

## Rapid Watershed Assessment

### Prairie-Willow

(MN) HUC: 07010103



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 Prairie-Willow 8-Digit Hydrologic Unit Code (HUC) subbasin is located in the Northern Lakes and Forest ecoregion of Minnesota. This largely forested watershed is 1,316,102 acres in size. Approximately seventy seven percent of the land in this HUC is privately owned, and the remainder is tribal, state or federally owned land or held by major corporate interests.

Assessment estimates indicate 546 farms located in the watershed. Approximately fifty seven 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 in size. Forty nine percent of the producers are full time operators and do not rely on off-farm income.

The main resource concerns on the cropland are sheet and rill erosion, groundwater quality and quantity, surfacewater quality and quantity, timberland management, riparian development, and lake carrying capacity. Associated with the erosion runoff and riparian development are increased sediment and pollutant (mercury, excess nutrients) loadings to surface waters.



### County Totals

<b>County</b>	<b>Acres in HUC</b>	<b>% HUC</b>
<b>Aitkin</b>	510,675	38.8%
<b>Carlton</b>	60,967	4.6%
<b>Cass</b>	99,063	7.5%
<b>Itasca</b>	592,826	45.0%
<b>St. Louis</b>	52,550	4.0%
<b>Total acres:</b>	<b>1,316,102</b>	<b>100%</b>

## Physical Description

Average elevation in the Prairie-Willow subbasin is 1,313 feet above sea level, with the highest values largely occurring in the and Northwestern portions of the watershed, while lower values are found across the Southwestern and central regions.

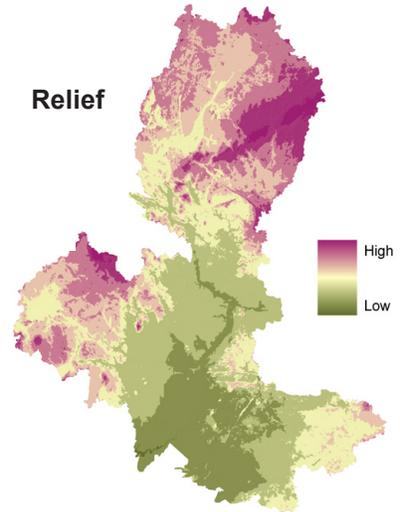
Precipitation in the watershed ranges from 25 to 29 inches annually. Evaporation estimates are between 28 to 32 inches annually (Minnesota State Climatologists Office, 1999).

Much of the land within this HUC is not considered highly erodible, and is moderately suited to agricultural uses. Predominate land uses / land covers are Forest (42.6%), Wetlands (37%), Open Water (6.4%), and Grass Pasture/Hay (5.9%).

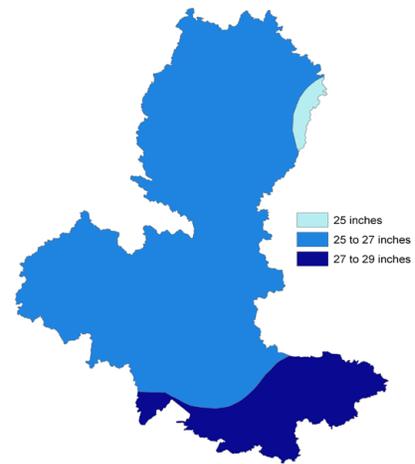
Land use within the watershed is modestly agricultural, accounting for approximately 10% of the available acres. Development pressure is moderate to high in many areas, with some farms, timberland, resorts and lakeshore being parceled out for recreation, lake or country homes.

There is reasonable concern that population growth, rapid development along lakeshores, and the transition to larger, year-round homes will adversely impact water quantity, quality, and fish and wildlife habitat in the region.

**Relief**



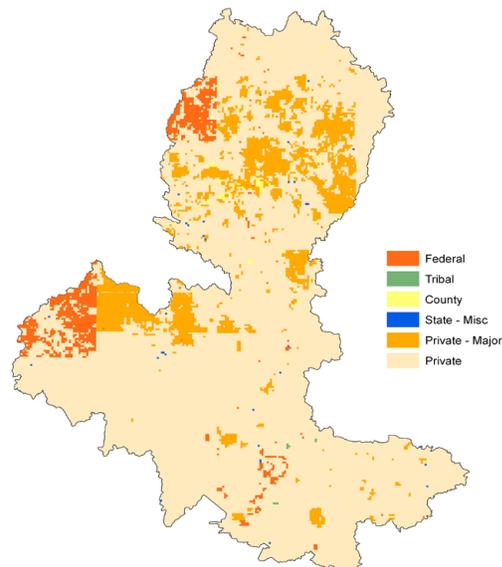
**Average Precipitation**



## Ownership<sup>1</sup>

Ownership Type	Acres	% of HUC
Conservancy	0.0	0.00
County	6,042.5	0.5
Federal	55,389.8	4.2
Private Major	162,390.3	12.3
State-Misc.	1,229.4	0.1
Tribal	379.9	0.03
Private	1,006,329.3	76.5
Open Water*	84,340.8	6.4
<b>Ownership Totals:</b>	<b>1,316,102</b>	<b>100</b>

