These nitrogen risk areas are also included in the Agricultural Land Management goal.

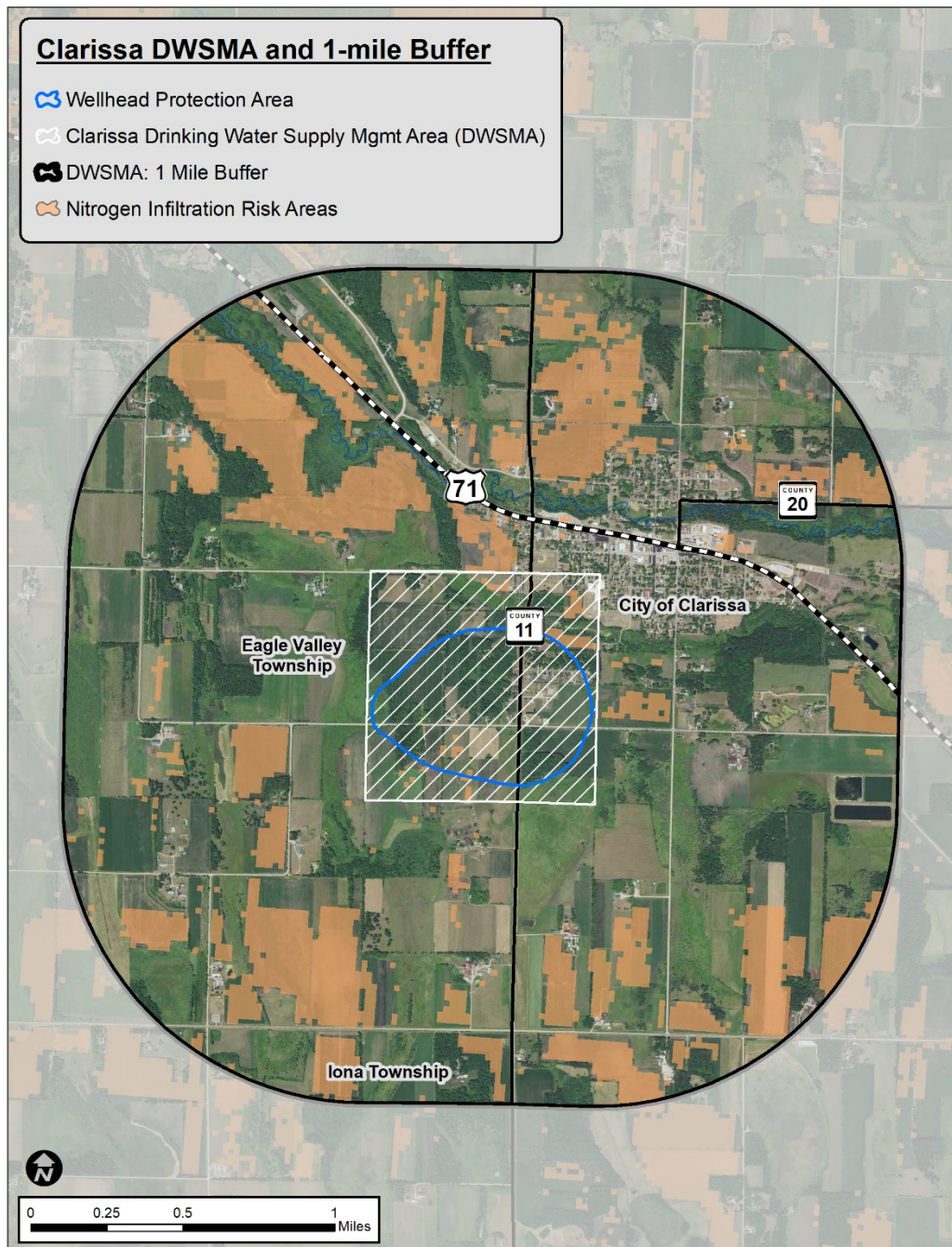


Figure 13. Nitrogen infiltration risk within the Clarissa DWSMA.

## Carbon Benefits

Carbon benefits were calculated as additional stacked benefits from implementing plan goals.

### Forests

Using the plan's Forest Management Goal, the carbon stored in the existing forests was quantified. Because this storage already exists, it was called "protected carbon storage" in the plan. Existing forests were estimated to be at least 40 years old on average.

#### Reference:

Russell, M., 2020. Forest Carbon Fact Sheet for Minnesota. Analysis for Forest Resources Association. [https://forestresources.org/pdf/Data\\_and\\_methods\\_for\\_forest\\_carbon\\_fact\\_sheets.pdf](https://forestresources.org/pdf/Data_and_methods_for_forest_carbon_fact_sheets.pdf) Accessed August 2021.

### Cover Crops

In the implementation scenario for the plan's Agricultural Lands Management goal, 45% of the total goal acres would be new cover crop implementation. This number of acres was used to quantify carbon sequestration as this would be new carbon capture.

#### Reference:

Using the Field to Market National Indicators Report, data modeling, and a literature review, estimates were created for Minnesota to determine the sequestration potential of on farm management techniques. These values enable estimation of per acre sequestration potential for BMP implementation.

Field to Market: The Alliance for Sustainable Agriculture, 2021. Environmental Outcomes from On-Farm Agricultural Production in the United States (Fourth Edition). ISBN: 978-0-578-33372-4

## Storage Benefits

Storage benefits were calculated as additional stacked benefits from implementing plan goals.

### Forests

Using the plan's Forest Management Goal, the amount of storage was quantified that would be lost if existing forests were cleared for agricultural production or subdivisions for development. Therefore, it was called "protected water storage" in the plan.

#### Reference:

Senay, G. B. and Kagone, S., 2019, Daily SSEBop Evapotranspiration: U. S. Geological Survey Data Release, <https://doi.org/10.5066/P9L2YMYV>

### Cover Crops

In the Leaf, Wing, Redeye Comprehensive Watershed Management Plan, the storage gained from adding cover crops to the landscape was quantified with PTMApp data and a proprietary hydrologic analysis tool at Houston Engineering. The Long Prairie River Watershed was deemed very similar in climate, latitude, soils, land use, and hydrology to the Leaf, Wing, Redeye Watershed, so the storage per acre was used from that plan.



## Key Concepts:

- A forest resource plan to support the Long Prairie River 1W1P.
- Keep forested lands forested.
- Priority is the intersection of quality & risk: Private Lands.
- Coordinate resilience with existing public forestlands.
- Stack public benefits to maximize taxpayer investment—\$\$\$.
- Increase and enhance delivery of services to landowners.
- Implementation based on landowners' goals.



The Long Prairie River Watershed Landscape Stewardship Plan (LSP) is focused on guiding the protection and management of working forests on private lands on a watershed basis. The goal of this plan is to empower teams of service providers to work together with private landowners and land managers to strategically protect working forest lands and promote private forest stewardship to enhance both private and public benefits that forests provide.

## What's in the Plan?

### Part 1: Analysis of Forest and Water Resources

- Resource Context
- Risk/Quality Assessment
- Forest Conservation Opportunity Areas
- Key Observations and Conclusions

### Part 2: The Vision

- Mission and Vision.
- Two major goals: 1) increase forestland protection, 2) promote forest stewardship.
- Subwatershed Action Plans – 7 subwatersheds – HUC 10 scale.
- Ecological Guidance – potential native plant communities (NPC).

### Part 3: Making it Happen

- Coordination strategies
- 10-year investment plan
- Demonstration projects
- Accomplishment reporting
- Recommendations to local and state agencies

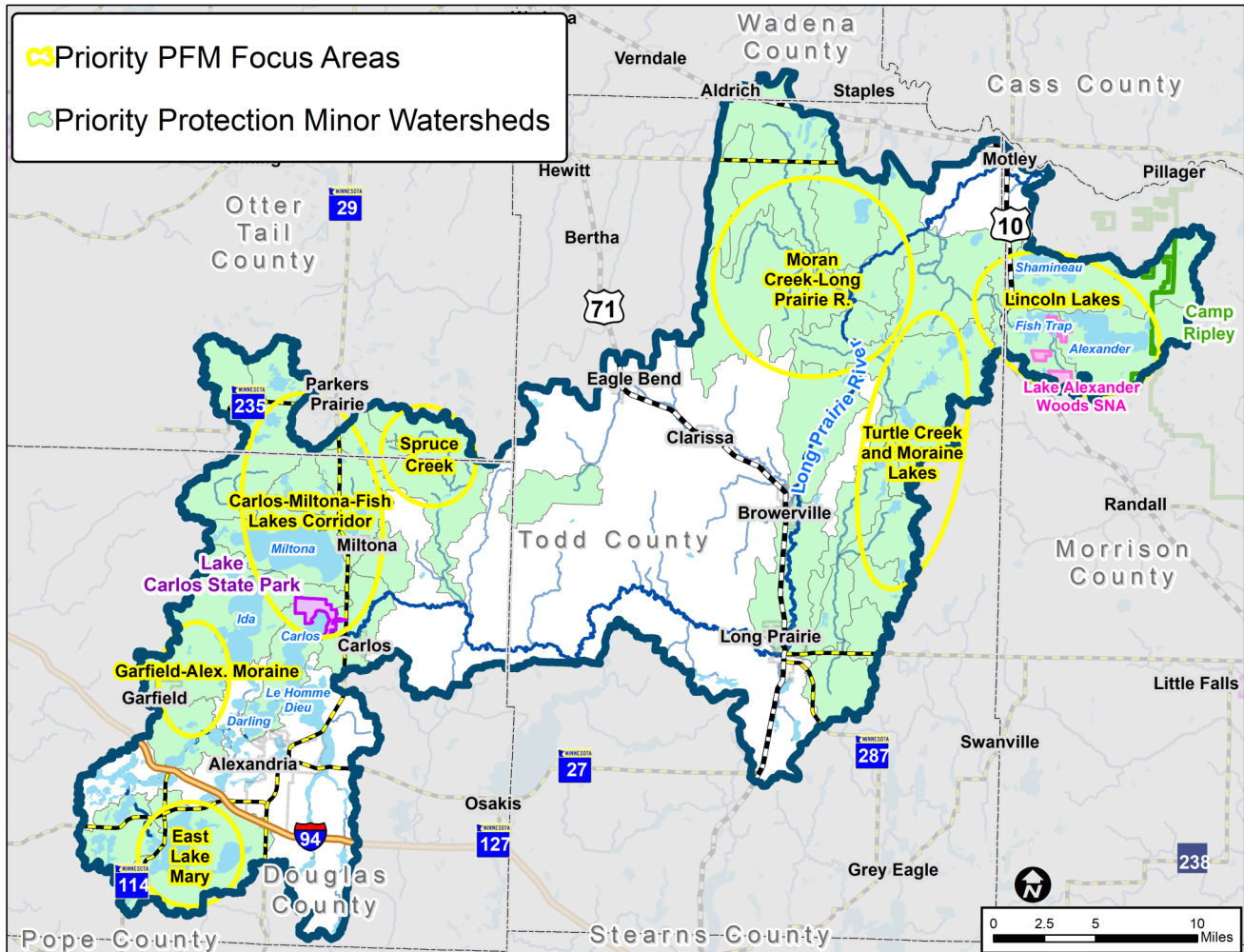
## Private Forest Landowner Implementation Toolbox



