



Forest/Lake Protection Update

Legislative Subcommittee on Water Policy

August 18, 2021



Habitat and Water Quality Protection: Successful Protection Efforts in the Upper Mississippi Basin

Successful LSOHC Projects:

Camp Ripley Buffer Program (ACUB):
\$10 M (+ \$50 M Federal)

Wild Rice (6+ Phases): \$9 M

Mississippi Headwaters
Board (5 Phases): \$16+ M

Pine-Leech Watershed Protection: \$4 M

Clean Water Act: 1971

- Impaired Waters / Restoration Focus
- **No Protection Methods**

Protection Methodologies:

- Large Lake Screening (2008)
- 75% Watershed Goal: DNR Fisheries (2010)
- Crow Wing County Water Plan (2013)
- "RAQ" Parcel Targeting (2016)

Successful Clean Water Council Projects:

Pine River: \$3 M

Crow Wing River: \$3 M

Rum River: \$3 M

Forest Landscape
Stewardship Plan (DNR)

Funding \$\$:
SFIA, 2C, FFF
Easements,
Cost-Share

One Watershed One Plan (1W1P)

Leech, Pine, Rum, Redeye, Miss. Headwaters, Sauk, Crow (north fork)

Priority Lakes/Watersheds

- Larger, Unimpaired, High Quality
- <75% Protected (at risk)

Targeted Implementation to Landowners

- Sell the "Toolbox", Landowner's Choose!

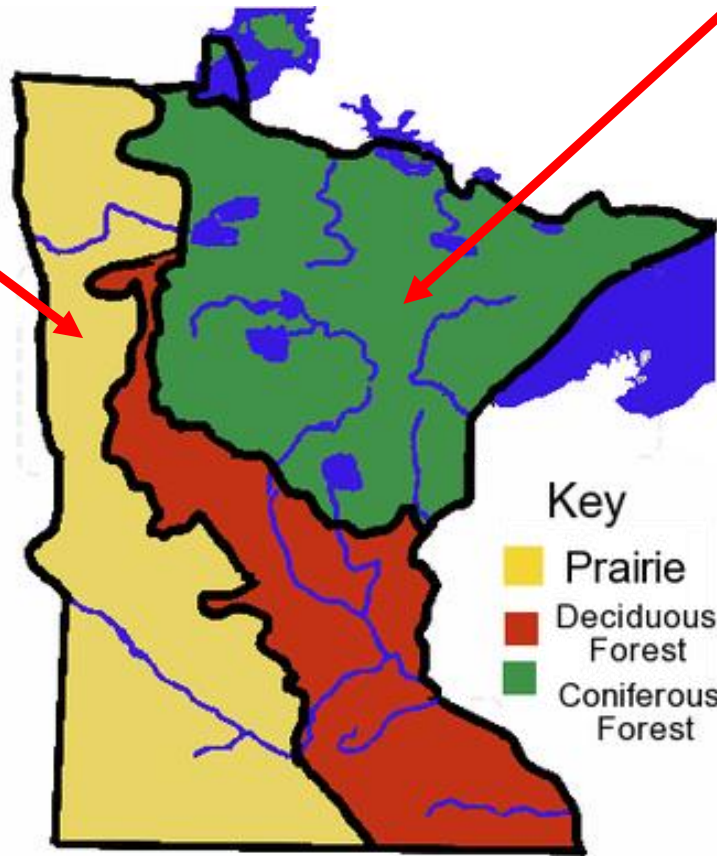
WRAPS (MPCA)

1W1P
Watershed
Based Funding,
Increased SWCD
Capacity \$\$

Landscape Context for Watershed Planning in MN

Restoration

- Water Quantity Drivers
- Streams/ Ditch Based
- Ag Based
- Lake-bed Clay Soils
- High Land Disturbance
- Little Public Land
- Watershed Districts
- **High Land Values**



Protection

- Water Quality Drivers
- Lake Based
- Forest Based
- Outwash/Till Soils
- Low Land Disturbance
- Lots of Public Land
- Lake Associations
- **Low Land Values = Return on Investment**

Minnesota:

Headwaters State

HUC 4 Level:

- Upper Miss Basin

HUC 8 Level – 1W1P/LSPs:

- Major Watersheds

HUC 10 Level:

- Subwatersheds

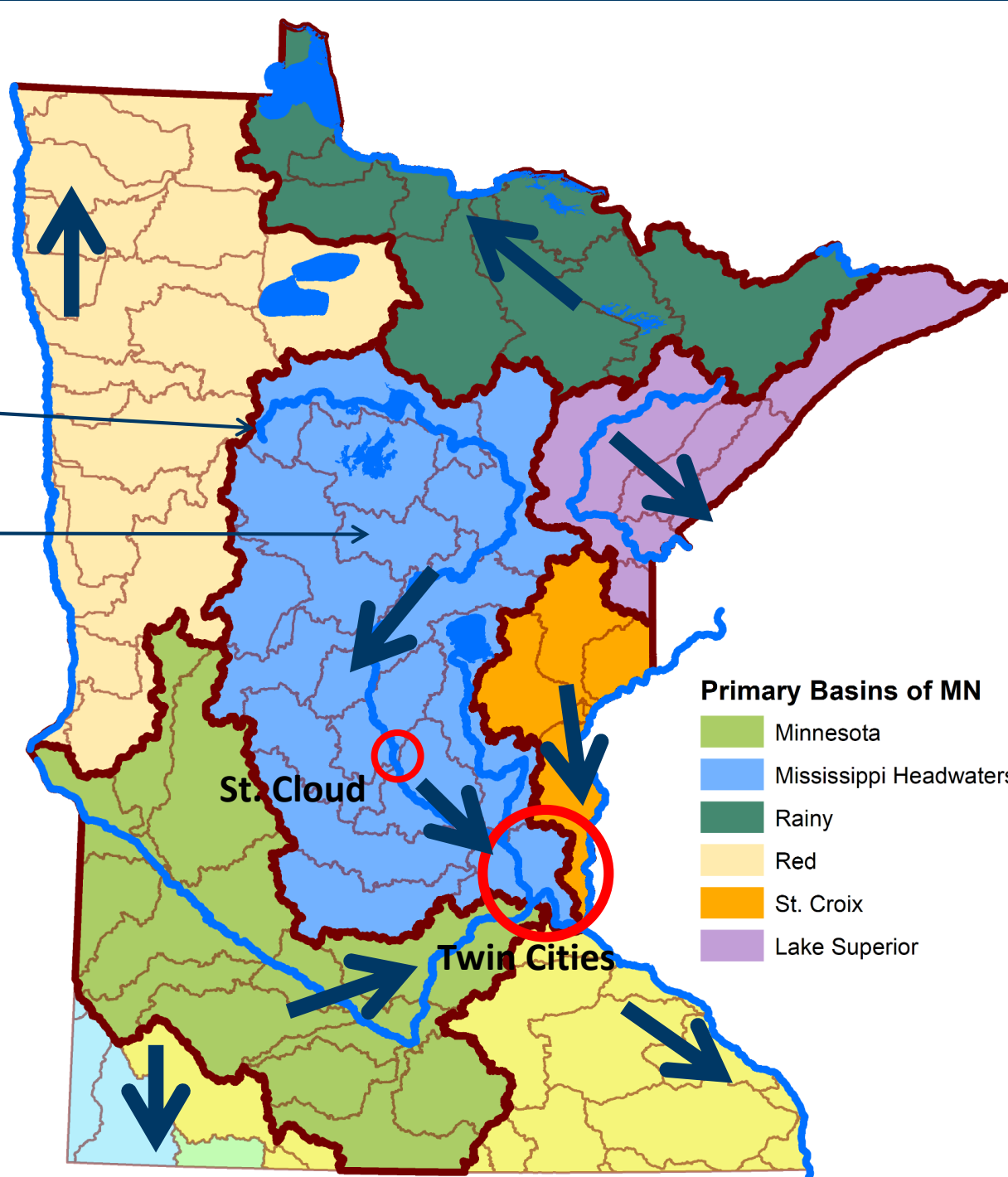
HUC 14 Level:

- Minor watersheds

Parcel Level:

- Landowners

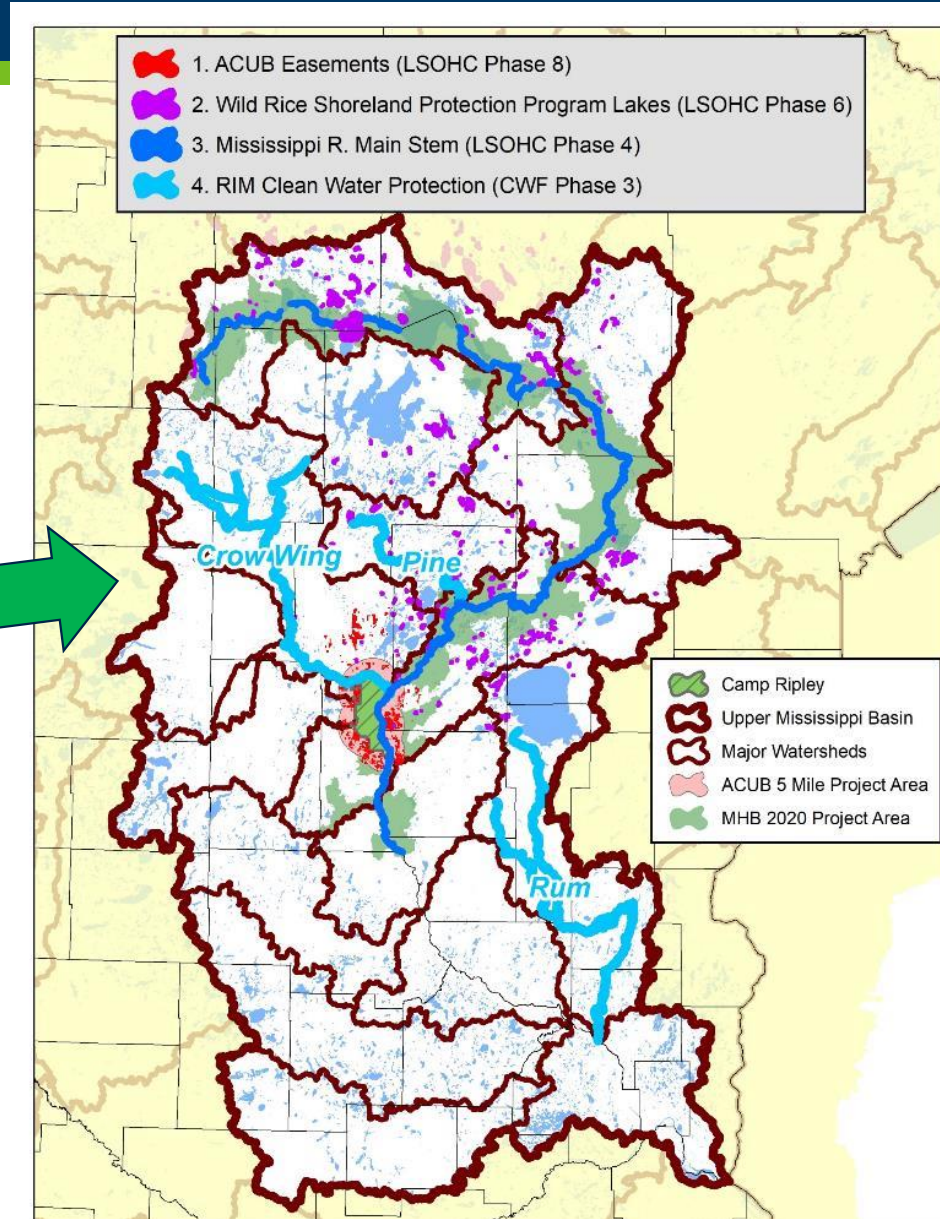
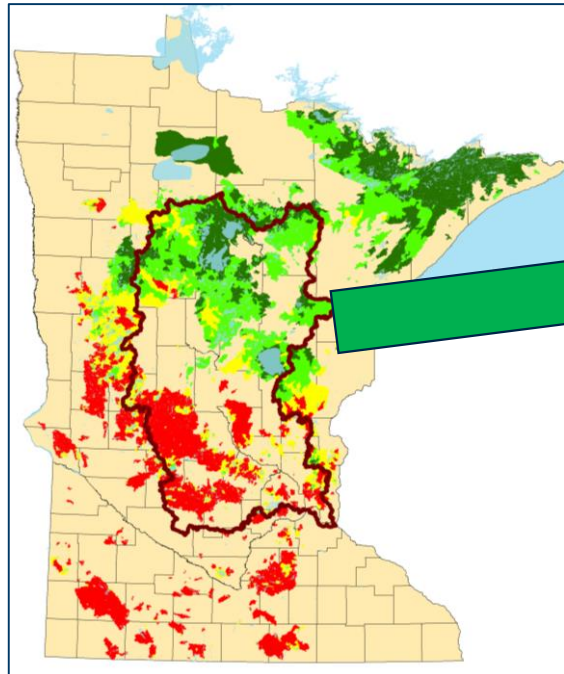
Drilling down for priorities!



“Water, in all its uses and permutations, is by far the most valuable commodity that comes from the forest land that we manage, assist others to manage, and/or regulate.”

National Association of State Foresters

Forestland Protection Projects (2005 – present)



Accomplishments so far...

Forestland Protection Projects

1. ACUB Project:
\$60 M – Fed + LSOHC
2. Wild Rice Project:
\$9 M – LSOHC
3. Mississippi River Corridor:
\$16+ M – LSOHC
4. RIM Clean Water Projects:
\$9 M – CWC
5. Leech / Pine Watershed
\$4 M - LSOHC

What's next?

What's Next?

Priority Lakes!

How we determine priority lakes?

Input → Policy → Implementation

LSP/WRAPS → 1w1p → PTM based PFM

Status: 6 of 15 1W1Ps are complete (40%)

8800: Total lakes in Upper Miss

436: Larger Lakes: 400 acres

376: Filter out: Impaired ⁽⁶⁰⁾

300: Filter out: Already 75% Protected ⁽⁷⁶⁾

207: Filter out: Shallow/wild rice/NE Lakes ⁽⁹³⁾

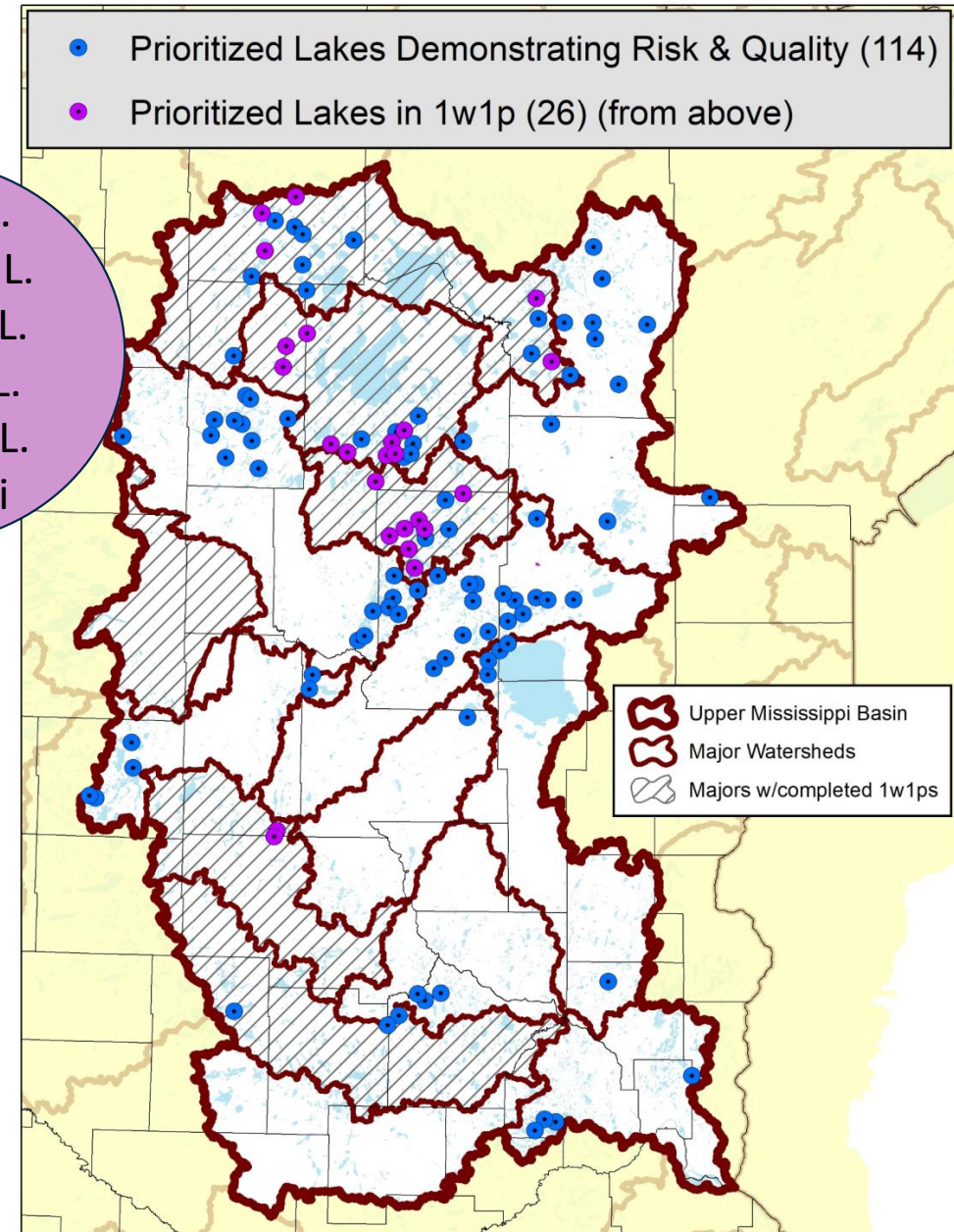
166: Filter out: Watersheds with high disturbance ⁽⁴¹⁾

Filter for: **Risk** (Phos. Sensitivity = Higher/Highest)



& **Quality** (Lakes of Biological Sig. = High/Outstanding)

= **114** Priority Lakes in Basin (26 are also priority in 1w1ps)

Woman L.
Pokegama L.
Whitefish L.
Big Trout L.
Roosevelt L.
L. Bemidji

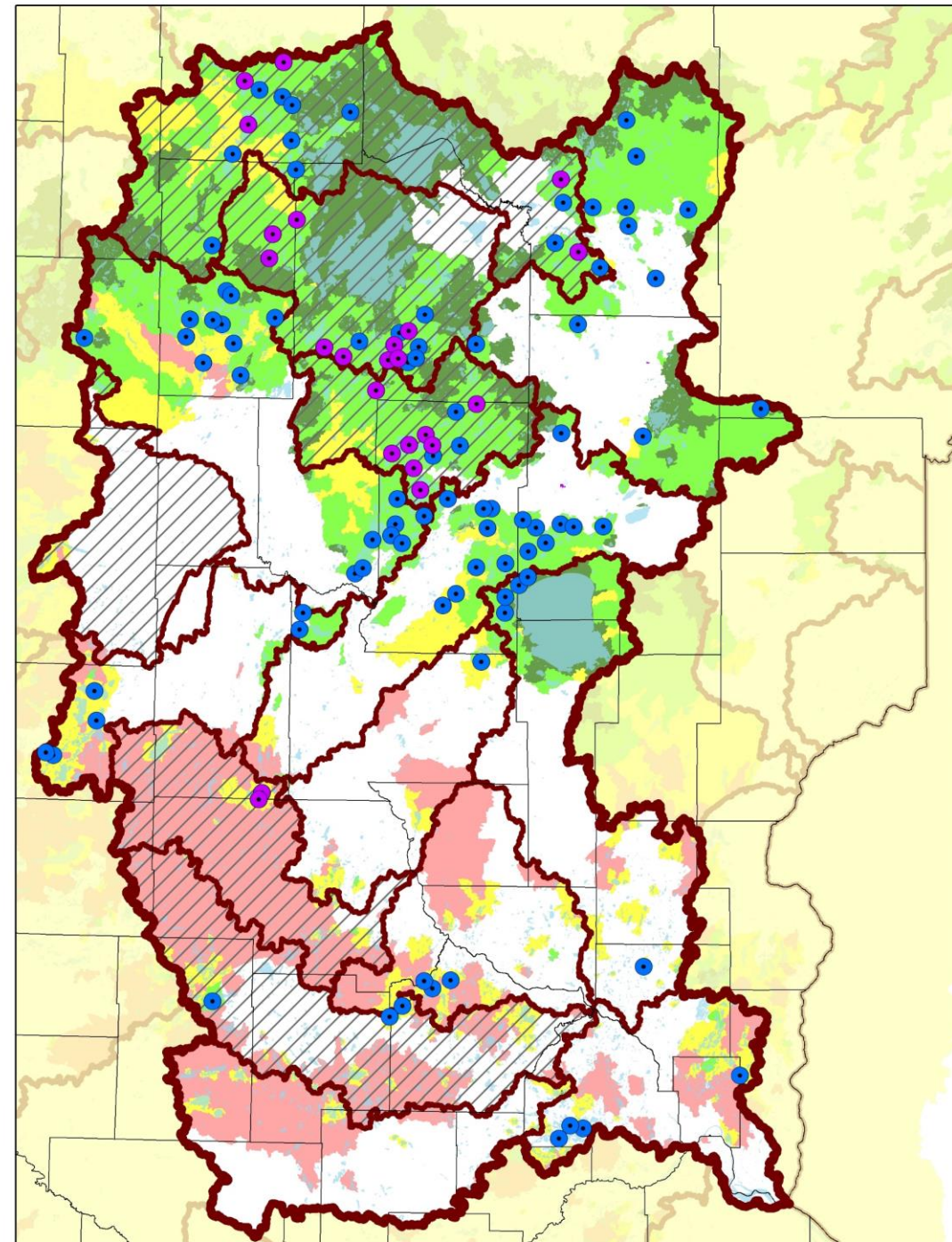


Prioritizing Lakes

-  Prioritized Lakes Demonstrating Risk & Quality (114)
-  Prioritized Lakes in 1w1p (26) (from above)