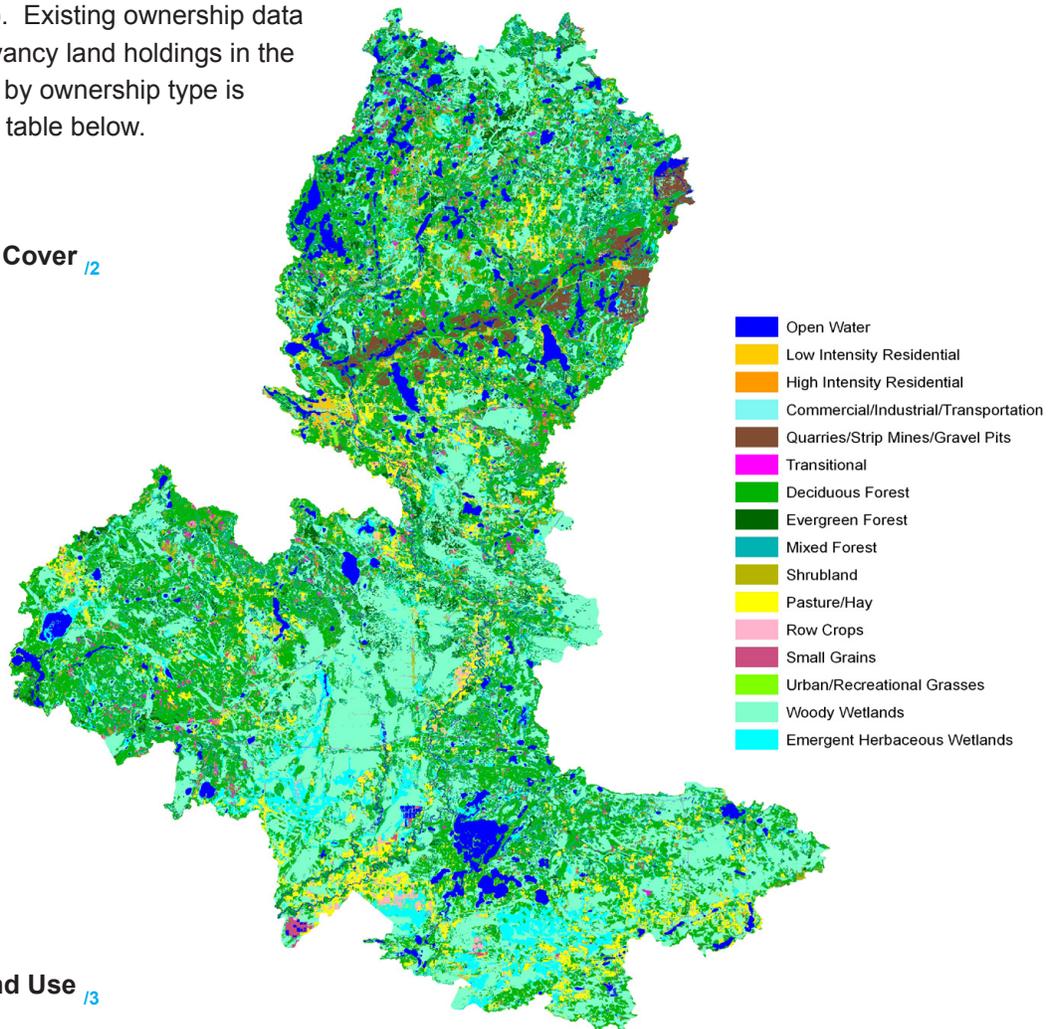
\* ownership undetermined



## Ownership / Land Use

The watershed covers an area of 1,316,102 acres. Slightly more than seventy six percent of the land in the watershed is owned by private landholders (1,006,329 acres). The second largest ownership type is Private-Major, with approximately 162,390 acres (12.3%), followed by Federal, with 55,390 acres (4.2%), and County with 6,043 acres (0.5%). Tribal lands account for the smallest ownership percentage, covering 380 acres (0.03%). Existing ownership data shows no Conservancy land holdings in the region. Land use by ownership type is represented in the table below.

## Land Use / Land Cover <sup>1/2</sup>



## Ownership / Land Use <sup>1/3</sup>

Landcover/Use	Public		Private**		Tribal		Total Acres	Percent
	Acres	Percent	Acres	Percent	Acres	Percent		
Forest	34,968	2.7	524,866	39.9	169	0.01	560,003	42.6%
Grain Crops	4.2	0.0	2,580	0.2	0	0.00	2,584	0.2%
Grass, etc	1,477	0.1	76,327	5.8	11	0.00	77,814	5.9%
Orchards	0.0	0.0	0.0	0.0	0	0.00	0	0.0%
Row Crops	413	0.03	20,766	1.6	3	0.00	21,182	1.6%
Shrub etc	1,492	0.1	66,214	5.0	8	0.00	67,714	5.2%
Wetlands	24,265	1.8	467,707	35.5	189	0.01	492,161	37.4%
Residential/Commercial			10,305	0.8			10,305	0.8%
Open Water*	--	--	--	--	--	--	84,341	6.4%

\* ownership undetermined

\*\* includes private-major

<b>Totals:</b>	<b>62,618</b>	<b>4.76%</b>	<b>1,168,764</b>	<b>88.8%</b>	<b>379,536</b>	<b>0.03%</b>	<b>1,316,102</b>	<b>100%</b>
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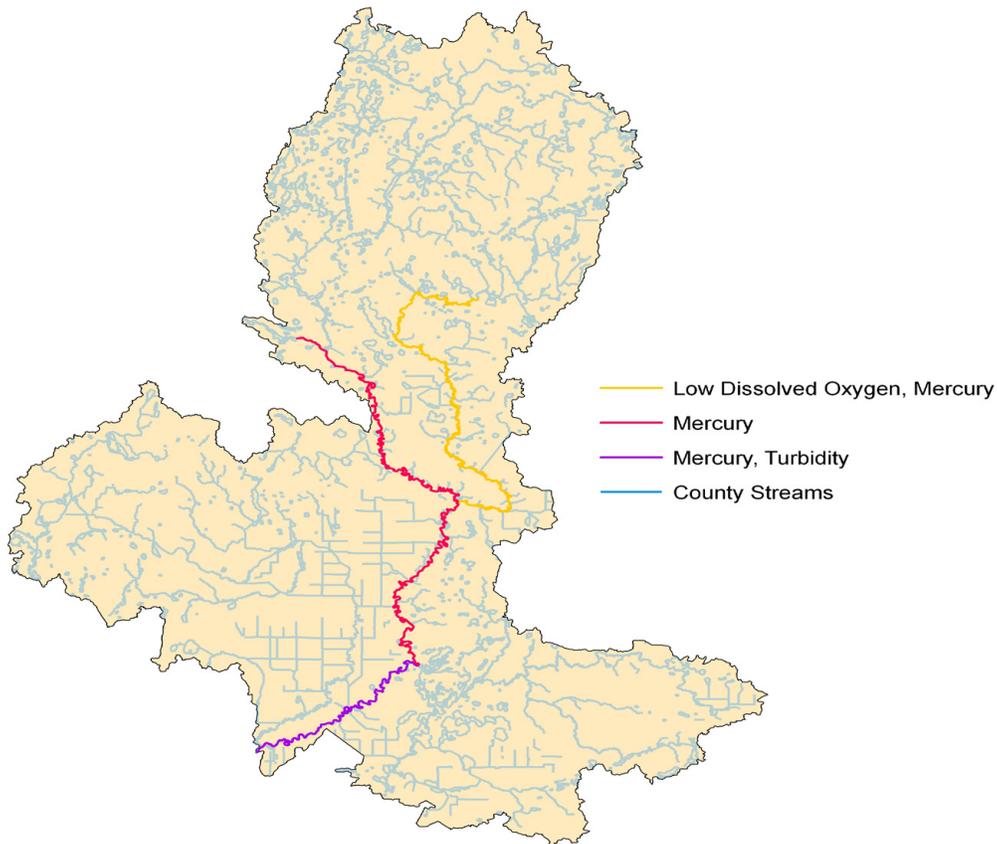
**Physical Description (continued)**

