

## Rapid Watershed Assessment

### Eastern Wild Rice

(MN) HUC: 09020108



Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals.

## Introduction

The Eastern Wild Rice 8-Digit Hydrologic Unit Code (HUC) subbasin is part of the Red River Basin in northwestern Minnesota. The watershed occurs in the Glacial Lake Agassiz Plain, North Central Hardwoods, and Northern Lakes and Forests Level III Ecoregions.

Formed by the confluence of the Bois de Sioux and Ottertail Rivers, the Red River flows north across the plains of glacial Lake Agassiz forming much of the border of Minnesota and North Dakota, continuing on to Manitoba and flowing into Lake Winnepeg.

The greater Red River basin characteristically has a poorly defined floodplain and low gradient that combine with extensive drainage, widespread conversion of tallgrass prairie to farmland, and urban/suburban development to leave the basin subject to frequent floods that affect urban and rural infrastructure and agricultural production.

Eastern Wild Rice is, in terms of area, the third largest subbasin of the Red River basin in Minnesota, and arguably one of the most ecologically diverse. The watershed includes portions of nine of the twelve separate agroecoregions identified in the Red River region.

The main resource concerns in the watershed are wind and water erosion, nutrient management, wetland management, surface water quality, flood damage reduction, and wildlife habitat. Many of the resource concerns relate directly to flooding and increased sediment and pollutant loadings to surface waters.



### County Totals

<i>County</i>	<i>Acres in HUC</i>	<i>% HUC</i>
Polk	2,543	0.2%
Clearwater	131,004	12.6%
Norman	298,193	28.6%
Mahanomen	340,417	32.6%
Clay	131,016	12.6%
Becker	139,534	13.4%
<b>Total acres:</b>	<b>1,042,708</b>	<b>100%</b>

## Physical Description

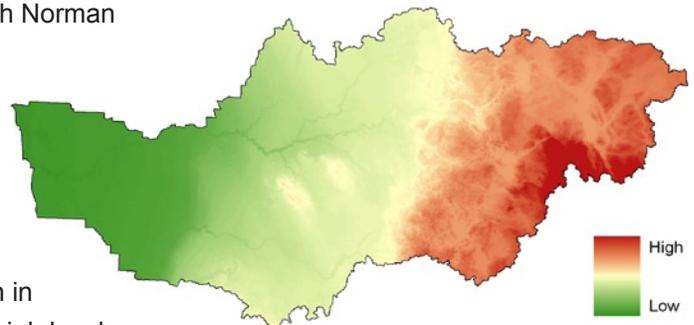
The Wild Rice River begins its course at Mud Lake in Minnesota's Clearwater county, and flows largely to the west through Norman and Mahnommen Counties. The river is joined by its two largest tributaries, The South Fork of the Wild Rice and the White Earth River before converging with the Red River of the North.

Precipitation in the watershed ranges from 21 to 25 inches annually. Above-normal amounts of precipitation in the late fall of the year or from May to October lead to high levels of soil moisture, periodically producing the snow-melt and summer floods that are known to affect the region.

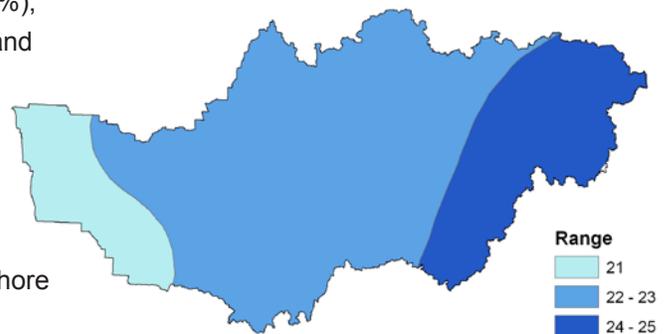
Predominate land uses / land covers are Row Crops (53%), Forest (23%), Wetlands (9%), Grass/Pasture/Hay (8%), and Residential/Commercial Development (4%). Agricultural land use in the basin is significant, accounting for over 60% of the overall watershed acres.

Development pressure is moderate to considerable in some areas, with occasional farms, timberland, and lakeshore being parceled out for recreation, lake or country homes.

**Relief**

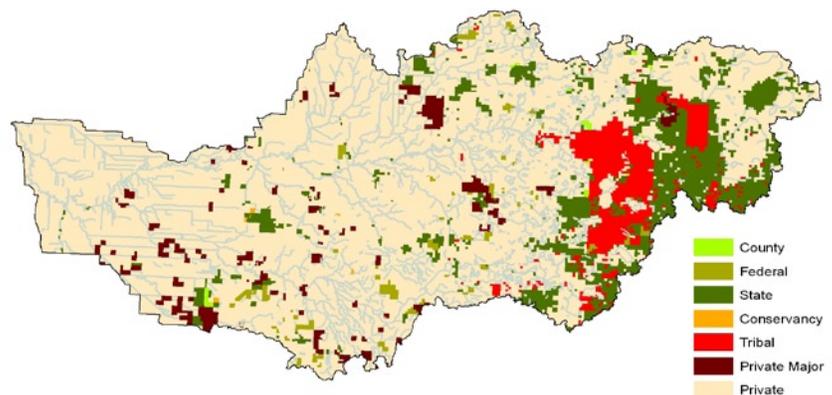


**Average Precipitation**



## Ownership\* <sup>1</sup>

Ownership Type	Acres	% of HUC
Conservancy	608	0.1
County	2,070	0.2
Federal	13,263	1.3
State	176,316	16.9
Other	-	-
Tribal	62,024	5.9
Private Major	39,301	3.8
Private	749,125	71.8
<b>Total Acres:</b>	<b>1,042,708</b>	<b>100</b>