White areas on map are stream-based watersheds ->

- **Priority lakes align with DNR Fisheries research and local watershed plans!**
- ***Light green is the “sweet spot” where we maximize return on investment!***



Cost to Protect Priority Lakes

Acres Needed to Achieve Protection Goal for 26 Prioritized Lakes in existing 1W1Ps:
50,000 acres

Funding Sources:

50% via SFIA (general fund)

50% via Easements (LSOHC + Clean Water)

Costs:

\$19 M = Clean Water Fund (12,500 acres)

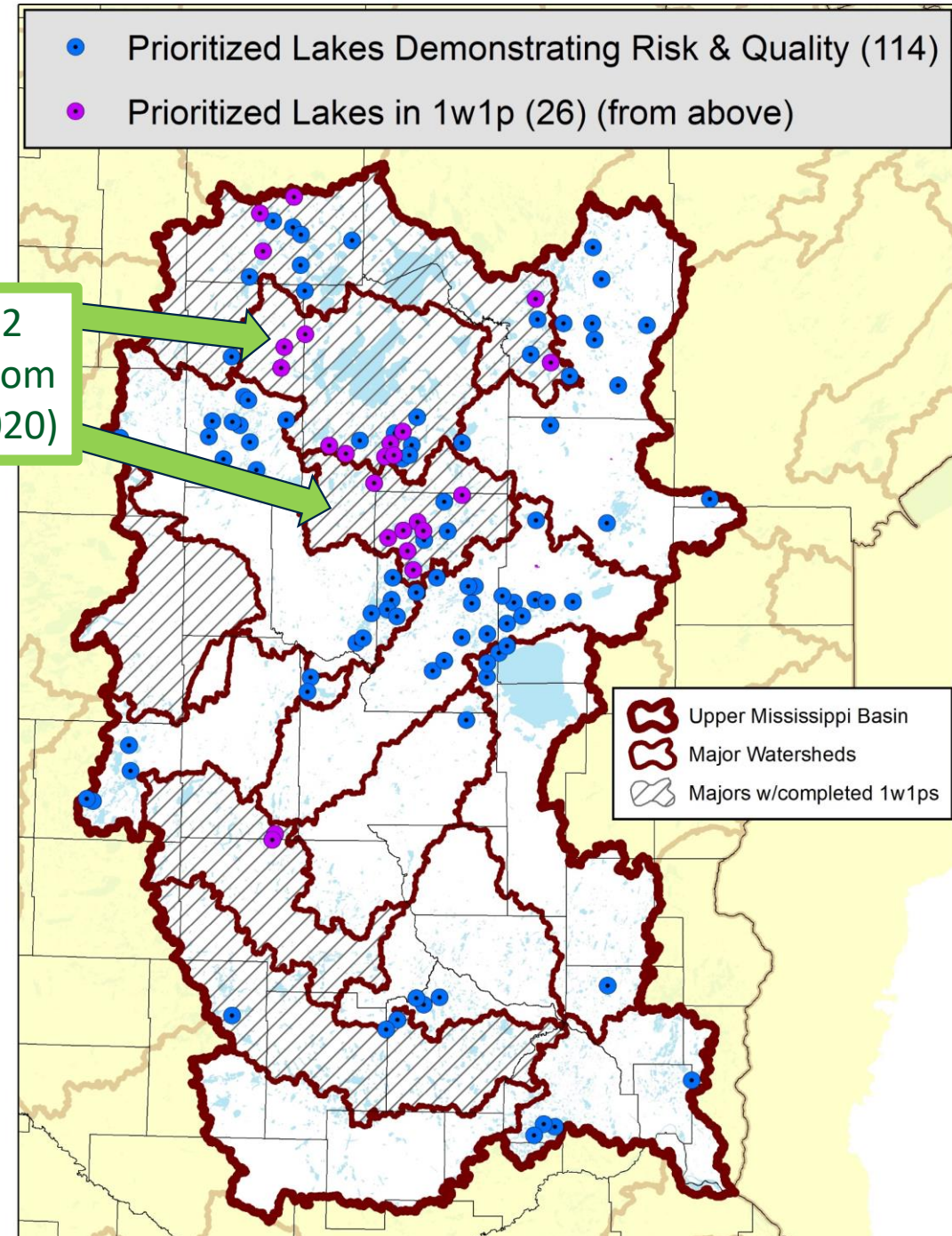
+\$19 M = Lessard-Sams Outdoor Heritage Fund (12,500 acres)

= **\$38 Million** = Easement cost for 25,000 acres

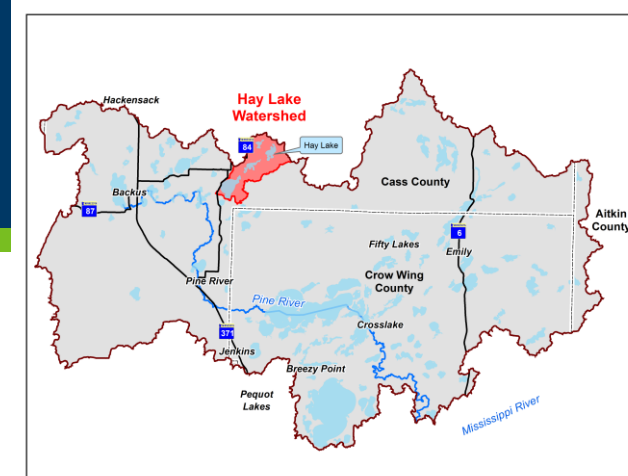
+ 33 Million for SFIA (25,000 acres for 100 years)

Land stays on the Tax Roles!

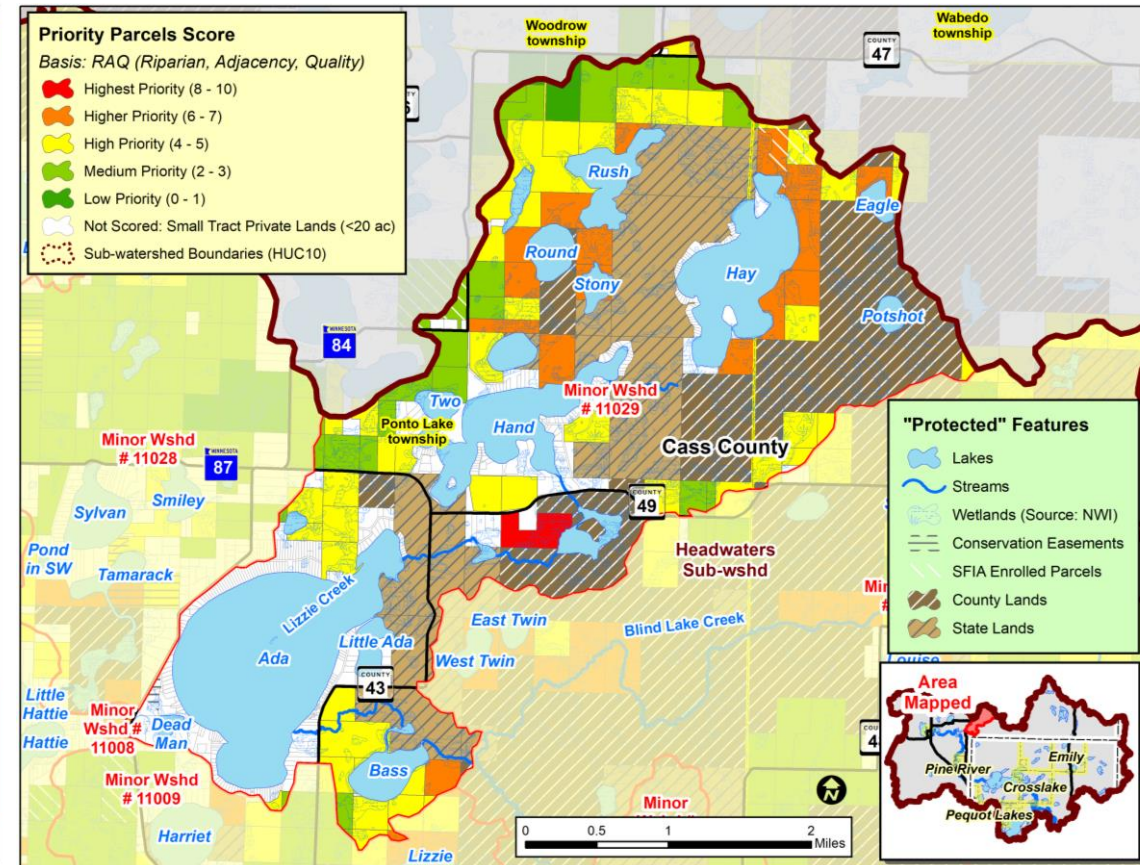
Phase 1,2
Funding from
LSOHC (2020)