		ACRES	cu. ft/sec	
<b>Stream Flow Data</b>	USGS 05211000 MISSISSIPPI RIVER AT GRAND RAPIDS, MN	<b>Total Avg.</b>	1,718	
		<b>May – Sept. Avg. Yield</b>	917.2	
		<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)	2570.3	---	
	303d/TMDL Listed Streams (DEQ)	164.3	6.4%	
<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)	Dev/Barren	1,081.2	1.8	
	Fallow	0	0	
	Forest	14,496.5	23.5	
	Grain Crops	104.0	0.2	
	Grass/Pasture	1,470.8	2.4	
	Orchards/Vine	0	0	
	Row Crops	938.9	1.5	
	Shrub/Range	349.4	0.6	
	Water	18830.6	30.6	
	Wetlands	24,331.3	39.5	
	<b>Total Buffer Acres</b>		<b>61,602.7</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 – slight limitations</b>	0	0%	
	<b>2 – moderate limitations</b>	78,300	63%	
	<b>3 – severe limitations</b>	13,600	11%	
	<b>4 – very severe limitations</b>	10,800	9%	
	<b>5 – no erosion hazard, but other limitations</b>	0	0%	
	<b>6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest</b>	18,200	15%	
	<b>7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat</b>	3,000	2%	
	<b>8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply</b>	0	0%	
	<b>Total Croplands &amp; Pasturelands</b>		<b>123,900</b>	---
	<b>TYPE OF LAND</b>	<b>ACRES</b>	<b>% of Irrigated Lands</b>	<b>% of Cropland</b>
<b>Irrigated Lands<sup>17</sup></b> (1997 NRI Estimates for Non-Federal Lands Only)	Cultivated Cropland / Pastureland	0	0%	0%
	Uncultivated Cropland	0	0%	0%
	<b>Total Irrigated Lands</b>	0	---	0%

## 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.

### 2006 Minnesota 303d Listed Streams - Prairie-Willow Watershed



Listed Stream / Reach <sup>/8</sup>	Impairment	Affected Use
Mississippi River Sandy R to Willow R	Mercury, Turbidity	Aquatic Consumption and Aquatic Life
Mississippi River Prairie R to Split Hand Cr	Mercury	Aquatic Consumption
Mississippi River Grand Rapids Dam to Prairie R	Mercury	Aquatic Consumption
Mississippi River Swan R to Sandy R	Mercury	Aquatic Consumption
Swan River Swan Lk (31-0067) to Mississippi R	Low Dissolved Oxygen, Mercury	Aquatic Consumption and Aquatic Life
Mississippi River Split Hand Cr to Swan R	Mercury	Aquatic Consumption

**Assessment of Waters (continued)**

**2006 Minnesota 303d Listed Lakes - Prairie-Willow Watershed**



Listed Lake	Impairment	Affected Use	Listed Lake	Impairment	Affected Use
Minnewawa	Excess nutrients, Mercury	Aquatic Recreation, Consumption	Snowball	Mercury	Aquatic Consumption
Big Sandy	Excess nutrients, Mercury	Aquatic Recreation, Consumption	Upper Panasa	Mercury	Aquatic Consumption
Round	Mercury	Aquatic Consumption	Lower Panasa	Mercury	Aquatic Consumption
Hill	Mercury	Aquatic Consumption	Wolf	Mercury	Aquatic Consumption
Eagle	Excess nutrients, Mercury	Aquatic Recreation, Consumption	Crooked	Mercury	Aquatic Consumption
Cross	Mercury	Aquatic Consumption	Trout	Mercury	Aquatic Consumption
Tamarack	Mercury	Aquatic Consumption	White Swan	Mercury	Aquatic Consumption
O'Brien	Mercury	Aquatic Consumption	Prairie	Mercury	Aquatic Consumption
Horsehead	Mercury	Aquatic Consumption	Wabana	Mercury	Aquatic Consumption
Swan	Mercury	Aquatic Consumption	Trout	Mercury	Aquatic Consumption
Buck	Mercury	Aquatic Consumption	Cutaway	Mercury	Aquatic Consumption
Ox Hide	Mercury	Aquatic Consumption	Plantation	Mercury	Aquatic Consumption
Prairie	Mercury	Aquatic Consumption	Blandin	Mercury	Aquatic Consumption
Day	Mercury	Aquatic Consumption	Unnamed	Mercury	Aquatic Consumption
			(O'Brien Res. #4)		

## Common Resource Areas

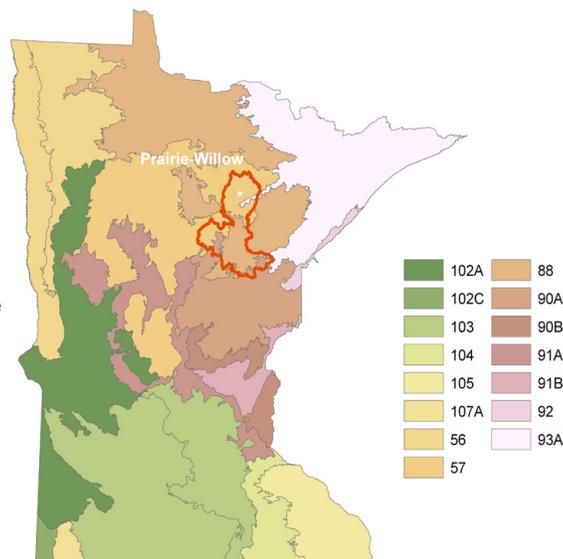
The Prairie-Willow Watershed encompasses four common resource areas, CRA 91A.1 and 90.A1, 88.1, and 57.1<sup>19</sup>

**91A.1 Central Minnesota Outwash:** Nearly level to gently sloping well drained sandy soils on outwash plains and stream terraces. There are also numerous poorly and very poorly drained mineral and organic soils. Irrigated crop land, pasture and hayland are the major land uses. Forestland is common in parts. Corn, soybeans, edible beans and potatoes are the primary irrigated crops. Forage crops are also extensively grown. Resource concerns are wind erosion water quality, nutrient management, improperly managed grazing.

**90A.1 Loamy Till Ground Moraines and Drumlins:** Nearly level to moderately steep, loamy, sandy, and organic soils. Mixed deciduous and coniferous forest is the primary land use with some glacial lakes and wetlands. Scattered cropland and grazing land are present. Cropland productivity is limited by the short length of the growing season. Primary resource concerns are timber management, wildlife habitat, recreation and agricultural forage production. Surface water quality is a localized concern.