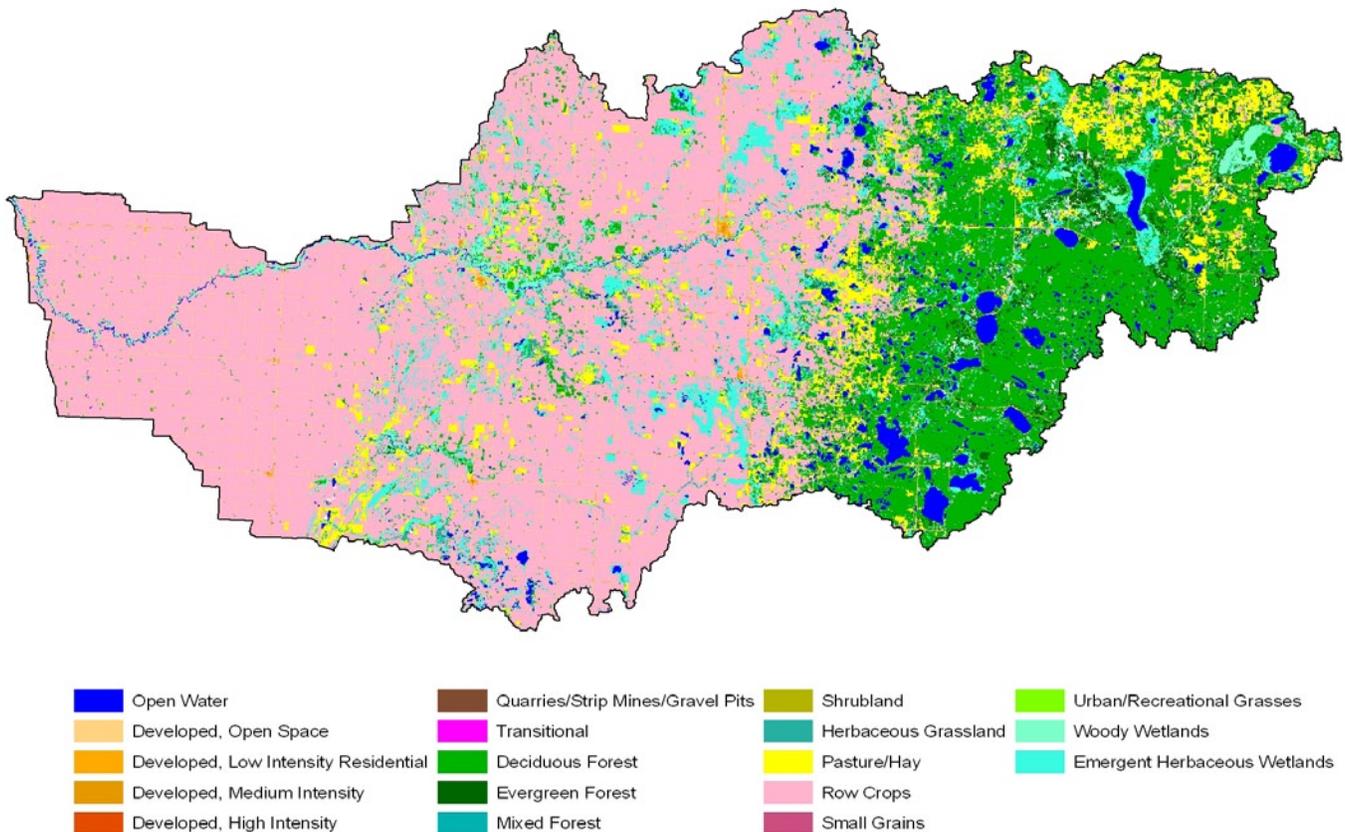


\* Ownership totals derived from 2007 MN DNR GAP Stewardship data and are the best suited estimation of land stewardship available on a statewide scale at time of publication. See the bibliography section of this document for further information.

## Ownership / Land Use

The Eastern Wild Rice watershed covers an area of 1,042,708 acres. Approximately seventy two percent of the land in the watershed is owned by private landholders (749,125 acres). The second largest ownership type is State, with approximately 176,316 acres (17%), followed by Tribal with 62,024 acres (6%), Private-Major with 39,301 acres (3%), Federal with 13,263 acres (1.3%), and County with 2,070 acres (0.2%). Conservancy lands account for the smallest percentage, with slightly more than 600 acres (0.1%). Land use by ownership type is represented in the table below.

**Land Use / Land Cover** <sup>/2</sup>



**Ownership / Land Use** <sup>/3</sup>

Landcover/Use	Public		Private**		Tribal		Total Acres	Percent
	Acres	% Public	Acres	% Private	Acres	% Tribal		
Forest	96,201	9.2%	91,840	8.8%	49,681	4.8%	237,722	22.8%
Grass, etc	13,844	1.3%	69,030	6.6%	2,083	0.2%	84,958	8.1%
Orchards	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Row Crops	14,032	1.3%	534,873	51.3%	799	0.1%	549,704	52.7%
Shrub etc	2,386	0.2%	3,450	0.3%	1,275	0.1%	7,111	0.7%
Wetlands	34,669	3.3%	50,228	4.8%	3,981	0.4%	88,878	8.5%
Residential/Commercial	1,657	0.2%	34,877	3.3%	1,056	0.1%	37,590	3.6%
Open Water*	28,860	2.8%	4,753	0.5%	3,148	0.3%	36,761	3.5%
<b>Watershed Totals:</b>	<b>191,649</b>	<b>18.4%</b>	<b>789,051</b>	<b>75.7%</b>	<b>62,024</b>	<b>5.9%</b>	<b>1,042,708</b>	<b>100%</b>

\* ownership undetermined

\*\* includes private-major

**Physical Description (continued)**

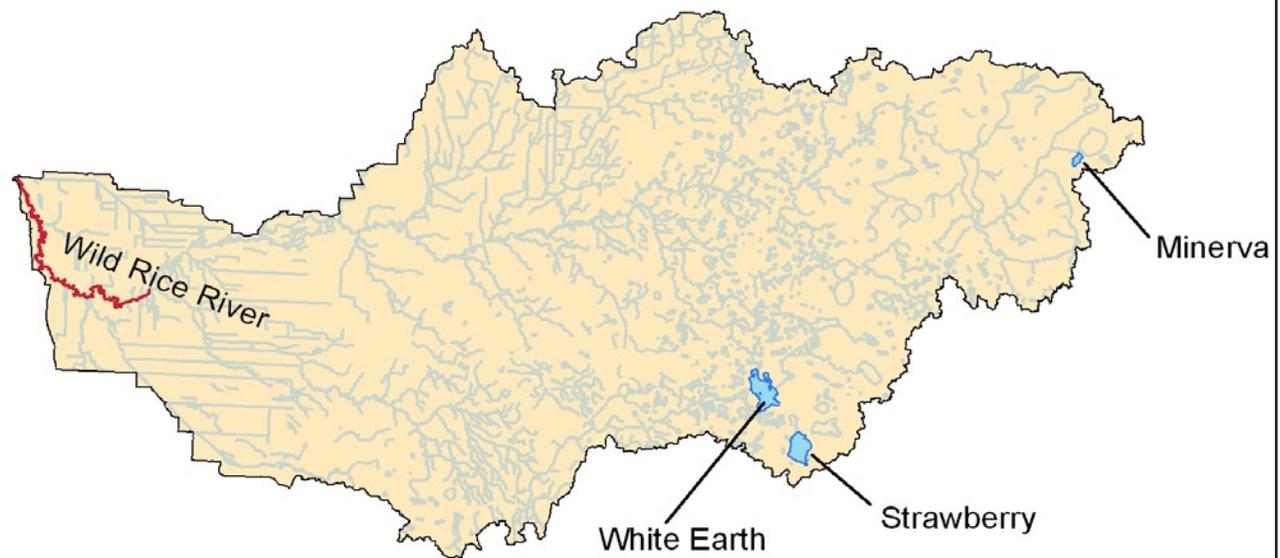
		ACRES	cu. ft/sec	
<b>Stream Flow Data</b>	USGS 05064000 WILD RICE RIVER AT HENDRUM, MN	<b>2008 Avg.</b>	401.1	
		<b>May – Sept. Avg.</b>	631.2	
		<b>ACRES/MILES</b>	<b>PERCENT</b>	
<b>Stream Data<sup>14</sup></b> (*Percent of Total HUC Stream Miles)	Total Miles – Major (100K Hydro GIS Layer)	2,279	---	
	303d/TMDL Listed Streams (DEQ)	30.5	1.3%	
<b>Riparian Land Cover/Land Use<sup>15</sup></b> (Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)	Forest	10,059	18.4%	
	Grain Crops	0	0.0%	
	Grass, etc	2,872	5.2%	
	Orchards	0	0.0%	
	Row Crops	22,007	40.2%	
	Shrub etc	306	0.6%	
	Wetlands	9,803	17.9%	
	Residential/Commercial	1,623	3.0%	
	Open Water*	8,141	14.9%	
	<b>Total Buffer Acres:</b>		<b>54,811</b>	<b>100%</b>
<b>Crop and Pastureland Land Capability Class<sup>16</sup></b> (Croplands & Pasturelands Only) (1997 NRI Estimates for Non-Federal Lands Only)	<b>1</b> – slight limitations	16,200	3%	
	<b>2</b> – moderate limitations	487,800	78%	
	<b>3</b> – severe limitations	35,800	6%	
	<b>4</b> – very severe limitations	46,600	7%	
	<b>5</b> – no erosion hazard, but other limitations	0	0%	
	<b>6</b> – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	41,500	7%	
	<b>7</b> – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	0	0%	
	<b>8</b> – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%	
	<b>Total NRI Crop &amp; Pasture Lands</b>		<b>627,900</b>	<b>-</b>
	<b>TYPE OF LAND</b>	<b>ACRES</b>	<b>% of Crop Lands</b>	<b>% of HUC</b>
<b>Irrigated Lands<sup>17</sup></b> (2002 NASS Estimates)	Cultivated Cropland / Pastureland	3,902	0.6%	0.3%
	Uncultivated Cropland	0	0%	0%
	<b>Total Irrigated Lands</b>	<b>3,902</b>	<b>0.6%</b>	<b>0.3%</b>

