

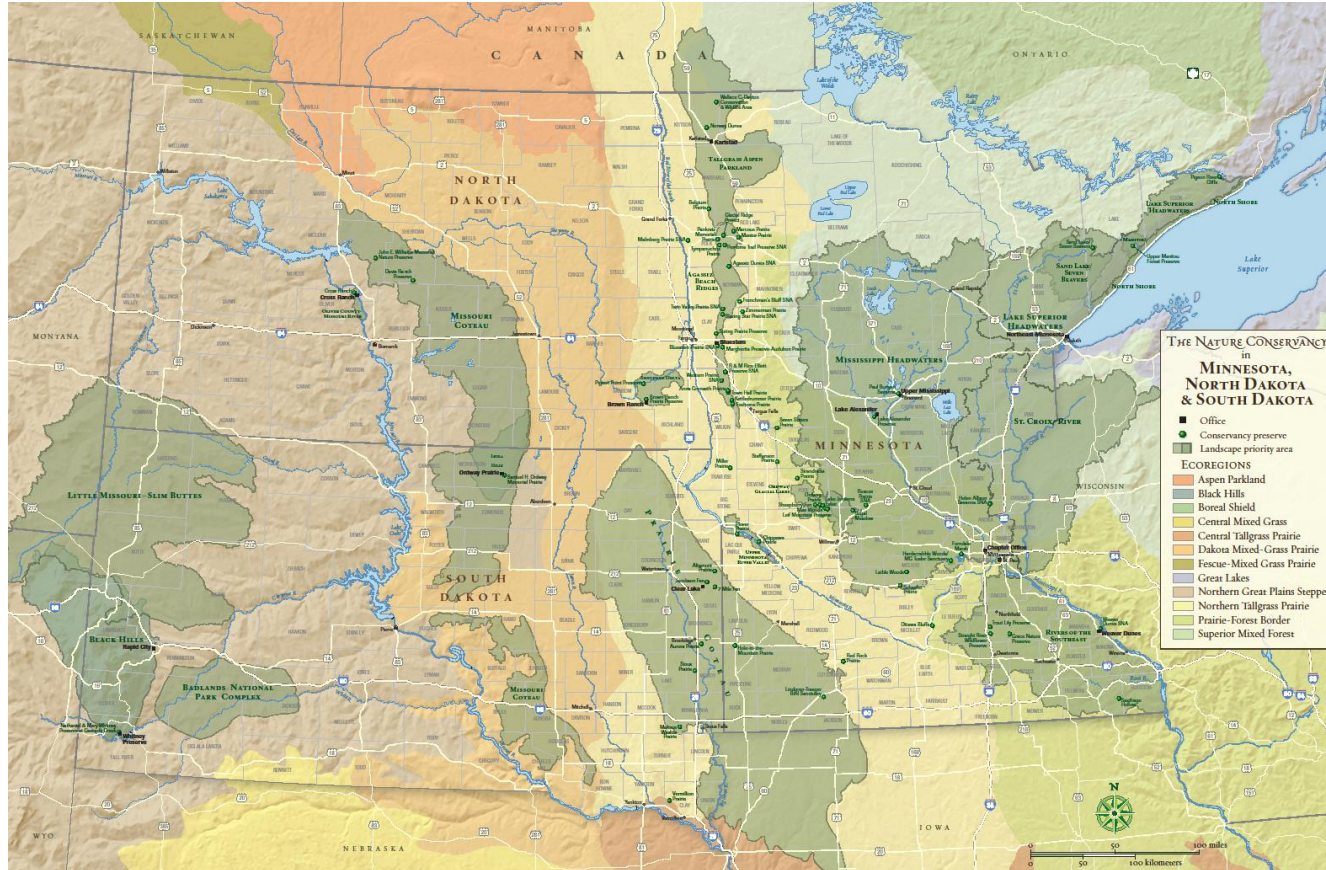
# Hubbard County Coalition of Lakes: Mississippi Headwaters story



Todd Holman  
*Mississippi Headwaters Program Director*

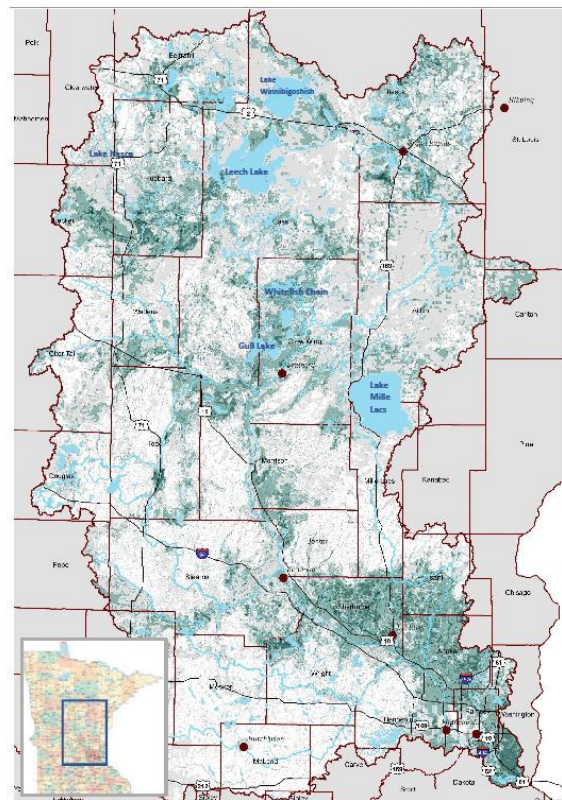


# MN-ND-SD Chapter of The Nature Conservancy



We look at key factors that our research tells us will result in protecting the most critical habitat for people and nature. These factors are layered atop one another to create a visual guide – the darker the color, the greater the benefit. These include:

☒ Fish & wildlife habitat
 ☐ Surface & ground water resources including drinking water
 ☐ Wetlands that manage flooding and act as nature water filters



**Upper Mississippi River Basin: 20,000 Square Miles**  
By prioritizing our work, we can protect this critical resource—safe, clean water—needed for human health, and for the values we all hold.



The tool is composed of 4 primary modules:

1. Fish and Wildlife
2. Drinking Water and Groundwater Quality
3. Flooding and Erosion
4. Groundwater Quantity

The Shoreland module was not used; shoreland protection is identified as a priority for its own sake.

### Fish & Wildlife Habitat Benefits

- Ecological patches and connections
- Protected lands
- Rare features
- Areas of biodiversity significance
- Lakes of biological significance
- High quality wild rice lakes
- High quality cisco lakes
- Forest conservation value/  
Drinking water value

### Drinking Water/Source Water Benefits

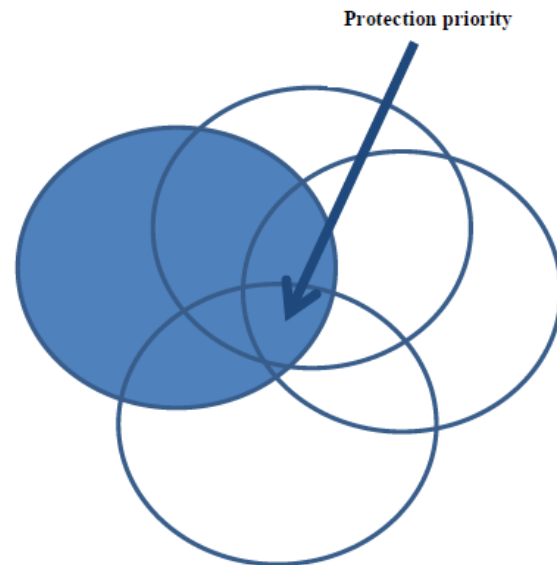
Drinking water management supply  
area vulnerability  
Groundwater contamination  
susceptibility  
Proximity to water

### Reduce Erosion, Enhance Storage, and Reduce Hydrologic Alteration

Existing wetlands, riparian areas, and floodplains providing storage and retention benefits  
Areas vulnerable to erosion

### Protect Groundwater Quantity – Protect

recharge and manage withdrawals  
Groundwater recharge  
Water use intensity relative to sustainable supply





# Mississippi Headwaters Restoration Strategy

## Background

The Nature Conservancy's Freshwater Program strives to keep healthy waters healthy for people and nature. As threats continue to mount, we have identified high-priority restoration project areas and actions that provide multiple, overlapping benefits to effectively target efforts and more efficiently utilize limited resources. This strategy is a companion to our protection strategy. The Mississippi Headwaters Fund will restore or enhance 100,000 acres of forests, grasslands and wetlands and 40 miles of river to secure healthy waters throughout the Mississippi Headwaters basin.

## Goal

To meet water quality goals and standards for aquatic life and human health by addressing localized impairments in priority protection watersheds, as well as healthy watersheds on the threshold of impairment.