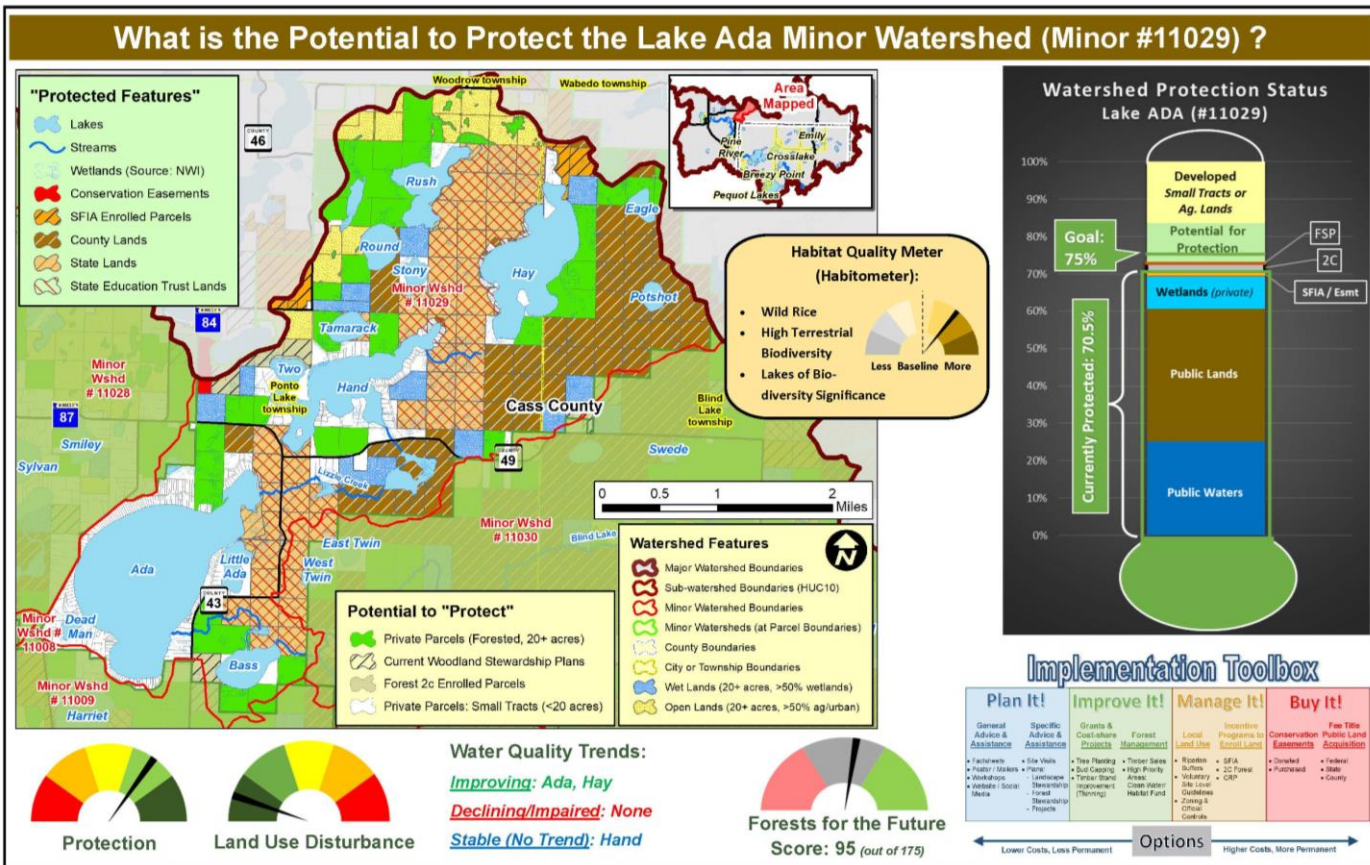
Drilling Down to the Parcel (Pine Wshd Example)



Parcel Scoring by RAQ:



Measurable Protection Goals:



Landowner Table

(Sorted by Highest RAQ Scores)



Acres (Gross)	Landowner Contact Info				Property Information								RAQ Scoring					
	Name	Address	Address2	City_State_Zip	Physical Address	Physical City	Land Value	Bldg Value	Total Value	Land Value per Acre	Cost (60% of Land Value)	Cost per Acre	RAQ: Riparia	RAQ: Adjacen	RAQ: Quali	RAQ: Total	Cost per RAQ Pt	Cost per RAQ Pt per Acre
70.1	TILBURY, DAVID L & FRALAYLA	623 COUNTY 49 NW		PINE RIVER MN 56474			\$64,400	\$0	\$64,400	\$918	\$38,640	\$551	3	3	3	9	\$4,293	\$61
41.5	SCHUCK, SCOTT & SCHUCK, JOS	4182 48TH ST SW		PINE RIVER MN 56474-7886			\$61,300	\$0	\$61,300	\$1,478	\$36,780	\$887	3	3	1	7	\$5,254	\$127
33.9	WHITNAH, V BLAIR	C/O BRANDE J WHITNAH	19 OAKGROVE	POTOSI MO 63664-2035			\$309,300	\$0	\$309,300	\$9,118	\$185,580	\$5,471	3	3	1	7	\$26,511	\$782
56.6	THEISEN, JOHN L, III & SANDRA	477 N HAND LK DR NW		BACKUS MN 56435	477 N HAND LAKE C	BACKUS	\$314,200	\$164,200	\$478,400	\$5,553	\$188,520	\$3,332	3	3	0	6	\$31,420	\$555
53.9	WHITNAH, V BLAIR	C/O BRANDE J WHITNAH	19 OAKGROVE	POTOSI MO 63664-2035			\$120,500	\$0	\$120,500	\$2,237	\$72,300	\$1,342	3	2	1	6	\$12,050	\$224
49.8	SCHUCK, SCOTT & SCHUCK, JOS	4182 48TH ST SW		PINE RIVER MN 56474-7886			\$136,000	\$0	\$136,000	\$2,729	\$81,600	\$1,637	3	2	1	6	\$13,600	\$273
40.0	FULLERTON, DAVID C; DONALD & KAREN	31113 351ST LN		LE SUEUR MN 56058-3404			\$75,600	\$0	\$75,600	\$1,888	\$45,360	\$1,133	3	3	0	6	\$7,560	\$189
39.9	WALSTON, LARRY	2155 GALLERY CT		VICTORIA MN 55386-4522	1757 HAY LAKE DR	PINE RIVER	\$87,600	\$49,200	\$136,800	\$2,193	\$52,560	\$1,316	3	3	0	6	\$8,760	\$219
39.9	SCHUCK, SCOTT & SCHUCK, JOS	4182 48TH ST SW		PINE RIVER MN 56474-7886			\$51,800	\$0	\$51,800	\$1,300	\$31,080	\$780	3	2	1	6	\$5,180	\$130
39.8	GARD, LEO J & JUDY	80 LAKE HATTIE DR NW		BACKUS MN 56435	1846 STATE 84 NW	BACKUS	\$81,600	\$20,700	\$102,300	\$2,051	\$48,960	\$1,231	3	2	1	6	\$8,160	\$205
39.0	KELM, SHERRY L & CHESTER E	2618 PINE CREST RD NE		LONGVILLE MN 56655			\$30,600	\$0	\$30,600	\$784	\$18,360	\$471	3	3	0	6	\$3,060	\$78
38.8	ZENNER, DANE V	451 COUNTY ROAD 47 NE		LONGVILLE MN 56655-3371			\$39,200	\$0	\$39,200	\$1,010	\$23,520	\$606	3	2	1	6	\$3,920	\$101
38.5	WHITNAH, V BLAIR	C/O BRANDE J WHITNAH	19 OAKGROVE	POTOSI MO 63664-2035			\$56,500	\$0	\$56,500	\$1,468	\$33,900	\$881	3	2	1	6	\$5,650	\$147
34.2	WHITNAH, V BLAIR	C/O BRANDE J WHITNAH	19 OAKGROVE	POTOSI MO 63664-2035			\$102,900	\$0	\$102,900	\$3,010	\$61,740	\$1,806	3	2	1	6	\$10,290	\$301
29.7	MCMENOMAN, THOMAS G & K	21990 HARROW AVE N		FOREST LAKE MN 55025			\$28,000	\$0	\$28,000	\$941	\$16,800	\$565	3	3	0	6	\$2,800	\$94
25.8	WHEELER, C TODD & LAURA K	2403 STATE HIGHWAY 84 NW		LONGVILLE MN 56655-3289			\$84,500	\$0	\$84,500	\$3,277	\$50,700	\$1,966	3	2	1	6	\$8,450	\$328
20.9	GADDES, DARIEN C & BARBARA	19134 TWIN LAKES RD NW		ELK RIVER MN 55330-1941	3 COUNTY 47 NE	LONGVILLE	\$85,800			\$4,098	\$51,480	\$2,459	3	2	1	6	\$8,580	\$410
19.8	CROSBY, DOUGLAS R & CHERYL	251 24TH ST NW		LONGVILLE, MN 56655			\$81,400	\$0	\$81,400	\$4,119	\$48,840	\$2,471	3	2	1	6	\$8,140	\$412
160.3	KRUCKOW, BRIAN K; STEVEN F	PO BOX 903		LAKEVILLE MN 55044	2074 STATE 84 NW	BACKUS	\$377,800	\$41,200	\$419,000	\$2,357	\$226,680	\$1,414	3	1	1	5	\$45,336	\$283
105.6	WHEELER PARTNERS	2403 STATE HIGHWAY 84 NW		LONGVILLE MN 56655-3289			\$157,200	\$0	\$157,200	\$1,488	\$94,320	\$893	2	3	0	5	\$18,864	\$179
80.3	VELARDI, KATHRYN A	PO BOX 33		PINE RIVER MN 56474	406 COUNTY 43 NW	BACKUS	\$161,300	\$135,900	\$297,200	\$2,008	\$96,780	\$1,205	3	2	0	5	\$19,356	\$241
50.1	MCMENOMAN, THOMAS G & K	21990 HARROW AVE N		FOREST LAKE MN 55025	788 N HAND LAKE C	BACKUS	\$85,300	\$166,200	\$251,500	\$1,703	\$51,180	\$1,022	3	2	0	5	\$10,236	\$204
41.6	COURNEYA, PAUL H	1388 SHADYWOOD SHORES DR NW		PINE RIVER MN 56474	1388 SHADYWOOD	PINE RIVER	\$68,200	\$166,700	\$234,900	\$1,640	\$40,920	\$984	2	3	0	5	\$8,184	\$197
40.1	DRAEGER, DAN	201 COUNTY 49 NW		PINE RIVER MN 56474	274 COUNTY 49 NW	PINE RIVER	\$64,500	\$44,000	\$108,500	\$1,607	\$38,700	\$964	2	3	0	5	\$7,740	\$193
40.1	WEAVER, MICHAEL C	1702 13TH AVE NE		KASSON MN 55944			\$9,500	\$0	\$9,500	\$237	\$5,700	\$142	3	2	0	5	\$1,140	\$28
40.0	FULLERTON, DAVID C; DONALD & KAREN	31113 351ST LN		LE SUEUR MN 56058-3404	353 BASS LAKE DR	BACKUS	\$51,900	\$10,900	\$62,800	\$1,296	\$31,140	\$778	3	2	0	5	\$6,228	\$156
40.0	KELM, SHERRY L & CHESTER E	2618 PINE CREST RD NE		LONGVILLE MN 56655			\$47,000	\$0	\$47,000	\$1,175	\$28,200	\$705	2	3	0	5	\$5,640	\$141
40.0	CROSBY, DOUGLAS R & CHERYL	251 24TH ST NW		LONGVILLE, MN 56655			\$33,800	\$0	\$33,800	\$845	\$20,280	\$507	2	2	1	5	\$4,056	\$101
39.8	KELM, SHERRY L & CHESTER E	2618 PINE CREST RD NE		LONGVILLE MN 56655			\$39,100	\$0	\$39,100	\$983	\$23,460	\$590	2	3	0	5	\$4,692	\$118
39.7	CROSBY, DOUGLAS R & CHERYL	251 24TH ST NW		LONGVILLE, MN 56655	251 24TH ST NW	LONGVILLE	\$47,900	\$293,200	\$341,100	\$1,207	\$28,740	\$724	2	2	1	5	\$5,748	\$145
39.6	CROSBY, DOUGLAS R & CHERYL	251 24TH ST NW		LONGVILLE, MN 56655			\$49,500	\$0	\$49,500	\$1,251	\$29,700	\$751	2	2	1	5	\$5,940	\$150
39.0	ZENNER, DANE V & GUY	451 COUNTY ROAD 47 NE		LONGVILLE MN 56655-3371			\$53,800	\$0	\$53,800	\$1,378	\$32,280	\$827	2	3	0	5	\$6,456	\$165
39.0	ZENNER, DANE V & GUY	451 COUNTY ROAD 47 NE		LONGVILLE MN 56655-3371			\$48,300	\$0	\$48,300	\$1,238	\$28,980	\$743	2	3	0	5	\$5,796	\$149

