
Rapid Watershed Assessment
Long Prairie
(MN) HUC: 7010108



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 Long Prairie 8-Digit Hydrologic Unit Code (HUC) subbasin is predominantly located within the North Central Hardwood Forest Ecoregion with a small section in the Northern Lakes and Forests Ecoregion near the watershed's discharge into the Crow Wing River.

While much of the watershed is comprised of agricultural lands, it is also largely forested, with many of the hardwoods and conifers typical of the region. Approximately ninety five percent of the 571,658 acres in this HUC are privately owned. The remaining acres are federally or state owned land, or held by major corporate interests.

Assessment estimates indicate 1,559 Farms in the watershed. Approximately forty nine percent of the operations are less than 180 acres in size, forty eight percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size.

The main resource concerns in the watershed are gully and sheet and rill erosion, wetland management, surface water quality, wetland management, woodland management, groundwater quality and quantity, and wildlife habitat.

Many of the resource concerns relate directly to changing landuse and increased development in the region, resulting in fragmentation and increased sediment and pollutant loadings (mercury, excess nutrients) to surface waters.



County Totals

County	Acres in HUC	% HUC
Wadena	1,609	0.3%
Otter Tail	24,014	4.2%
Todd	305,853	53.5%
Morrison	43,013	7.5%
Douglas	197,169	34.5%
Total acres:	571,658	100%

Physical Description

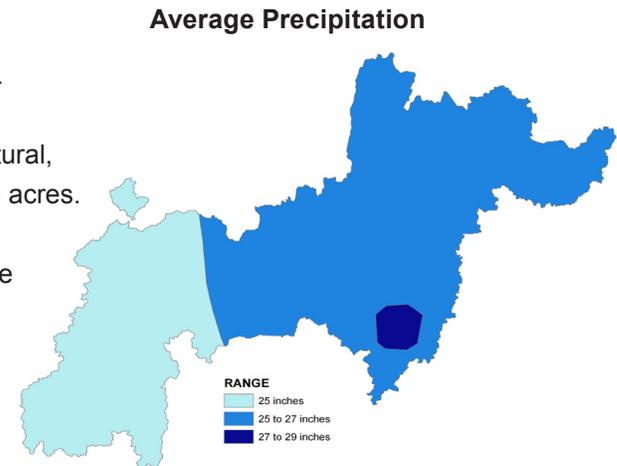
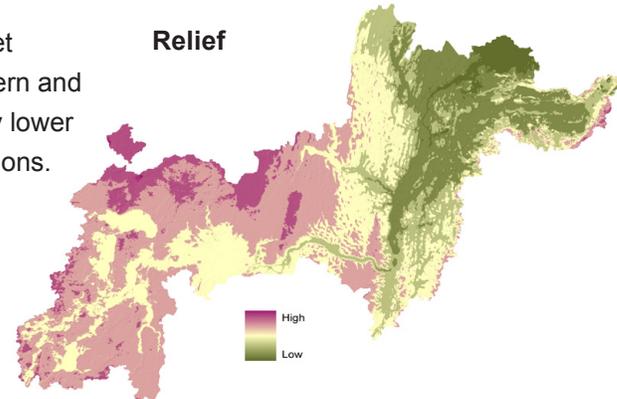
Average elevation in the Long Prairie subbasin is 1,367 feet above sea level, with the highest values being in the Western and Southwestern portions of the watershed, while increasingly lower values are found across the Eastern and Northeastern regions.

Precipitation in the watershed ranges from 25 to 29 inches annually. Evaporation estimates are between 34 to 35 inches annually (MN State Climatologists Office, 1999).

Most lands within this HUC are not highly erodible, and are moderately suited to agricultural uses. Predominate land uses / land covers are Grass/Pasture/Hay (27.5%), Row Crops (26.6%), Forest (22.5%), and Wetlands (8.1%).

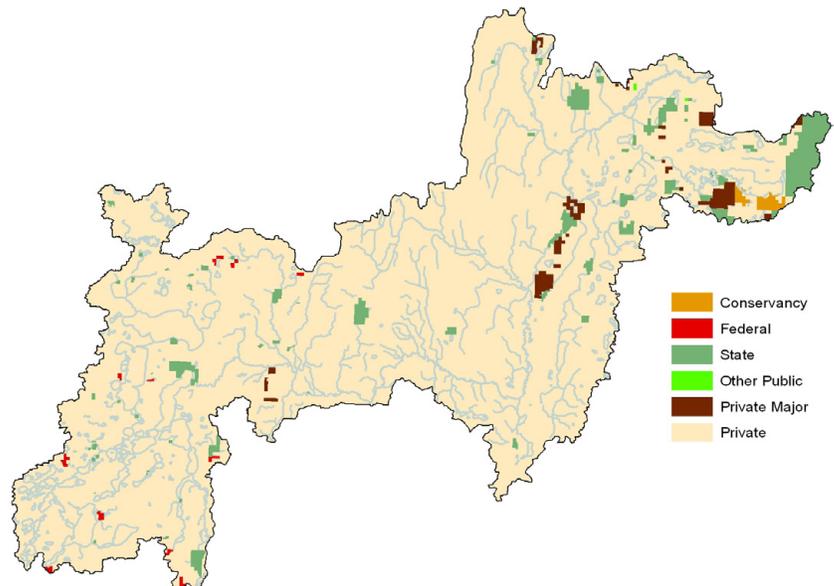
A slight majority of the land use in the watershed is agricultural, accounting for approximately 54% of the overall watershed acres.