## Foundation Concept: Landowner's Choose

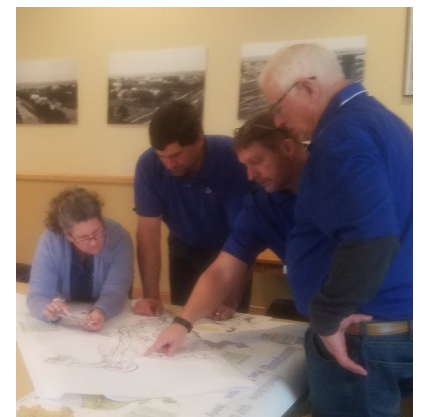
# Long Prairie River Landscape Stewardship Plan: Where do we want to work?

The Long Prairie River Major Watershed is comprised primarily of private lands. The total amount of protected lands (public lands, public waters, wetlands, conservation easements, SFIA) is only 31%. Each of its seven subwatersheds have their own protection goals, which range from 25 to 65%. The subwatersheds are made up of minor watersheds (64 total in the watershed). Each of these has its own protection goal that was determined by the Long Prairie River LSP Planning Team based on local priorities and the amount of available large-tract, private forested land.



## Coordination Strategies :

- Reconvene, support and sustain the Local Forestry Technical Team (LFT).
- Confirm the project coordinator.
- Clarify partner roles in serving private landowners.
- Coordinate resources for Implementation.
- Support accomplishment reporting.
- Advocate recommendations to local and state agencies and programs.



**Insert link to the Long Prairie LSP and Appendix on the Long Prairie 1W1P website.**



## Appendix F Public Input

### Public Kickoff Meeting

The Long Prairie Watershed Collaboration hosted a Public Kickoff event on March 18, 2021. Because it was during the COVID-19 pandemic, the event was held online. The event had great turnout, with 72 attendees.

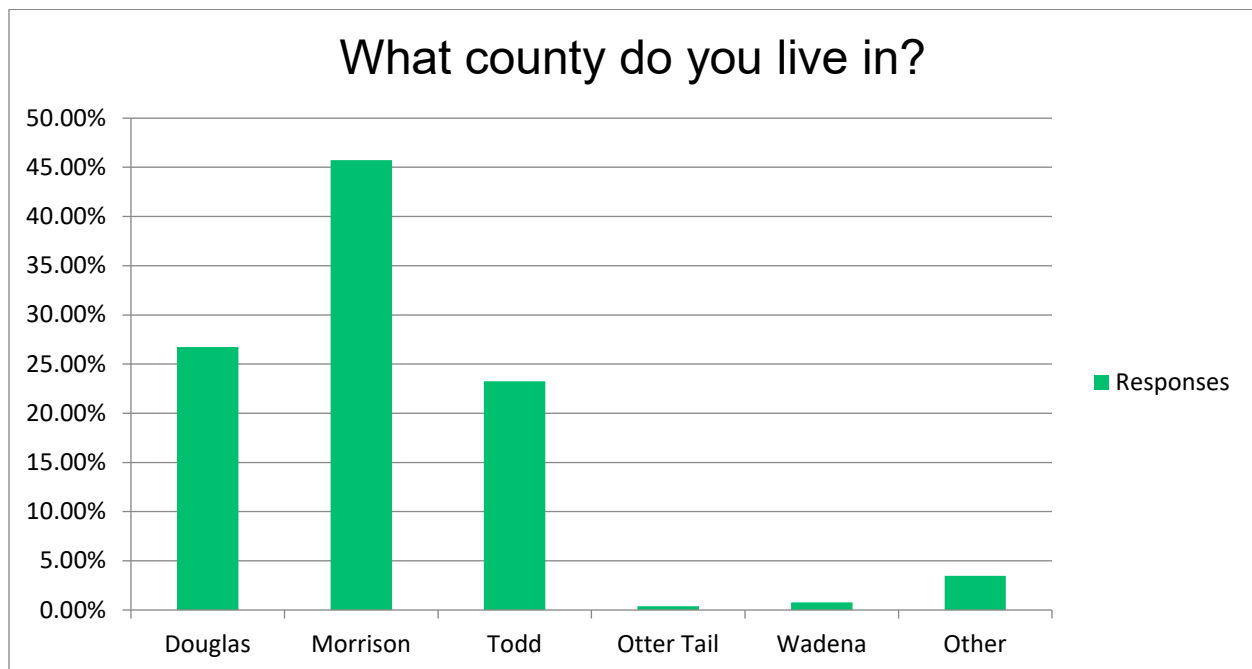
The agenda included:

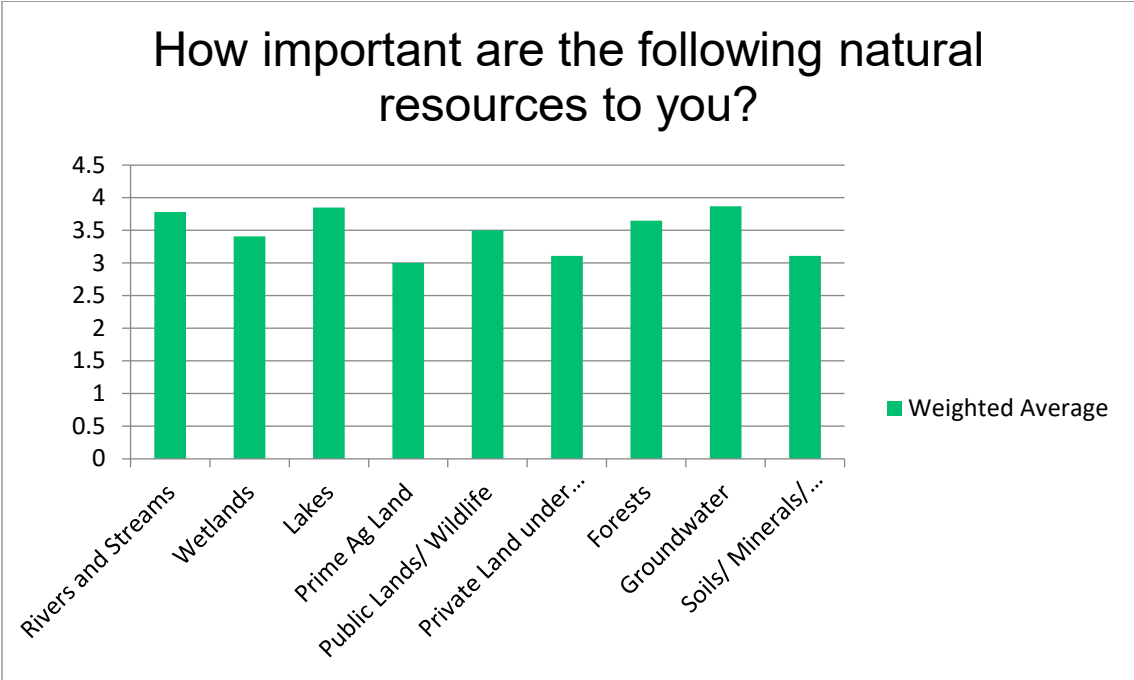
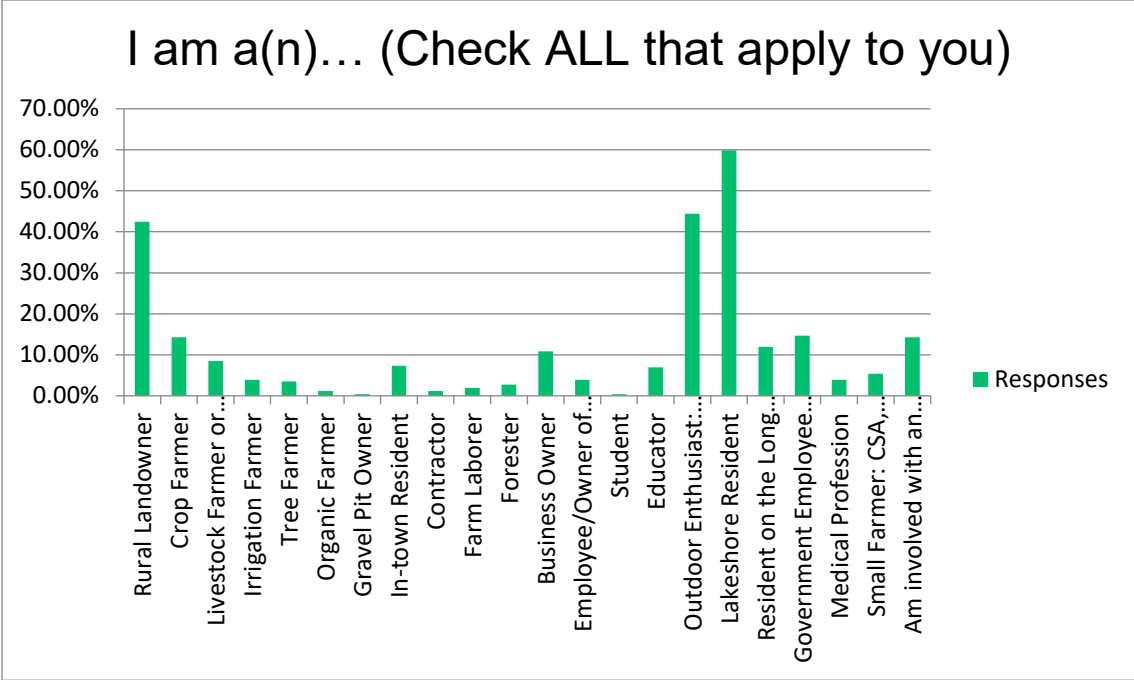
- ◆ Introduction to the watershed with a story map
- ◆ Comedian performance
- ◆ An interactive poll about watershed issues

The interactive poll results are in the following pages.