**88.1 Northern Minnesota Glacial Lake Basins:** Nearly level to gently sloping areas formed in lake washed till, lacustrine and organic soil material. Generally the soils are silty, clayey and loamy with small amounts of sandy and gravelly soils on beach ridges. Timber land is the main use. Scattered cropland and grazing land for beef and dairy are present. Cropland is used mostly for small grain, silage and hay. Resource concerns include management of excessive wetness, short growing season, pasture management, and water quality.

**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.



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

## Geology / Soils<sup>10</sup>

Soils within the watershed are primarily Alfisols consisting of silty sand forming under deciduous forests, Entisols which are sandy soils commonly found in glacial outwash and alluvium. And finally, Inceptisols which are commonly found in northern forests, woodlands, and wetlands. The bedrock geology consists of primarily Precambrian crystalline rocks (Sims and Morey, 1972, Stark et al., 1996).

Also found in the Prairie-Willow Watershed bedrock geology are cretaceous era rock types. The water lies within the calcareous glacial deposits associated with the Des Moines Lobe, the Wadena Lobe Associations and the siliceous deposits associated with Rainy and Superior Lobe Associations.

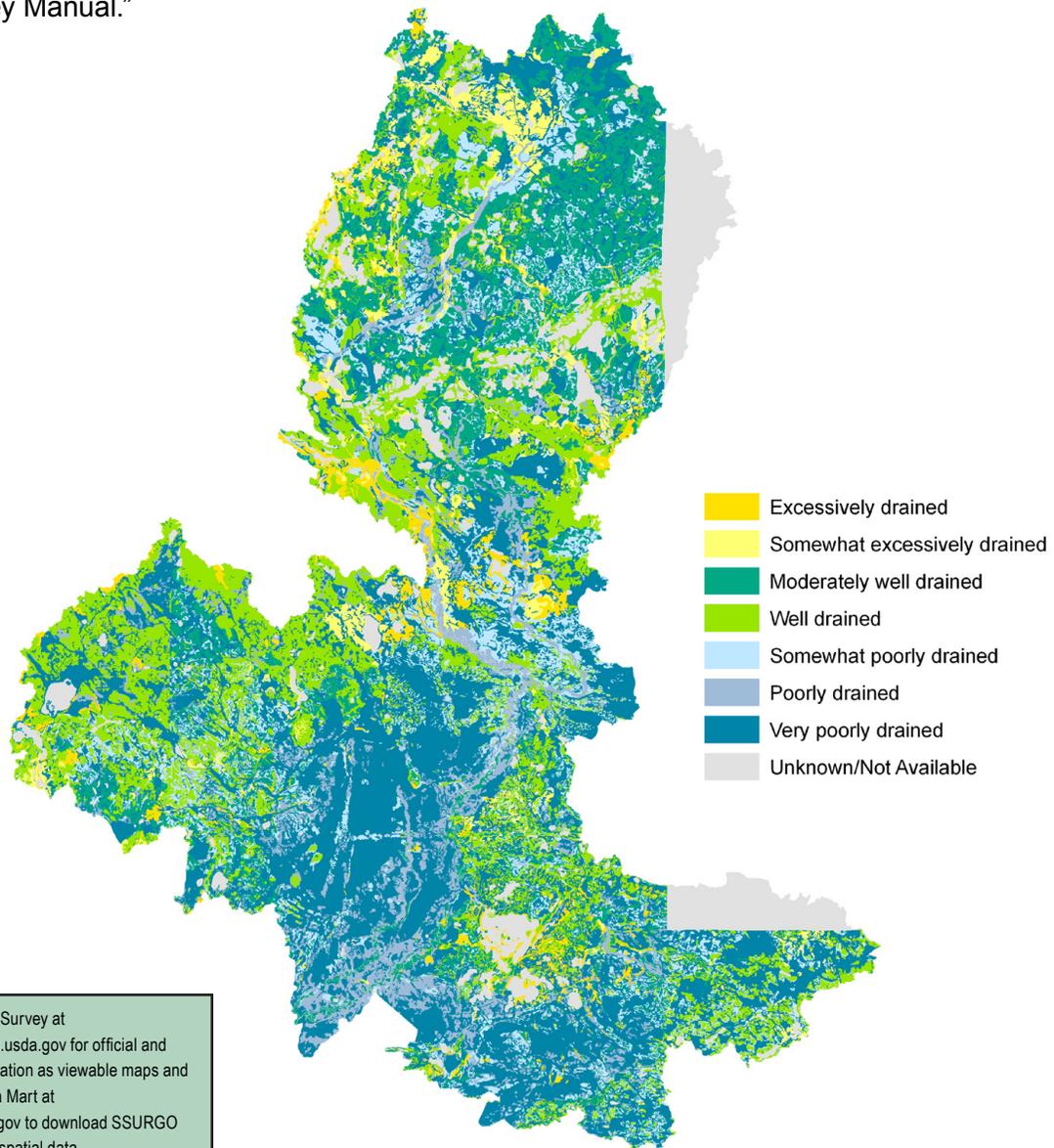
The bedrock hydrogeology and ground water in the Prairie-Willow watershed consists of primarily Precambrian igneous and metamorphic rocks. The surficial aquifers are glacial outwash consisting of coarse-grained sands and fine-grained alluvium of calcareous and siliceous deposits. The Glacial till consists of calcareous and siliceous deposits.

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  
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## Drainage Classification

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.”