## Assessment of Waters

Section 303(d) of the Clean Water Act states that water bodies with impaired use(s) must be placed on a state's impaired waters list. A water body is "Impaired" or polluted when it fails to meet one or more of the Federal Clean Water Act's water quality standards.

Federal Standards exist for basic pollutants such as sediment, bacteria, nutrients, and mercury. The Clean Water Act requires the Minnesota Pollution Control Agency (MPCA) to identify and restore impaired waters.

### Minnesota 303d Listed Waters - Eastern Wild Rice



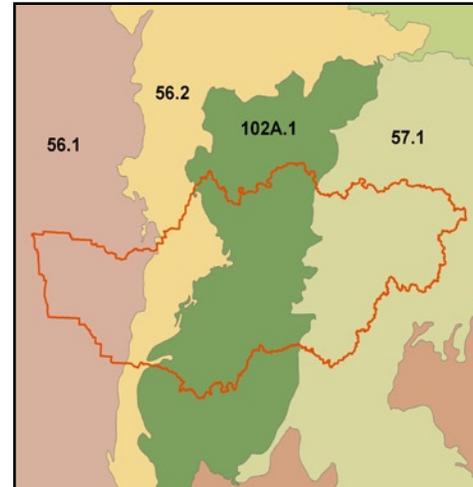
Waterbody Name	Impairment	Affected Use
Wild Rice River: South Branch Wild Rice River to Red River	Turbidity	Aquatic Life
Strawberry	Mercury	Aquatic Consumption
White Earth	Mercury	Aquatic Consumption
Minerva	Mercury	Aquatic Consumption

## Common Resource Areas

Eastern Wild Rice watershed encompasses four Common Resource Areas, 56.1, 56.2, 57.1 and 102A.1. <sup>19</sup>

A Common Resource Area (CRA) map delineation is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area (General Manual Title 450 Subpart C 401.21)

Common Resource Areas are created by subdividing MLRAs by resource concerns, soil groups, hydrologic units, resource use, topography, other landscape features, and human considerations affecting use and treatment needs.



Only the major CRA units are described.  
For further information, go to:  
<http://soils.usda.gov/survey/geography/cra.html>

**56.1 Red River Valley:** The Red River Valley (Glacial Lake Agassiz) is an extremely flat landscape composed of thick lacustrine sediments. Soils range from silty to clayey in texture. Most soils have a high water table and are very productive. Saline soils exist in places. Most areas are farmed with main crops being small grain, sugar beets, and soybeans. The native vegetation was tall grass prairie. Primary resource concerns are soil erosion and deposition by wind.

**56.2 Glacial Lake Agassiz Basin:** This area is a complex of sandy beach material, stratified interbeach material, lacustrine silts and lake washed glacial till. Soils range from excessively drained on ridges to very poorly drained basins. Many areas have been partially drained. The main crops are small grain, soybeans and hay. Native vegetation was mixed tall and short grass prairie with scattered woodland and brush. Primary resource concerns are wind erosion, droughtiness on sandy soils and wetness in low lying and seepy areas.

**57.1 Northern Minnesota Till Moraine:** Rolling glacial moraine and associated outwash with short, choppy and complex slopes. Soils are generally loamy with some clayey and sandy soils included. Organic soils occur in depressions. Land use is cropland, pasture timber and recreation. Numerous lakes occur in this region. Main crops are small grain, soybeans and forage crops. Resource concerns include improved drainage for crop production, grazing management of forest and grassland, water and wind erosion and water quality impacts.