PFM Outreach by SWCDs

1 The state of Headwaters

No water flows in to Minnesota, it all flows out. That makes us stewards of many waters. The map below shows our state broken into counties (the white line), by major watershed (the various blue sections), and by water flow (the orange, red, and yellow areas).

North to the Arctic
The Red River and Rainy River watershed flow north into the Arctic Ocean

Forests = Clean Water
Clean water is a by-product of healthy forests. Water quality is directly connected to our forests and woods, which act as a giant sponge. The water that leaves the forest is clean, with few pollutants, for a state where waters begin!

3 Protect forests, protect water

Forested Lands Retain Water
Forests and well-vegetated lands serve as a giant natural sponge. Filtering and retaining stormwater, a healthy woods of plants and their deep root systems helps soil soak up water and filter contaminants. Woodlands protect both groundwater and surface water. Native cover slows surface infiltration of stormwater into underground aquifers.

Developed Lands Shed Water
When woodlands are converted to other uses, rain and snowmelt runoff increases. Increased runoff carries more sediment and contaminants like chemicals and excess nutrients to surface water. Infiltration and groundwater recharge is reduced. Increased flows can defoliate streams and decrease water quality.

5 Options for landowners

Your Woodland Stewardship Plan is key to unlocking a host of options that range from keeping your woods healthy to financial incentives.

1 Keep your woodlands intact
Private forest land provides public benefits. For the nation, woodlands and resources are available to all private forest landowners. You might be eligible to receive either:
- Annual payments by enrolling in the Sustainable Forest Incentives Act (SFIA) program.
- A lump sum payment by selling or leasing your woods permanently to a conservation easement.

Add more trees and native vegetation to your land
- Planted trees on woodlands that have been converted to other uses.
- Field trees and native vegetation near streams, rivers, and shorelines.

Make your woods healthier and more resilient
Follow the forester recommendations in your Woodland Stewardship Plan. Private examples may include:
- Minimize natural disturbances with a woodland forest.
- Site-specific tree management to grow with a woodland improvement cut.
- Encourage the survival of native tree and plant by removing invasive species.
- Increase tree species diversity by re-planting the growth of lost or common trees on your property and planting other site-appropriate native trees.

Private Forests. Pristine Waters.

The Importance of Woodland Stewardship Plans for Minnesota's Private Forests and Waters.

The Great Lakes
The Lake Superior basin flows through the great lakes and into the Atlantic Ocean

The Mighty Mississippi
All other Minnesota watersheds flow into the Mississippi and Missouri river basins and then on to the Gulf of Mexico

DEPARTMENT OF NATURAL RESOURCES
BOARD OF WATER AND SOIL RESOURCES
One Watershed One Plan
CLEAN WATER LAND & LEGACY FUNDING

2 Watershed 101

A watershed describes an area of land that contains a common set of streams and rivers that all drain into a larger body of water.

The key word with watersheds is "Connection." The water within a watershed is always moving. Groundwater and surface water are connected. Your land is connected to neighboring properties. Together they may be connected to a stream which leads to a lake or larger river. Streams and rivers form extensive drainage networks. What you do on your land has the potential to affect many other places. Protecting one means protecting all. You can start to make that happen.

Forests filter water like a sponge
Water quality is directly connected to our forests. Rain and snowmelt are trapped and soak into the forest ground. Forests filter excess water, sediment, and filter contaminants. Water runoff that escapes forested land is very clean. Private forest lands help keep our watersheds healthy.

2 The magic number is 25%
Watershed land cover was analyzed for six lakes in Minnesota. Increased runoff brings phosphorus to lakes which cause harmful algae blooms. The phosphorus concentration in lakes goes up dramatically when more than 25% of the watershed is disturbed.

at least 75% of a watershed. Some lands (shown in Dark Green & Yellow) are lands that are at a tipping point.

benefit from having extensive public lands in their watershed. Public lands are not at risk for conversion to other "disturbed" land use types such as agriculture, wetlands, etc. Private landowners can add "protected" benefits by the Sustainable Forest Incentives Act (SFIA) or placing a conservation easement on their land.

Below is an example of an actual watershed breakdown.

Major Watershed "HUC08" Acres = 858,000 (1340 sq. miles)
Subwatershed "HUC10" Acres = 104,000 (163 sq. miles)
Minor Watershed "HUC14" Acres = 19,000 (30 sq. miles)

* Hydrologic Unit Codes (or HUCs) refer to the number of digits for each unique watershed ID that is part of the National Watershed Inventory (Dataset) managed by the United States Geological Survey (USGS). Hydrologic units in the WSD are arranged in a nested, hierarchical system with lower numbers representing larger watersheds/basins.

4 Native plant communities

The native plant community was established by the forest. Let the forest grow what it was intended to grow. The native plant community system can be an excellent seed and type of woodlands that are more resilient to disturbance. Identify land into native plant community based on soil, water, and other local conditions.

Work with the land not against it. Allow the forest to be what it was ecologically meant to be.
Soil types and habitat cover can tell you what will likely thrive in your forest. You best chance for a healthy forest is to let the land grow what it needs to grow. It is also vital to encourage diversity of native tree species within your woodland's ecological classification. Diverse forests tend to be healthier and more resilient to stress. Your Woodland Stewardship Plan will give you direction on what your soil type is and which native plants will grow best on your land.

The land was formed by glaciers. Below is an example of glacial soil deposits.

Retreating glacier
Rolling moraines, leamy & clay soils = Mixed hardwood forest
Flat, sandy outwash plain = Pine forest

Woodlands hold economic, recreational, and ecological value. However, the economic and recreational value of woodlands hinge on the woodlands ecological strength. You can't have the two without the one.

Ideas...

- Forest economics
- Diverse plant and wildlife habitat
- Clean water for recreation
- Healthy fish habitat

Helping landowners see how their woodlands connect to their watersheds...