## Method

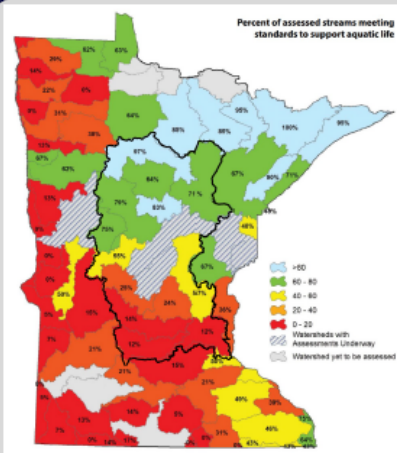
The Conservancy's role in restoration is to catalyze high leverage restoration projects and program opportunities with partners by building their capacity to do effective restoration.

## Priorities

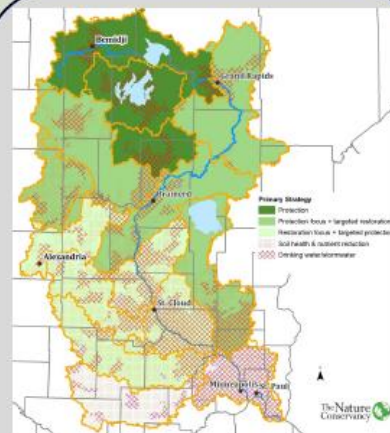
- Improve watershed resiliency to projected future land and climate change
- Increase the ecosystem function of stream and wetland restoration projects to maximize the project benefit downstream
- Increase water storage through wetland restoration, soil health improvements and other practices to prevent or mitigate increases in stream flow
- Address localized problems in watersheds that pose a threat to local and/or downstream freshwater goals
- Reduce threats to the 5 healthy watershed components – hydrology, biology, geomorphology, water quality, and connectivity

## Measures

- Reduce Nitrogen by 20%
- Reduce Phosphorus by 20%
- Maintain flows on the upper Mississippi River within 10% of long-term historical mean flows
- Maintain low flow for drinking water supply in Minneapolis at the water treatment plant (7-day low flow not less than 1000 cfs)



Streams are monitored for water chemistry, fish, and aquatic insects to determine if a stream has healthy aquatic ecosystems. Water monitoring information is also evaluated to determine if lakes and streams are suitable for swimming and other water recreation, and to determine whether consumption of fish should be limited (MPCA).



This map shows our overall strategies within the Mississippi River Headwaters Basin—illustrating where we will focus primarily on protection vs. restoration. Improving soil health and nutrient management is a priority for agricultural lands throughout the basin. Strategies to protect clean drinking water and address stormwater runoff will be designed to “touch down” in urban, impervious, and water supply areas.

## Strategy Maps

The Conservancy has developed a map of priority watersheds for restoration, which are those where impaired waters are closest to meeting state water quality standards; or where restoring water resources for public use and public health, including drinking water, generates multiple benefits in terms of ancillary watershed/ecosystem services.

In addition, the Conservancy has developed maps to identify where specific restoration project types/strategies are needed by minor watersheds. The two additional restoration strategy maps will include:

- Soil Health and Agricultural Nutrient Reduction/Drinking Water Strategy
- Restoring Altered Hydrology/Stormwater Strategy

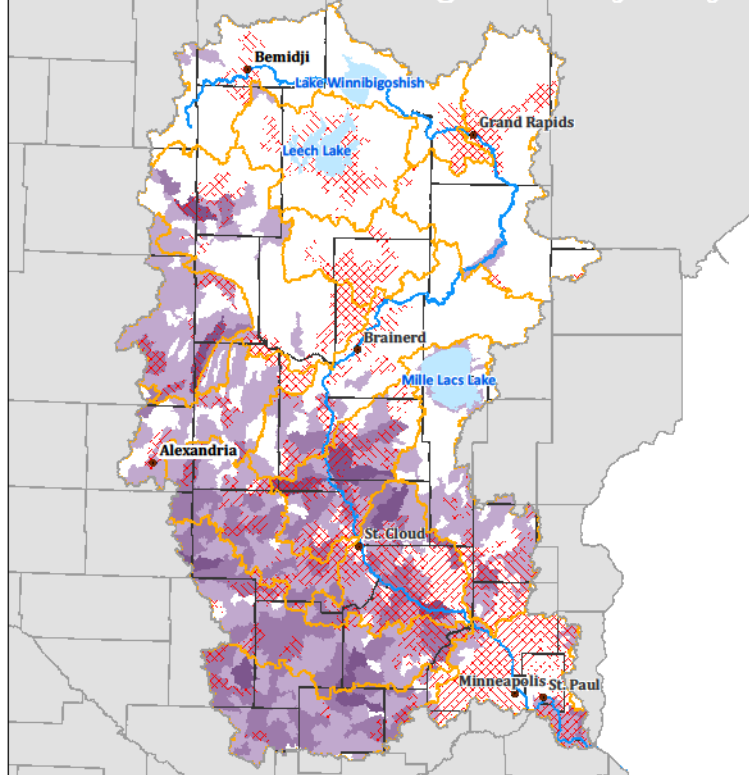
The Conservancy will take the lead on projects that fit best with our mission and core competencies, or that meet capacity needs and gaps within priority portions of the basin. For other strategies, we will focus on assisting and/or supporting partners through policy or funding recommendations.

In our priority restoration watersheds, our focus is on maintaining, re-establishing and mimicking natural watershed structure and function. Projects that we will support include targeted implementation of:

- Agricultural based BMPs, focusing on edge-of-field capture and filtering of nutrients; such as restoration of buffers, wetlands, and floodplains, and in-field BMPs, such as cover crops, 4Rs for inputs (=right source, right rate, right time, right place), and soil health practices.
- River channel restoration and floodplain reconnection projects that restore aquatic habitat, floodplain function, and reduce instream nutrient and sediment sources.
- Wetland and riparian zone restoration projects that increase nutrient, sediment, and carbon retention, increase water storage, reduce flooding, decrease peak flows and improve ground water recharge.



## Restoration Priorities: Soil Health & Agricultural Nutrient Reduction with Drinking Water Priority Overlay



### Soil Health & Nutrient Priority Areas

Medium  
High  
Highest

### Drinking water overlay

Priority source water protection

This map shows priority areas for applying TNC's soil health and nutrient management strategies. Minor watershed basins are displayed based on the total acres of cropland, weighted by their relative importance to drinking water, groundwater, aquatic habitat, and flooding and erosion reduction benefits based on the Multiple Benefits model. Priority areas for source water protection are displayed as an overlay based on community and domestic drinking water supply vulnerability and importance.



0

30

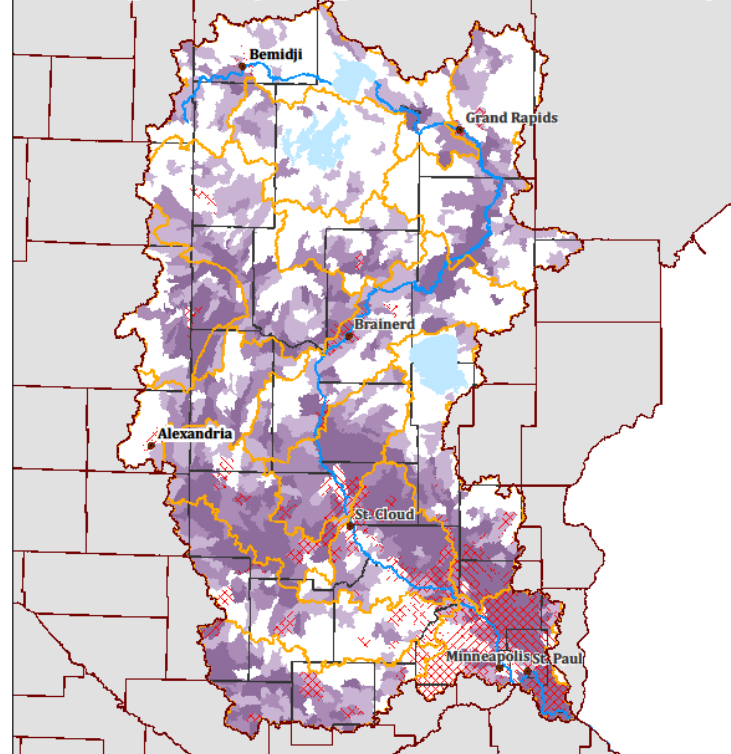
60

Miles



Strategy\_1\_Ag\_SoilHealth.mxd

## Restoration Priorities: Restoring Altered Hydrology with Stormwater Needs Overlay



### Hydrologic restoration

Basin priority/need

Medium  
High  
Highest

### Stormwater

MS4/Impervious

This map shows priority areas for implementing strategies designed to restore altered hydrology, water quality, and/or aquatic habitat such as wetland restoration, physical restoration/enhancement of stream channels or ditches, or "edge-of-field" practices such as bioreactors, riparian buffers, and natural channel retrofits. Priority areas for stormwater management are displayed as an overlay based on MS4 stormwater district and/or high density impervious cover.