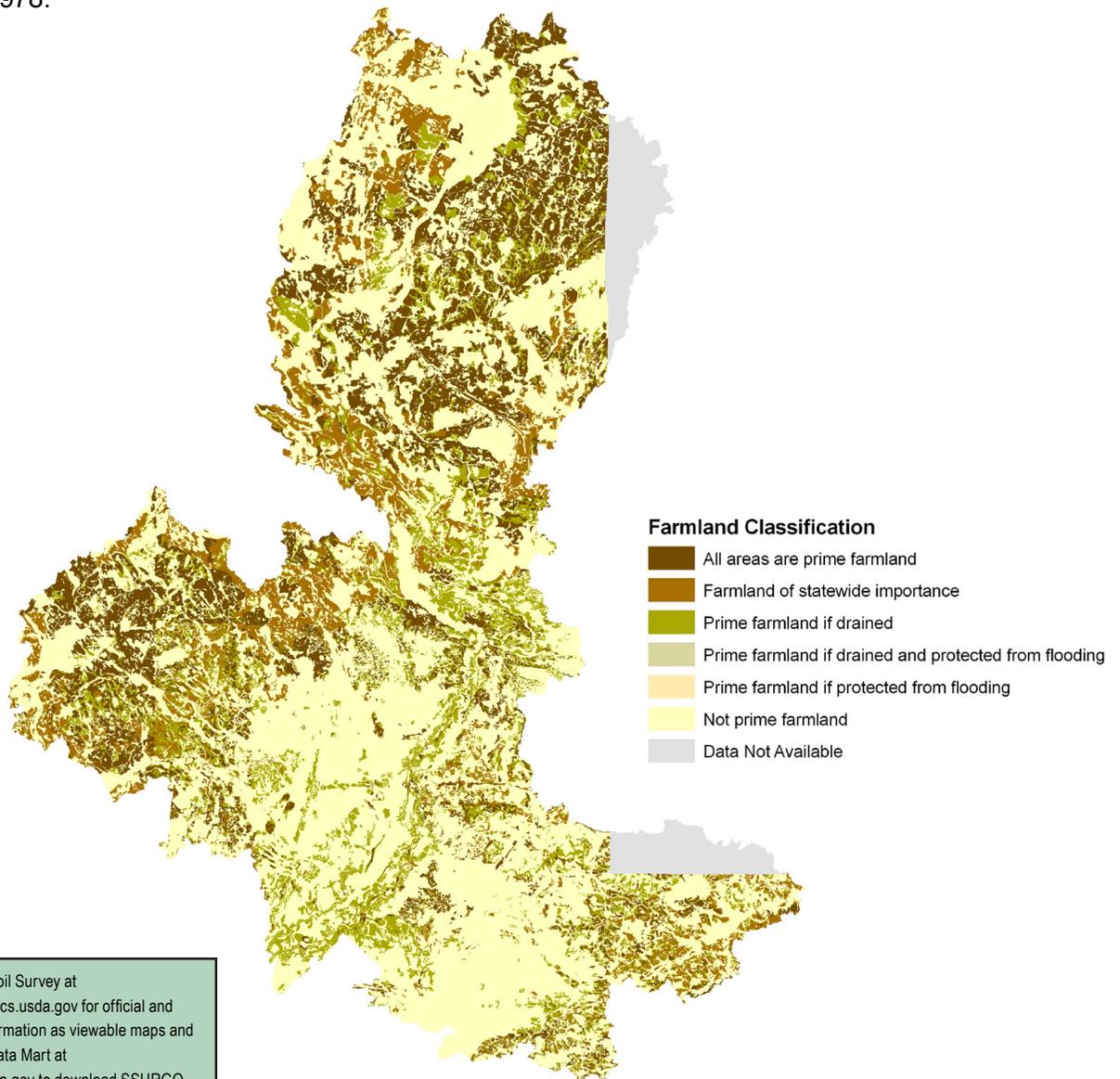
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## Farmland Classification

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.

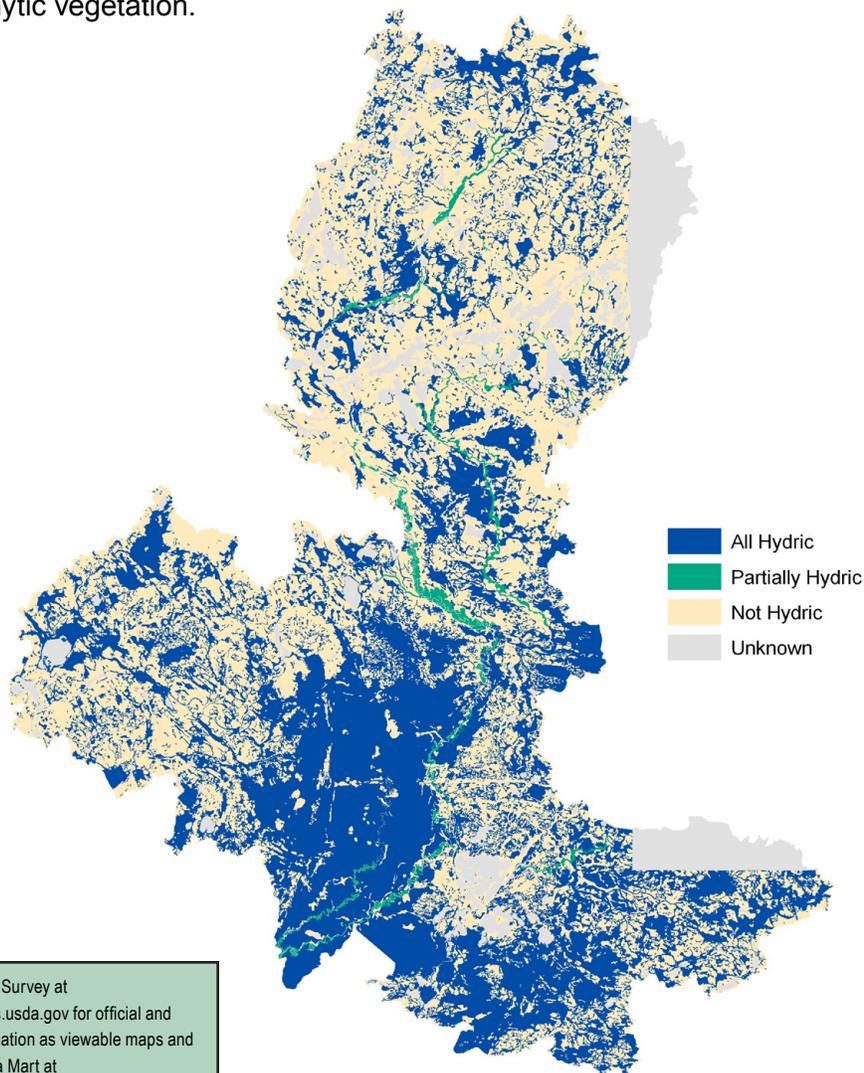


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## Hydric Soils

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 nonhydric 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.