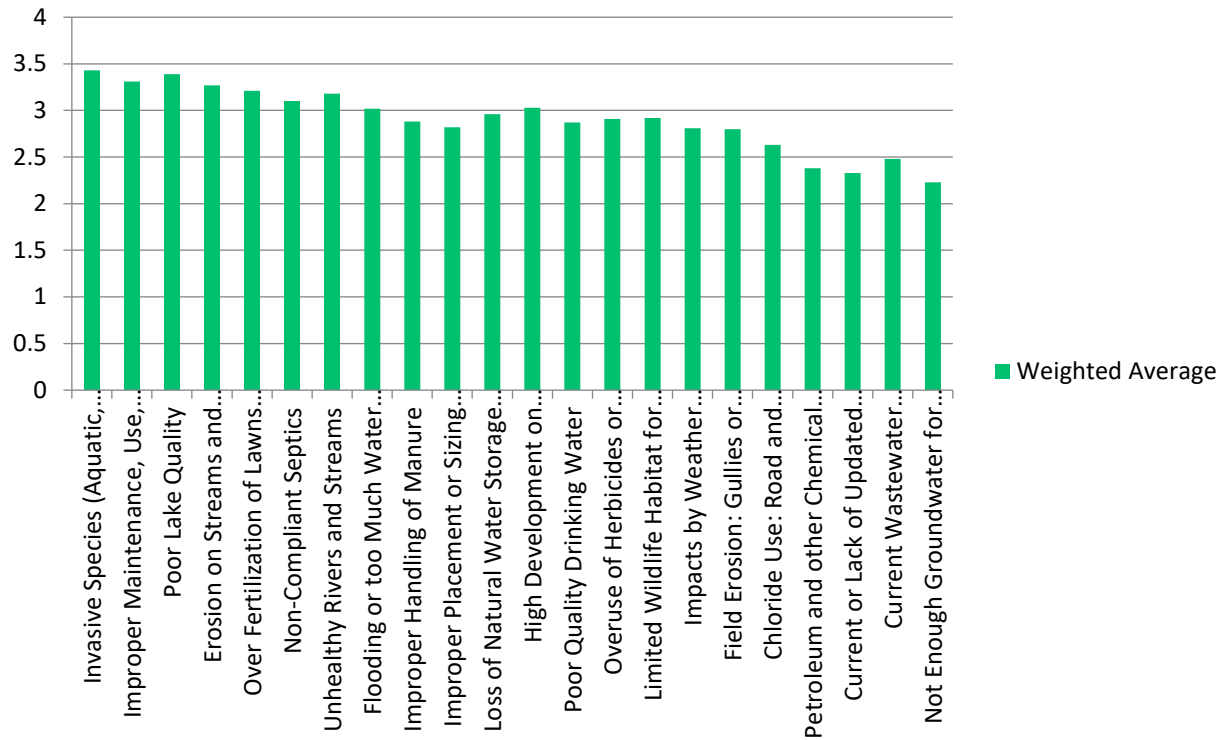
### Public Survey

In addition to the Public Kickoff event, an online survey was available for a month. There were 258 total responses to the survey. Results are presented here.

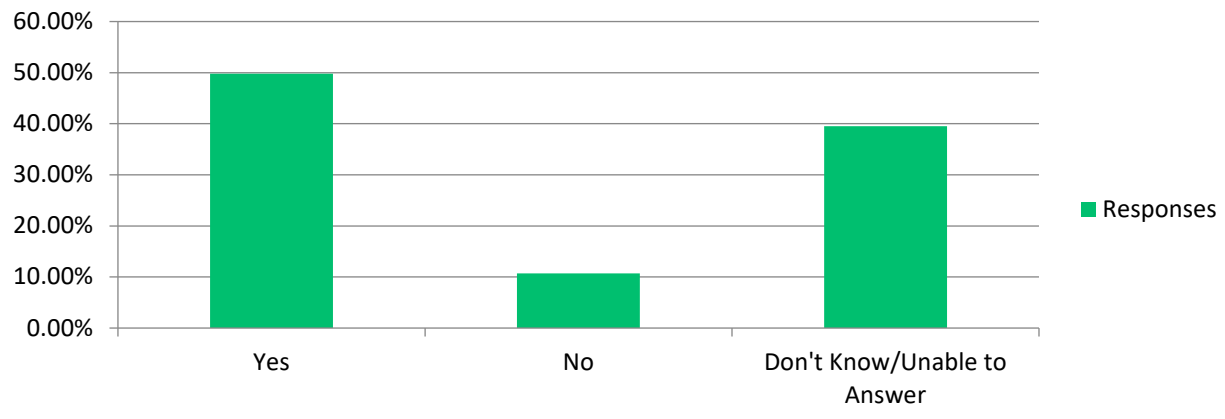




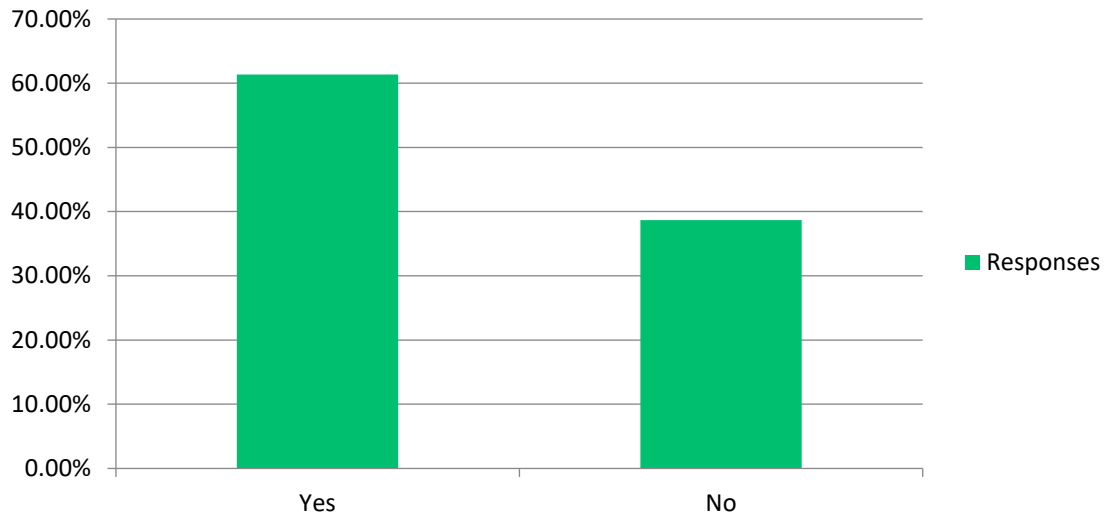
## How “big of a deal” are the following issues/worries to you in your region of the watershed?



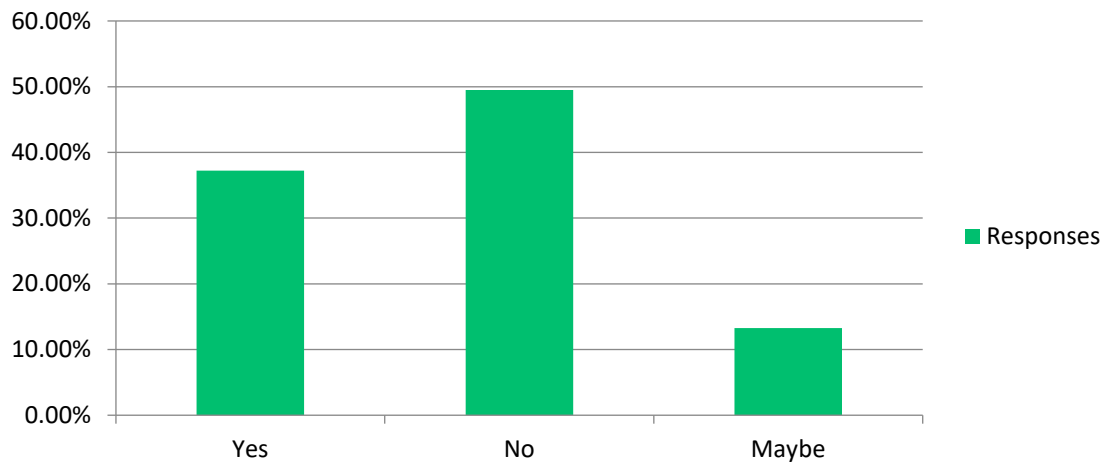
## In your opinion, are the programs and cost-share offered by your Local SWCD and county offices helpful to residents and the local economy?