0

25

50

Miles



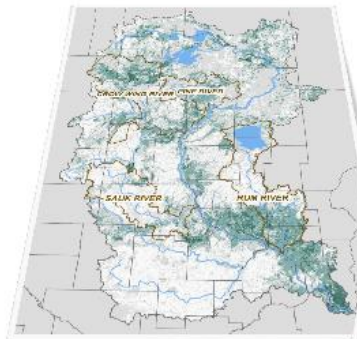
Strategy\_2\_EdgeOfField\_Final.mxd





*We start with deliberate planning.*

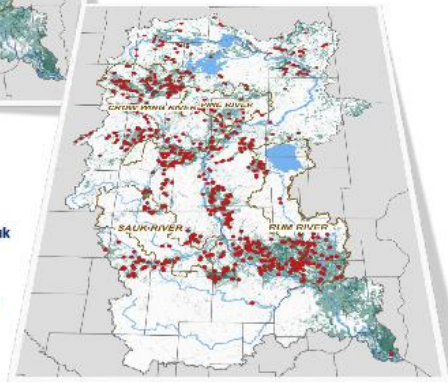
# Now we're delivering exceptional results in Minnesota's Headwaters.



## Step Two: Where will we have the most impact?

Dark brown boundaries describe watersheds of the Crow Wing, Pine, Sauk and Rum Rivers, all of which flow into the Mississippi.

Each dot represents specific places that our scientists feel will help keep our water healthy and vital.



## Step One: Where must we focus?

Nature Conservancy scientists identify critical places in the Mississippi River basin that will benefit the most from land protection or restoration.

Darker green areas indicate the highest priority:

- places where people, fish & wildlife live;
- lakes, rivers and ground water sources for drinking and playing;
- wetlands that filter and soak up rainwater.

## Step Three: Which tools are best deployed to address the needs of that particular landscape? Here are a few examples of how they are employed.



Permanently protect shoreline and other critical features through voluntary conservation easements with private landowners in the Pine River watershed.

Restore poorly performing farm fields with a carefully designed mosaic of fen, wetlands and grasslands that will dramatically improve water quality and reduce expenses for the City of Cold Spring.



Grow our collaboration with the Chippewa National Forest and the Leech Lake Band of Ojibwe to restore forests and protect wild rice lakes.



High impact restoration and land acquisition on the Rum River that will directly influence water quality as it meets the Mississippi River in Fridley.



*Our tool box:*



**Permanent Habitat Protection**  
Conservation Easements, Outright Purchase



**Habitat Restoration**



**Increase Partner Capacity**



# Mississippi Headwaters: The Business Case for Conservation

## About the authors and their methodology

This report is a collaboration among McKinsey, The Nature Conservancy, and Ecolab to analyze the benefits and costs of improving water quality in the Mississippi Headwaters through land preservation and restoration

McKinsey&Company



Sources of insight and data and include:

- **More than 50 studies and data sources** from environmental research, state and federal reports
- **More than 15 interviews with experts** from Minnesota Pollution Control Agency, Explore Minnesota, other conservation efforts across the United States, universities, Ecolab, McKinsey, and TNC
- **Six case studies** of land conservation and water quality preservation across the US
- **Primary geospatial analysis**



Minnesota Pollution Control Agency

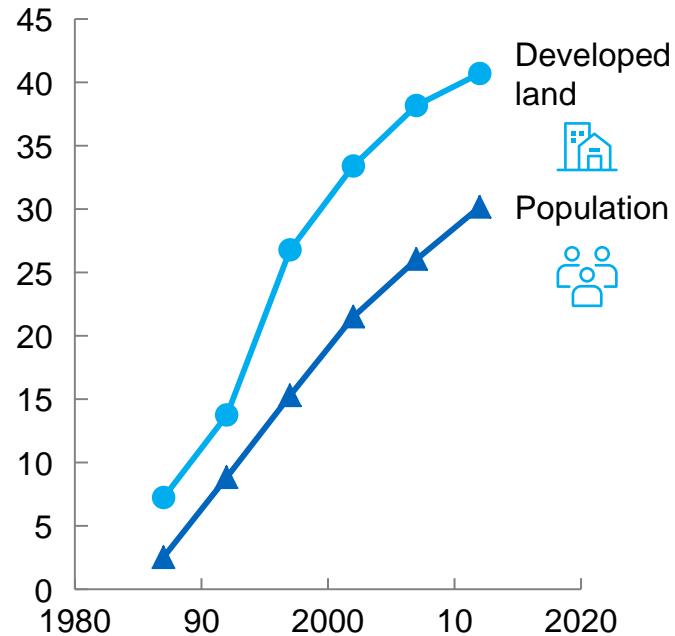




# Land conversion in Minnesota is continuing as our population and economy continue to grow

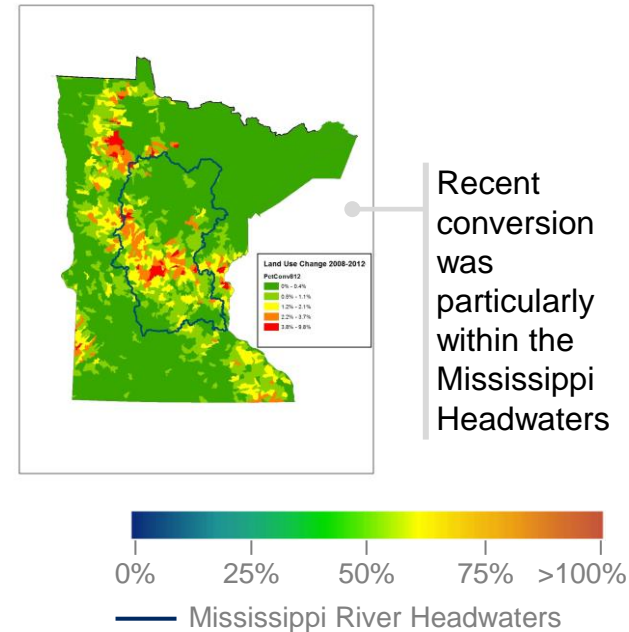
About 100,000 acres were converted for development from 2007 to 2012

Percent growth since 1982



About 250,000 acres were converted to cropland

Relative cropland expansion, 2008-2012<sup>1</sup>



<sup>1</sup> Map shows new cropland in 2012 since 2008. In red hotspots, cropland more than doubled.

Cost of proposed plan to protect Mississippi River is \$0.4 – 0.6 billion

Estimates to protect the Mississippi River Headwaters are around

**\$0.4 – 0.6 billion over 10 years**

Plan includes...

Restoring  
**100,000**  
acres  
of land



Protecting  
**100,000**  
acres of  
wetlands,  
grasslands,  
and forests

**\$0.4 –  
0.6** billion



- Investments would include protecting up to 100,000 acres through conservation easements from willing landowners, with minimal impact on local tax revenues

# Executive summary



Clean water is crucial for the health of Minnesota's economy and people. Natural lands such as forests, grasslands, and wetlands act as nature's filtration system and are important for keeping our water clean



However, our water quality is at risk. Pollution in our water is increasing as the natural lands in the Mississippi Headwaters convert to development, farmland, and industry increasing the pollutants entering the system and reducing the presence of natural filters



We have already seen the negative impact of land conversion on water quality in the Minnesota River Basin and expect similar outcomes in the Mississippi Headwaters if it is not protected



We face a choice: to protect our waters now and prevent further pollution or delay action and hope to clean them later



If action is delayed, it will cost billions to clean the Mississippi River Headwaters



Acting now to protect our water by preserving about 100,000 acres and restoring another 100,000 in the Mississippi Headwaters – a tiny fraction of the 13 million acres of the Headwaters – would cost \$400-600 million



Acting now retains \$130 million in direct benefits such as avoided water treatment costs, retained property values and tourism revenue and jobs, plus \$360 million in indirect benefits