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



Ownership

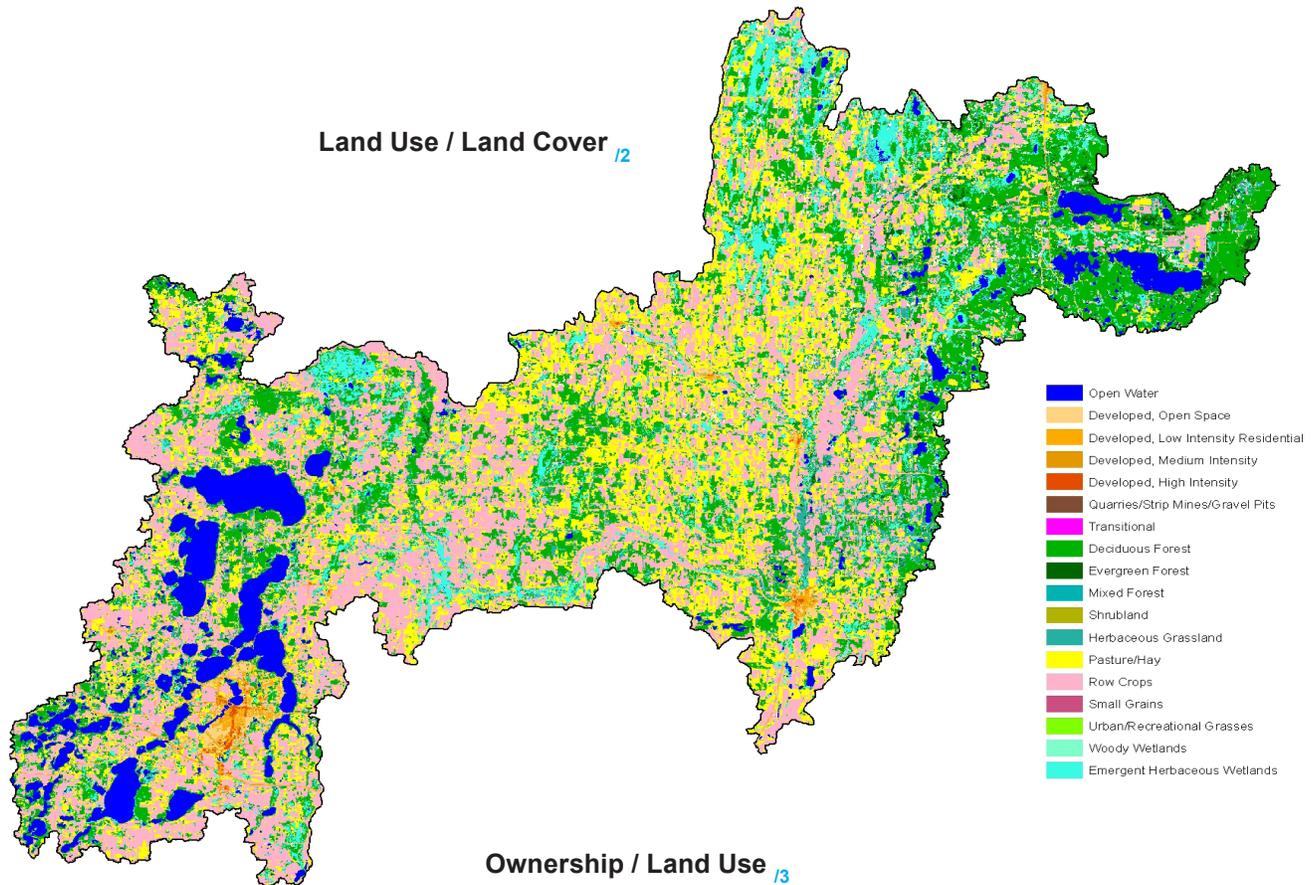
Ownership Type	Acres	% of HUC
Conservancy	1,600	0.3
County	-	-
Federal	1,340	0.2
State	20,488	3.6
Other	121	0.0
Tribal	-	-
Private Major	6,668	1.2
Private	541,441	94.7
Total Acres:	571,658	100



* Ownership totals derived from 2007 MN DNR GAP Stewardship Coverage 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 Long Prairie watershed covers an area of 571,658 acres. Slightly less than ninety five percent of the land in the watershed is owned by private landholders (541,441 acres). The second largest ownership type is State, with approximately 20,488 acres (1.4%), followed by Private Major with 6,668 acres (1.2%), Conservancy with 1,600 acres (0.3%), and Federal with 1,340 acres (0.2%). There are an additional 121 acres of miscellaneous public lands, and existing ownership data shows no Tribal or County land holdings in the region. Land use by ownership type is represented in the table below.



Landcover/Use	Public		Private**		Tribal		Total Acres	Percent	
	Acres	% Public	Acres	% Private	Acres	% Tribal			
Forest	11,794	2.1%	116,870	20.4%	0	0.0%	128,664	22.5%	
Grass, etc	2,441	0.4%	154,849	27.1%	0	0.0%	157,290	27.5%	
Orchards	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Row Crops	1,384	0.2%	150,512	26.3%	0	0.0%	151,896	26.6%	
Shrub etc	475	0.1%	9,666	1.7%	0	0.0%	10,141	1.8%	
Wetlands	4,163	0.7%	42,100	7.4%	0	0.0%	46,263	8.1%	
Residential/Commercial	609	0.1%	33,799	5.9%	0	0.0%	34,408	6.0%	
Open Water*	970	0.2%	42,028	7.4%	0	0.0%	42,998	7.5%	
Watershed Totals:		21,836	3.82%	549,823	96.2%	0	0.0%	571,658	100%