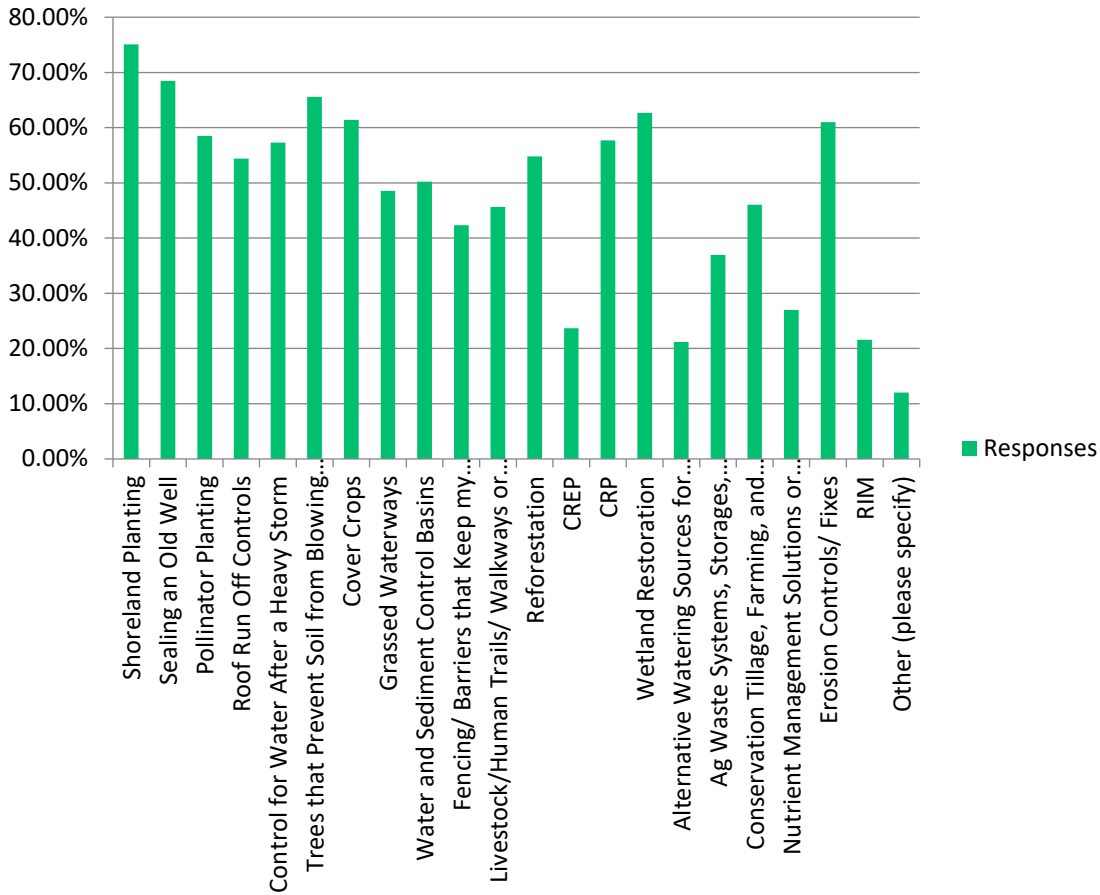
Do you know what is meant by the phrase cost-shared practices?.



Have you ever participated in, benefited from, or considered participating in a cost-share practice?



## Which of the below do you have basic knowledge in regards to what they are, their purpose, and benefit?

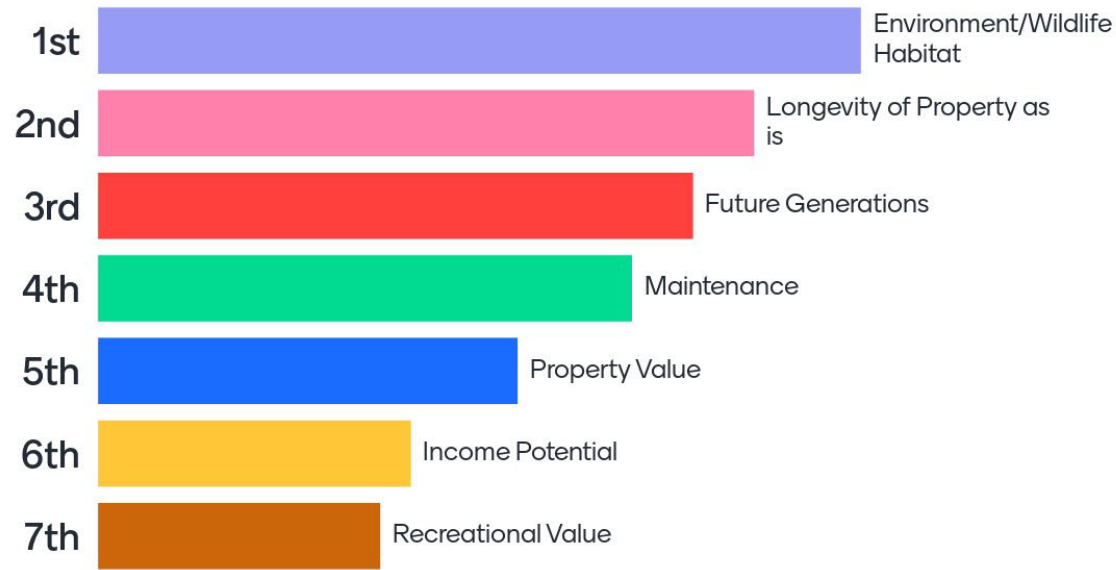


- What is specific about the Long Prairie Watershed makes you proud to be living/working here?

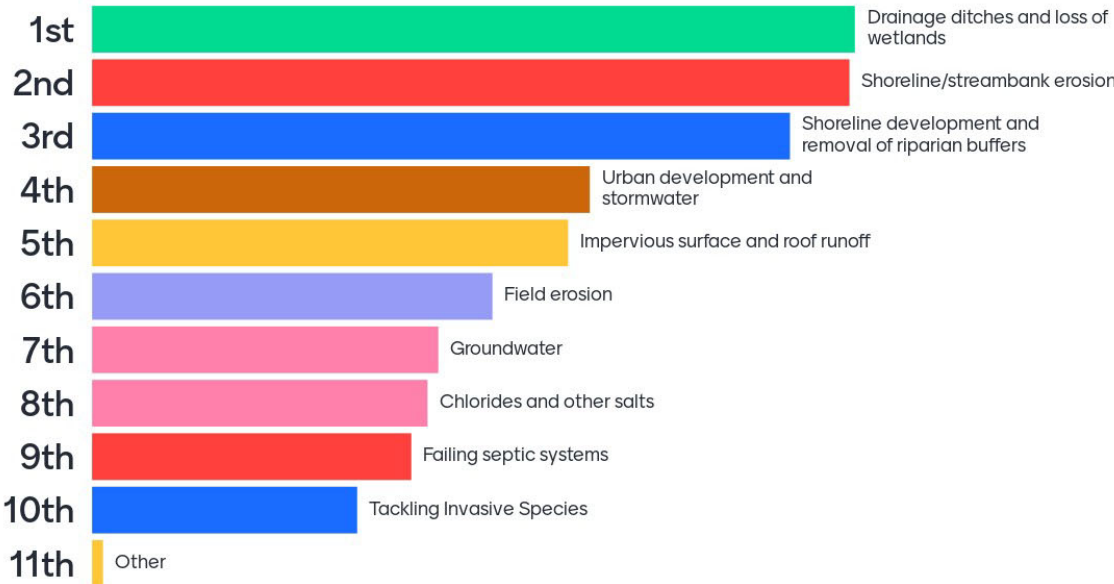




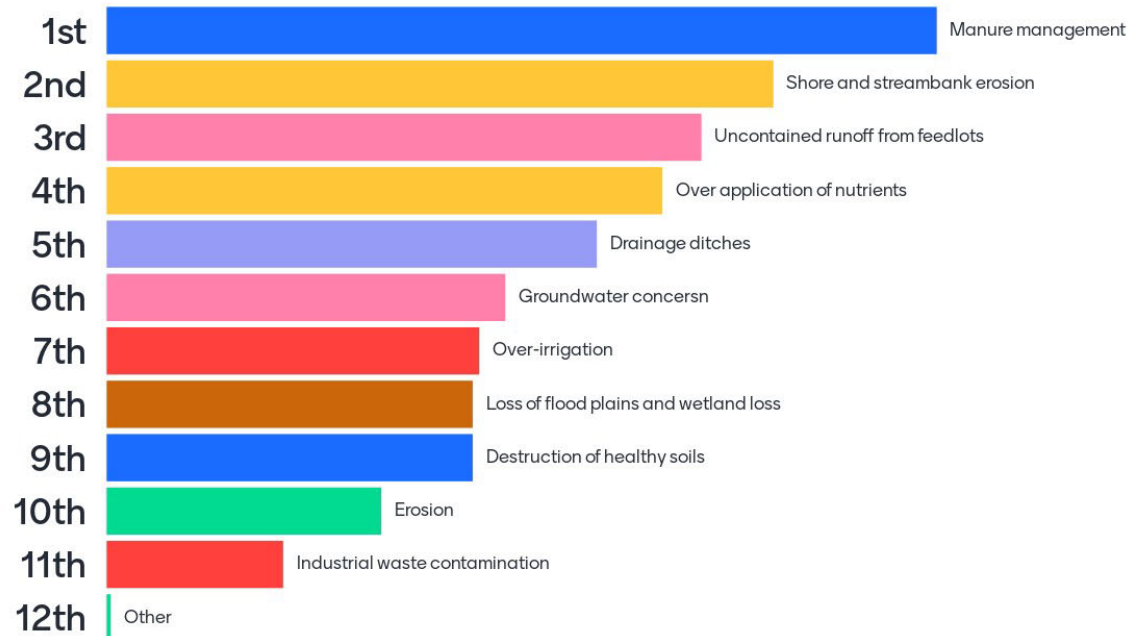
# - When considering changes on your property/farm/homestead, etc. what is your most important consideration?