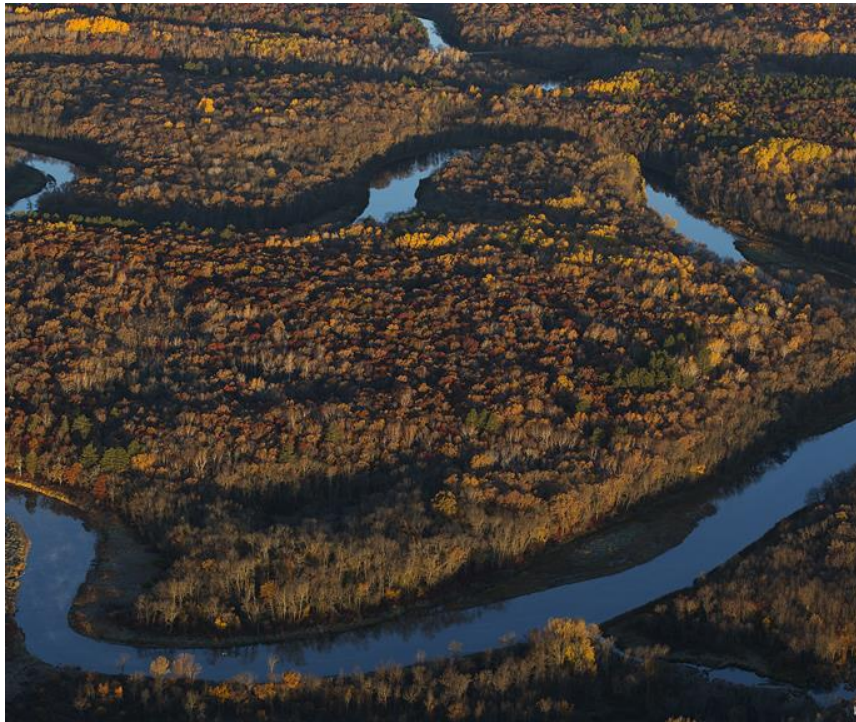


Protecting the Mississippi River Headwaters now avoids billions in future costs and allows us to enjoy clean drinking water and clean rivers

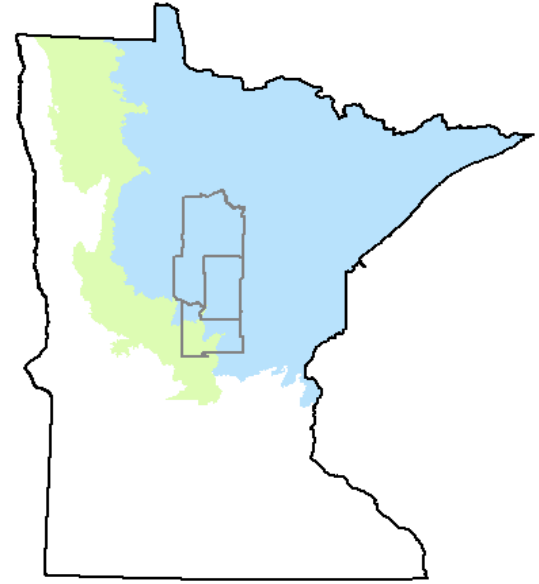


# Three Projects in the Mississippi Headwaters

- Camp Ripley Sentinel Landscape
- Pine River Healthy Watershed Partnership
- Crow Wing River Healthy Watershed Partnership



# Project #1: Camp Ripley Sentinel Landscape



**CAMP RIPLEY**  
SENTINEL LANDSCAPE



The Nature  
Conservancy 

- *Sentinel Landscapes are working or natural lands important to the Nation's defense mission – places where preserving the working and rural character of key landscapes strengthens the economies of farms, ranches, and forests; conserves habitat and natural resources; and protects vital test and training missions conducted on those military installations that anchor such landscapes.*



# 2004-2016 Army Compatible Use Buffer (ACUB) Program

## Program Status:

### DNR

19 Land Transactions

1,920 acres

### BWSR

237 Land Transactions

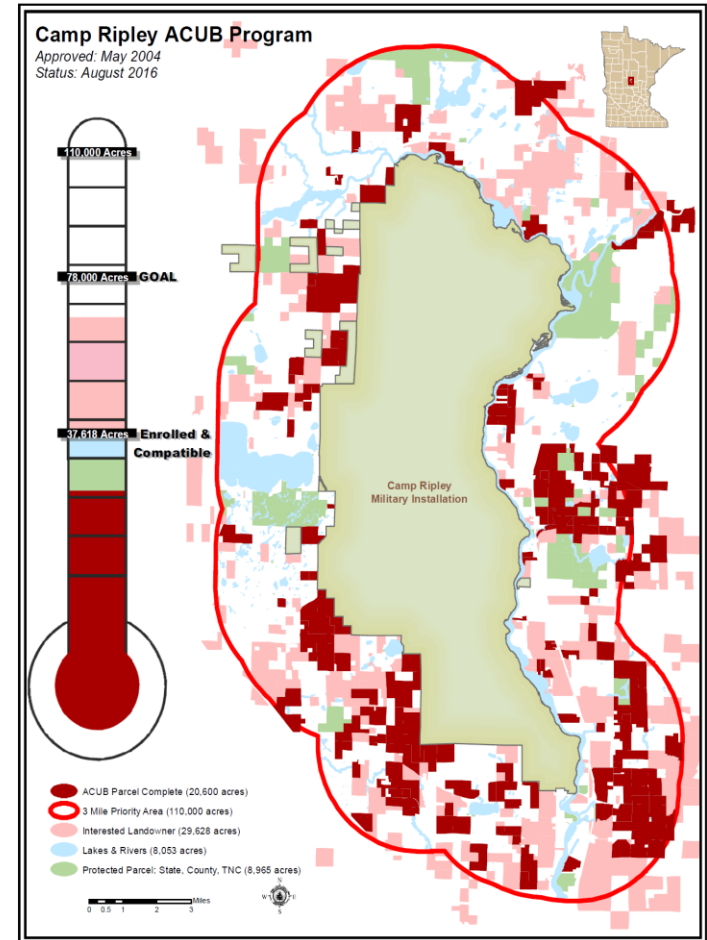
24,500 acres

39 Pending

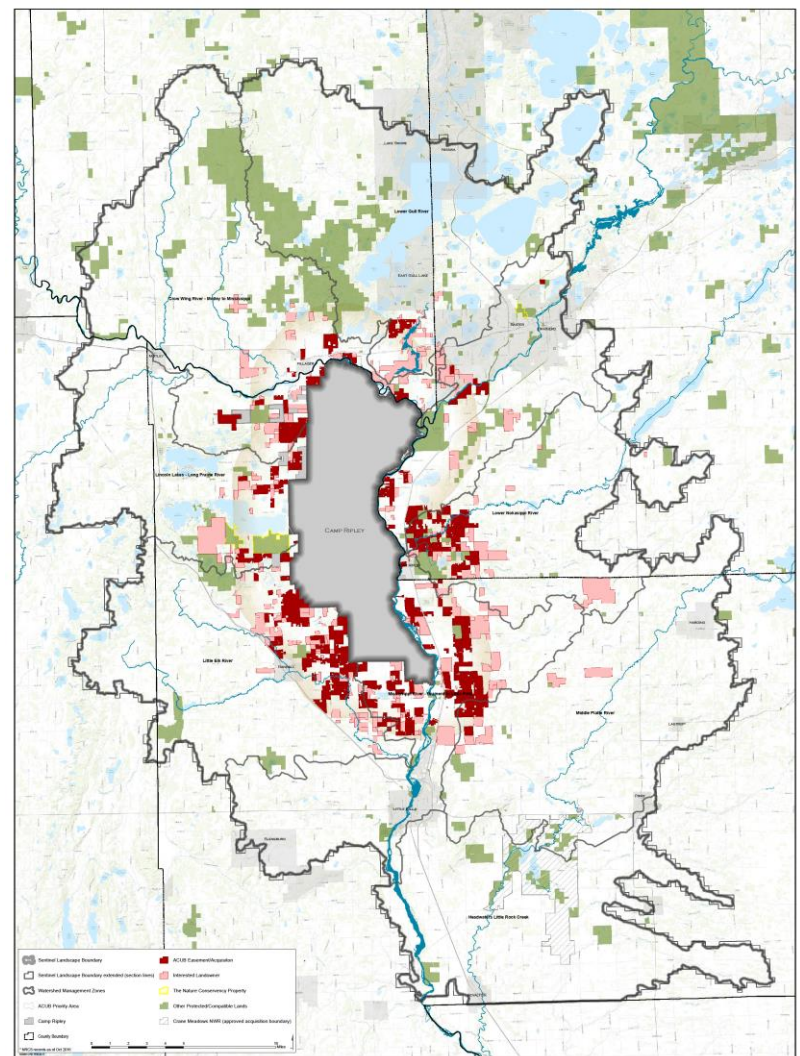
**Funding:** Federal = \$38,400,000    State = \$8,900,000