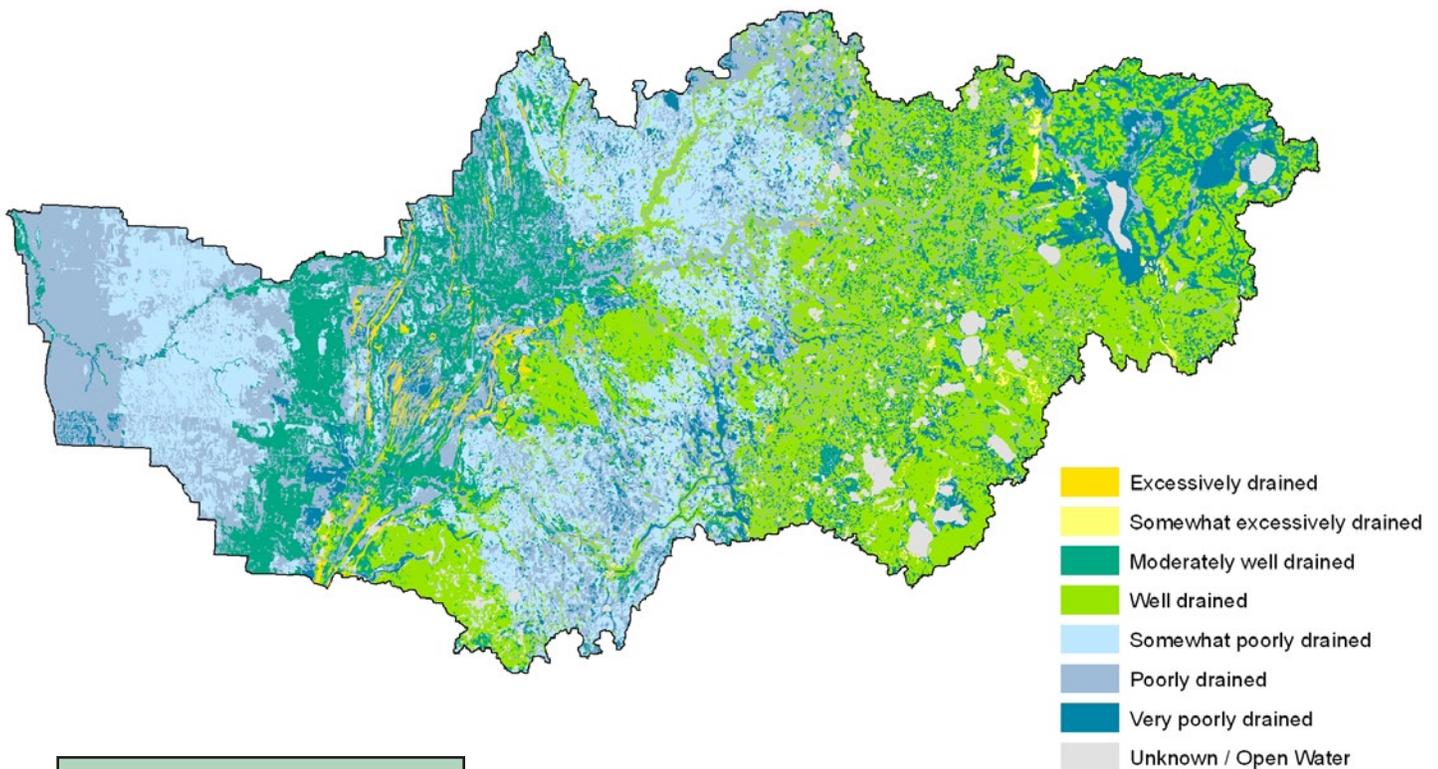
**102A.1 Rolling Till Prairie:** Gently sloping to steep, loamy glacial till soils with scattered sandy outwash soils and silty alluvial flood plains soils. This area is part of the Prairie Pothole region of the upper Midwest. Predominantly cropped to corn and soybeans with increasing hayland and pasture and small grains in the western part. Resource concerns are water and wind erosion, nutrient management and water quality.

Visit the online Web Soil Survey at  
<http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at  
<http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

## Drainage Classification<sup>10</sup>

Drainage class (natural) refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil.

Seven classes of natural soil drainage are recognized—excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the “Soil Survey Manual.”



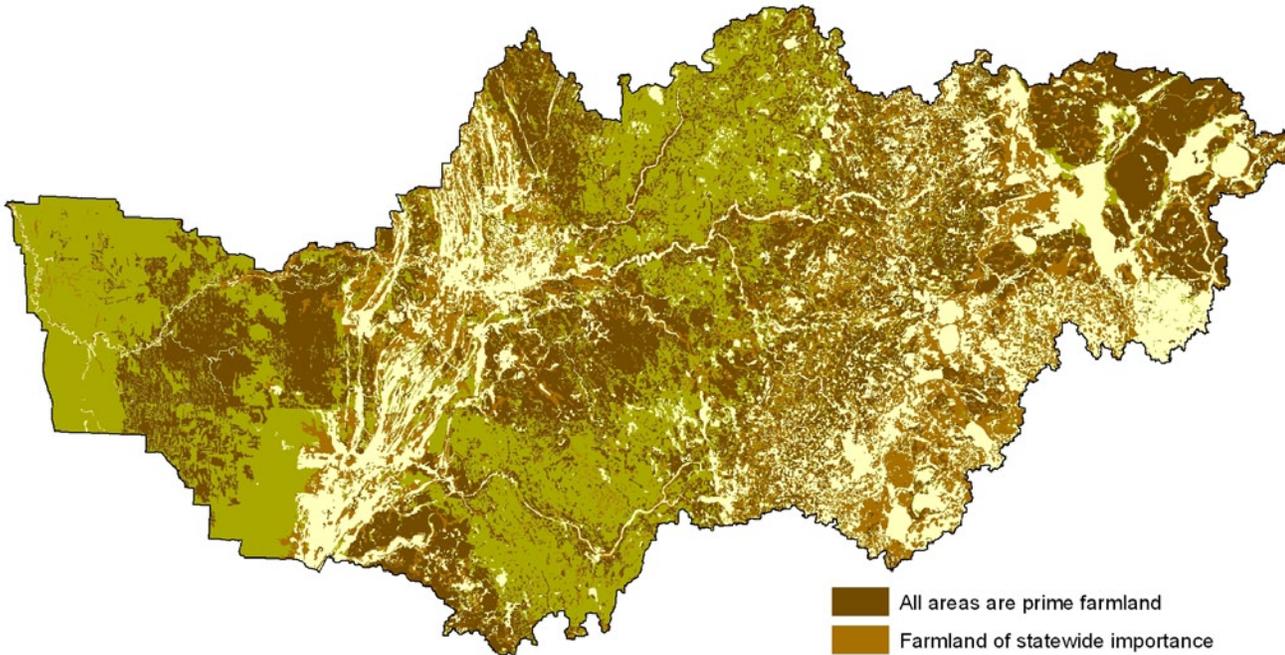
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## Farmland Classification <sup>/10</sup>

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland.

Farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops.

NRCS policy and procedures on prime and unique farmlands are published in the Federal Register, Vol. 43, No 21, January 31, 1978.