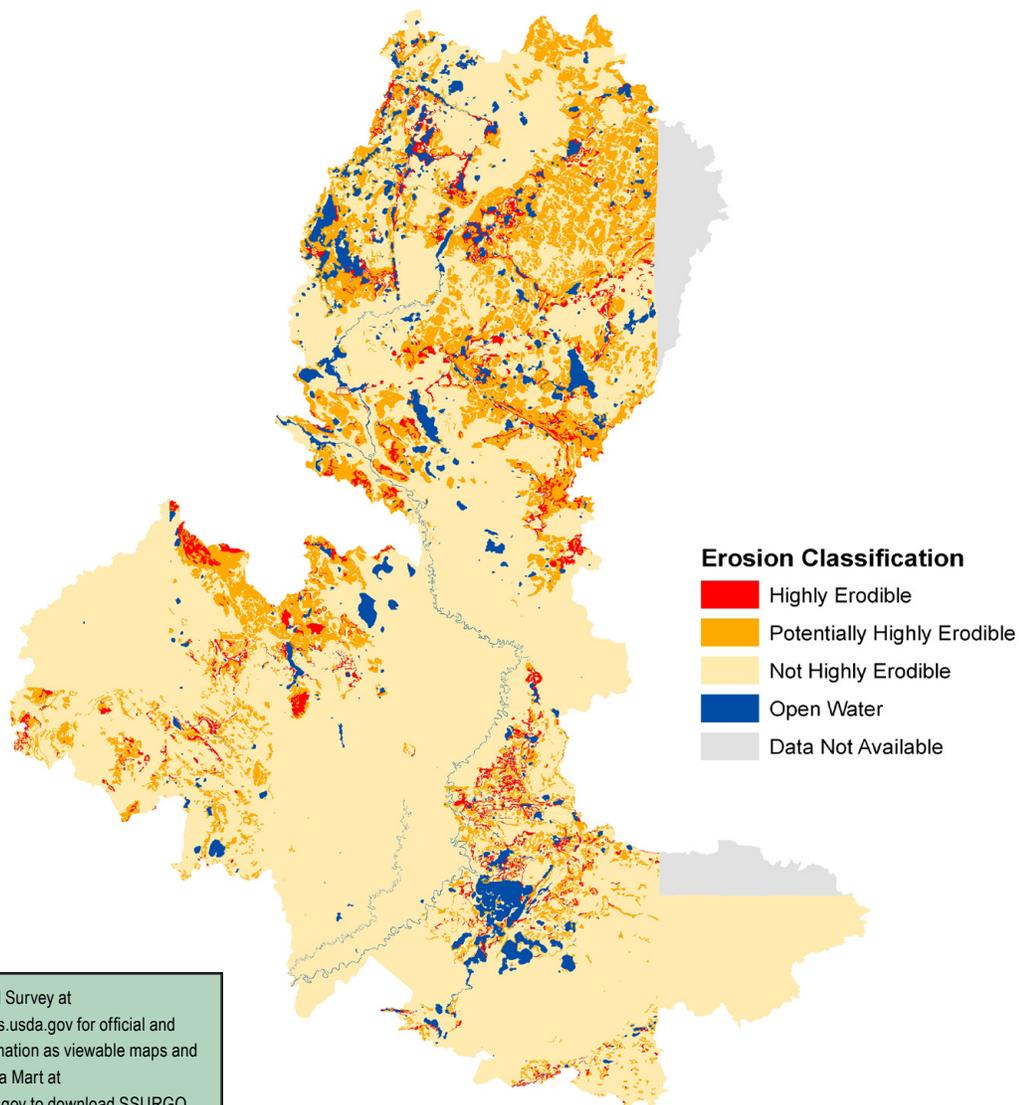
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## Highly Erodible Land (HEL)

The erodibility index (EI) for a soil map unit is determined by dividing the potential erodibility for the soil map unit by the soil loss tolerance (T) value established for the soil in the FOTG as of January 1, 1990.

A soil map unit with an EI of 8 or greater is considered to be highly erodible land (HEL).

Potential erodibility is based on default values for rainfall amount and intensity, percent and length of slope, surface texture and organic matter, permeability, and plant cover. Actual erodibility and EI for any specific map unit depends on the actual values for these properties.

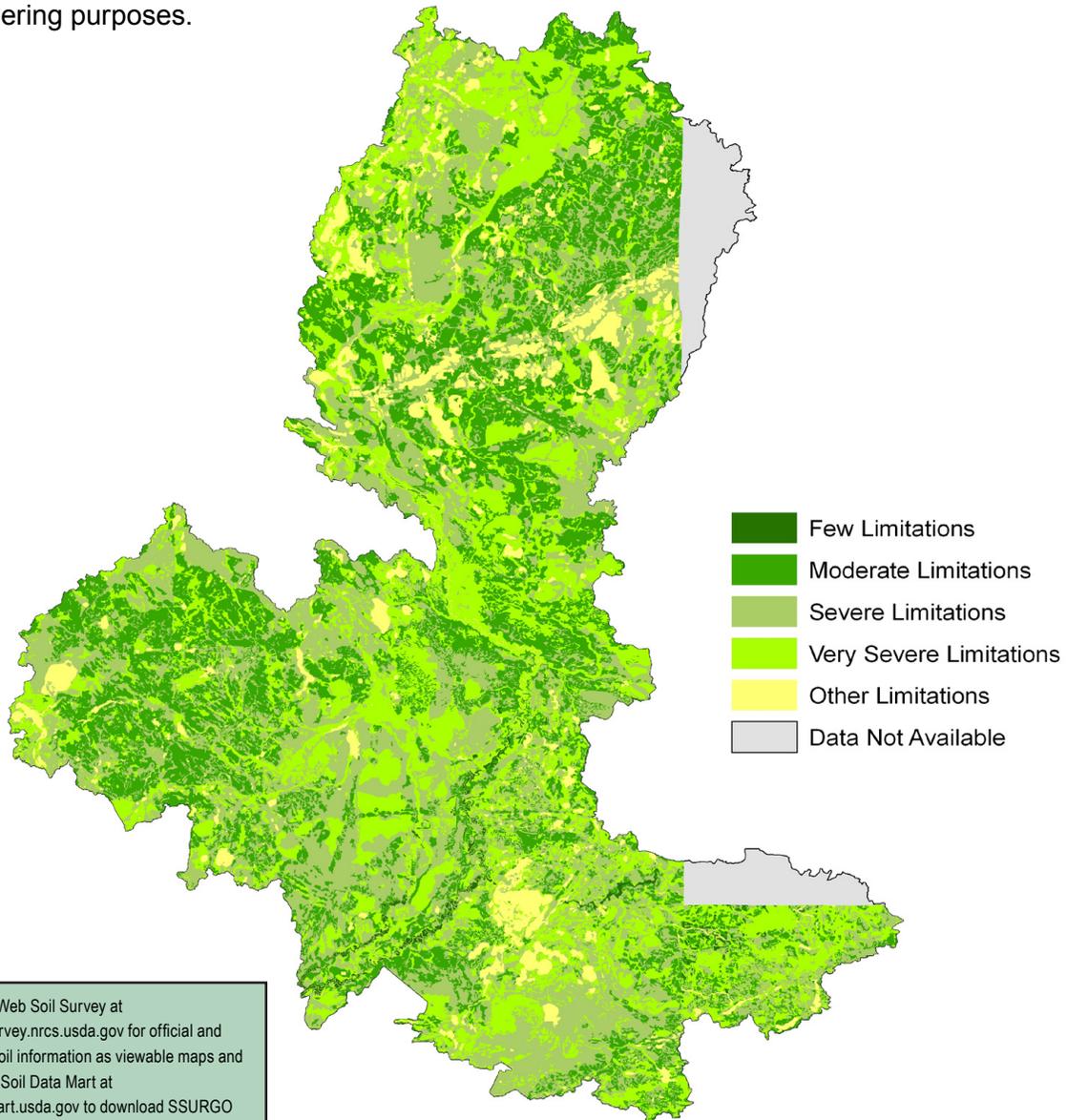


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## Land Capability Classification