* ownership undetermined

** includes private-major

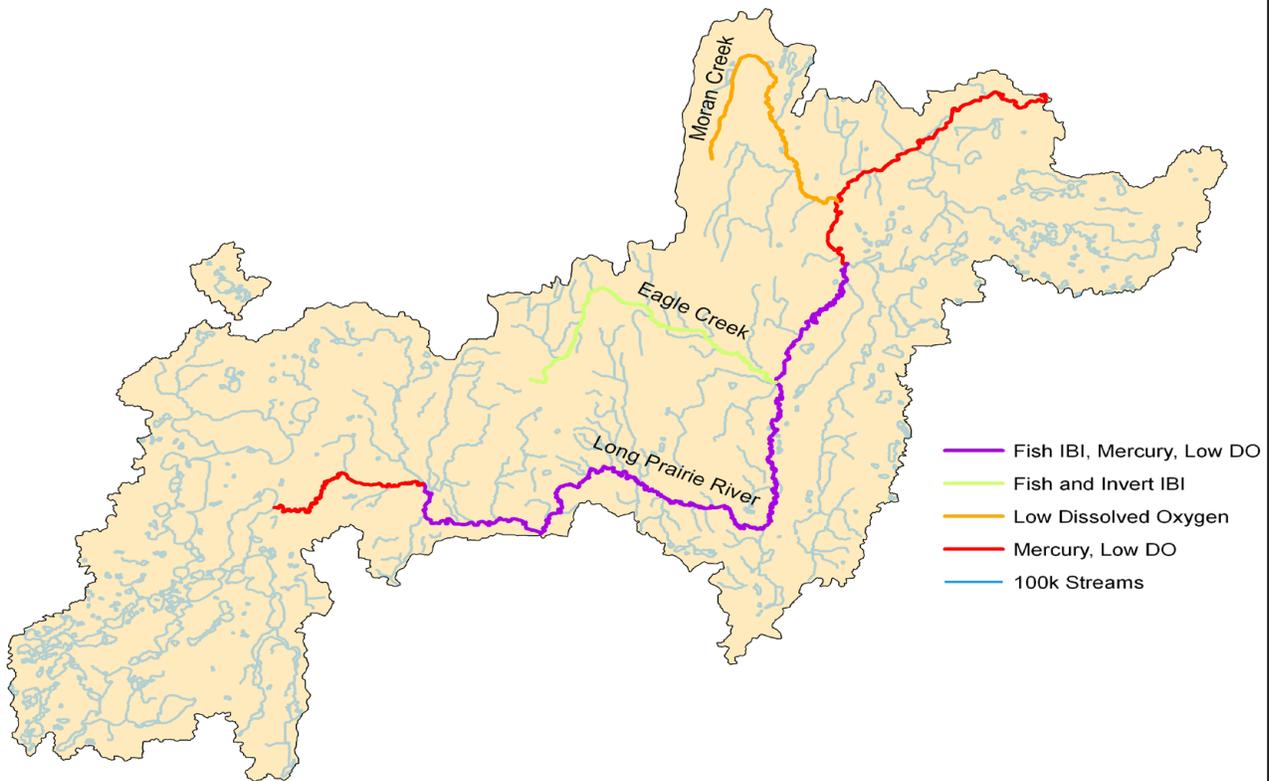
Physical Description (continued)

		ACRES	cu. ft/sec	
Stream Flow Data	USGS 05245100 LONG PRAIRIE RIVER AT LONG PRAIRIE, MN	Total Avg.	163.3	
		May – Sept. Yield	199.8	
		ACRES/MILES	PERCENT	
Stream Data¹⁴ (*Percent of Total HUC Stream Miles)	Total Miles – Major (100K Hydro GIS Layer)	1,102	---	
	303d/TMDL Listed Streams (DEQ)	132	12%	
Riparian Land Cover/Land Use¹⁵ (Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)	Forest	6,586	24.5%	
	Grain Crops	0	0.0%	
	Grass, etc	5,791	21.6%	
	Orchards	0	0.0%	
	Row Crops	2,373	8.8%	
	Shrub etc	397	1.5%	
	Wetlands	5,084	19.0%	
	Residential/Commercial	955	3.6%	
	Open Water	5,642	21.0%	
	Total Buffer Acres:	26,828	100%	
Crop and Pastureland Land Capability Class¹⁶ (Croplands & Pasturelands Only) (1997 NRI Estimates for Non-Federal Lands Only)	1 – slight limitations	6,400	2%	
	2 – moderate limitations	104,600	39%	
	3 – severe limitations	83,700	32%	
	4 – very severe limitations	58,000	22%	
	5 – no erosion hazard, but other limitations	4,800	2%	
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	7,800	3%	
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	0	0%	
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%	
	Total Croplands & Pasturelands	265,300	---	
	TYPE OF LAND	ACRES	% of Crop Lands	% of HUC
Irrigated Lands¹⁷ (2002 NASS Figures)	Cultivated Cropland / Pastureland	8,299	3.1%	1.5%
	Uncultivated Cropland	0	0%	0%
	Total Irrigated Lands	8,299	---	1.5%

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 - Long Prairie Watershed



Listed Stream / Reach ¹⁸	Impairment	Affected Use
Long Prairie River:Fish Trap Cr to Crow Wing R	Mercury	Aquatic Consumption
Long Prairie River:Moran Cr to Fish Trap Cr	Mercury	Aquatic Consumption
Long Prairie River:Turtle Cr to Moran Cr	Mercury	Aquatic Consumption
Long Prairie River:Eagle Cr to Turtle Cr	Fish IBI, Mercury	Aquatic Consumption and Aquatic Life
Long Prairie River:Spruce Cr to Eagle Cr	Fish IBI, Mercury	Aquatic Consumption and Aquatic Life
Long Prairie River:Headwaters to Long Prairie R	Fish IBI	Aquatic Life
Long Prairie River:Headwaters to Long Prairie R	Low Dissolved Oxygen	Aquatic Life
Long Prairie River:Headwaters to end of Wetland (CR 65)	Mercury	Aquatic Consumption
Long Prairie River:End of Wetland (CR 65) to Spruce Cr	Mercury	Aquatic Consumption

Assessment of Waters (continued)

2006 Minnesota 303d Listed Lakes - Long Prairie Watershed



Listed Lake	Impairment	Affected Use
Burgen	Mercury	Aquatic Consumption
Victoria	Mercury	Aquatic Consumption
Le Homme Dieu	Mercury	Aquatic Consumption
Carlos	Mercury	Aquatic Consumption
Winona	Excess nutrients	Aquatic Recreation
Miltona	Mercury	Aquatic Consumption
Andrew	Mercury	Aquatic Consumption
Mary	Mercury	Aquatic Consumption
Latoka	Mercury	Aquatic Consumption
Ida	Mercury	Aquatic Consumption
Lobster	Mercury	Aquatic Consumption

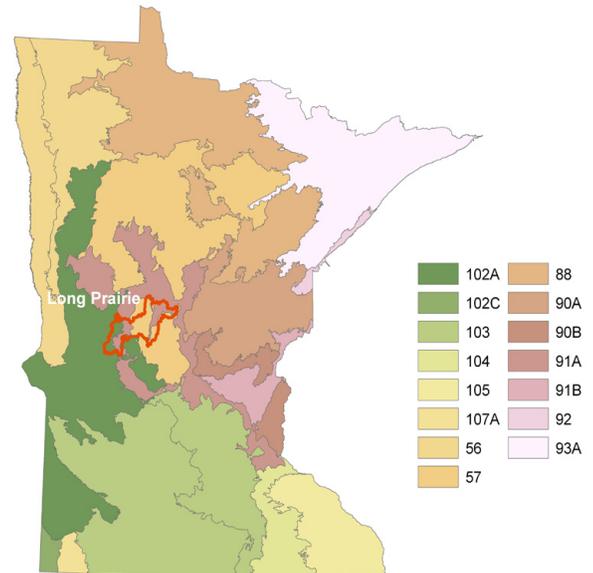
Common Resource Areas

The Long Prairie Watershed encompasses three common resource areas, CRA 102A.1, 91A.1, and 57.1. ^{/9}

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.