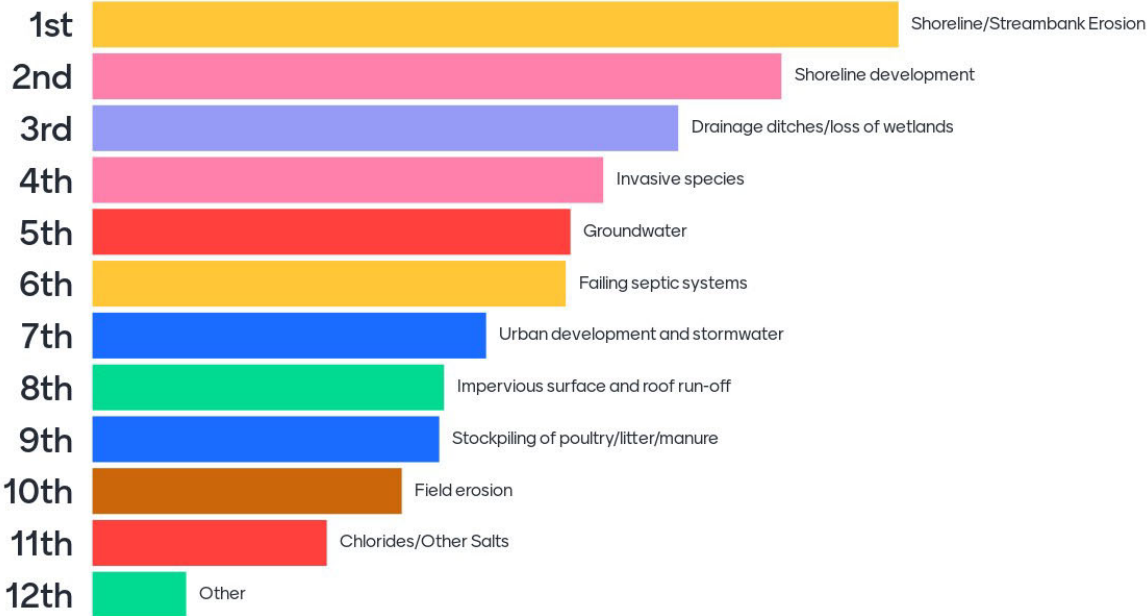
# - Following the information provided this evening, what do you think might be the priority concern for Douglas and Otter Tail counties?



# - What do you think is the priority concern for Todd and Wadena counties?



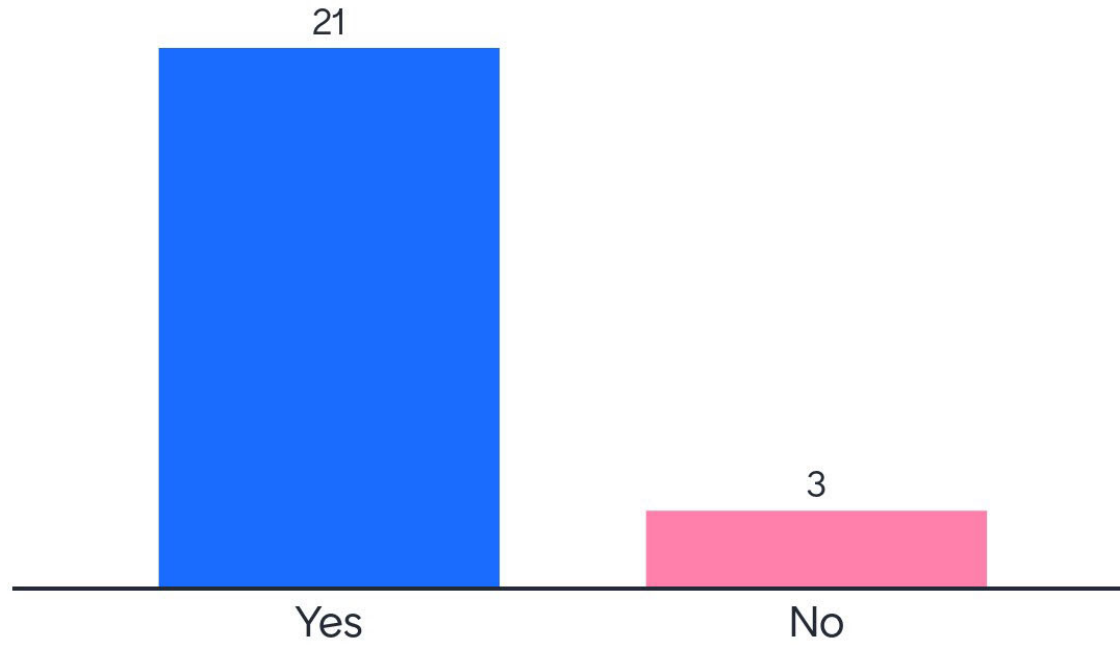
# - What should be the priority concern for Morrison County?



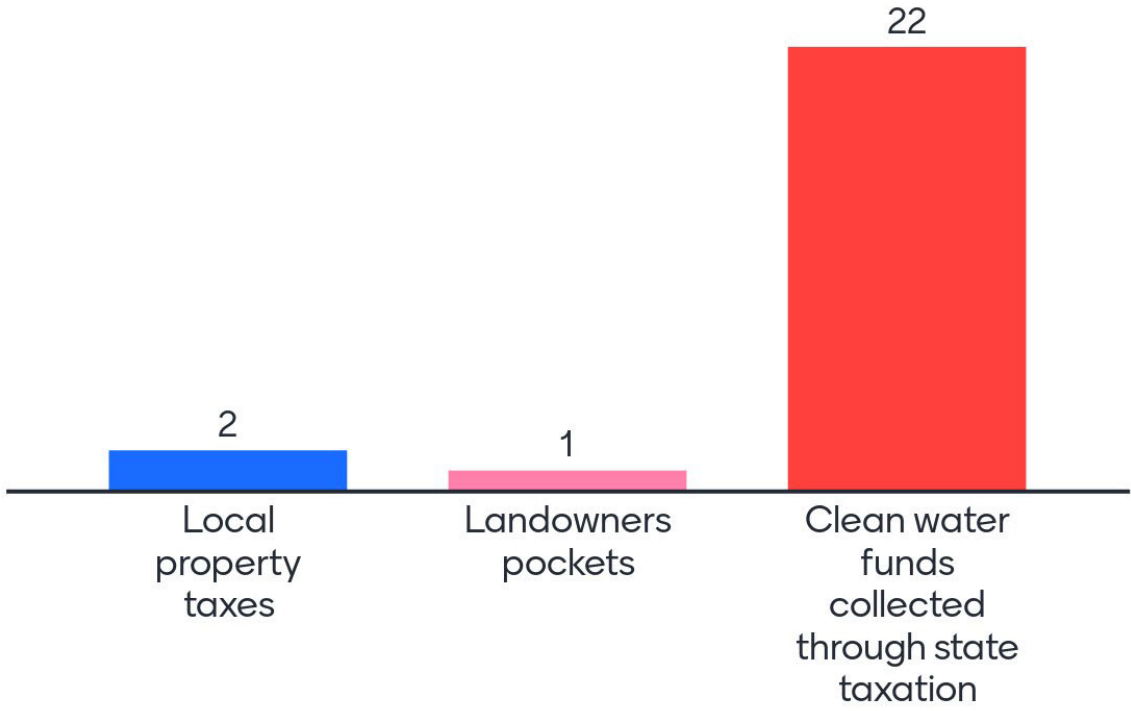
- Collectively, what should be the number one priority water concern for the watershed as a whole?



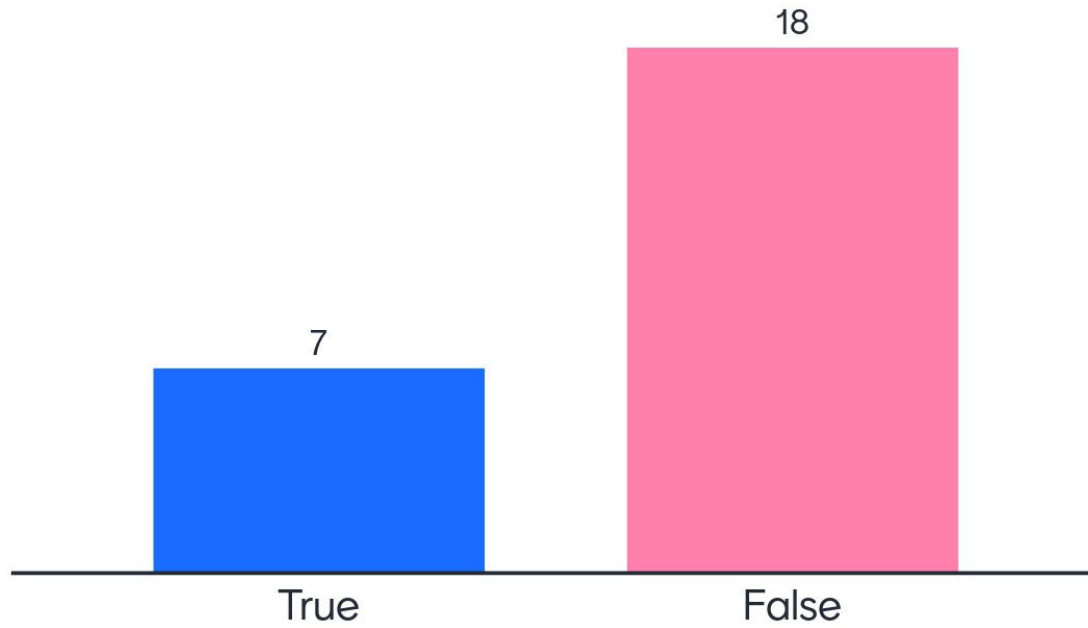
- Do you feel each County and section of the watershed has fair representation when it comes to decision making?