Implementation Success Story: Crosby Area

37%



w/ Public Lands

46%



w/ 2017 Acquisition

51%



w/ 2017 Easement

66%



w/ SFIA

Current: 71%

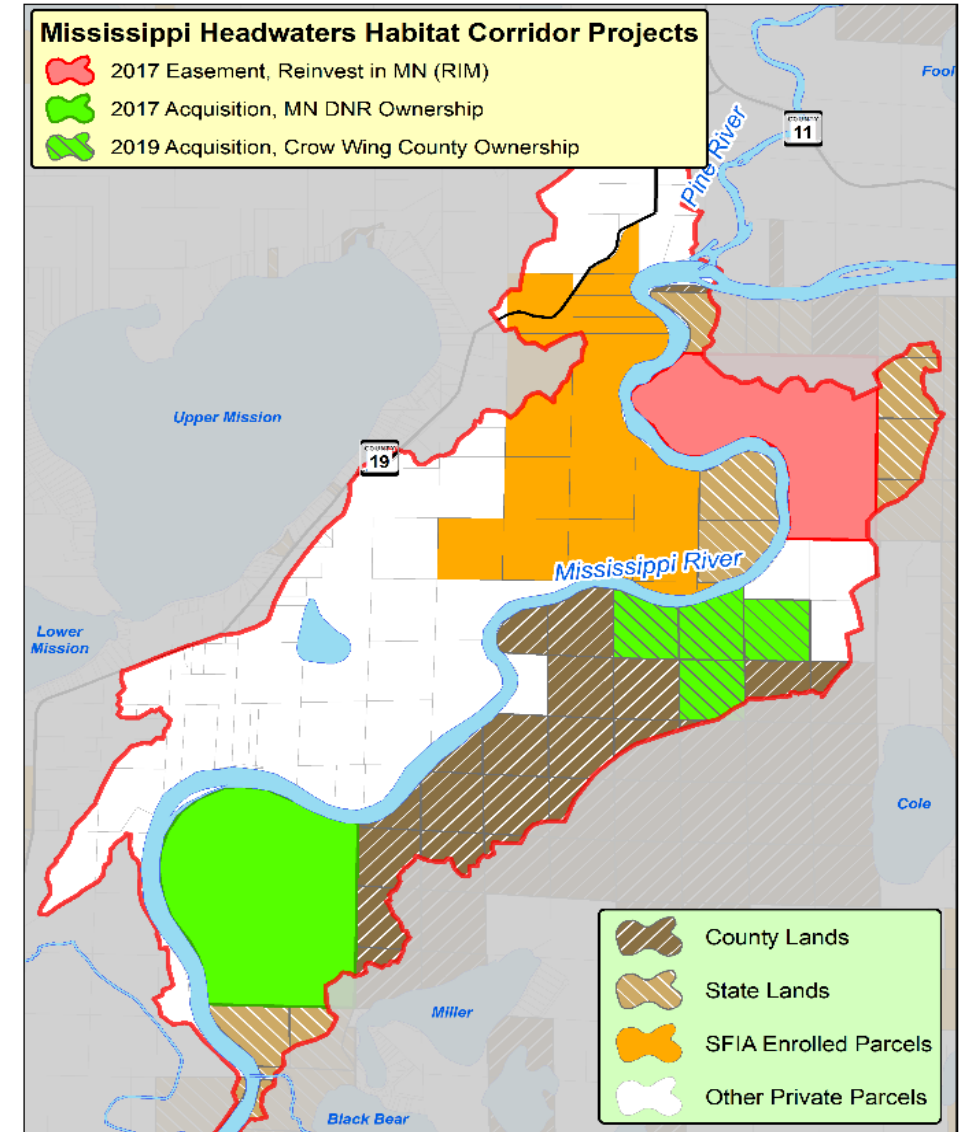


w/ 2019 Acquisition

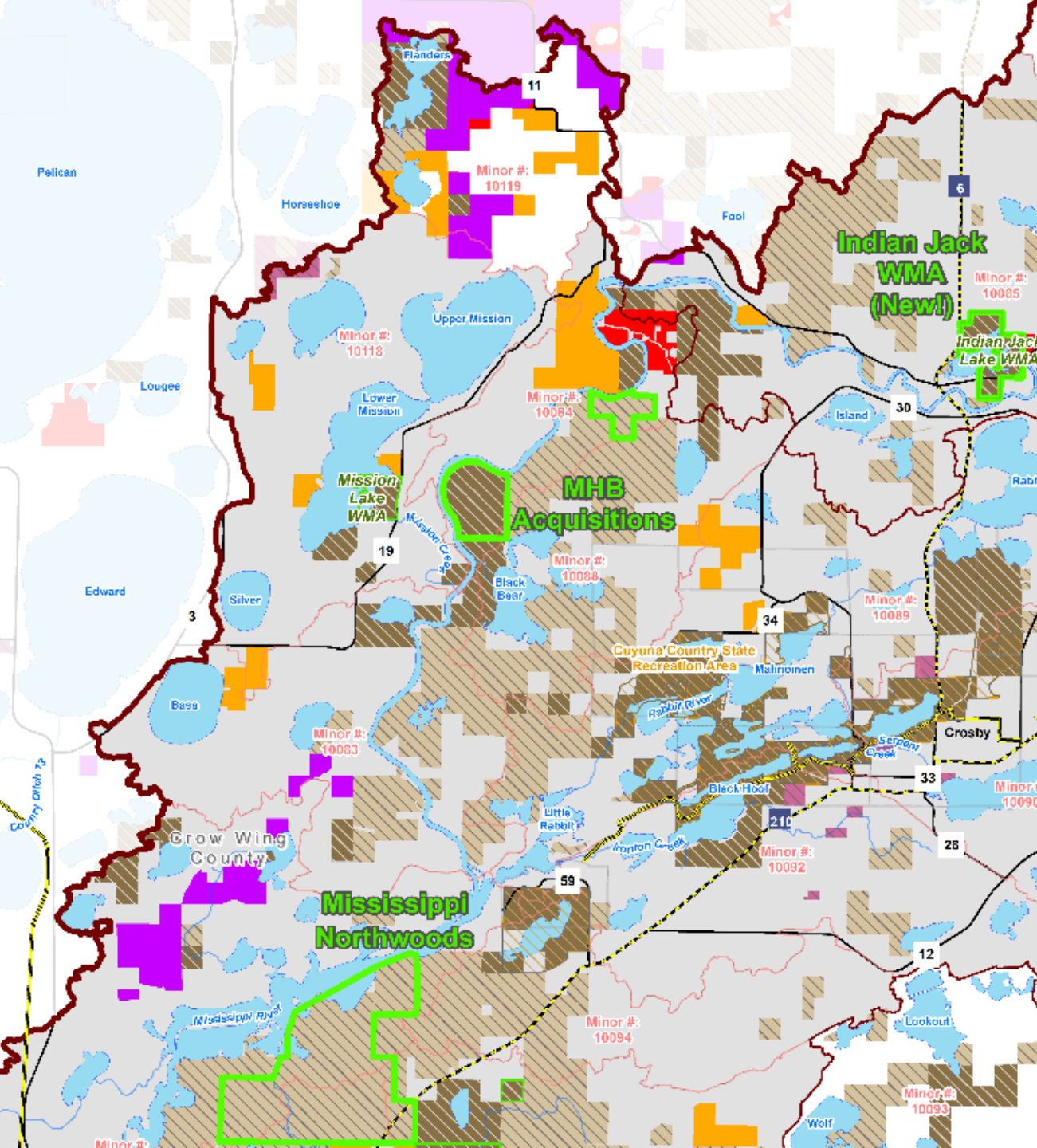
How?

- Coordination
- Collaboration
- Co-investment

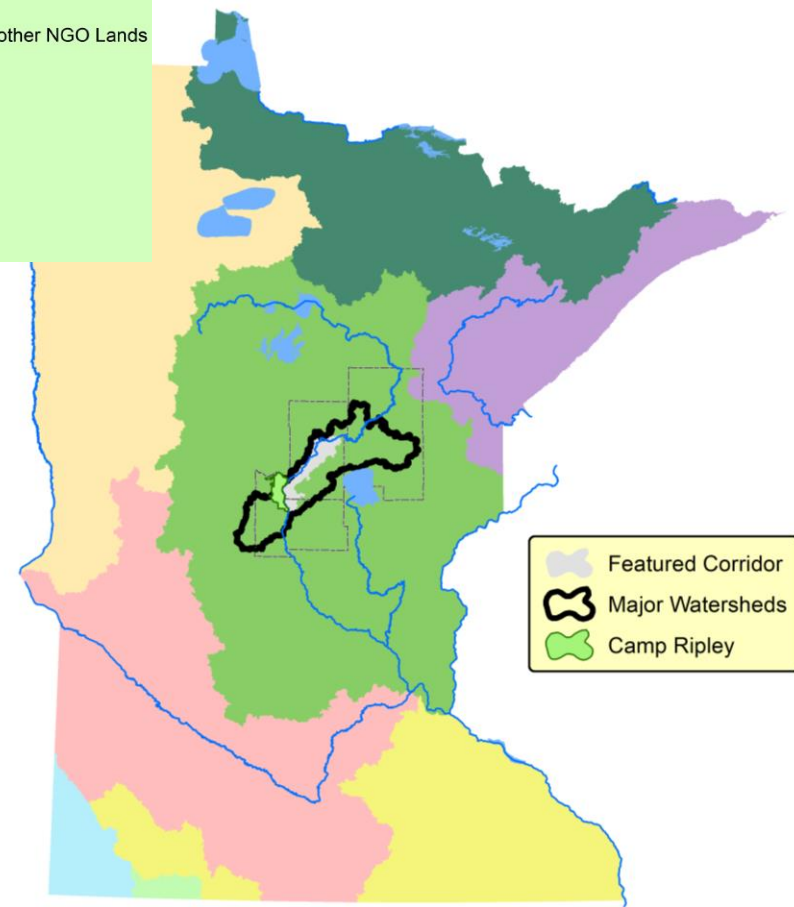
Wow!
SFIA
moved
the
needle
15
clicks!



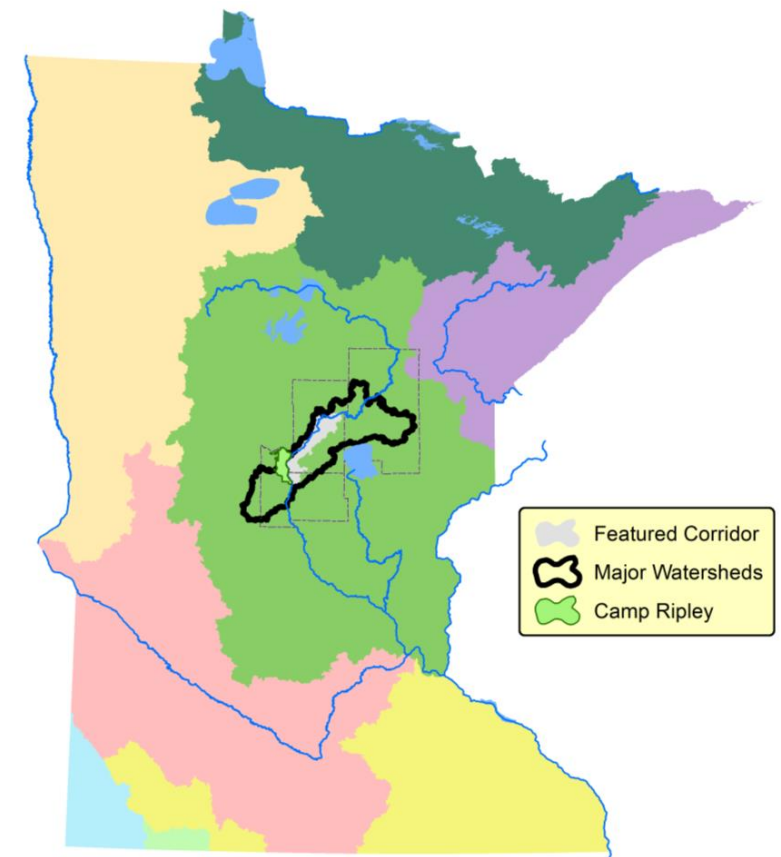
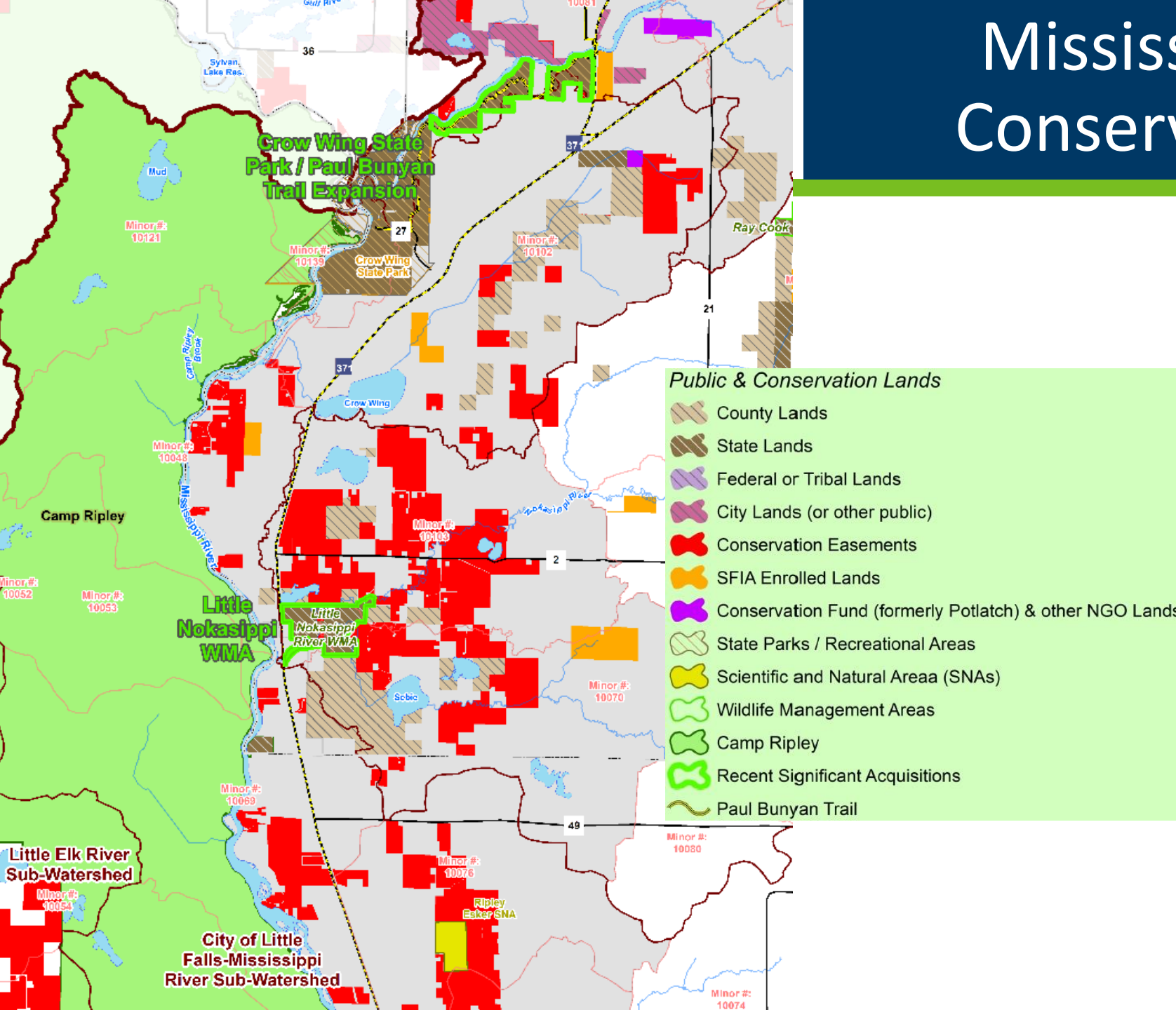
Mississippi R. (North) Conservation Corridor