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.

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 herein.

For further information, go to:

<http://soils.usda.gov/survey/geography/cra.html>

Geology / Soils ^{/10}

The major types of soils within the watershed are Alfisols, Entisols and Mollisols. The bedrock geology consists of primarily Precambrian crystalline rocks (Sims and Morey, 1972, Stark et al., 1996).

The Long Prairie Watershed lies within calcareous glacial deposits associated with the Des Moines Lobe and the Wadena Lobe Associations and the siliceous glacial deposits characteristic of the Rainy Lobe Associations. The bedrock hydrogeology and ground water in the Long Prairie River Watershed consists of primarily Precambrian igneous and metamorphic rocks.

The surficial aquifers are primarily glacial outwash consisting of course-grained sands and fine-grained alluvium of calcareous and siliceous depots and glacial till consisting of calcareous and siliceous deposits. In some areas of the watershed these glacial deposits of sand and gravel are up to 600 feet deep.

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

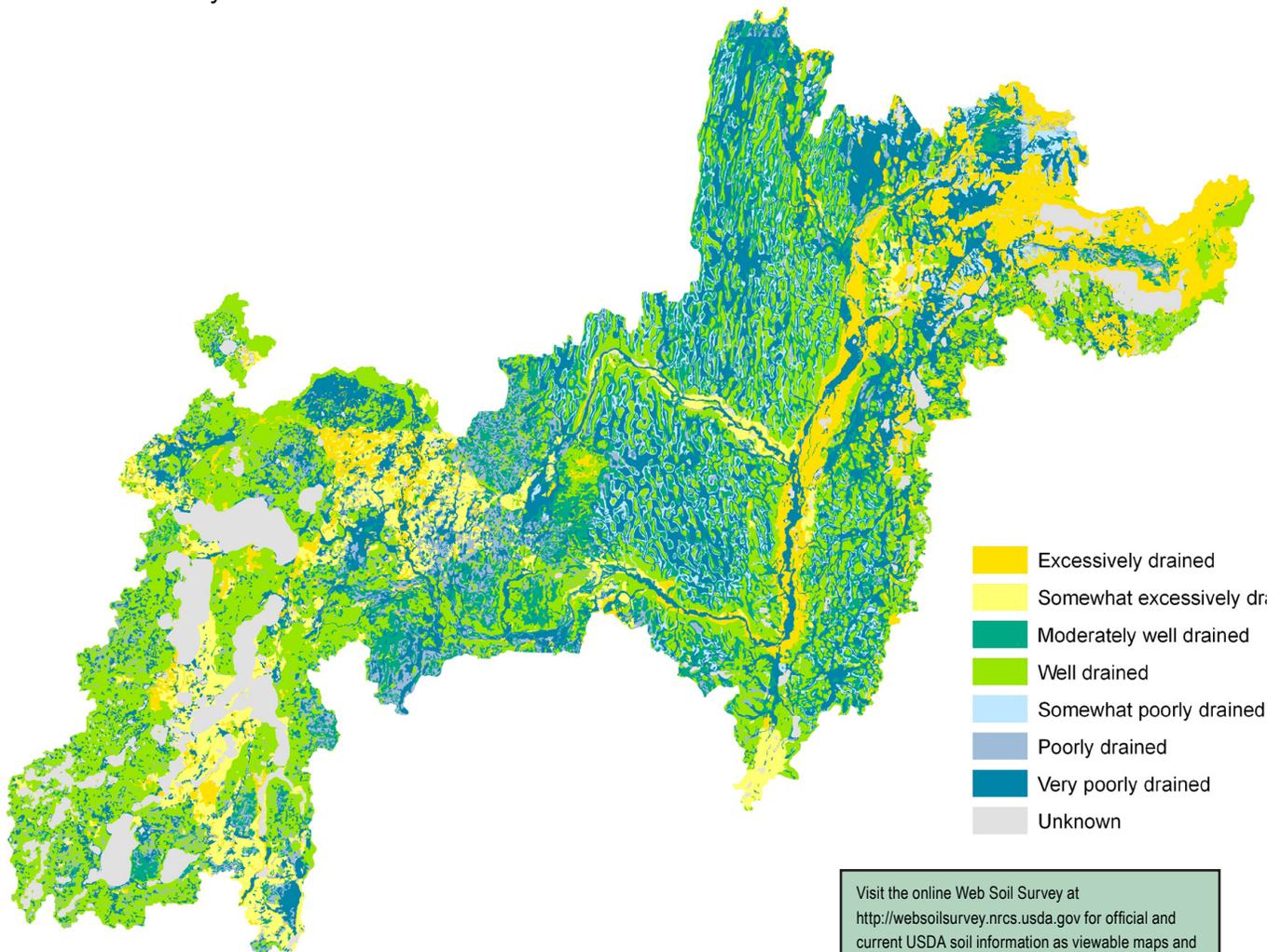
<http://soildatamart.usda.gov> to download SSURGO

 certified soil tabular and spatial data.

Drainage Classification

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.”