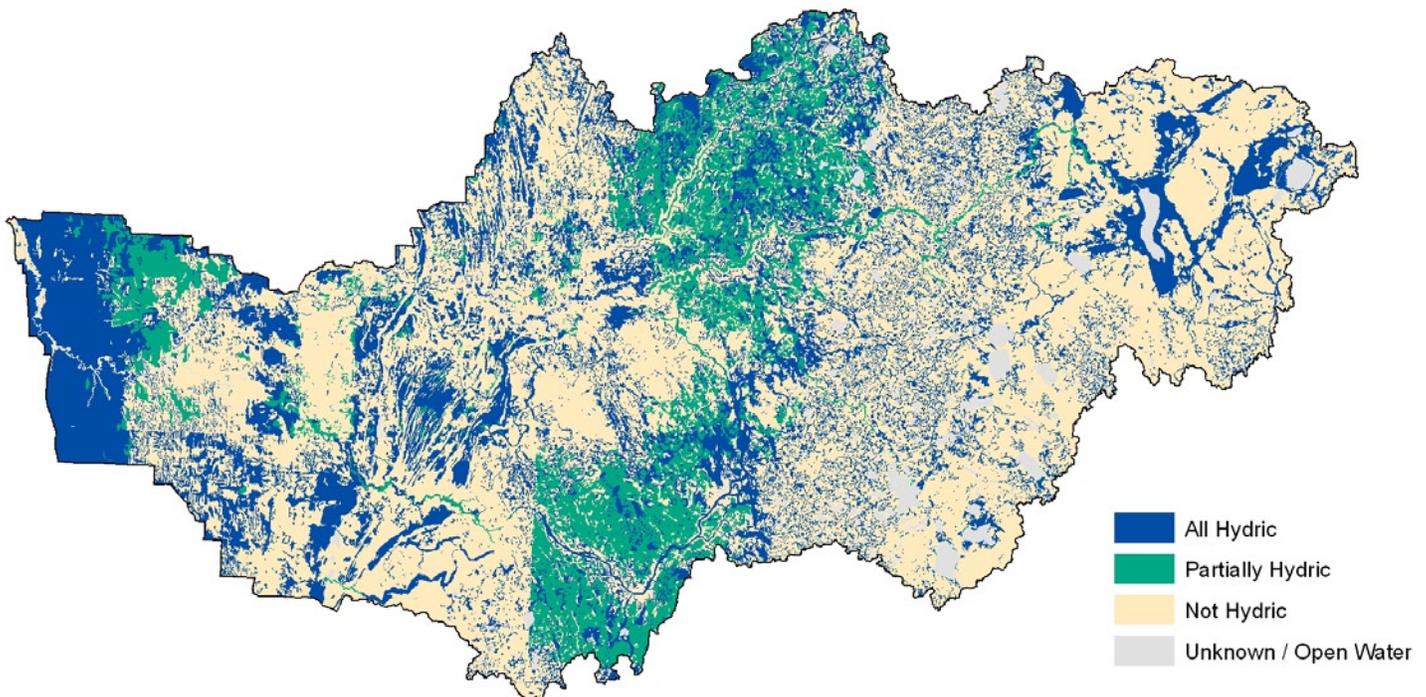
-  All areas are prime farmland
-  Farmland of statewide importance
-  Prime farmland if drained
-  Prime farmland if drained and protected from flooding
-  Prime farmland if protected from flooding
-  Not prime farmland

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## Hydric Soils<sub>10</sub>

This rating provides an indication of the proportion of the map unit that meets criteria for hydric soils. Map units that are dominantly made up of hydric soils may have small areas, or inclusions of non-hydric soils in the higher positions on the landform. Map units of dominantly non-hydric soils may therefore have inclusions of hydric soils in the lower positions on the landform.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as “soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part” (Federal Register 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

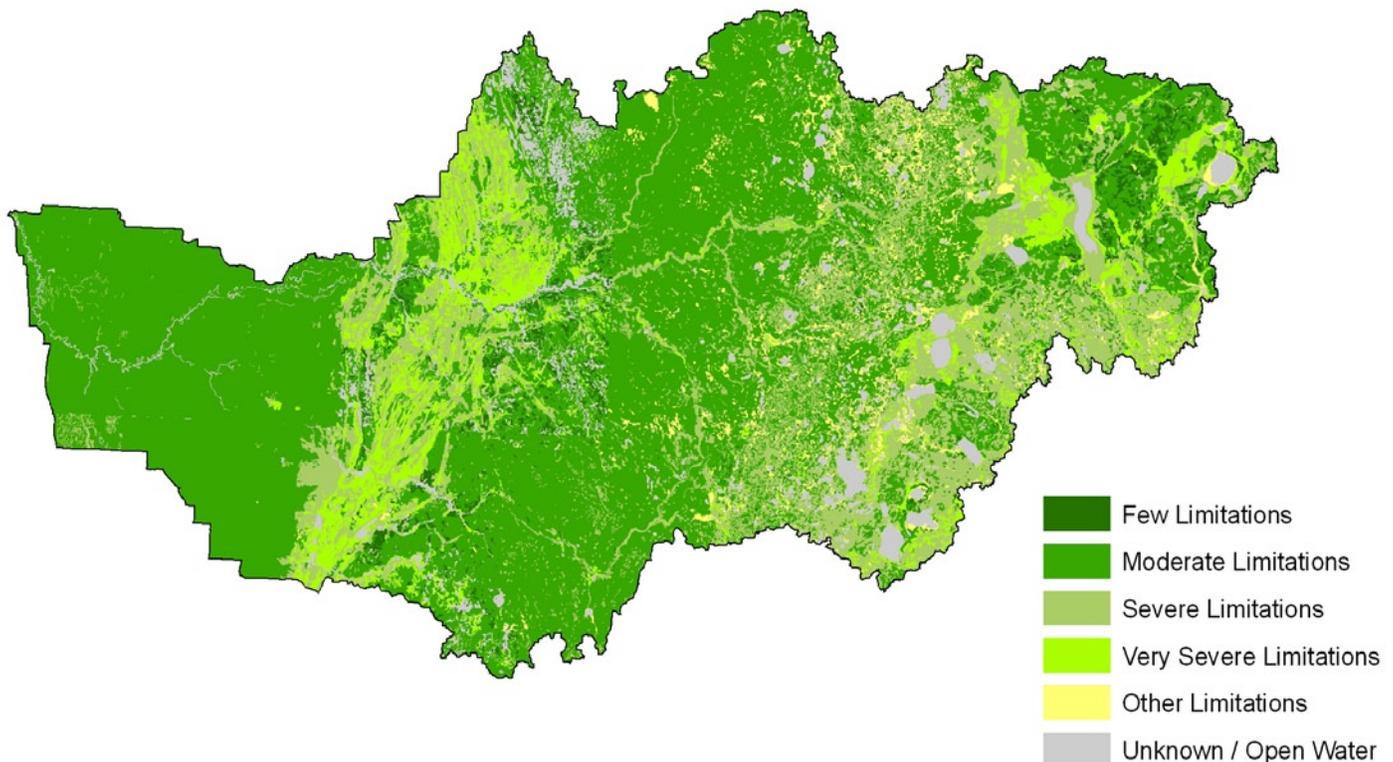


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## Land Capability Classification <sup>10</sup>

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management.

The criteria used in grouping the soils does not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.