210 Interested Landowners representing 26,500 acres

**Desired End State:** 78,000 acres of compatible lands within the 110,000 acre 3 mile buffer.

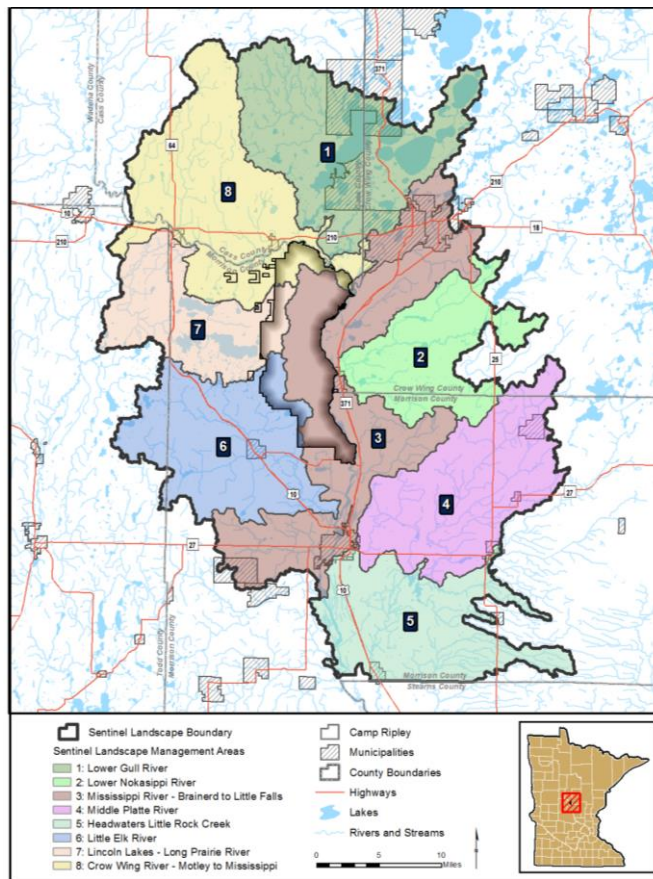


- July 2016: Federal designation as a Sentinel Landscape
- October 2016: Camp Ripley contracted with The Nature Conservancy to coordinate the CRSL program



# Water Resources Project Area

- 50-miles of Miss. River
- 748-miles of streams
- 243-miles of river(s)
- 3997 lakes and ponds
- 40-minor watersheds (HUC12)
- 8-Watershed Mgmt. Units





# CAMP RIPLEY SENTINEL LANDSCAPE



## Sentinel Landscape Strategy

## ACUB Strategy

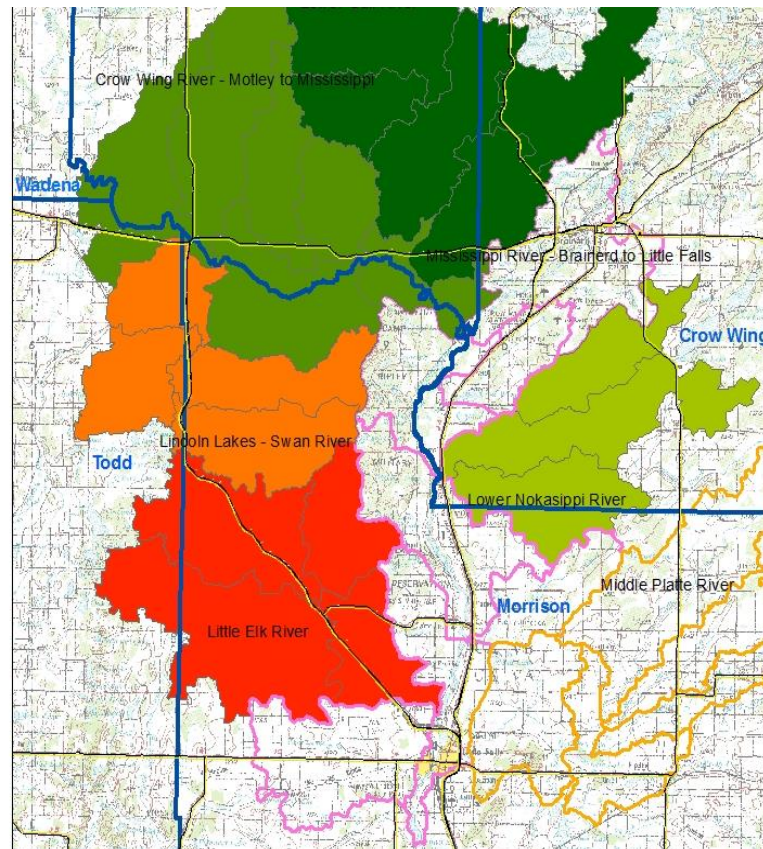
EDUCATE		IMPROVE / MANAGE			ACQUIRE		
<b>#1</b> <b>General Advice &amp; Assistance</b> Factsheets Posters / Mailers Workshops Website / Social Media	<b>#2</b> <b>Specific Advice &amp; Assistance</b> Site Visits Forest Stewardship Plans Project Plans	<b>#3</b> <b>Grants / Cost-share Projects</b> Clean Water Fund EQIP CSP	<b>#4</b> <b>Land Use Controls</b> Storm water Buffers BMPs County Water Plan County Zoning	<b>#5</b> <b>Incentive Programs to Enroll Land</b> SFIA CRP Coops Forest Banks CREP III	<b>#6</b> <b>Donated, Land &amp; Easements</b> NGOs Public Agencies	<b>#7</b> <b>Purchased Easements</b> LSOHC ACUB RIM FFF NGOs ACEP HFRP	<b>#8</b> <b>Fee Title Acquisition</b> LSOHC ACUB Public Agencies

Lower Costs, Less Permanent

Higher Costs, More Permanent

# Crow Wing SWCD Private Forest Mgmt.

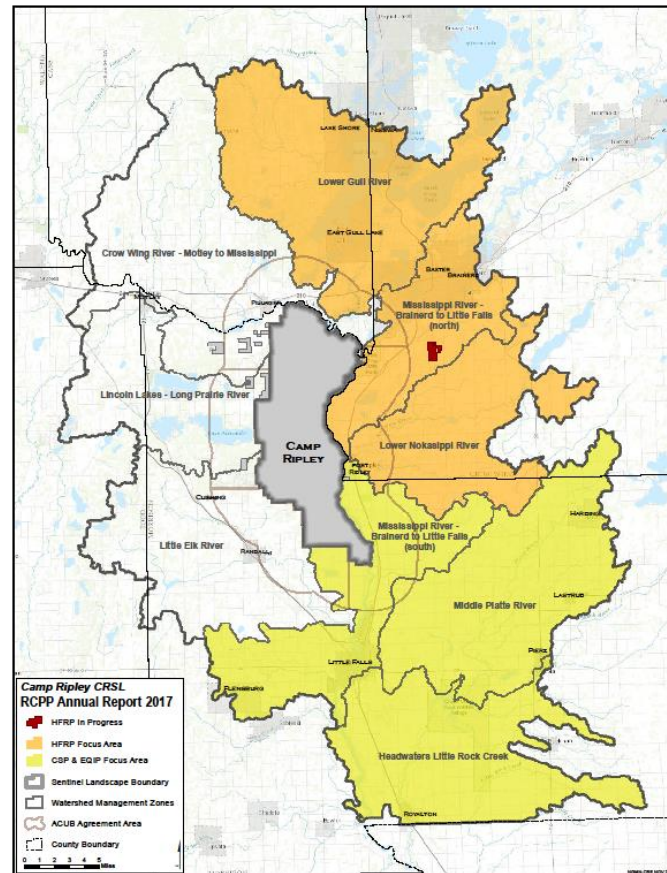
- Environment and Natural Resources Trust Fund grant
- Forest management plans
- Riparian restoration
- Education and Outreach
- USFS additional grant support



