MN-ND-SD Chapter of The Nature Conservancy
The science behind our freshwater blueprint:

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 step one another to create a visual guide—the thicker the color, the greater the benefit. These include:

- Fish & wildlife habitat
- Surface & ground water resources
- Wetlands that manage flooding and include drinking water

Multiple Benefits v2.0 - Methods and Data Layers

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 restore 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-impact restoration projects and program opportunities with partners by building their capacity to do effective restoration.

**Priorities**
- Improve watershed resilience to projected future landuse and climate change
- Increase the ecosystem function of streams 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 treatment plant (7-day low flow net less than 3000 cfs)

**Strategy Maps**
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:
1. Soil Health and Agricultural Nutrient Reduction/Drinking Water Strategy
2. Restoring Stream Hydrology/Stormwater Strategy

The Conservancy will take the lead on projects that fit best with our mission and core competencies, or that must 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.
Now we’re delivering exceptional results in Minnesota’s Headwaters.

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 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.

Our tool box:
Permanent Habitat Protection
Conservation Easements, Outright Purchase

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.

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

- 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.

- 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.

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**
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

1 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
• 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
39 Pending

BWSR
237 Land Transactions
24,500 acres

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
# Sentinel Landscape Strategy

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

<table>
<thead>
<tr>
<th>Max Score</th>
<th>Criteria</th>
<th>Guidelines:</th>
<th>Our Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td># Feet of Shoreline</td>
<td>5 points for minimal river frontage on Little Pine, Upper Pine, or Lower Pine Rivers (&lt;500 ft)</td>
<td>TNC ArcGIS Map</td>
</tr>
<tr>
<td>15</td>
<td>% of Tract Developed</td>
<td>1-15 points based on the proportion of the tract that is developable (10% = 1 pt)</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Wetland fringe width</td>
<td>1-10 points based on the distance between upland &amp; the bank/water (0-10 pts, 30-60 pts, 1 pt/30')</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Urgency</td>
<td>Property opportunity is likely to be lost if we do not act quickly</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Professional Judgement</td>
<td>0-20 Points based on Landowner actively managing their land &amp; Riparian/Streamside Needs</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Drinking Water Score</td>
<td>5 Points for Second Quartile Drinking Water Benefits</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Adjoining Applications</td>
<td>15 points for land adjoining another application</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Adjoining Public Land</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Habitat Value</td>
<td>1-5 points based on the habitat value of the property, uniqueness, and lack of existing development and shoreline alterations</td>
<td>WildFlora, Dcoco, TNC Maps</td>
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<tr>
<td>10</td>
<td>% of Parcel/Tract</td>
<td>1-10 points based on the proportion of the parcel enrolled (10% = 1 pt)</td>
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<tr>
<td>10</td>
<td>% Forest of the parcel</td>
<td>1-10 points based on the proportion of parcel that is forest (10% = 1 pt)</td>
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<tr>
<td>15</td>
<td>Minor Watershed Risk Classification County Watershed</td>
<td>1-15 Points for Classification Enhancement and Protection. Less points for Vigilance. Additional points for moving that needle.</td>
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<tr>
<td>20</td>
<td>Bargain Sale/Leverage</td>
<td>1-20 Points based on percent discount or other funds leveraged</td>
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<tr>
<td>100</td>
<td>TOTAL GROSS SCORE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>Final Score (Total / 2)</td>
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### Tracking Landowner easement progress: SWCD

<table>
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<tr>
<th>Landowner (Last, F)</th>
<th>ID #</th>
<th>Start</th>
<th>Score</th>
<th>Stretch</th>
<th>Acres</th>
<th>Shore (ft)</th>
<th>Cost (60%)</th>
<th>Status</th>
<th>Notes</th>
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<td>Landowner</td>
<td>18-06-16-13</td>
<td>7/12/2016</td>
<td>64.5</td>
<td>L</td>
<td>75</td>
<td>1500</td>
<td>$65,215.23</td>
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<td>Landowner</td>
<td>18-08-16-13</td>
<td>7/11/2016</td>
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<td>23</td>
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<td>45</td>
<td>L</td>
<td>13.5</td>
<td>50</td>
<td>$14,948.15</td>
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<td>18-12-16-13</td>
<td>7/14/2016</td>
<td>52.5</td>
<td>L</td>
<td>25</td>
<td>640</td>
<td>$84,760.62</td>
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<td>Landowner</td>
<td>18-10-17-13</td>
<td>5/17/2017</td>
<td>64.5</td>
<td>L</td>
<td>37.5</td>
<td>1600</td>
<td>$44,498.00</td>
<td>Recorded</td>
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<td><strong>Complete Total:</strong></td>
<td><strong>174</strong></td>
<td><strong>5290</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$242,318.67</strong></td>
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<tr>
<td>Landowner</td>
<td>18-08-17-13</td>
<td>6/12/2017</td>
<td>66</td>
<td>L</td>
<td>305.9</td>
<td>4200</td>
<td>$172,645.00</td>
<td>Pending Deed</td>
<td>Putting into Trust &amp; then will re-apply</td>
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<tr>
<td>Landowner</td>
<td>18-11-16-13</td>
<td>6/12/2017</td>
<td>66</td>
<td>L</td>
<td>31</td>
<td>1110</td>
<td>$125,010.92</td>
<td>Pending Deed</td>
<td>Cost will change for 2018 values</td>
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<tr>
<td>Landowner</td>
<td>11-02-18-13</td>
<td>1/31/2018</td>
<td>66</td>
<td>U</td>
<td>28</td>
<td>3800</td>
<td>$37,412.76</td>
<td>Application</td>
<td>Mailed to BWSR 4/10/18</td>
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<td><strong>Estimated Total:</strong></td>
<td><strong>538.9</strong></td>
<td><strong>14400</strong></td>
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<td></td>
<td></td>
<td><strong>$577,387.35</strong></td>
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<tr>
<td>Landowner</td>
<td>18-13-16-13</td>
<td>7/25/2016</td>
<td>80.5</td>
<td>U</td>
<td>45.8</td>
<td>4250</td>
<td>$230,000.00</td>
<td>May re-apply</td>
<td>Pending Satisfaction of Mortgage</td>
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<td><strong>Potential Total:</strong></td>
<td><strong>758.7</strong></td>
<td><strong>23940</strong></td>
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<td></td>
<td></td>
<td><strong>$1,049,706.02</strong></td>
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</tbody>
</table>
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
Crow Wing River Healthy Watershed Partnership
Nitrate Contamination of private and community water supply wells
Partnership Leads: Technical Advisory Committee

Crow Wing River Healthy Waters Partnership

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
Restore Your Shore (RYS)

Restore Your Shore is a powerful tool for shoreland owners and professionals.
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 avoid effects to endangered, threatened, or candidate species and their habitat, as possible.

Treatments applied shall seek to avoid effects to endangered, threatened, or candidate species and their habitat as possible.
Hubbard Soil and Water Conservation District

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