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**Performance Results System and Other Data**

Watershed Name: Eastern Wild Rice				Watershed Number: 9020108						
PRS Performance Measures	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	TOTAL
Total Conservation Systems Planned (acres)	4,157	33,797	0	13,576	14,317	N/A	23,571	31,649	43,627	164,694
Total Conservation Systems Applied (acres)	5,024	27,321	0	11,882	11,882	N/A	12,581	29,228	32,756	130,674
<b>Conservation Practices</b>										
Total Waste Management (313) (numbers)	1	0	0	0	0	0	0	0	0	1
Riparian Forest Buffers (391) (acres)	0	2	246	228	460	71	98	51	0	1,156
Erosion Control Total Soil Saved (tons/year)	2,313	437,483	179,160	125,914	39,584	N/A	N/A	N/A	N/A	784,454
Total Nutrient Management (590) (Acres)	0	269	237	1,934	2,369	250	3,322	3,322	7,944	19,647
Pest Management Systems Applied (595A) (Acres)	0	0	0	0	0	0	90	649	1,612	2,351
Prescribed Grazing 528a (acres)	0	0	0	317	40	208	41	0	0	606
Tree & Shrub Establishment (612) (acres)	7	1,314	442	389	67	61	28	7	0	2,315
Residue Management (329A-C) (acres)	540	5,560	5,379	1,369	472	2,258	2,258	11,876	3,034	32,746
Total Wildlife Habitat (644 - 645) (acres)	1,477	15,713	5,243	9,142	4,479	1,464	9,142	7,236	6,810	60,706
Total Wetlands Created, Restored, or Enhanced (acres)	17	504	214	539	308	630	62	582	66	2,922
<b>Acres enrolled in Farmbill Programs</b>										
Conservation Reserve Program	5,024	21,070	47,281	8,621	5,325	N/A	4,273	6,986	7,130	105,710
Wetlands Reserve Program	0	0	0	0	0	N/A	163	841	227	1,231
Environmental Quality Incentives Program	0	0	0	269	154	N/A	6,933	17,490	22,992	47,838
Wildlife Habitat Incentive Program	0	0	0	0	10	N/A	51	0	16	77
Farmland Protection Program	0	0	0	0	0	N/A	0	0	0	0

## THREATENED AND ENDANGERED SPECIES OF THE BASIN <sup>14</sup>

NRCS assists in the conservation of threatened and endangered species and avoids or prevents activities detrimental to such species. NRCS' concern for these species includes the species listed by the Secretary of the Interior (as published in the Federal Register) and species designated by state agencies.



The following is a list of threatened, endangered, candidate species and species of special concern that occur in the subbasin.

Scientific Name	Common Name	Type	Scientific Name	Common Name	Type
<i>Acipenser fulvescens</i>	Lake Sturgeon	Zoological	<i>Helianthus nuttallii</i> ssp. <i>rydbergii</i>	Nuttall's Sunflower	Botanical
<i>Aflexia rubranura</i>	Red Tailed Prairie Leafhopper	Zoological	<i>Helictotrichon hookeri</i>	Oat-grass	Botanical
<i>Ammodramus bairdii</i>	Baird's Sparrow	Zoological	<i>Hesperia comma assiniboia</i>	Assiniboia Skipper	Zoological
<i>Ammodramus henslowii</i>	Henslow's Sparrow	Zoological	<i>Hesperia dactotae</i>	Dakota Skipper	Zoological
<i>Ammodramus nelsoni</i>	Nelson's Sharp-tailed Sparrow	Zoological	<i>Heterodon nasicus</i>	Western Hognose Snake	Zoological
<i>Anthus spragueii</i>	Sprague's Pipit	Zoological	<i>Juniperus horizontalis</i>	Creeping Juniper	Botanical
<i>Aristida purpurea</i> var. <i>longiseta</i>	Red Three-awn	Botanical	<i>Lanius ludovicianus</i>	Loggerhead Shrike	Zoological
<i>Asio flammeus</i>	Short-eared Owl	Zoological	<i>Lasmigona compressa</i>	Creek Heelsplitter	Zoological
<i>Atrytone arogos</i>	Arogos Skipper	Zoological	<i>Lasmigona costata</i>	Fluted-shell	Zoological
<i>Botrychium campestre</i>	Prairie Moonwort	Botanical	<i>Ligumia recta</i>	Black Sandshell	Zoological
<i>Botrychium gallicomontanum</i>	Frenchman's Bluff Moonwort	Botanical	<i>Limosa fedoa</i>	Marbled Godwit	Zoological
<i>Botrychium minganense</i>	Mingan Moonwort	Botanical	<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	White Adder's-mouth	Botanical
<i>Botrychium mormo</i>	Goblin Fern	Botanical	<i>Microtus ochrogaster</i>	Prairie Vole	Zoological
<i>Botrychium simplex</i>	Least Moonwort	Botanical	<i>Notropis anogenus</i>	Pugnose Shiner	Zoological
<i>Buteo lineatus</i>	Red-shouldered Hawk	Zoological	<i>Oarisma powesheik</i>	Powesheik Skipper	Zoological
<i>Calamagrostis montanensis</i>	Plains Reedgrass	Botanical	<i>Orobanche fasciculata</i>	Clustered Broomrape	Botanical
<i>Carex hallii</i>	Hall's Sedge	Botanical	<i>Orobanche ludoviciana</i>	Louisiana Broomrape	Botanical
<i>Carex obtusata</i>	Blunt Sedge	Botanical	<i>Oxyethira ecornuta</i>	A Caddisfly	Zoological
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	Botanical	<i>Oxyethira itascae</i>	A Caddisfly	Zoological
<i>Carex sterilis</i>	Sterile Sedge	Botanical	<i>Perognathus flavescens</i>	Plains Pocket Mouse	Zoological
<i>Carex xerantica</i>	Dry Sedge	Botanical	<i>Phalaropus tricolor</i>	Wilson's Phalarope	Zoological
<i>Cladium mariscoides</i>	Twig-rush	Botanical	<i>Platanthera clavellata</i>	Club-spur Orchid	Botanical
<i>Coturnicops noveboracensis</i>	Yellow Rail	Zoological	<i>Platanthera praeclara</i>	W. Prairie Fringed Orchid	Botanical
<i>Cypripedium candidum</i>	Small White Lady's-slipper	Botanical	<i>Podiceps auritus</i>	Horned Grebe	Zoological
<i>Dendroica cerulea</i>	Cerulean Warbler	Zoological	<i>Rhynchospora capillacea</i>	Hair-like Beak-rush	Botanical
<i>Drosera anglica</i>	English Sundew	Botanical	<i>Ruppia maritima</i>	Widgeon-grass	Botanical
<i>Drosera linearis</i>	Linear-leaved Sundew	Botanical	<i>Salix maccalliana</i>	McCall's Willow	Botanical
<i>Eleocharis quinqueflora</i>	Few-flowered Spike-rush	Botanical	<i>Scleria verticillata</i>	Whorled Nut-rush	Botanical
<i>Eleocharis rostellata</i>	Beaked Spike-rush	Botanical	<i>Sparganium glomeratum</i>	Clustered Bur-reed	Botanical
<i>Gaillardia aristata</i>	Blanket-flower	Botanical	<i>Speotyto cunicularia</i>	Burrowing Owl	Zoological
<i>Gentiana affinis</i>	Northern Gentian	Botanical	<i>Speyeria idalia</i>	Regal Fritillary	Zoological
<i>Gentianella amarella</i> ssp. <i>acuta</i>	Felwort	Botanical	<i>Sterna forsteri</i>	Forster's Tern	Zoological
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Zoological	<i>Tympanuchus cupido</i>	Greater Prairie-chicken	Zoological