# NRCS: Regional Conservation Partnership Program

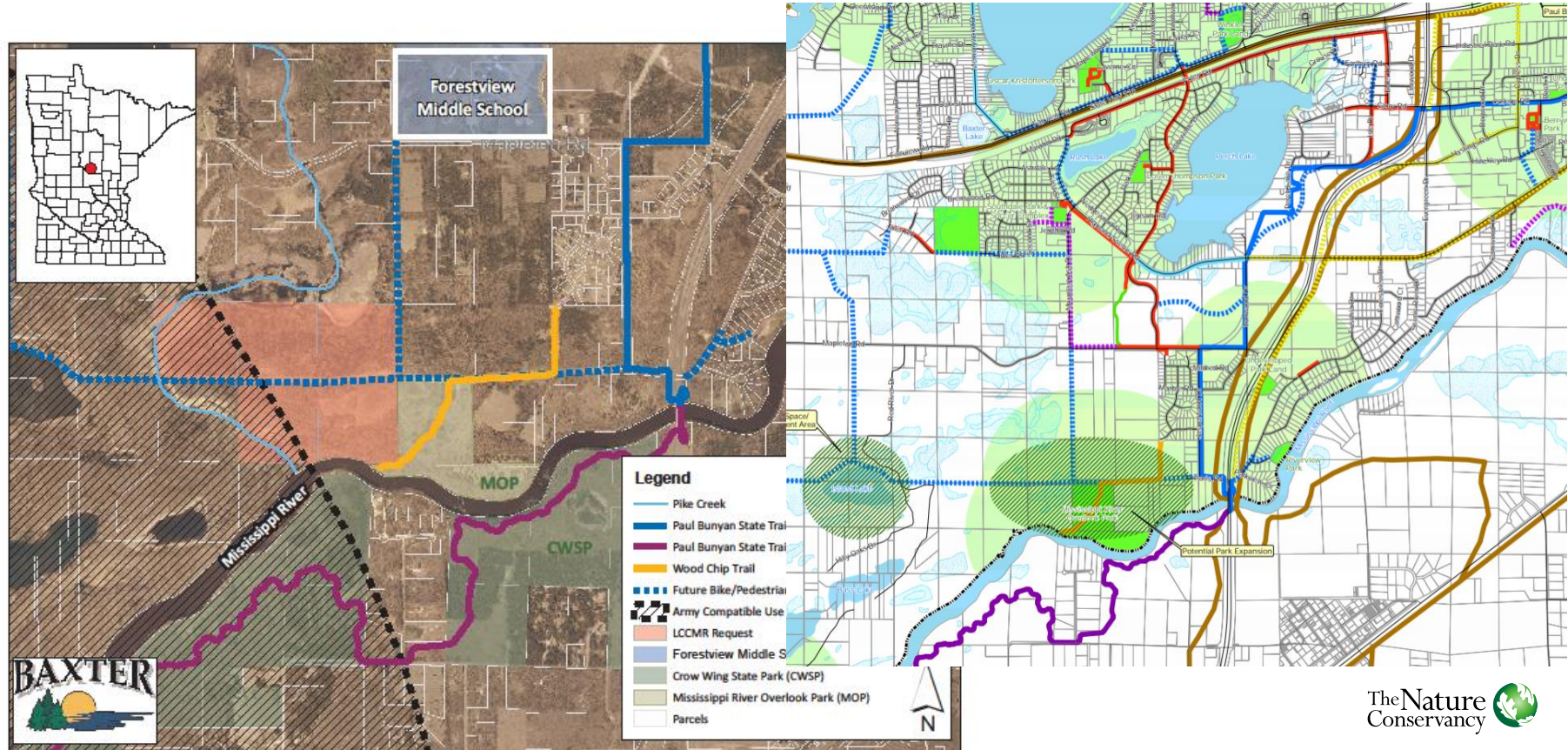
- RCPP award 2016
- \$1.6M for HFRP started
- \$1.2M for EQIP/CSP 2018
- Morrison SWCD lead
- NRCS Forester: Ginger Koop