- Public & Conservation Lands**
- County Lands
 - State Lands
 - Federal or Tribal Lands
 - City Lands (or other public)
 - Conservation Easements
 - SFIA Enrolled Lands
 - Conservation Fund (formerly Potlatch) & other NGO Lands
 - State Parks / Recreational Areas
 - Scientific and Natural Areas (SNAs)
 - Wildlife Management Areas
 - Camp Ripley
 - Recent Significant Acquisitions
 - Paul Bunyan Trail



Mississippi R. (South) Conservation Corridor:

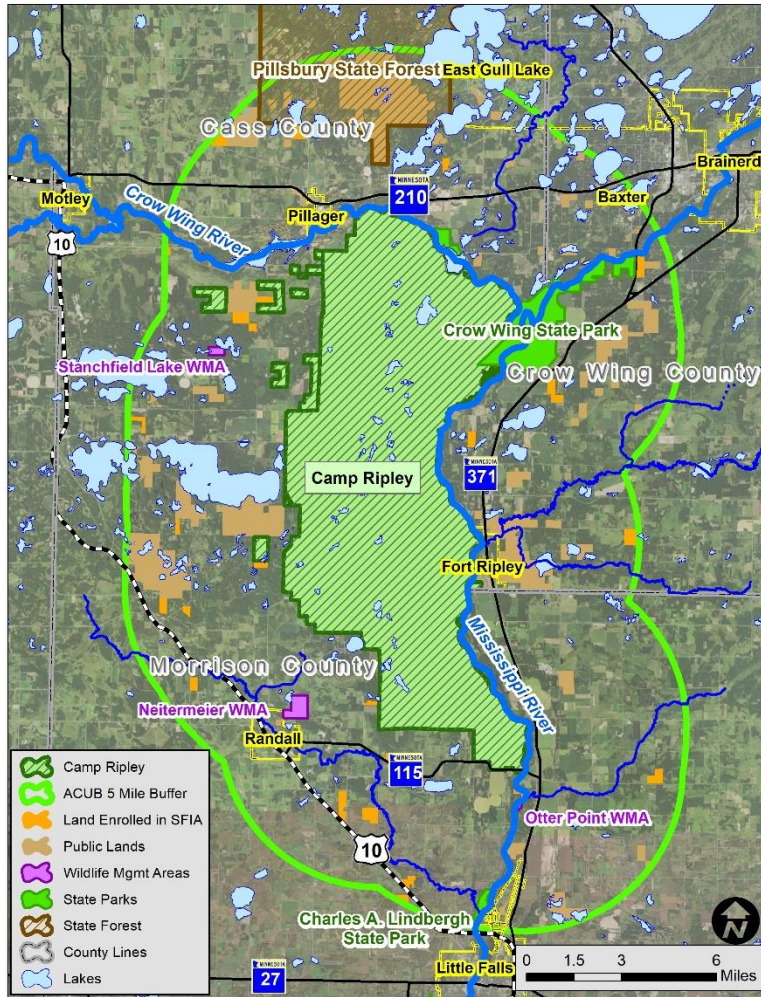


Protection Summary in ACUB 5-mile Buffer

Pre-ACUB: 34%



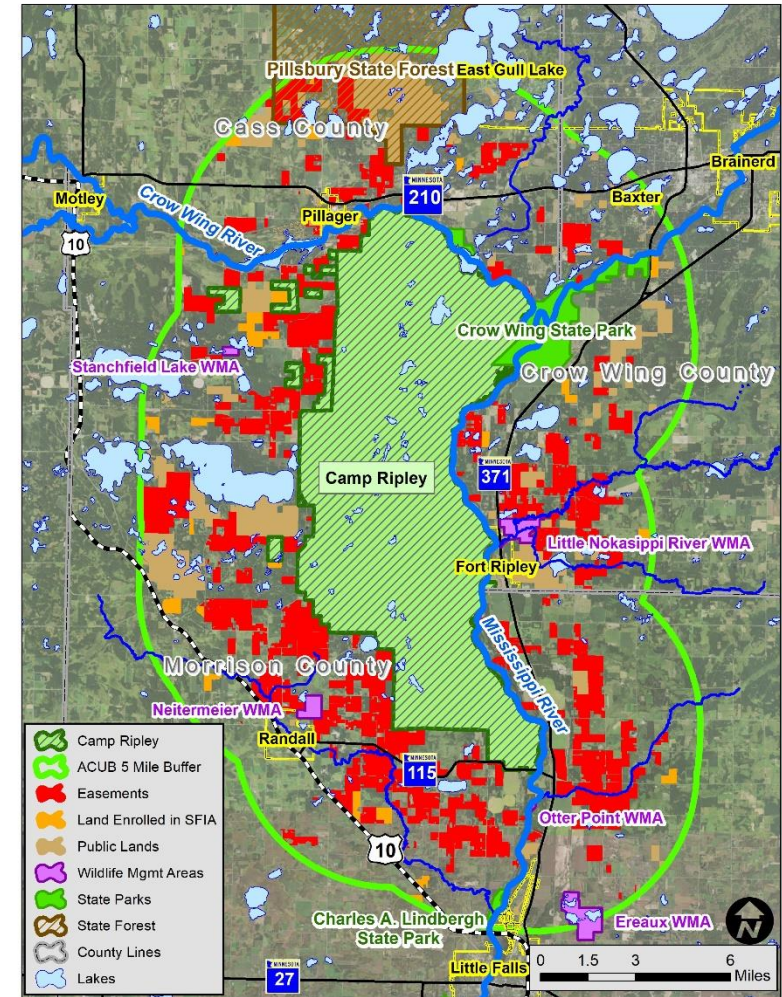
Current: 49.5%



Habitat Quality Meter (Habitometer):

Less Base More

- High Terrestrial Biodiversity
- High Wildlife Action Network Score
- Wild Rice Lakes
- Trout Streams
- Stream Confluences
- Lakes of High/Outstanding Biodiversity
- High Fisheries Habitat



Summary

- We have developed several examples of successful implementation projects at landscape scales over the last 10 years.
- Next big step – protect the basin’s premier license plate lakes. Best completed through 1W1P/LSP approach.
- Coordinate implementation over the entire basin to keep numbers of proposals to minimum while keep projects sharply defined.

Questions?