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

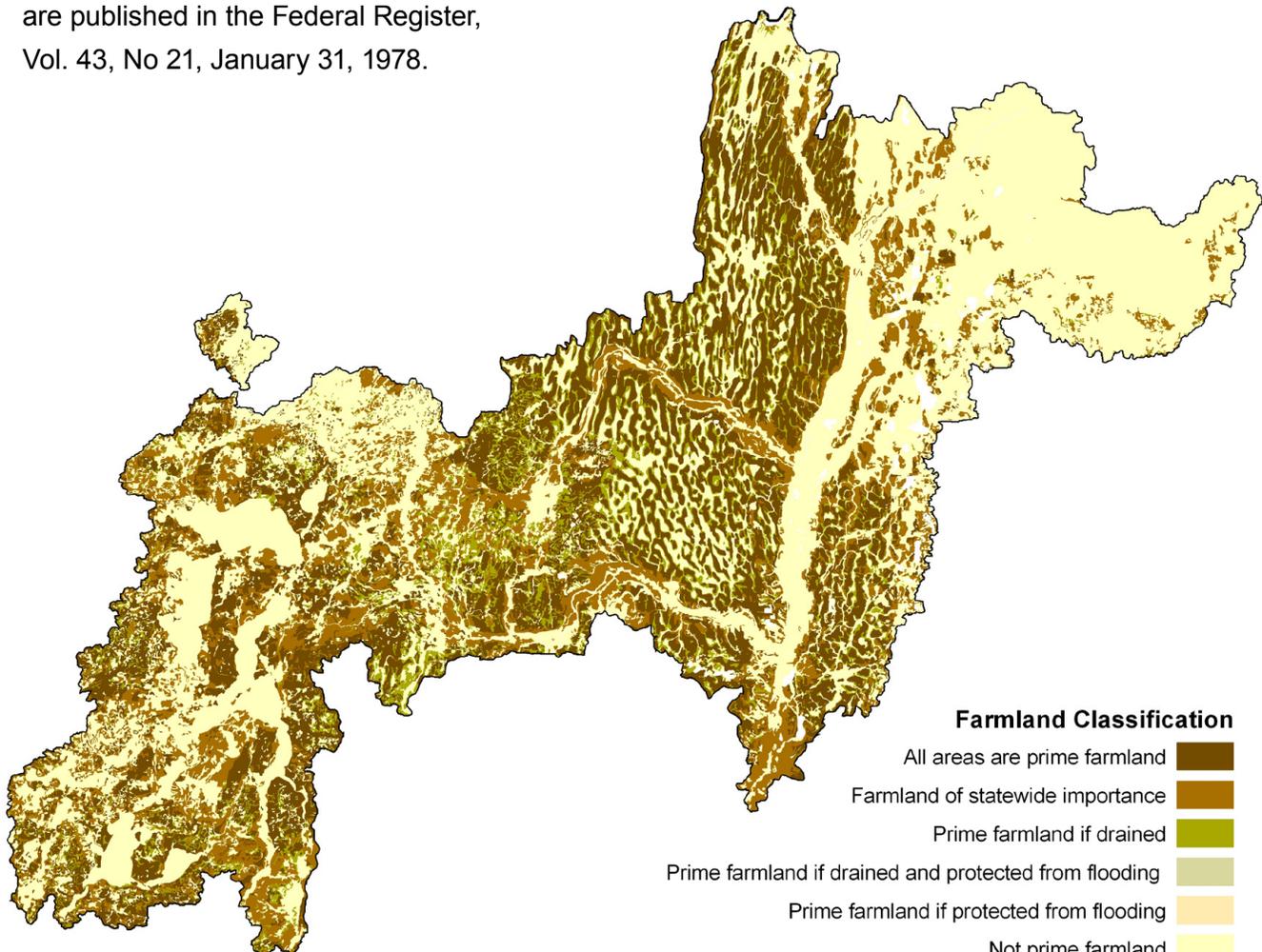
 certified soil tabular and spatial data.

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.



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

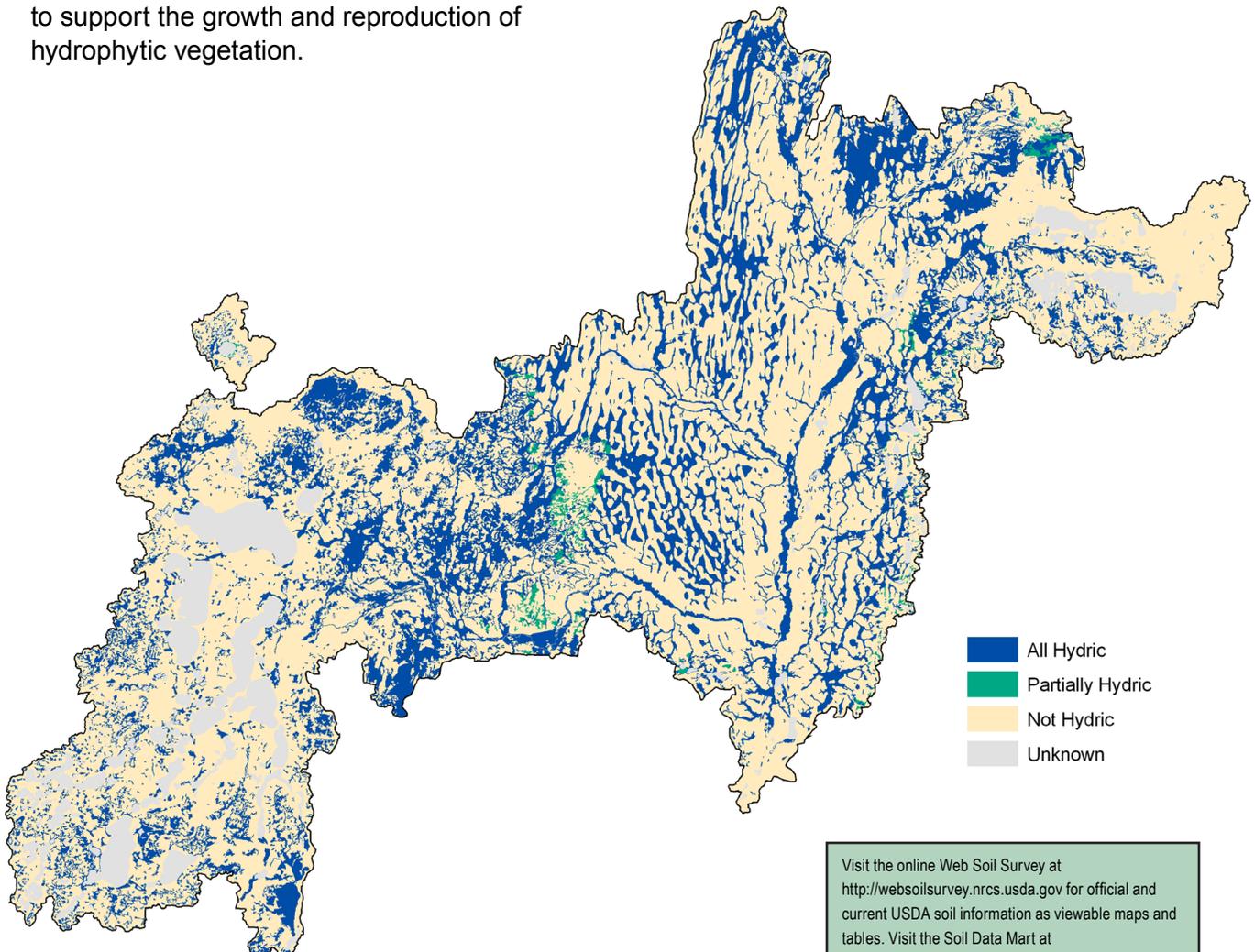
<http://soildatamart.usda.gov> to download SSURGO

 certified soil tabular and spatial data.