**CAMP RIPLEY**  
SENTINEL LANDSCAPE



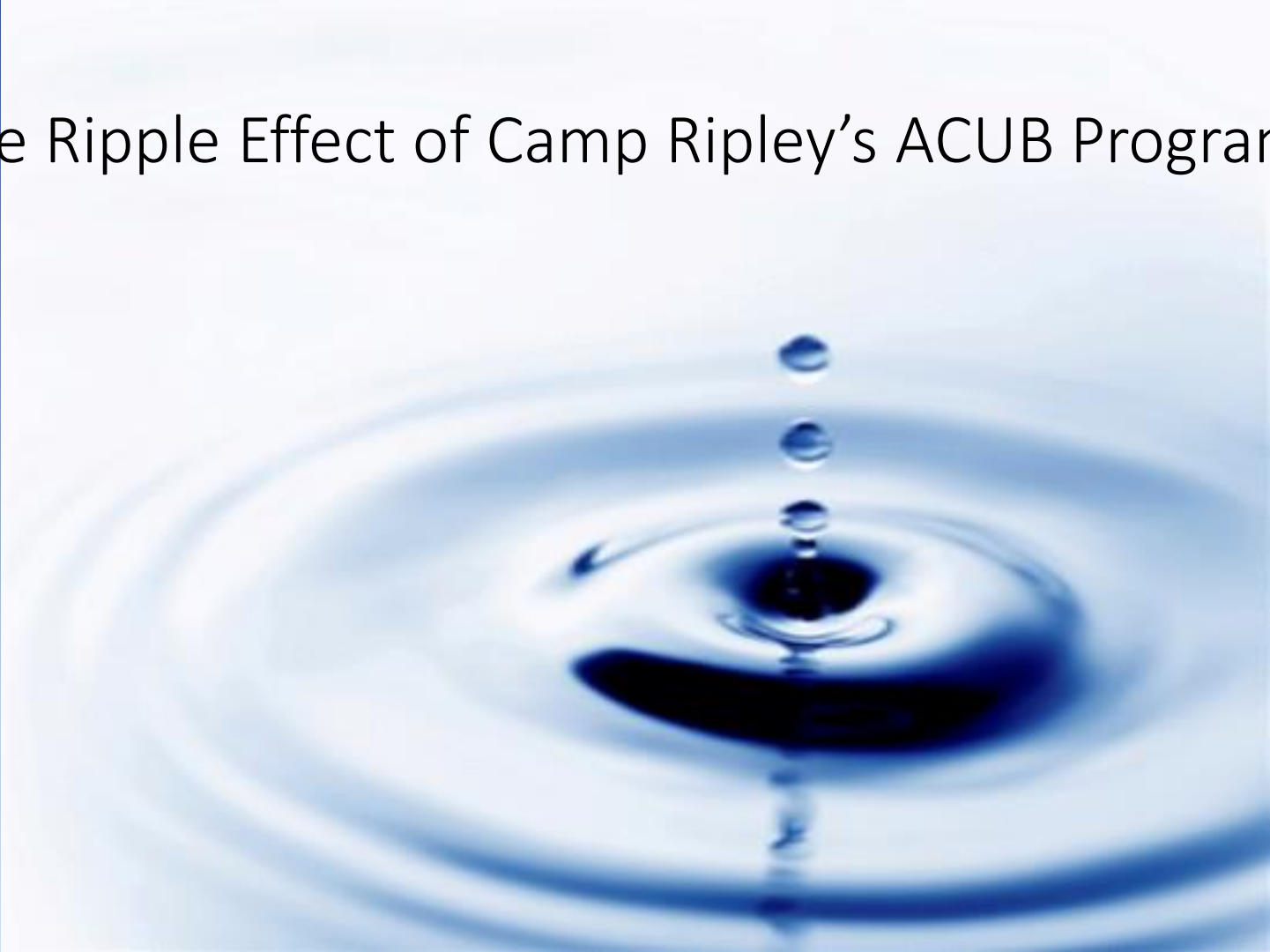


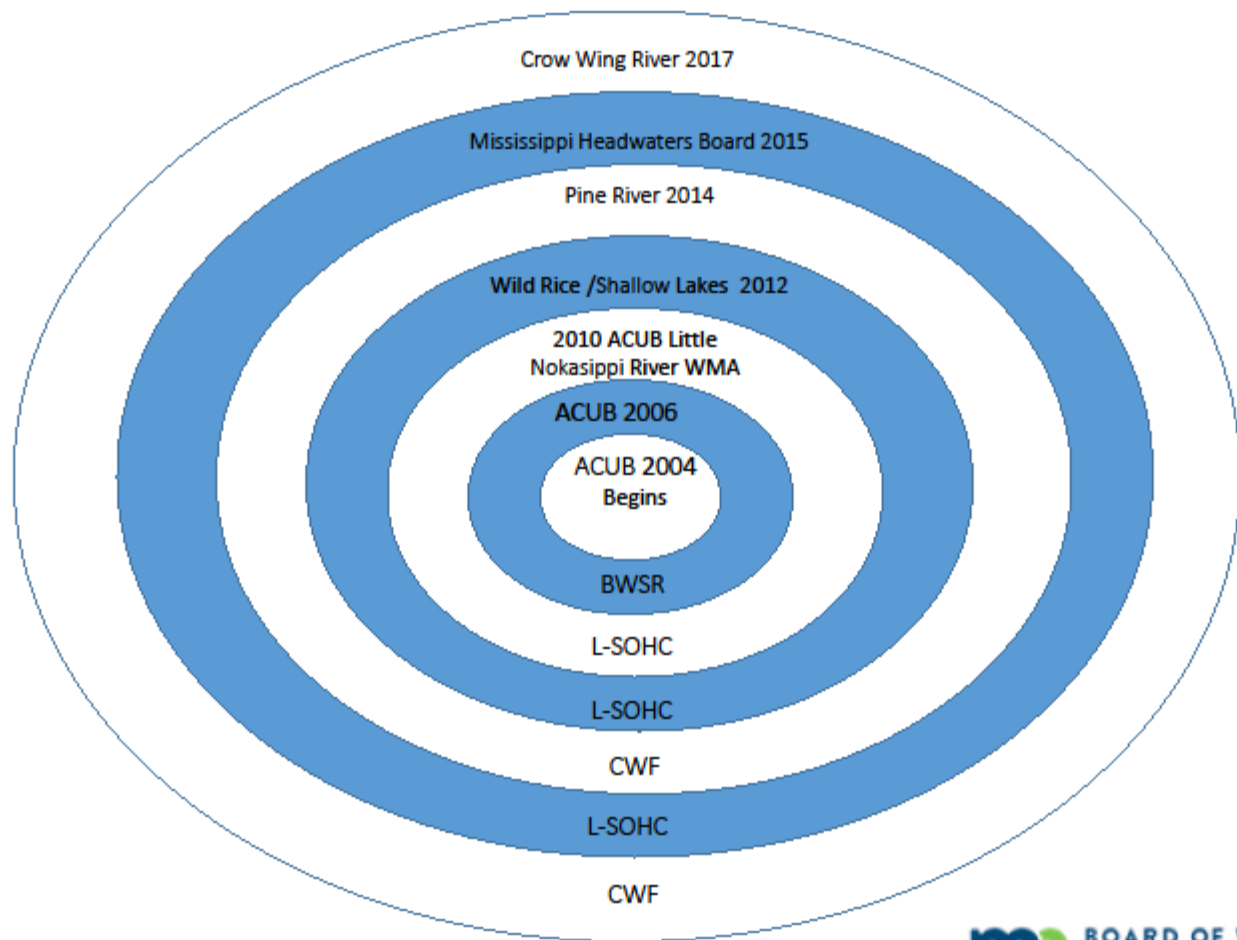
# City of Baxter: LCCMR proposal, 200-ac. Potlatch land



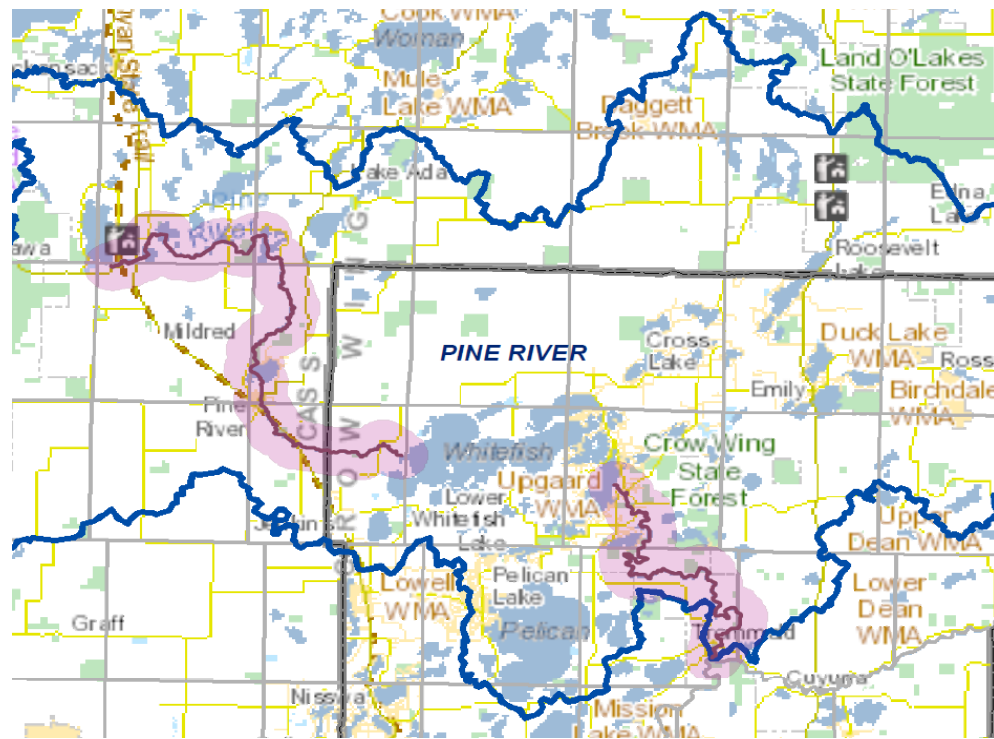
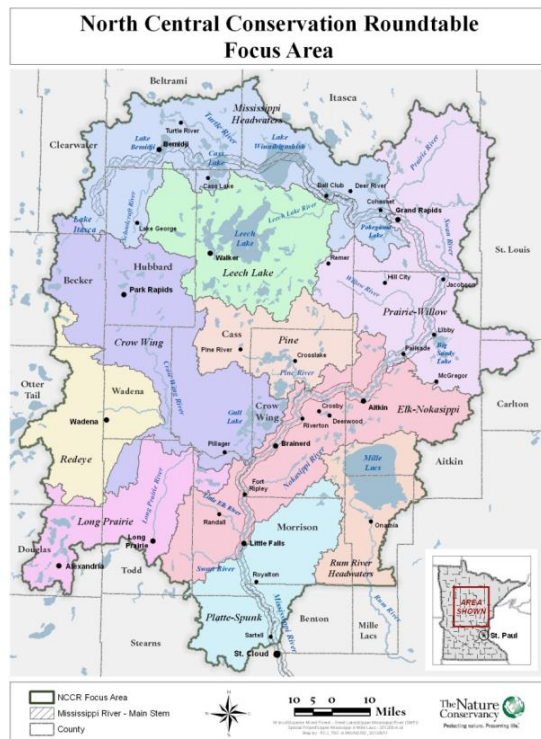


# The Ripple Effect of Camp Ripley's ACUB Program





# Pine River Healthy Watershed Partnership



# Criteria Ranking Sheet for easements:

Healthy Waters Protection - Pine River Watershed Ranking			
Max Score	Criteria	Guidelines:	Our Guidelines
30	# Feet of Shoreline	5 points for minimal river frontage on Little Pine, Upper Pine, or Lower Pine Rivers (<500ft) 10 points for at least 500 - 999 feet of shoreland on a Little Pine, Upper Pine, or Lower Pine Rivers 15 points for 1,000 - 2,000 feet of shoreland on a Little Pine, Upper Pine, or Lower Pine Rivers 20 points for 2,000 - 3,000 feet of shoreline on a Little Pine, Upper Pine, or Lower Pine Rivers 30 points for more than 3,000 feet of shoreland on a Little Pine, Upper Pine, or Lower Pine Rivers	
15	% of Tract Developable	1-15 points base on the proportion of the tract that is developable (10%=1.5pts)	
10	Wetland fringe width	1-10 points based on the distance between upland & the bank/water (0'=10pts, 300'=0pts, -1pt/30'	
20	Urgency	Property opportunity is likely to be lost if we do not act quickly	
20	Professional Judgement	0-20 Points based on Landowner actively managing their land & Riparian/Streamshore Needs	
15	Drinking Water Score	5 Points for Second Quartile Drinking Water Benefits 10 Points for Third Quartile Drinking Water Benefits 15 Points for Fourth Quartile Drinking Water Benefits	TNC Arc GIS Map
15	Adjoining Applications	15 points for land adjoining another application	
15	Adjoining Public Land	15 points for land adjoining public land on the Little Pine, Upper Pine, or Lower Pine Rivers adjoining land permanently protected by other easement program	
5	Habitat Value	1-5 points based on the habitat value of the property, uniqueness, and lack of existing development and shoreline alterations	Wild Rice, Cisco, TNC Maps
10	% of Parcel/Tract	1-10 points based on the proportion of the parcel enrolled (10% = 1 pt)	
10	% Forest of the parcels	1-10 points based on the proportion of parcel that is forest (10% = 1 pt)	
15	Minor Watershed Risk Classification County Waterplan	1-15 Points for Classification Enhancement and Protection. Less points for Villigance. Additional points for moving that needle.	
20	Bargain Sale/Leverage	1-20 Points based on percent discount or other funds leveraged	
200	TOTAL GROSS SCORE	*Other factors may raise or lower the priority of a parcel	
100	Final Score (Total / 2)		