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 Data

Watershed Name: Prairie-Willow				Watershed Number: 07010103						
PRS Performance Measures	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	TOTAL
<b>Total Conservation Systems Planned (acres)</b>	0	2,028	0	664	2,816	N/A	750	1,746	3,507	11,511
<b>Total Conservation Systems Applied (acres)</b>	0	546	0	881	881	N/A	350	1,258	3,384	7,300
<b>Conservation Practices</b>										
<b>Total Waste Management (313) (numbers)</b>	0	1	0	0	0	0	0	0	0	1
<b>Riparian Forest Buffers (391) (acres)</b>	0	0	0	173	48	9	0	113	46	389
<b>Erosion Control Total Soil Saved (tons/year)</b>	0	0	0	0	302	N/A	N/A	N/A	N/A	302
<b>Total Nutrient Management (590) (Acres)</b>	160	0	163	0	512	0	0	0	0	835
<b>Pest Management Systems Applied (595A) (Acres)</b>	0	0	0	46	4	0	0	0	0	50
<b>Prescribed Grazing 528a (acres)</b>	0	0	0	0	225	0	0	153	153	531
<b>Tree &amp; Shrub Establishment (612) (acres)</b>	0	23	0	152	277	27	39	211	71	800
<b>Residue Management (329A-C) (acres)</b>	0	0	0	0	0	0	0	0	245	245
<b>Total Wildlife Habitat (644 - 645) (acres)</b>	0	1,129	0	929	2,108	32	929	899	1,485	7,511
<b>Total Wetlands Created, Restored, or Enhanced (acres)</b>	0	0	0	0	1	5	0	0	0	6
<b>Acres enrolled in Farmbill Programs</b>										
<b>Conservation Reserve Program</b>	0	0	0	392	268	N/A	0	513	2,575	3,748
<b>Wetlands Reserve Program</b>	0	0	0	0	0	N/A	0	0	0	0
<b>Environmental Quality Incentives Program</b>	0	1	0	0	0	N/A	140	430	3,132	3,703
<b>Wildlife Habitat Incentive Program</b>	0	525	0	0	120	N/A	168	343	157	1,313

## 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 basin.

Scientific Name	Common Name	Type
<i>Acipenser fulvescens</i>	Lake Sturgeon	Zoological
<i>Ammodramus nelsoni</i>	Nelson's Sharp-tailed Sparrow	Zoological
<i>Asio flammeus</i>	Short-eared Owl	Zoological
<i>Botrychium campestre</i>	Prairie Moonwort	Botanical
<i>Botrychium lanceolatum</i>	Triangle Moonwort	Botanical
<i>Botrychium minganense</i>	Mingan Moonwort	Botanical
<i>Botrychium mormo</i>	Goblin Fern	Botanical
<i>Botrychium oneidense</i>	Blunt-lobed Grapefern	Botanical
<i>Botrychium pallidum</i>	Pale Moonwort	Botanical
<i>Botrychium rugulosum</i>	St. Lawrence Grapefern	Botanical
<i>Botrychium simplex</i>	Least Moonwort	Botanical
<i>Buteo lineatus</i>	Red-shouldered Hawk	Zoological
<i>Coturnicops noveboracensis</i>	Yellow Rail	Zoological
<i>Cygnus buccinator</i>	Trumpeter Swan	Zoological
<i>Cypripedium arietinum</i>	Ram's-head Lady's-slipper	Botanical
<i>Eleocharis olivacea</i>	Olivaceous Spike-rush	Botanical
<i>Emydoidea blandingii</i>	Blanding's Turtle	Zoological
<i>Etheostoma microperca</i>	Least Darter	Zoological
<i>Fimbristylis autumnalis</i>	Autumn Fimbristylis	Botanical
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Zoological
<i>Hemidactylium scutatum</i>	Four-toed Salamander	Zoological
<i>Lasmigona compressa</i>	Creek Heelsplitter	Zoological
<i>Ligumia recta</i>	Black Sandshell	Zoological
<i>Littorella uniflora</i>	American Shore-plantain	Botanical
<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	White Adder's-mouth	Botanical
<i>Najas gracillima</i>	Thread-like Naiad	Botanical
<i>Notropis anogenus</i>	Pugnose Shiner	Zoological
<i>Nymphaea leibergii</i>	Small White Water-lily	Botanical
<i>Phalaropus tricolor</i>	Wilson's Phalarope	Zoological
<i>Platanthera clavellata</i>	Club-spur Orchid	Botanical
<i>Platanthera flava</i> var. <i>herbiola</i>	Tuberclad Rein-orchid	Botanical
<i>Polemonium occidentale</i> ssp. <i>lacustre</i>	Western Jacob's Ladder	Botanical
<i>Polycentropus milaca</i>	A Caddisfly	Zoological
<i>Potamogeton bicipulatus</i>	Snailseed Pondweed	Botanical
<i>Potamogeton vaseyi</i>	Vasey's Pondweed	Botanical
<i>Ranunculus lapponicus</i>	Lapland Buttercup	Botanical
<i>Sparganium glomeratum</i>	Clustered Bur-reed	Botanical
<i>Torreyochloa pallida</i>	Torrey's Manna-grass	Botanical
<i>Xyris montana</i>	Montane Yellow-eyed Grass	Botanical