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.



- All Hydric
- Partially Hydric
- Not Hydric
- Unknown

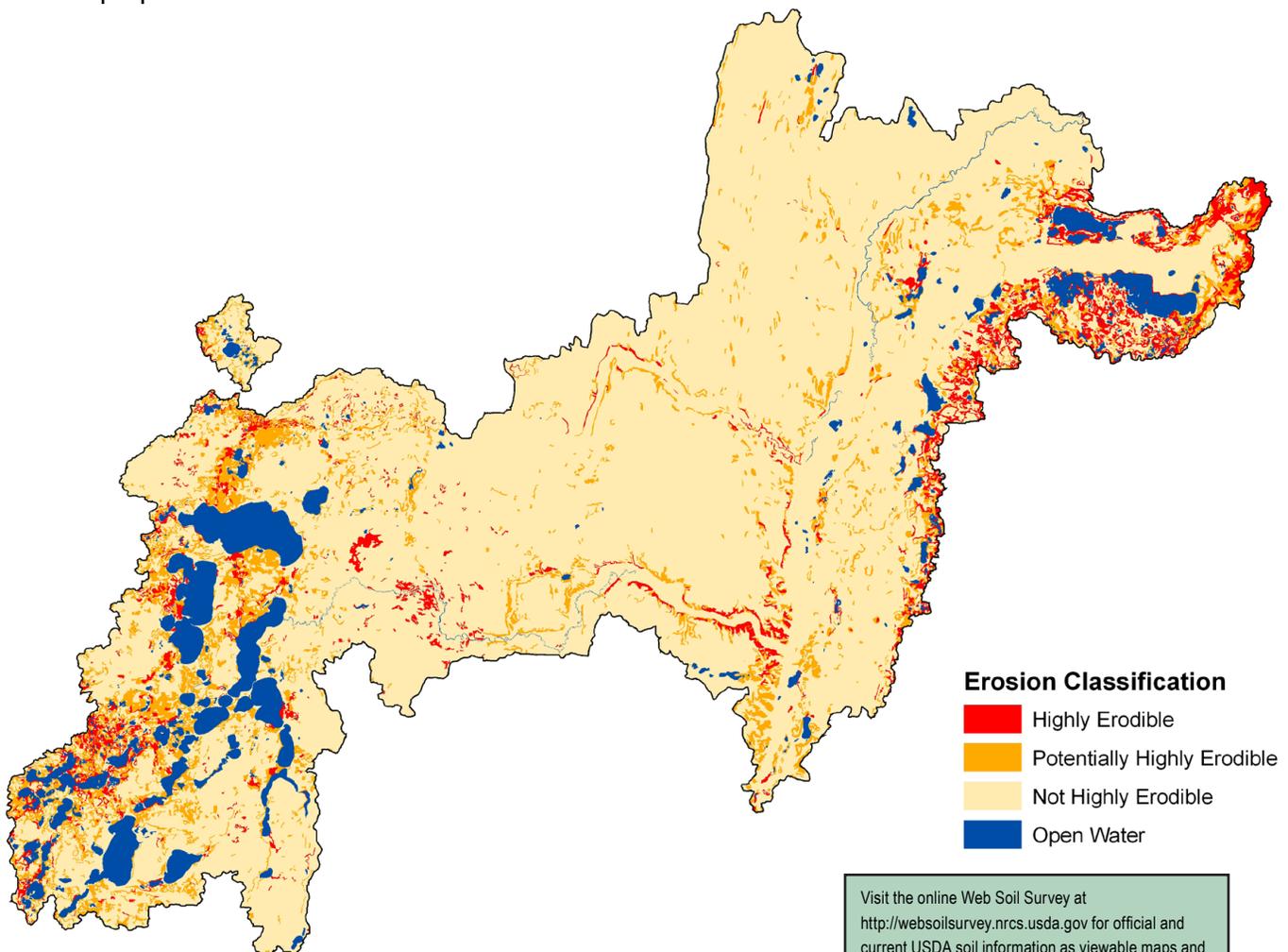
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

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.