# Tracking Landowner easement progress: SWCD

Crow Wing SWCD RIM Healthy Waters Protection - Pine River Easements								Updated 4/10/18 by Sheila Boldt	
Landowner (Last, F)	ID #	Start	Score	Stretch	Acres	Shore (ft)	Cost (60%)	Status	Notes
Landowner	18-06-16-13	7/12/2016	64.5	L	75	1500	\$65,215.23	Recorded	
Landowner	18-08-16-13	7/11/2016	66.5	L	23	1500	\$32,896.67	Recorded	
Landowner	18-11-16-13	7/12/2016	45	L	13.5	50	\$14,948.15	Recorded	
Landowner	18-12-16-13	7/14/2016	52.5	L	25	640	\$84,760.62	Recorded	
Landowner	18-10-17-13	5/17/2017	64.5	L	37.5	1600	\$44,498.00	Recorded	
		<b>Complete Total:</b>			<b>174</b>	<b>5290</b>	<b>\$242,318.67</b>		
Landowner	18-08-17-13	6/12/2017	66	L	305.9	4200	\$172,645.00	Pending Deed	Putting into Trust & then will re-apply
Landowner			66	L	31	1110	\$125,010.92	Pending Deed	Cost will change for 2018 values
Landowner	11-02-18-13	1/31/2018	66	U	28	3800	37,412.76	Application	Mailed to BWSR 4/10/18
		<b>Estimated Total:</b>			<b>538.9</b>	<b>14400</b>	<b>\$577,387.35</b>		
Landowner	18-13-16-13	7/25/2016	80.5	U	45.8	4250	\$230,000.00	May re-apply	Pending Satisfaction of Mortgage
		<b>Potential Total:</b>			<b>758.7</b>	<b>23940</b>	<b>\$1,049,706.02</b>		

# Pictures tell the story...



*Towering Pines in a well-managed woodland (Quade)*



*4,000 + Ft Shoreline, Turkeys appeared here soon after (Quade)*



# Pine River Dam restoration: Norway Brook project



**North Central Conservation Roundtable  
Focus Area**

This map illustrates the North Central Conservation Roundtable Focus Area in Minnesota. The map is color-coded by county and watershed. Key features include:

- Counties:** Beltrami, Itasca, Clearwater, Becker, Hubbard, Crow Wing, Cass, Pine, Crow Wing, Wadena, Redeye, Douglas, Long Prairie, Todd, St. Cloud, Morrison, Ramsey, Benton, and Mille Lacs.
- Watersheds:** Mississippi Headwaters, Leech Lake, Crow Wing, Pine, Crow Wing, Wadena, Redeye, Long Prairie, Todd, St. Cloud, Morrison, Ramsey, Benton, and Mille Lacs.
- Cities:** Duluth, Grand Rapids, Park Rapids, Wadena, Pine River, Cass, Crow Wing, Wadena, Redeye, Douglas, Long Prairie, Todd, St. Cloud, Morrison, Ramsey, Benton, and Mille Lacs.
- Legend:**
  - NCCR Focus Area (Solid color)
  - Mississippi River - Main Stem (Hatched pattern)
  - County (Thin black line)
- Scale:** 0 to 10 miles.
- North Arrow:** Located in the bottom left corner.
- Inset Map:** Shows the location of the focus area within the state of Minnesota, with St. Paul marked.







# Partnership Leads: Technical Advisory Committee

## Crow Wing River Healthy Waters Partnership



**CASS COUNTY**  
*Still More To Explore!*

*Minnesota*



**HUBBARD COUNTY**  
**Soil & Water**  
Conservation District



**WADENA**  
**Soil & Water**  
Conservation District



**CROW WING**  
**Soil & Water**  
CONSERVATION DISTRICT



**Becker**  
**Soil & Water**  
Conservation District



## Project Description:

- Focus near-shore forest easement program on the Straight, Fish Hook, Shell and Crow Wing Rivers to implement local county water plan and agency goals for water quality protection



## Partners:

### - Local

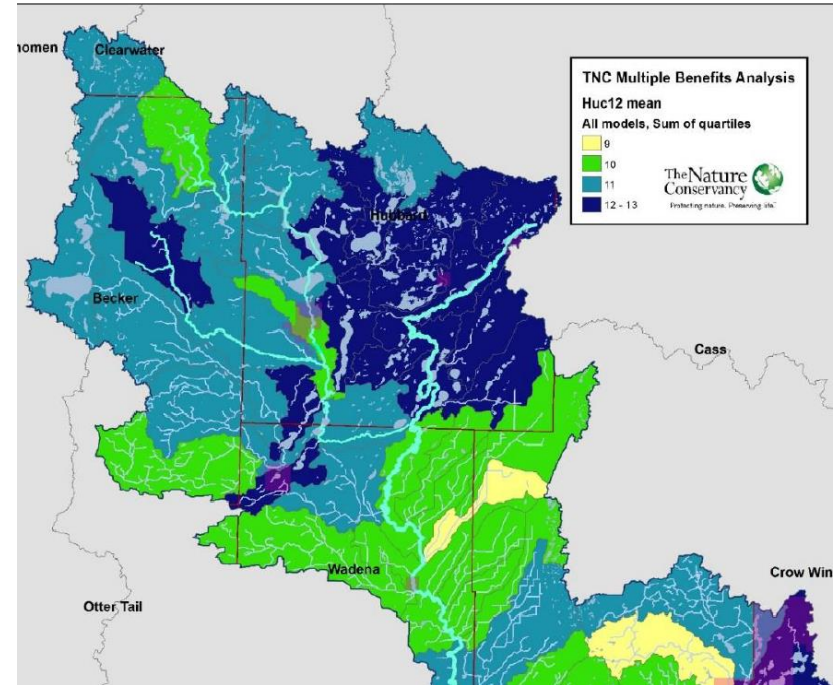
- Becker SWCD
- Hubbard SWCD
- Wadena SWCD
- Cass County ESD
- Crow Wing SWCD

### - State

- Board of Water and Soil Resources
- Department of Natural Resources:
- MN Pollution Control Agency

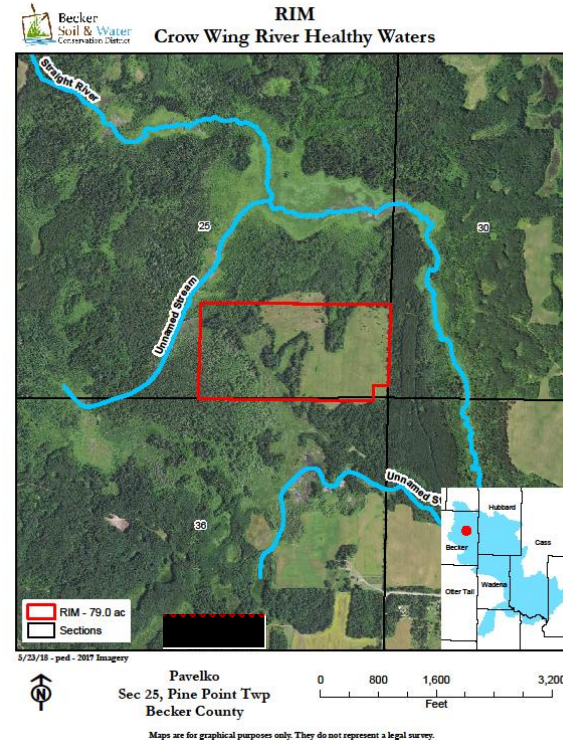
### - Non-Governmental Organizations

- The Nature Conservancy



# RIM easement example in Becker County

- Starts with one landowner
- Now three adjacent applied
- Potential grazing mgmt.
- Working forest plan





## Smaller Properties Opportunities and Challenges:

- More urban than rural
- Seasonal/recreation
- Less acres, more valuation
- Large impact near-shore
- Seasonal intensity issue
- Sometimes rental uses



## Urban Strategies:

- Zoning controls
- Storm Water
- Septic/Well
- Shoreland Buffers
- Shoreland restoration
- Neighborhood Associations
- Lake Improvement Districts

[Home](#) > [Assistance](#) > [Nurture nature](#) > [Shoreland management](#) >

## Restore Your Shore

[Home](#)

[Introduction](#)

[Shore Lore](#)

[Step & Techniques](#)

[Plant Guide](#)

[References & resources](#)

## Restore Your Shore (RYS)



*Restore Your Shore* is a powerful tool for shoreland owners and professionals t

**NATURAL RESOURCES CONSERVATION SERVICE**  
**CONSERVATION PRACTICE STANDARD**  
**STREAMBANK AND SHORELINE PROTECTION**  
**(Ft.)**

**CODE 580**

**DEFINITION**

Treatment(s) used to stabilize and protect banks of streams or constructed channels, and shorelines of lakes, reservoirs, or estuaries.

Treatments applied shall seek to a effects to endangered, threatened candidate species and their habitats possible.

Treatments applied shall seek to s



# Hubbard Soil and Water Conservation District

Hubbard County Local Water Management Plan

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- Wetland Conservation
- Cost Share
- Community Partners
- Forest Mgmt. Plans
- Wild Rice easements RIM
- River RIM easements
- Shoreland Guides

January 2016 to January 2026