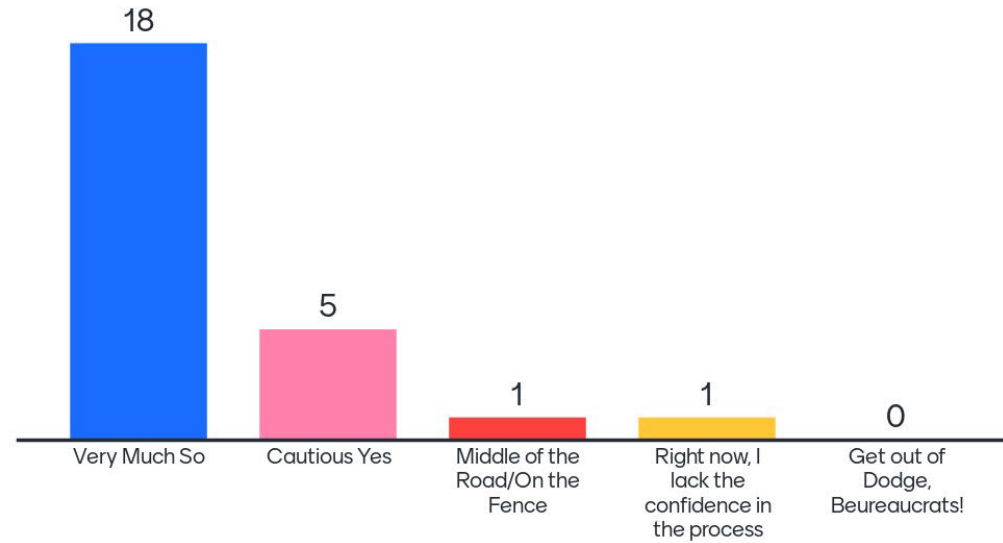
# - In your current understanding, how are these plans paid for when put into action?



# True or False: Through this plan there will be additional layers of government.



# - Do you support planning efforts for the Long Prairie Watershed, even if some of these efforts aren't in your immediate back yard?



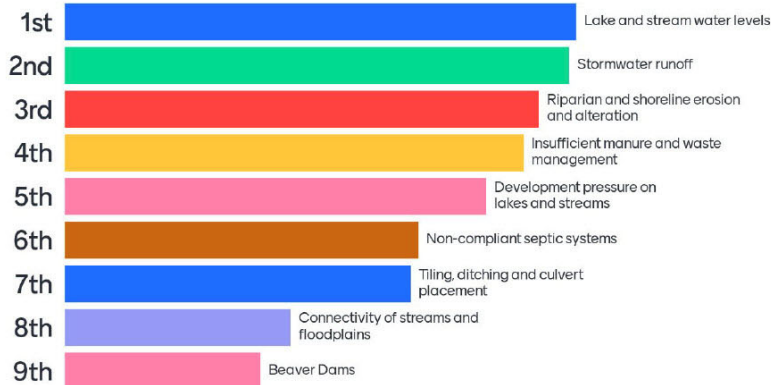


# What are you concerned about in the Long Prairie River Watershed?



# What issues related to surface water in there you most concerned about?

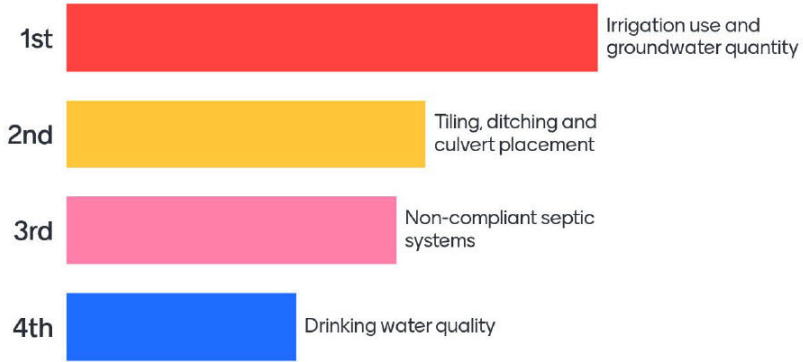
Mentimeter



12

## What issues related to groundwater in the watershed are you most concerned about?

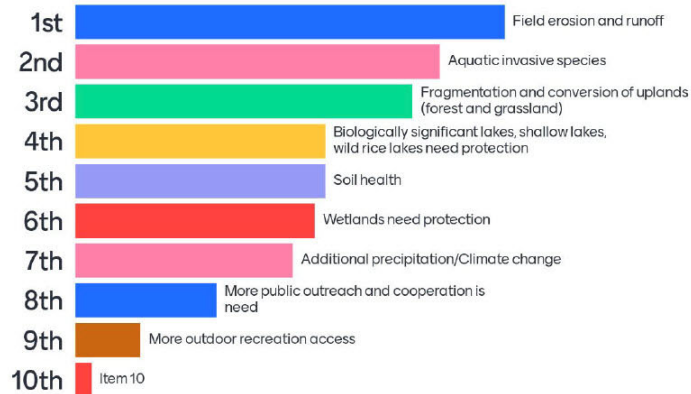
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12

## What other issues in the watershed do you have concerns about?

Mentimeter



11

## Watershed Actions, October 19, 2021

This meeting began with an introduction of planning regions and maps:

- Alexandria Lakes Area, Eagle/Moran Creek Region, Long Prairie-Adjacent Lands, Fish Trap/ Turtle Creeks Region.
- Maps depict land uses, Lakes of Biological Significance, and Impairments.
- Impairments include bacteria, biological, phosphorus. Overall good water quality in the watershed.
- Groundwater quality concerns map shows nitrogen infiltration risk to ground water.
- Map of groundwater quantity concerns: shows locations of appropriation permits. 410 total permits; ~258 Ag permits, ~150 irrigation/industrial.

Next, participants split into groups based on Planning Region, and brainstormed actions that fit that Planning Region. These actions were incorporated into the Targeted Implementation Schedule (Section 6).

### ***Alexandria Lakes Planning Region***

- 1) Good on the Landscape:
  - A. Alexandria Lakes Area Sanitary District (ALASD):
    - a. No ISTS issues in District service area
    - b. Lake Carlos, Ida, Miliona have EXCELLENT water Quality
    - c. Adaptive Lake Management efforts
  - B. Aquatic Invasive Species prevention and management
  - C. Good Funding and \$\$\$
  - D. Peer Pressure is playing a positive role- to make improvements
  - E. There are a lot of lakes and lakes of biological significance
  - F. Active lake Associations
- 2) What are people willing to do?
  - A. We are willing to assist in the development of good rules/standards for lake friendly development on all lakes and rivers in THIS region of the watershed.
  - B. Landowners are willing to *explore* and LGU's are willing to PROMOTE Smart Ag in the Ag portions of the region- this includes Soil Health, Manure Management, and Regenerative Ag practices.
  - C. Develop an understanding and concern for "downstream"
  - D. It's so personal- it is hard to get buy in.
  - E. People are willing to pay grant matching funds (*in kind contributions?*)
  - F. People are willing to follow lawn fertilizer management plans.
  - G. People are willing to *restore shoreline to native vegetation*
  - H. Can we increase AIS inspections?
  - I. Other comments:
    - Urban stormwater needs to be addressed
    - how do we address high lake use, i.e. big boats stirring up sediment and wave action on shoreline *from rec use*



### ***Long Prairie River Planning Region***

- 1) Good on the Landscape:
  - A. Some hay pasture- permanent cover
  - B. Current Native buffer
  - C. Long Prairie River is in good condition
  - D. High % of wetlands
  - E. Spruce Creek Forest
  - F. Still a good amount of riparian areas maintained along the Long Prairie River
  - G. Low amount of development in this region
  - H. There is lots of data and understanding- we are well educated on the issues
  - I. High investment in projects from the NRCS and SWCD in this area
  
- 2) What are people willing to do?
  - J. Cover Crop implementation
  - K. Rotational Grazing- pasture management
  - L. Exclusion fencing on public waters- flash grazing allowed
  - M. Alternative watering systems for livestock
  - N. We need to improve dialogue between producers and lake residences
  - O. (some?)Landowners are willing to implement better erosion practices and BMPs

### ***Eagle/ Moran Creek Planning Region***

- 1) Good on the Landscape:
  - A. Hay/ grazing pasture- permanent cover
  - B. Buffers still intact
  - C. Wetlands intact
  - D. Low urban development along creeks
  
- 2) What are people willing to do?
  - A. improve buffers thru landowner compensation
  - B. Pasture Management
  - C. Manure Management
  - D. Develop plans to meet bacteria sources
  - E. Irrigation management
  - F. Urban Stormwater Management
  - G. Topography relief: erosion, sediment controls
  - H. ID the source of bacteria impairments- better sampling efforts and develop plans to meet bacteria loading
  - I. Concerns mentioned:
    - More education is needed
    - Concern over new irrigation wells
    - Concern over proper drainage management
    - Stand pipes and water collection
    - Improve manure management



## ***Fish Trap/Turtle Creeks Planning Region***

- 1) Good on the Landscape:
  - A. Outstanding lakes- water quality and lakes of biologic significance
  - B. Planning and Zoning in shoreland
  - C. Preservation of wetlands
  - D. High amount of forests/ forest preservation
  - E. West side Camp Ripley easements
  - F. ACUB/ Sentinel Landscape efforts are ongoing
  - G. Maintaining septic System improvements
  - H. Active property owners and lake associations and strong LIDS
  - I. Identity as “Lake Country”- easy access from cities
  
- 2.) What are people willing to do?
  - P. Restoration of human made errors- drainage mistakes
  - Q. Reforest areas that have flooded out
  - R. Easements/ land protection/ protect forests/ active forest management
  - S. Maintain pasture and hay ground
  - T. Cover crop Implementation
  - U. Change crop rotation to include small grains/legumes (*may depend on commodity prices*) Rotational Grazing- pasture management
  - V. Organize to get good things done as a TEAM- consolidated solutions!!!!
  - W. Other concerns:
    - Shoreline development

## **Plan Review and How to Reach Local Landowners for Implementation, February 8, 2022**

The draft goals and actions were presented and the dots were connected between Citizen Advisory Committee feedback and plan content. Then there were two main discussion items:

- 1) Plan Content – Did we hit the mark?