## RESOURCE CONCERNS

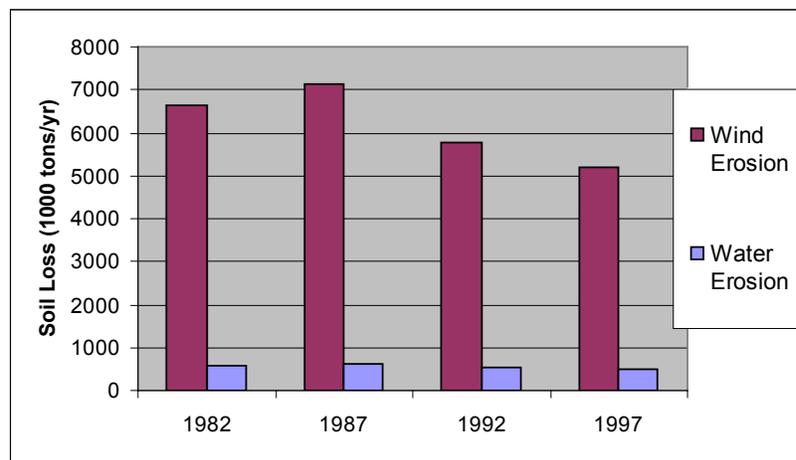
County Soil and Water Conservation Districts in the watershed have identified the following resource concerns as top priorities for conservation and cost sharing efforts:

- Soil Quality; Excessive Sheet and Rill Erosion.** In addition to erosion on the cropland, sedimentation caused by the clearing and grading of shoreland property is neither desirable nor necessary. Erosion issues relate directly to lake pollution/eutrophication and shoreland development, and compound effects of erosion from agricultural lands.
- Soil Quality; Excessive Wind Erosion.** Soil loss from high and constant wind is considerable. Though there has been recent progress in this area, reduction of Wind erosion continues to be a pressing concern in western areas approaching the Red River Valley.
- Flood Damage Reduction.** Local districts recognize that annual flood damage is a main concern. Concerns over flooding in the basin include tiling practices, drainage management, stormwater conveyence, protection of city and private sewer systems, property damage, excessive erosion and sedimentation.
- Surface and Ground Water Quality; Nutrients, Priority Pollutants.** Reduction of priority pollutants and sediments in surface waters is a priority issue throughout the watershed. Excessive amounts of sediments, nutrients, and bacteria degrade the water quality causing a fish community with depressed populations and limited diversity. Increased levels of phosphorus and chlorophyll-a are reaching area lakes as impervious surface increases and natural buffers disappear.
- Wildlife Habitat.** Given the fragmentation caused by increased development, and agricultural land use there are few to no natural corridors of natural habitat for wildlife. Districts recognize the need for the protection and enhancement of Prairie and Wetland areas throughout the watershed.
- Wetland Management.** Due to documented development pressures within shoreland and agricultural areas, priority should be given to preserving the wetlands within 1000 feet of a lake or 300 feet of a river. Restoration of wetlands, dam repair and placing flood-prone lands in CRP/RIM all serve to lessen the impact of flooding and sedimentation, and improve drainage.



### NRI Soil Loss Estimates<sup>13</sup>

- Sheet and rill erosion rates on crop and pasture land decreased by approximately 87,300 tons (15%) between 1982 and 1997.
- NRI estimates indicate wind erosion on crop and pasture land decreased by approximately twenty two percent between 1982 and 1997.



## Socioeconomic and Agricultural Data (Relevant)

Population estimates for the subbasin indicate that approximately 13,560 people reside in the area. Median household income throughout the district is nearly \$33,600 yearly, roughly 73% of the national average. Figures show an unemployment rate of 5.5% for the basin, and approximately 13% of the residents in the watershed live below the national poverty level.



Estimates indicate there are 1,168 farms in the watershed. Of the 1,106 operators in the basin, sixty three percent are full time producers not reliant on off-farm income. Approximately forty three percent of the operations are less than 180 acres in size, thirty nine percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres. Average farm size in the basin is 195 acres.

<b>(MN) HUC# 9020108</b>		<b>Total Acres:</b>	<b>1,042,708</b>
<b>Population Data *</b>	Watershed Population	13,564	
	Unemployment Rate	5.5%	
	Median Household Income	33,580	
	% below poverty level	13%	
	Median Value of Home	68,983	
<b>Farm Data</b>	# of Farms	1,168	
	# of Operators	1,106	<b>Percent</b>
	# of Full Time Operators	698	63%
	# of Part Time Operators	408	37%
	<b>Total Cropland Acres</b>	<b>572,374</b>	<b>54.9%</b>
<b>Farm Size</b>	1 to 49 Acres	163	14%
	50 to 179 Acres	339	29%
	180 to 499 Acres	315	27%
	500 to 999 Acres	140	12%
	1,000 Acres or more	210	18%
	<b>Average Farm Size</b>	<b>195</b>	
<b>Livestock &amp; Poultry</b>	Cattle - Beef	8,222	5%
	Cattle - Dairy	4,076	2%
	Chicken	1,057	1%
	Swine	8,762	5%
	Turkey	61,961	36%
	Other	86,190	51%
	<b>Animal Count Total:</b>	<b>170,269</b>	
	<b>Total Permitted AFOs:</b>	<b>194</b>	
<b>Chemicals (Acres Applied)</b>	Insecticides	86,091	
	Herbicides	507,752	
	Wormicides	4,858	
	Fruiticides	5,277	
	<b>Total Acres Treated</b>	<b>603,978</b>	
	<b>% State Chemical Totals</b>	<b>4.2%</b>	

\* Adjusted by percent of HUC in the county or by percent of block group area in the HUC, depending on the level of data available

## Watershed Projects, Plans and Monitoring

- **Upper Becker Dam Enhancement Project**  
Wild Rice Watershed District, Houston Engineering
- **Goose Prairie Water Management Project**  
Wild Rice Watershed District
- **Waubun Diversion Project**  
Wild Rice Watershed District
- **Dalen Coulee Project** MN DNR, USFWS, NRCS  
WRWD, Norman & Clay counties, BWSR, MPCA
- **Rural Ring Dike Program**  
Area Districts, MN DNR
- **Wild Rice River Feasibility Study**  
Wild Rice Watershed District, US Army COE
- **Red River Basin Riparian Project**  
Red River RC&D
- **Red River Water Management Consortium**  
USDA, UND EERC, Red River Basin Citizens
- **Red River Basin Water Quality Work Plan**  
Minnesota Pollution Control Agency
- **Red River Valley Water Supply Project**  
Red River International Joint Commission
- **Red River Basin Water Quality Monitoring Project**  
Red River Basin Commission
- **USGS Sediment to Streams Study - Red River Basin**  
USGS, Minnesota Pollution Control Agency