## 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:

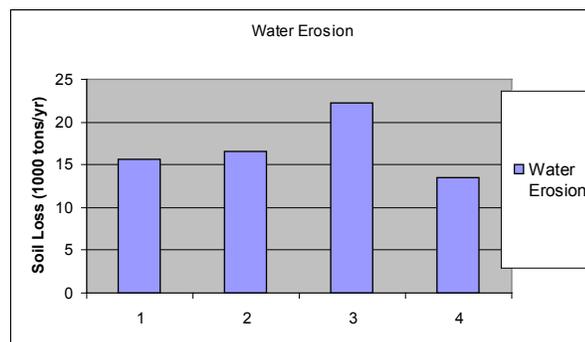


- Soil Quality, Excessive Sheet and Rill Erosion.** Concerns are not limited to agricultural areas. Sedimentation caused by the clearing and grading of shoreland property is neither desirable nor necessary. Erosion issues relate directly to lake pollution/eutrophication and shoreland development, and compound effects of erosion from agricultural lands.
- Woodland Management.** Management opportunities include planting trees or shrubs, restoring prairies, timber stand improvement, timber sales, enhancing wildlife habitat, prescribed burning, and many other practices or projects.
- Surface Water Quality, Nutrients, Priority Pollutants.** Excessive amounts of sediments, nutrients, and bacteria degrade the water quality causing a fish community with depressed populations and limited diversity. Mercury levels are affecting the health of Aquatic communities, and affecting the consumption of fish in many area lakes.
- Surface / Groundwater Quality and Quantity.** Local districts seek to assist local government, landowners, and interest groups to make land and water use decisions regarding potential impacts to water quality and quantity in the face of growing land use changes.
- Lake Carrying Capacity.** As development and changing land use pressure builds, carrying capacity of water bodies needs to be a consideration. Carrying capacity reflects a reasonable or optimum amount of development along lakeshores, and in “back-lot development”. Another consideration boating carrying capacity, a reasonable or optimum average number of boats using the lake at one time.
- Shoreland expansion areas.** Designate areas appropriate for new development. Limit expansion in area lakes through promoting and assisting existing resorts facing increasing taxation and development pressure.

- NRI estimates for Sheet and rill erosion by water on cropland pastureland **decreased** by approximately 2,100 tons of soil (13.46%) between 1982 and 1997.

- NRI estimates for wind erosion were not reported at the 8-digit HUC level between 1982 and 1997.

[/13](#)



## Socioeconomic and Agricultural Data (Relevant)

Estimations for the Prairie-Willow subbasin indicate a current population of approximately 28,000 people. Median household income throughout the district is near \$35,600 yearly, roughly 77% of the national average. Unemployment in the subbasin is estimated at 5.7%, and approximately 11% of the residents in the watershed are living below the national poverty level.



Assessment estimates indicate 546 farms located in the watershed. Approximately fifty seven 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 in size. Of the 483 operators in the subbasin, 565 are full time producers not reliant on off farm income.

<b>(MN) HUC#7010103</b>		<b>Total Acres:</b>	<b>1,316,102</b>
<b>Population Data*</b>	Watershed Population	27,960	
	Unemployment Rate	5.7%	
	Median Household Income	35,606	
	% below poverty level	11%	
	Median Value of Home	88,240	
<b>Farms</b>	# of Farms	546	
	# of Operators	483	<b>Percent</b>
	# of Full Time Operators	272	56%
	# of Part Time Operators	211	44%
	<b>Total Crop/Pasturelands:</b>	<b>123,900</b>	<b>9.41%</b>
<b>Farm Size</b>	1 to 49 Acres	101	18%
	50 to 179 Acres	211	39%
	180 to 499 Acres	175	32%
	500 to 999 Acres	43	8%
	1,000 Acres or more	16	3%
<b>Livestock &amp; Poultry</b>	Cattle - Beef	4,301	6%
	Cattle - Dairy	1,345	2%
	Chicken	208	0%
	Swine	491	1%
	Turkey	60,333	90%
	Other	191	0%
	<b>Animal Count Total:</b>	<b>66,868</b>	
	<b>Total Permitted AFOs:</b>	<b>56</b>	
<b>Chemicals (Acres Applied)</b>	Insecticides	1567.67	
	Herbicides	5373.44	
	Wormicides	0	
	Fruiticides	155.42	
	<b>Total Acres Treated</b>	<b>7096.4</b>	
	<b>% State Chemical Totals</b>	<b>0.05%</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

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- **Biological & Toxicological Assessment**  
Minnesota Pollution Control Agency
- **Mississippi River Env. Management Program**  
US Army Corps of Engineers
- **Mississippi River Watch**  
Mississippi Headwaters Board
- **Mississippi River Defense Network**  
Legislative Commission on Minnesota Resources
- **Upper Mississippi River Basin W.Q. Plan**  
Minnesota Pollution Control Agency
- **North Central Minnesota Lakes Project**  
Minnesota Dept of Natural Resources
- **Upper Mississippi River Initiative**  
National Audobon Society
- **Upper Mississippi River Basin Planning**  
Minnesota Pollution Control Agency
- **Upper Mississippi Source Water Protection Project**  
Minnesota Department of Health
- **Upper Mississippi River WS Forest Partnership**  
USDA Forest Service
- **Upper Mississippi River Watershed Fund**  
USDA Forest Service / National Fish & Wildlife Federation

## Conservation Districts, Organizations & Partners

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- **Aitkin County SWCD**  
130 Southgate Dr, Aitkin, MN 56431  
Phone (218) 927-6565
- **Blandin Foundation**  
100 N. Pokegama Ave Grand Rapids, MN 55744  
Phone (218) 326-0523
- **Carlton County SWCD**  
115 5th St S, Carlton, MN 55718-0029  
Phone (218) 384-3891
- **Cass County SWCD**  
303 Minnesota Avenue W Walker, MN 56484-3000  
Phone (218) 547-7399
- **Cromwell-Wright Monitoring Group**  
Box 7 Hwy 72 & 210 Cromwell, Minnesota 55726  
Phone (218) 644-3716
- **Itasca County SWCD**  
1889 E Hwy 2, Grand Rapids, MN 55744  
Phone (218) 326-0017
- **1000 Friends of Minnesota**  
213 South 5th Street Brainerd, MN 56401  
Phone (218) 824-5095
- **Friends of the Mississippi River**  
360 N Robert St Saint Paul, MN 55101  
Phone (651) 222-2193
- **Grand Rapids High School**  
800 Conifer Dr. Grand Rapids, Minnesota 55744  
Phone (218) 326-9473 ext. 276
- **Greater Pokegama Lake Association**  
PO Box 381 Grand Rapids, MN 55744  
Phone (218) 326-5658
- **The Initiative Foundation**  
405 First Street SE Little Falls, MN 56345  
Phone (877) 632-9255
- **North Central Minnesota Joint Powers Board**  
3217 Bemidji Ave N Suite 3 Bemidji, MN 56601  
Phone (218) 755-4339
- **North St Louis SWCD**  
307 First St S Suite 114, Virginia, MN 55792  
Phone (218) 742-9504
- **South St Louis SWCD**  
215 No 1st Ave E Rm 301, Duluth, MN 55802  
Phone (218) 723-4867

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## Footnotes / Bibliography

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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. U.S. Geological Survey National Hydrography Dataset (NHD) 1:100,000-scale Digital Line Graph (DLG) medium resolution hydrography data, integrated with reach-related information from the U.S. Environmental Protection Agency Reach File Version 3.0 (RF3). 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. 1997 NRI 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. [NRI-97] For more information: <http://www.nrcs.usda.gov/technical/NRI/>
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 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. 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/>. Where listed, 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>. Additional Information on listed individual projects can be obtained from the noted parties.