Dan Steward: Watershed/PFM Coordinator
Minnesota Board of Water & Soil Resources
218-820-1679, dan.steward@state.mn.us



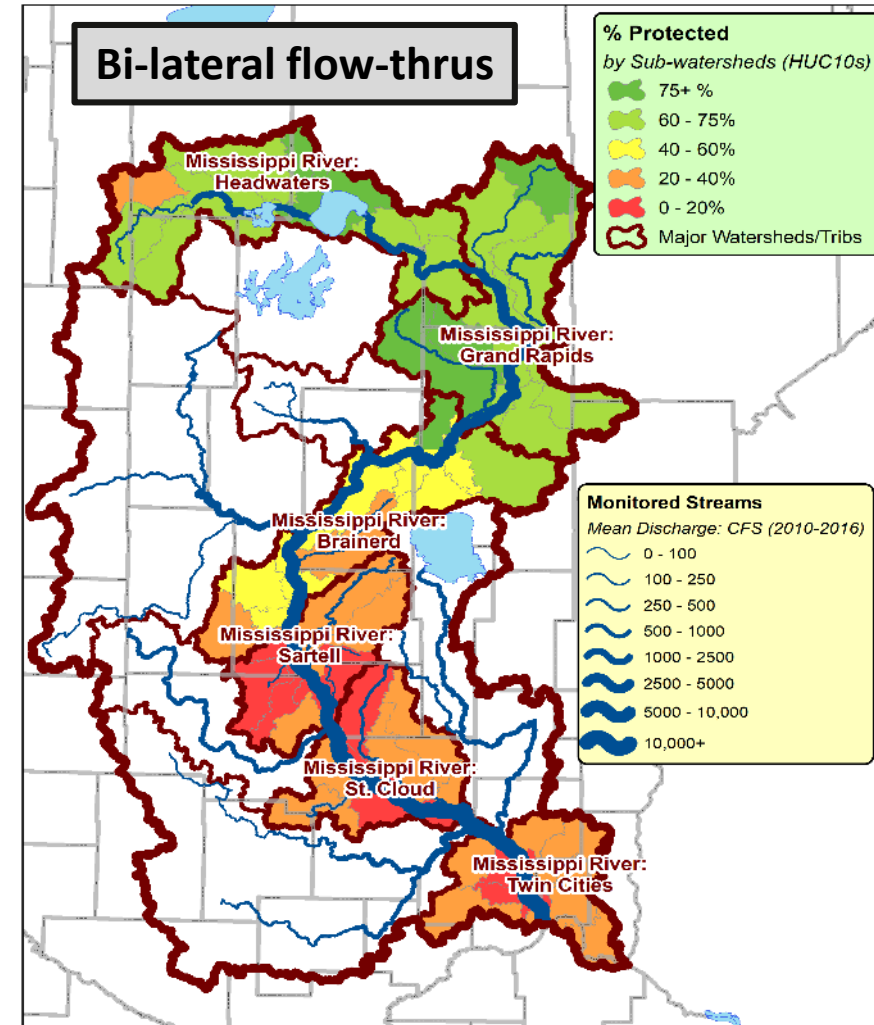
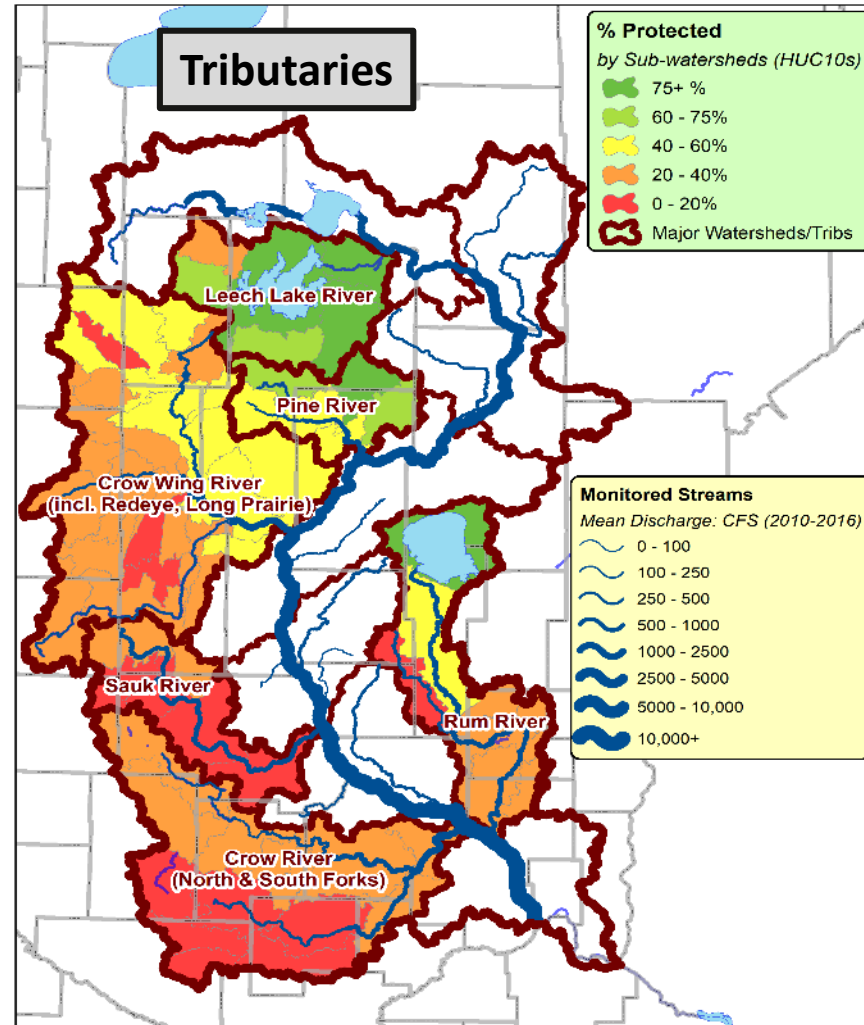
Upper Mississippi River Basin: Major Watershed Context

Tributary Wshds (6)

- 5 on West, 1 on East
- Crow = 2 majors
- Crow Wing = 3 majors

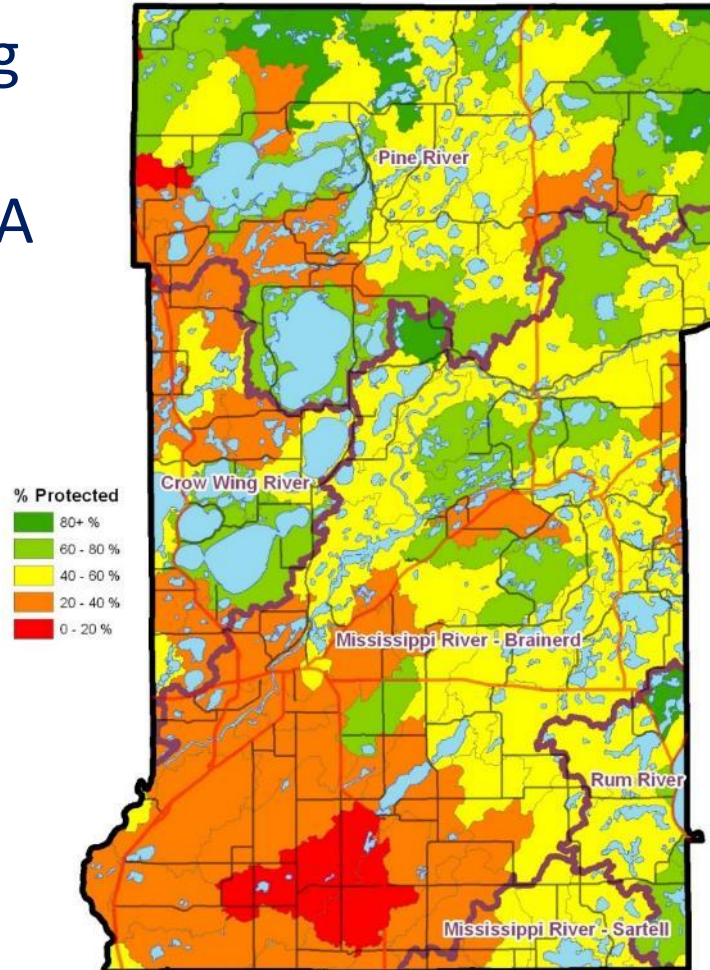
Bi-lateral Wshds (6)

- Along Main-stem
- Flow-through wshds
- Population Centers

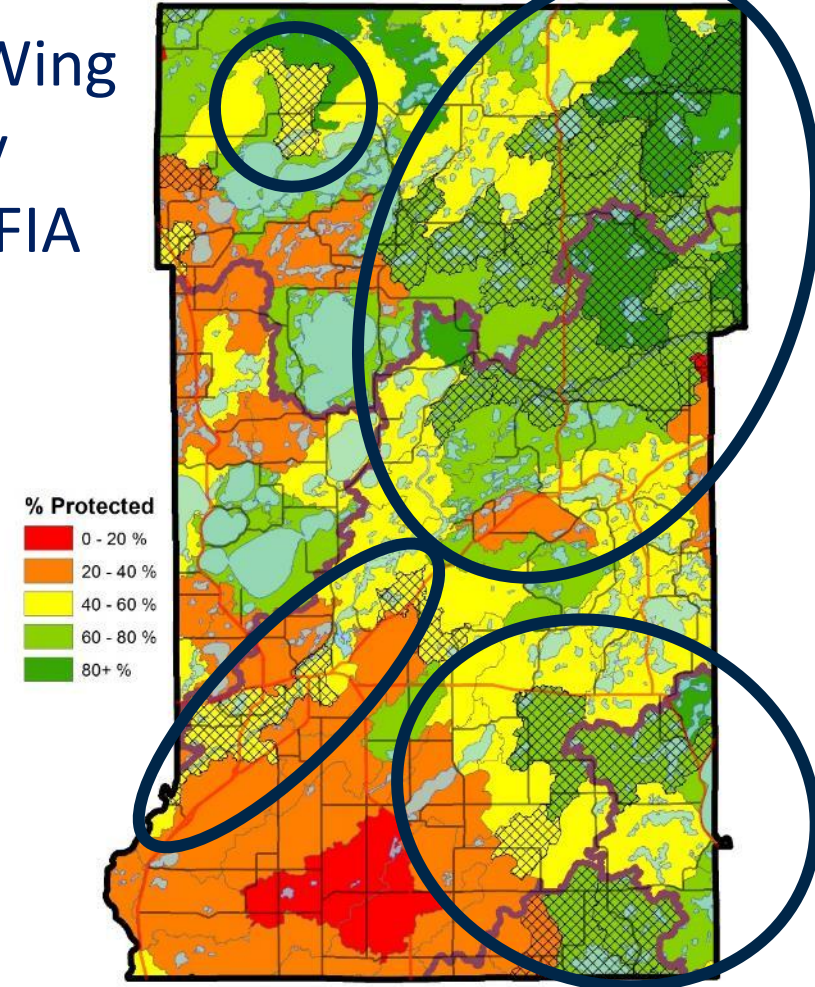


SFIA – A Key Partner in Water Resource Protection

Crow Wing County
before SFIA



Crow Wing County
after SFIA



SFIA is a state general fund program, SFIA needs your ongoing support...

US Forest Service Review – MN DNR Forestry PFM

Washington's 5-year review of US FS Programs in 20-State NE Region

PFM Partnership – A National Model

- *Out of 20 states, Minnesota was recognized as the premier example* on how the Forest Stewardship Program can achieve its conservation outcomes around of water, wildlife, wildfire resiliency and job/rural prosperity.
- Minnesota has combined traditional private forest landowner assistance with a Landscape Stewardship perspective, linking that to water quality.
- This work has resulted in a watershed-based approach to land use and water quality planning that maintains or improves water quality through strategic forest investments.