Group notes were taken an overall the plan was well-received. Some items were added to the plan based on these discussions such as:

- Please do hydroconditioning around Lake Shamineau and further discuss high water levels
- Please address septic systems in the Bacteria Goal as well as ag issues.
- ALASD would like to be a plan partner on some of the actions around Alexandria lakes
- Add a phosphorus reduction goal for the Long Prairie River



2) Outreach and Education – how can we best reach landowners for implementation?

- Social media
- Open meeting forum with citizens
- Traditional media (print, radio)
- Utilities bills stuffers
- Project signage and transparency
- Well-known landowner does project with the expectation of spreading information
- Process transparency
- Keep things non-political
- Use a well known local retired county agent to conduct a meeting
- Make sure it's a trusted person running any public meetings
- Launch a group-planning process. All ideas listed with no judgement.
- Farm groups
- Civic group meetings
- Church
- Town board meetings
- Feedlot/shoreland meetings
- Assist landowners with providing funding for soil sampling so they can use less fertilizer
- Make sure good communication remains open and follow up!



MEMORANDUM OF AGREEMENT

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

The Counties of Douglas, Morrison, Todd, and Otter Tail by and through their respective County Board of Commissioners, and  
The Douglas, Morrison, Todd, and West Otter Tail Soil and Water Conservation Districts, by and through their respective Soil and Water Conservation District Board of Supervisors  
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 (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 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 Long Prairie 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 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.

**WHEREAS**, the Parties have formed this Agreement for the specific goal of developing a plan pursuant to Minnesota Statutes § 103B.801, Comprehensive Watershed Management Planning, also known as *One Watershed, One Plan*.

**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 Long Prairie River Watershed. The purpose of this Agreement is to collectively develop and adopt, as local government units, a coordinated watershed management plan for implementation per the provisions of the Plan. Parties signing this agreement will be collectively referred to as Long Prairie River Watershed Collaboration.
2. **Term:** This Agreement is effective upon signature of all Parties in consideration of the Board of Water and Soil Resources (BWSR) Operating Procedures for One Watershed, One Plan; and will remain in effect

10/08/20

until adoption of the plan by all parties unless canceled according to the provisions of this Agreement or earlier terminated by law.

3. **Adding Additional Parties:** A qualifying party desiring to become a member of this Agreement shall indicate its intent by adoption of a board resolution prior to a date that is six months from the BWSR One Watershed, One Plan Planning Grant Agreement execution. The party agrees 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. **Withdrawal of Parties:** 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 at least 30 days in advance of leaving the Agreement.
5. **General Provisions:**
  - a. **Compliance with Laws/Standards:** The Parties agree to abide by all federal, state, and 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 any 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.” 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 § 471.59, subd. 1a(a). For purposes of Minnesota Statutes § 471.59, subd. 1a(a) 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.
  - c. **Records Retention and Data Practices:** 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 Minnesota Statutes § 138.17. The Parties further agree that records prepared or maintained in furtherance of the agreement shall be subject to the Minnesota Government Data Practices Act. At the time this agreement expires, all records will be turned over to Todd County for continued retention.
  - 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. **Extension:** The Parties may extend the termination date of this Agreement upon agreement by all Parties.

## 6. Administration:

- a. **Establishment of Committees for 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 and may appoint one or more technical representatives to a Technical Advisory Committee for development of the plan in consideration of the BWSR Operating Procedures for One Watershed, One Plan.
  - i. The Policy Committee will meet as needed to decide on the content of the plan, serve as a liaison to their respective boards, and act on behalf of their Board. Each representative shall have one vote.
  - ii. Each governing board may choose one alternate to serve on the Policy Committee as needed in the absence of the designated member.
  - iii. The Policy Committee will establish bylaws within 90 days of the execution of the Memorandum of Agreement to describe the functions and operations of the committee(s).
  - iv. The Steering Committee will be comprised of staff from local agencies formally participating in 1W1P by signing the MOA and BWSR staff acting as advisors. The Steering Committee will provide the logistical organization of the planning process and associated meetings. They may make recommendations to the Technical Advisory Committee and to the Policy Committee.
  - v. The Technical Advisory Committee will meet monthly or as needed to assist and provide technical support and make recommendations to the Policy Committee on the development and content of the plan. Members of the Technical Advisory Committee may not be a current board member of any of the Parties.
- b. **Submittal of the Plan.** The Policy Committee will recommend the plan to the Parties of this agreement. The Policy Committee will be responsible for initiating a formal review process for the watershed-based plan conforming to Minnesota Statutes Chapters 103B and 103D, including 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 BWSR for review and approval.
- c. **Adoption of the Plan.** The Parties agree to adopt and begin implementation of the plan within 120 days of receiving notice of state approval, and provide notice of plan adoption pursuant to Minnesota Statutes Chapters 103B and 103D.



7. **Fiscal Agent:** Morrison 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 grant agreement and contract implementation.
  - c. Annually provide a full and complete audit report.
  - d. Provide the Policy Committee with the records necessary to describe the financial condition of the BWSR grant agreement.
  - e. Retain fiscal records consistent with the agent's records retention schedule until termination of the agreement (at that time, records will be turned over to Todd County).
  
8. **Grant Administration:** Douglas SWCD will act as the grant administrator for the purposes of this Agreement and agrees to provide the following services:
  - a. Accept all day-to-day responsibilities associated with the implementation of the BWSR grant agreement for developing a watershed-based plan, including being the primary BWSR contact for the *One Watershed, One Plan* Grant Agreement and being responsible for BWSR reporting requirements associated with the grant agreement.
  - b. Provide the Policy Committee with the records necessary to describe the planning condition of the BWSR grant agreement.
  
9. The following parties agree to provide the following services:
  - a. Project Coordinator/Grant Administrator: Douglas SWCD
  - b. Fiscal Agent: Morrison SWCD
  - c. Outreach Coordinator: Todd SWCD
  - d. Notifications Coordinator: Todd County
  - e. Land & Water Resources Inventory Data Consolidator/Organizer: Consultant TBD
  - f. Meeting Facilitator (Non-Technical): Todd County
  - g. Meeting Facilitator (Technical): Consultant TBD
  - h. Note Taker: Todd County / Consultant TBD
  - i. Plan Writer: Consultant TBD

In the event of a vacancy of the above listed roles, the party responsible for the role will determine if there is adequate capacity within the organization to fulfil the listed role. If it is determined by the partner agency they no longer have capacity and would like to relinquish their duties they must inform the Steering Committee. The Steering Committee will then reassign the service to another party with the capacity to fulfil the grant agreement.



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

Douglas County  
Dave Rush or successor  
Land & Resource Management Director  
305 8<sup>th</sup> Ave. W, Alexandria, MN  
Telephone: 320-762-3863

Douglas SWCD  
Jerome Haggemiller or successor  
District Coordinator  
900 Robert St. Suite 102, Alexandria, MN  
Telephone: 320-763-3191 x3

Morrison County  
Amy Kowalzek or successor  
Director of Land Services  
213 1<sup>st</sup> Ave. SE, Little Falls, MN  
Telephone: 320-632-0170

Morrison SWCD  
Shannon Wettstein or successor  
District Manager  
16776 Heron Road, Little Falls, MN  
Telephone: 320-631-3551

Todd County  
Adam Ossefoort or successor  
Division Director  
215 1<sup>st</sup> Ave. S Suite 103, Long Prairie, MN  
Telephone: 320-732-2644

Todd SWCD  
Deja Anton or successor  
District Manager  
215 1<sup>st</sup> Ave. S Suite 104, Long Prairie, MN  
Telephone: 320-732-2644

Otter Tail County  
Chris LeClair or successor  
Land & Resource Management Director  
540 Fir Ave. W, Fergus Falls, MN  
Telephone: 218-998-8105

West Otter Tail SWCD  
Brad Mergens or successor  
District Administrator  
506 Western Ave. N, Fergus Falls, MN  
Telephone: 218-998-5300



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

PARTNER: Douglas County

APPROVED:

BY: Keith England 9/15/2020  
Keith England, Board Chair Date

Attest: [Signature] 9/15/2020  
Heather H. Schlangen, Coordinator Date

APPROVED AS TO FORM

BY: [Signature] 9/16/2020  
Chad Larson, County Attorney Date



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

PARTNER: Douglas Soil and Water Conservation District

APPROVED:

BY: Paul Barfness 10-13-20  
Board Chair Date


BY: Jim Hagg 10-13-20  
District Manager/Administrator Date

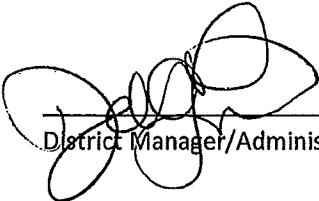


**IN TESTIMONY WHEREOF** the Parties have duly executed this agreement by their duly authorized officers.

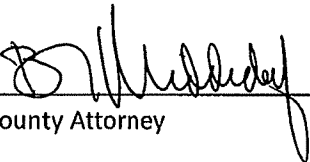
PARTNER: Morrison County

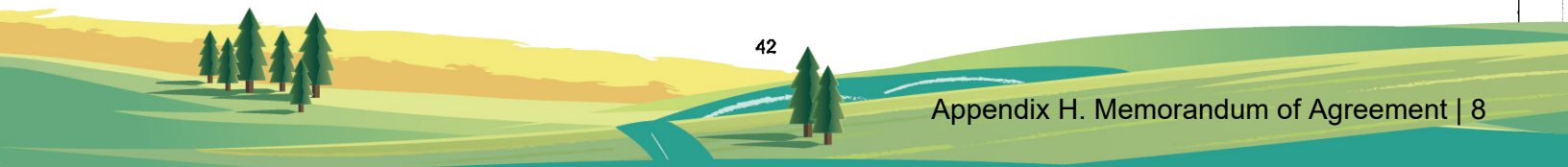
APPROVED:

BY:  10/13/20  
Board Chairperson Date

BY:  10/13/20  
District Manager/Administrator Date

APPROVED AS TO FORM


BY:  10/13/20  
County Attorney Date




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

PARTNER: Morrison Soil and Water Conservation District

APPROVED:

BY:  \_\_\_\_\_ 10-23-20  
Board Chair Date

BY:  \_\_\_\_\_ 10-23-20  
District Manager/Administrator Date



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

PARTNER: Todd County

APPROVED:

BY: *Paul M. Kuehl* 10/6/2020  
Board Chair Date

BY: *Ch. Perry* 10/9/20  
County Coordinator / Administrator Date

APPROVED AS TO FORM

BY: *Ch. [Signature]* 10-12-20  
County Attorney Date



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

PARTNER: Todd Soil and Water Conservation District

APPROVED:

BY: *Kenny Festa* *10-8-2020*  
Board Chair Date

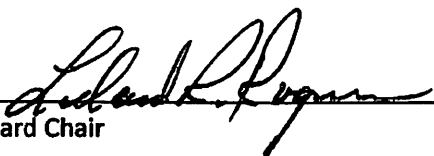
BY: *Deja Clark* *10-8-2020*  
District Manager/Administrator Date

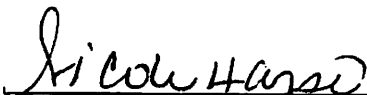


**IN TESTIMONY WHEREOF** the Parties have duly executed this agreement by their duly authorized officers.

**PARTNER:** Otter Tail County

**APPROVED:**

**BY:**  9-22-2020  
Board Chair Date

**BY:**  9-22-2020  
County Coordinator /Administrator Date

**APPROVED AS TO FORM**

**BY:**  9-24-2020  
County Attorney Date



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

PARTNER: West Otter Tail Soil and Water Conservation District

APPROVED:

BY: Rod Wenstrom 10-13-20  
Board Chair Date

BY: [Signature] 10/13/20  
District Manager/Administrator Date





**Attachment B**

<b>Scope of Services Provided by Individual Parties</b>			
Douglas SWCD	Danielle Anderson	Project/Notification Coordinator	Point person for all 1W1P activities, orchestrates the planning process, develops public notifications and works directly with the consultant.
Douglas County	Rebecca Sternquist	Participant	Attend Meetings, provide input, other duties as assigned
East Otter Tail SWCD	Ben Underhill	Participant	Attend Meetings, provide input, other duties as assigned
West Otter Tail SWCD	Brad Mergens	Participant	Attend Meetings, provide input, other duties as assigned
Otter Tail County	Chris LeClair	Participant	Attend Meetings, provide input, other duties as assigned
Todd SWCD	Deja Anton	Outreach Coordinator	Develops materials and strategies for public outreach, gathers information and assures all parties are represented well.
Todd County	Adam Ossefoort	Meeting Facilitator	Works directly with the Project Coordinator. Conducts an efficient, organized meeting, assures all voices are heard. Utilized for meetings before consultant is hired or where the consultant is determined not to be needed.
Wadena SWCD	Ben Underhill	Participant	Attend Meetings, provide input, other duties as assigned
Wadena County	Deana Malone	Participant	Attend Meetings, provide input, other duties as assigned
Morrison SWCD	Shannon Wettstein	Fiscal Agent/Data Collector	Develops a draft budget, maintains the grant account balance, makes payments, and collects in kind match information.  Takes inventory of all existing data sources, works directly with consultant implementing data into the plan.
Morrison County	Amy Kowalzek	Participant	Attend Meetings, provide input, other duties as assigned
Consultant	TBD	Plan Writer	Writes the plan based on information received, develops maps, and conducts modeling, formatting and design of plan.
Consultant	TBD	Plan Facilitator	Works directly with the Project Coordinator. Conducts an efficient, organized meeting, assures all voices are heard.
Todd County / Consultant	TBD	Note Taker	Take meetings notes and draft minutes for review. Utilized for meetings before consultant is hired or where the consultant is determined not to be needed.





WHERE THE FOREST MEETS THE PRAIRIE

**Todd County**

• MINNESOTA • EST. 1855 •

**SOIL AND WATER CONSERVATION DISTRICT**

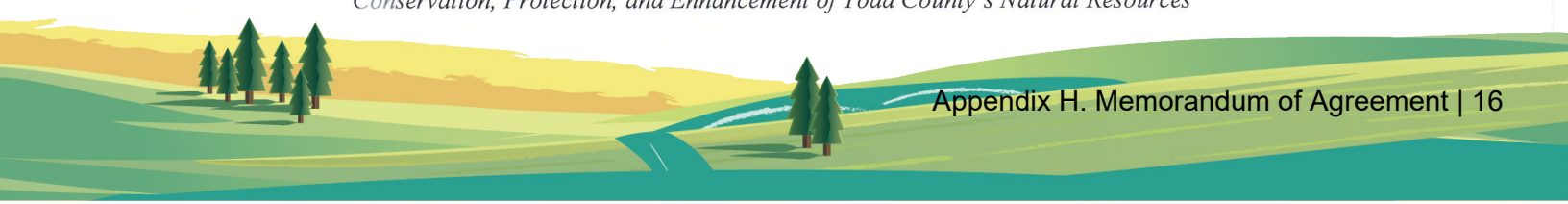
215 1<sup>st</sup> Avenue South, Suite 104

Long Prairie, MN 56347

Phone: 320-732-2644 Fax: 320-732-4803

Todd SWCD signs into this Memorandum of Agreement making note of the use of the term, “preserve” found on page one of the agreement, paragraph four, line four. Todd Soil and Water Conservation District has a mission “*to conserve, protect, and enhance natural resources*”. The word preserve, can be used interchangeably with “save” thus providing a source for confusion. For clarification, the purpose of this plan, is to allow efficient and wise use of natural resources, not to save aside for non-use. Thank you.

*Conservation, Protection, and Enhancement of Todd County's Natural Resources*





# Appendix I Regulatory Comparisons

Key:

Regulatory responsibility lies with this LGU and there is an ordinance

Administers program but no ordinance

Regulatory Program	Regulatory Responsibility										Comments
	Douglas County	Todd County	Morrison County	Otter Tail County	Wadena County	Douglas SWCD	Todd SWCD	Morrison SWCD	Otter Tail SWCDs	Wadena SWCD	
County-wide zoning											Otter Tail: No county-wide zoning. Only the shoreland zone.
Aggregate Management											Otter Tail: For land in the shoreland only.
Agricultural Soil Erosion											None
AIS											Otter Tail County has a Dock and Riparian Use Ordinance.
Bluffland Protection											Morrison: Has a thirty foot bluff impact zone. Wadena: More stringent setbacks than neighboring counties, part of shoreland ordinance
Buffers	Enforcement	Enforcement	Enforcement	Enforcement	Enforcement	Compliance checks	Compliance checks	Compliance checks	Compliance checks	Compliance checks	
City Ordinances											Douglas: City of Alexandria has zoning and shoreland ordinances. Todd: Long Prairie has a zoning ordinance. Morrison: Motley has a zoning ordinance.
Construction Erosion Control											Douglas: Alexandria has construct and erosion control ordinance; Wadena and Todd: Writes conditions in as part of permitting
Feedlots							Compliance checks				Morrison: Tiered permitting, maximum animal unit cap of 2,500. Otter Tail: state jurisdiction, no local control.
Floodplain Management											Morrison: In process of being remapped by FEMA - will update ordinance section when maps are effective
Forestland Management											Wadena: No responsibility listed, and in shoreland district only
Groundwater Protection Rule											MDA Administers. Part 1 applies in the watershed.
Subsurface Sewage Treatment Systems											Otter Tail, Wadena and Todd counties require SSTS inspections on point-of-sale.
Noxious Weed Law											Morrison, Douglas, Todd: Administered by public works department

Regulatory Program	Regulatory Responsibility										Comments
	Douglas County	Todd County	Morrison County	Otter Tail County	Wadena County	Douglas SWCD	Todd SWCD	Morrison SWCD	Otter Tail SWCDs	Wadena SWCD	
Public Drainage Systems (103E)											Todd County: Has drainage system management policy but lists that there are no ordinances. Morrison: administered by public works department; Otter Tail: Covers buffers only, not the remaining parts of public drainage systems.
Shoreland management							Compliance checks				See a detailed comparison of Shoreline Ordinances in Section 7, page X.
Solid waste management											Shared Director of Solid Waste Management with Wadena, Otter Tail, and Todd Counties
Stormwater runoff				Only shoreland zone							Todd County: No local responsibility. Morrison: City of Motley MDA/MDH. Wadena: No local responsibility
Wetland Conservation Act		Enforcement				All	Restoration orders	All			Counties are responsible for enforcement and SWCDs responsible for restoration orders for violations. Morrison County has setback requirements (25-50 ft) in zoning ordinance for wetlands.



## Appendix J. References

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