Erosion Classification

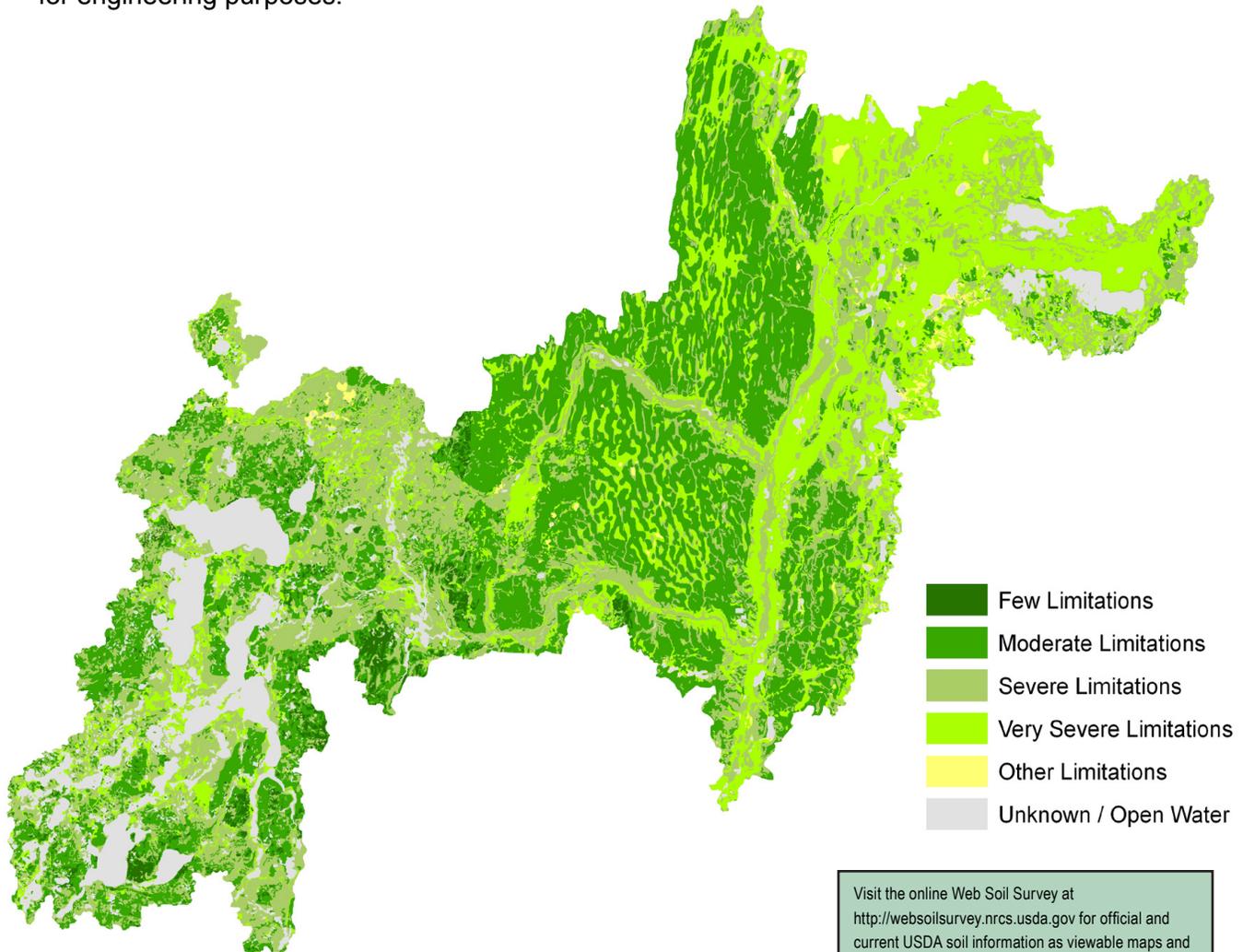
- Highly Erodible
- Potentially Highly Erodible
- Not Highly Erodible
- Open Water

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.

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.



-  Few Limitations
-  Moderate Limitations
-  Severe Limitations
-  Very Severe Limitations
-  Other Limitations
-  Unknown / Open Water

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.

Performance Results System Data

Watershed Name: Long Prairie				Watershed Number: 07010108						
PRS Performance Measures	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	TOTAL
Total Conservation Systems Planned (acres)	5,801	12,242	0	5,591	3,241	N/A	5,426	6,700	10,228	49,229
Total Conservation Systems Applied (acres)	2,269	1,823	0	7,240	7,240	N/A	3,648	7,881	8,561	38,662
Conservation Practices										
Total Waste Management (313) (numbers)	3	0	1	2	1	2	0	0	0	9
Riparian Forest Buffers (391) (acres)	0	40	14	181	29	44	129	0	0	437
Erosion Control Total Soil Saved (tons/year)	2,346	43,896	11,057	20,999	11,630	N/A	N/A	N/A	N/A	89,928
Total Nutrient Management (590) (Acres)	440	586	2,295	595	276	692	2,847	2,847	3,359	13,937
Pest Management Systems Applied (595A) (Acres)	0	0	0	106	0	0	326	246	1,630	2,308
Prescribed Grazing 528a (acres)	0	0	0	155	0	168	0	0	0	323
Tree & Shrub Establishment (612) (acres)	268	409	506	861	5,087	342	15	68	32	7,588
Residue Management (329A-C) (acres)	325	3,161	0	124	996	1,464	1,464	3,123	1,270	11,927
Total Wildlife Habitat (644 - 645) (acres)	2,148	2,107	3,221	2,255	515	333	2,255	334	1,932	15,100
Total Wetlands Created, Restored, or Enhanced (acres)	114	131	257	198	114	44	3	39	5	905
Acres enrolled in Farmbill Programs										
Conservation Reserve Program	1,917	1,109	2,608	5,568	508	N/A	407	821	2,144	15,082
Wetlands Reserve Program	0	0	0	0	0	N/A	0	0	0	0
Environmental Quality Incentives Program	0	0	159	634	44	N/A	3,070	5,585	5,800	15,292
Wildlife Habitat Incentive Program	0	0	0	0	23	N/A	0	0	0	23
Farmland Protection Program	0	0	0	0	0	N/A	0	0	0	0

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:

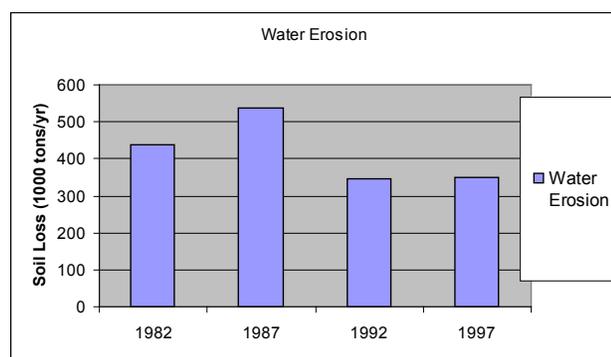
- Soil Quality, Excessive Gully, Sheet and Rill Erosion.** In addition to erosion on the cropland, sedimentation caused by the clearing and grading of shoreland property is neither desirable nor necessary. Erosion issues relate directly to lake pollution/eutrophication and shoreland development, and compound effects of erosion from agricultural lands.
- Surface Water Quality, Nutrients, Priority Pollutants.** Reduction of priority pollutants and sediments in surface waters is a priority issue throughout the watershed. 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 shoreland development, there are few to no natural corridors of natural habitat for wildlife. Habitat for wildlife is increasingly compromised as development pressure mounts. Priority should be given to the maintenance and enhancement of existing habitat.
- Wetland Management.** Due to documented development pressures within shoreland areas, priority is 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.
- Woodland Management.** Management opportunities include, but are not limited to planting trees or shrubs, timber stand improvement, timber sales, enhancing wildlife habitat, prescribed burning, and controlling invasive species.
- Ground Water Quality.** Nutrients, Organics, Animal and Human Wastewater management. Aging septic systems, feedlot runoff, nutrient runoff, tilling practices, improper closure of old manure pits, and abandoned wells all pose threats to groundwater quality throughout the region. Improved management of wastewater ensures safe water for all uses.
- Ground Water Quantity.** Land alterations have transformed the flow, retention, and replenishment of the hydrologic cycle. Pattern tiling, ditching, wetland removal, development, stormwater drainage, excessive groundwater use, etc. have resulted in the cumulative effect of rapidly transporting a greater amount of water to major rivers and streams, and away from groundwater recharge potential.