\* Have a watershed project you'd like to see included? Submit suggestions online @ <http://www.mn.nrcs.usda.gov/technical/rwa/>

## Conservation Districts, Organizations & Partners

- **Becker County SWCD**  
809 - 8th St SE, Detroit Lakes, MN 56501  
Phone (218) 846-7360
- **Clay County SWCD**  
1615 30th Ave S, Moorhead, MN 56560  
Phone (218) 287-2255
- **Clearwater SWCD**  
312 Main Ave N Ste 3, Bagley, MN 56621  
Phone (218) 694-6845
- **Mahnomen SWCD**  
200 US HWY 59, Box 381, Mahnomen, MN 56557  
Phone: (218) 935-2987
- **Norman SWCD**  
100 Main Ave E PO Box 60, Twin Valley, MN 56584  
Phone (218) 584-5169
- **Polk SWCD East**  
PO Box 57, McIntosh, MN 56556  
Phone: (218) 563-2777
- **Polk SWCD West**  
528 Strander Ave, Crookston, MN 56716  
Phone (218) 281-607
- **Red River Basin Commission**  
119th 5th St. P.O. Box 66 Moorhead, MN 56561  
[www.reddriverbasincommission.org](http://www.reddriverbasincommission.org)
- **Red River RC&D**  
516 cooper Ave, Suite 101 Grafton, ND 58237  
Phone (701) 352-0127
- **Red River Basin Riparian Project**  
516 Cooper Ave Grafton, ND 58237  
Phone (701) 352-3550
- **Wild Rice Watershed District**  
11 5th Avenue Ada, MN 56510  
Phone (218) 784-5501
- **West Central Minnesota Joint Powers Board**  
809 SE 8th St, Detroit Lakes, MN 56501  
Phone (218) 847-9392

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## Footnotes / Bibliography

1. Ownership Layer – Source: MN Stewardship Data: Minnesota Department of Natural Resources, Section of Wildlife, BRW, Inc, 2007. This is the complete GAP Stewardship database containing land ownership information for the entire state of Minnesota. Date of source material is variable and ranges from 1976 to 2007, although a date range of 1983 to 1985 predominates. Land interest is expressed only when some organization owns or administers more than 50% of a forty except where DNR could create sub-forty accuracy polygons.
2. National Land Cover Dataset (NLCD) - Originator: U.S. Geological Survey (USGS); Publication date: 19990631; Title: Minnesota Land Cover Data Set, Edition: 1; Geospatial data presentation form: Raster digital data; Publisher: U.S. Geological Survey, Sioux Falls, SD, USA.
3. Ownership layer classes grouped to calculate Public ownership vs. Private and Tribal ownership by Minnesota NRCS Rapid Watershed Assessment Staff. Land cover / Land use data was then extracted from the National Landcover Dataset Classification System and related to ownership class polygons.
4. USGS 1:100,000 Hydrography Layer .This data set represents all features coded as ‘rivers’ on the USGS 1:100,000-scale DLG Hydrography data set. This current version was converted to ARC/INFO by the Land Management Information Center and edge-matched across map sheet boundaries. Minnesota DNR made further modifications to the files, verified lake feature identifiers, and created a state layer from the separate 100k data. The Hydro 100k layer was compared to MPCA’s 303(d) data to derive percentage of listed waters.
5. Land Cover / Land Use / Hydro 100k Buffer. Using the 100k Hydrology dataset, All streams within HUC were spatially buffered to a distance of 100 ft. National Landcover Dataset attributes were extracted for the spatial buffer to demonstrate the vegetation and landuse in vulnerable areas adjacent to waterways.
6. Land Capability Class. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: <http://www.nrcs.usda.gov/technical/NRI/>
7. 2002 NASS Irrigated Land Estimates. Irrigated land: Land that shows evidence of being irrigated during the year of the inventory or during two or more years out of the last four years. Water is supplied to crops by ditches, pipes, or other conduits. Water spreading is not considered irrigation; it is recorded as a conservation practice. For more information: <http://www.agcensus.usda.gov/>
8. 303(d) Stream data. Minnesota’s Final Impaired Waters (per Section 303(d) Clean Water Act), 2006. Data obtained from Minnesota Pollution Control Agency (MPCA). The Minnesota Pollution Control Agency (MPCA) helps protect state water by monitoring quality, setting standards and controlling inputs through the development of TMDL plans. <http://www.pca.state.mn.us/water/tmdl/index.html#maps>.

## Footnotes / Bibliography (continued)

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9. National Coordinated Common Resource Area (CRA) Geographic Database. A Common Resource Area (CRA) map delineation is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area

10. Soil Survey Geographic Database (SSURGO) Tabular and spatial data obtained from NRCS Soil Data Mart at <http://soildatamart.nrcs.gov>. Publication dates vary by county. Component and layer tables were linked to the spatial data via SDV 5.1 and ARCGIS 9.1 to derive the soil classifications presented in these examples. Highly Erodible Land Classification Data obtained from USDA/NRCS EFOTG Section II, County Soil Data. HEL classifications, where provided, were appended to SSURGO spatial data via an ARCEdit session. Addendum and publication dates vary by county.

11. Lands removed from production through farm bill programs. County enrollment derived from the following: CRP Acres: [www.fsa.usda.gov/crpstorpt/07Approved/r1sumyr/mn.htm](http://www.fsa.usda.gov/crpstorpt/07Approved/r1sumyr/mn.htm) (7/30/04). CREP Acres: <http://www.bwsr.state.mn.us/easements/crep/easementssummary.html> (7/31/03). WRP Acres: NRCS (8/16/04). Data were obtained by county and adjusted by percent of HUC in the county.

12. Socioeconomic and Agricultural Census Data were taken from the U.S. Population Census, 2000 and 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available. Unemployment statistics obtained from the Bureau of Labor Statistics - Labor Force Data by County, 2006 Annual Averages <http://www.bls.gov> Data were also taken from MPCA AFO/CAFO counts provided by county for 2005.

13. 1997 NRI Estimates for sheet and rill erosion (WEQ & USLE). The NRI estimates sheet and rill erosion together using the Universal Soil Loss Equation (USLE). The Revised Universal Soil Loss Equation (RUSLE) was not used in the 1997 NRI. RUSLE was not available for previous inventories, therefore the use of USLE was continued to preserve the trending capacity of the NRI database. Wind erosion is estimated using the Wind Erosion Equation (WEQ). For further information visit <http://www.mn.nrcs.usda.gov/technical/nri/findings/erosion.htm>

14. Federally listed endangered and threatened species counts obtained from NRCS Field Office Technical Guide, Section II, Threatened and Endangered List. <http://www.nrcs.usda.gov/Technical/efotg/>. Essential fish habitat as established by Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265, as amended through October 11, 1996 <http://www.nmfs.noaa.gov/sfa/magact/>

15. Watershed Projects, Plans, Monitoring. Natural Resources Conservation Service, Watershed Projects Planned and Authorized, <http://www.nrcs.usda.gov/programs/watershed/Purpose>.