NRI Erosion Estimates

- Sheet and rill erosion by water on the cropland and pastureland decreased by approximately 88,900 tons (20.4%) of soil between 1982 and 1997.

/13



THREATENED AND ENDANGERED SPECIES /14

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>Botrychium rugulosum</i>	St. Lawrence Grapefern	Botanical
<i>Buteo lineatus</i>	Red-shouldered Hawk	Zoological
<i>Carex woodii</i>	Wood's Sedge	Botanical
<i>Cicindela patruela patruela</i>	Northern Barrens Tiger Beetle	Zoological
<i>Cirsium hillii</i>	Hill's Thistle	Botanical
<i>Coturnicops noveboracensis</i>	Yellow Rail	Zoological
<i>Dendroica cerulea</i>	Cerulean Warbler	Zoological
<i>Emydoidea blandingii</i>	Blanding's Turtle	Zoological
<i>Etheostoma microperca</i>	Least Darter	Zoological
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Zoological
<i>Hudsonia tomentosa</i>	Beach-heather	Botanical
<i>Juglans cinerea</i>	Butternut	Botanical
<i>Lasmigona compressa</i>	Creek Heelsplitter	Zoological
<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	White Adder's-mouth	Botanical
<i>Microtus ochrogaster</i>	Prairie Vole	Zoological
<i>Najas marina</i>	Sea Naiad	Botanical
<i>Notropis anogenus</i>	Pugnose Shiner	Zoological
<i>Oarisma powesheik</i>	Powesheik Skipper	Zoological
<i>Panax quinquefolius</i>	American Ginseng	Botanical
<i>Ruppia maritima</i>	Widgeon-grass	Botanical
<i>Silene drummondii</i>	Drummond's Campion	Botanical
<i>Sparganium glomeratum</i>	Clustered Bur-reed	Botanical

Socioeconomic and Agricultural Data (Relevant)

Estimations for the Long Prairie subbasin indicate a current population of just over 37,810 people. Median household income throughout the district is nearly \$35,667 annually, roughly 77% of the national average. The unemployment rate is estimated at 5.2%, and approximately 11% of the residents in the watershed are below the national poverty level.



Assessment estimates indicate 1,559 Farms in the watershed. Approximately forty nine percent of the operations are less than 180 acres in size, forty eight percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size. Of the 1,561 operators in the basin, approximately sixty percent are full-time producers not reliant on off-farm income.

(MN) HUC# 7010108		Total Acres:	571,658
Population Data*	Watershed Population	37,810	
	Unemployment Rate	5%	
	Median Household Income	35,667	
	% below poverty level	11%	
	Median Value of Home	81,500	
Farms	# of Farms	1,559	
	# of Operators	1,561	Percent
	# of Full Time Operators	931	60%
	# of Part Time Operators	630	40%
	Total Crop/Pasturelands:	265,300	46.4%
Farm Size	1 to 179 Acres	16	49%
	180 to 499 Acres	13	38%
	500 to 999 Acres	3	10%
	1,000 Acres or more	1	4%
Livestock & Poultry	Cattle - Beef	9,223	1%
	Cattle - Dairy	12,995	1%
	Chicken	69,742	6%
	Swine	14,029	1%
	Turkey	473,575	41%
	Other**	583,807	50%
	Animal Count Total:	1,163,371	
Total Permitted AFOs:	794		
Chemicals (Acres Applied)	Insecticides	6,783	
	Herbicides	81,970	
	Wormicides	59	
	Fruiticides	1,518	
	Total Acres Treated	90,331	
	% State Chemical Totals	0.6%	

* 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

** "Other" Category includes animal counts for Horses and Ponies, Milk Goats, Angora Goats, Sheep and Lambs as reported by county in the 2002 Ag Census

Watershed Projects, Plans and Monitoring

- **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
- **Long Prairie River: The Citizens Vision**
Long Prairie River Stewardship Project
- **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
- **Long Prairie River Management Project**
US Environmental Protection 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

- **Douglas County SWCD**
900 Robert St Ste 102, Alexandria, MN 56308
Phone (320) 763-3191
- **Morrison County SWCD**
16776 Heron Rd, Little Falls, MN 56345
Phone (320) 616-2479
- **Ottertail County SWCD, East**
801 Jenny Ave SW Ste 2, Perham, MN 56573
Phone (218) 346-4260
- **Ottertail Co Coalition of Lake Associations**
PO Box 53 Ottertail, MN, 56571
Phone (218) 736-4021
- **Todd County SWCD**
607 9th St NE, Long Prairie, MN 56347
Phone (320) 732-2644
- **Wadena County SWCD**
4 Alfred St NE, Wadena, MN 56482-2303
Phone (218) 631-3195
- **Long Prairie River Stewardship Project**
RR 2, Maple Hill Farm Long Prairie, Minnesota 56347
Phone (612) 732-6203
- **Friends of the Mississippi River**
360 N Robert St Saint Paul, MN 55101
Phone (651) 222-2193
- **West Central Minnesota Joint Powers Board**
809 SE 8th St, Detroit Lakes, MN 56501
Phone (218) 847-9392
- **Wenck - Shingle Creek WMO, W. Mississippi WMO**
1800 Pioneer Creek Center, Maple Plain, MN 55359
Phone (763) 479-4229
- **Trout Unlimited Twin Cities Chapter**
PO Box 390207
Edina, MN 55439-0207
- **MN DNR Area Fisheries Supervisor:**
1509 1st Ave N Fergus Falls, MN 56537
Phone (218) 739-7576

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. 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. 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)

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. Bedrock Geology and Structure: Zumbro Watershed Partnership Management Plan, 9/30/2007.

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 (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.