

Rapid Watershed Assessment

Resource Profile

Pomme de Terre (MN) HUC: 7020005



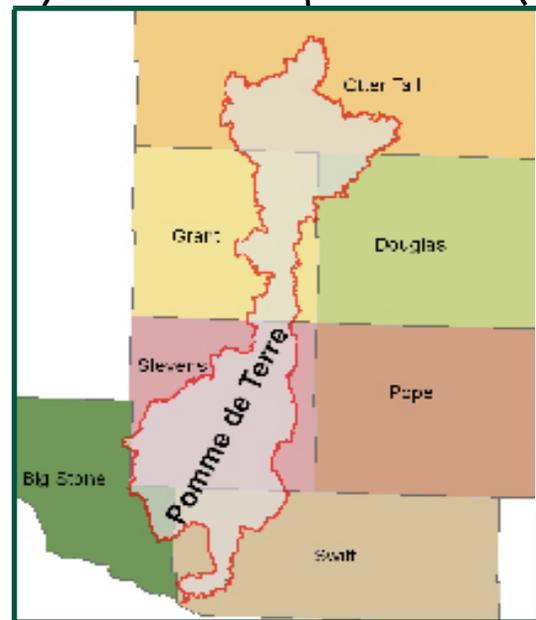
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best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

Introduction

The Pomme de Terre 8-digit Hydrological Unit Code (HUC) Subbasin is located in the Prairie Parkland Ecological Province of Southwestern Minnesota. This largely agricultural watershed is 559,968 acres in size. Over ninety four percent of the land is held by private land owners.

There are 966 farms in the subbasin. Approximately 48 percent of the operations are less than 180 acres in size, nearly 37 percent are 180 to 1000 acres in size, and the remaining farms are larger than 1000 acres. Sixty five percent of the producers are full time operators and do not rely on off farm income.

The main resource concerns on the cropland are wind and water erosion and flooding resulting in cropland runoff. Associated with the cropland runoff are increased sediment and pollutant loadings to surface water. Additional resource concerns include surface and groundwater quality (Mercury, Turbidity, and Fecal Coliform), Agricultural waste management, and declining wildlife habitat.



County Totals:

County	Acres in HUC	% HUC
Big Stone	18,122.11	3.2
Douglas	19,921.51	3.6
Grant	100,373.53	17.9
Otter Tail	128,821.26	23.0
Stevens	221,289.20	39.5
Swift	71,440.86	12.8
Total acres:	559,968.5	100

Physical Description

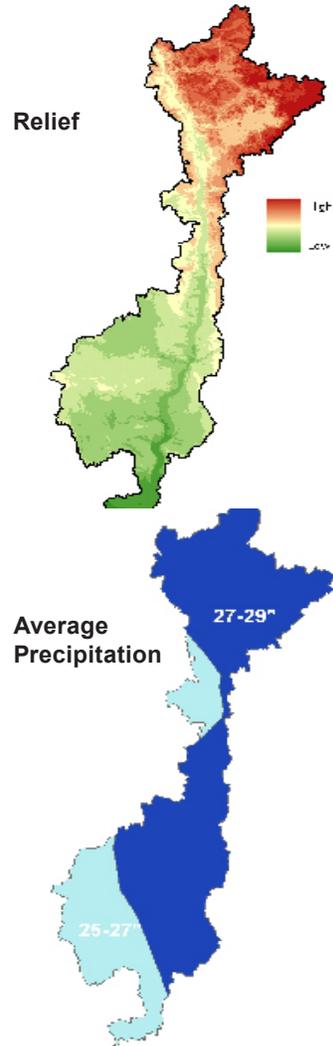
The Pomme de Terre Watershed is situated in the Northern Glaciated Plains and North Central Hardwood Forest Ecoregions of Minnesota. Soils in this HUC are generally loamy clays and sands, with considerable deposits of glacial till and outwash.

Average elevation in the watershed is 1198 feet above sea level. Precipitation in the watershed averages between 25 to 29 inches annually.

Most lands within this watershed are not highly erodible, and are well to moderately well suited to agricultural uses, though Northern areas of the watershed have high erodibility indexes. Predominate land uses / land covers are row crops (61%), followed by grass and pasture (14%), open water (7.58%), and wetlands (7.58%).

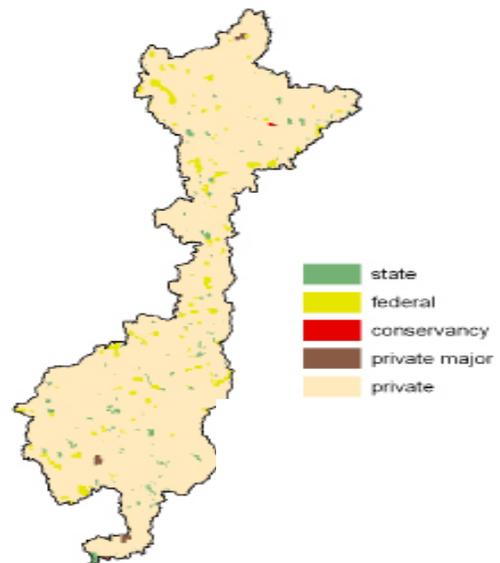
Land use within the Pomme De Terre Watershed is primarily agricultural, accounting for approximately 81% of the available acres. Located in the northwest quadrant of the Minnesota River Basin, cropping systems in the Pomme De Terre Watershed are more diverse than those of other major watersheds draining the southwest and southeast quadrants of the Minnesota River basin.

Cropped lands are generally classified as moderately productive (73%), although nearly 24% are ranked as low production acres. Development pressure is moderate, with occasional farms being parceled out for recreation or country homes.



Ownership* ¹

Ownership Type	Acres	% of HUC
Conservancy	228.22	0.04
County	0.00	0.00
Federal	21,062.2	3.76
Private Major	1,732.4	0.31
State-Misc.	9,233.2	1.65
Tribal	0.0	0.00
Private	528,279.3	94.34
Ownership Totals:	559,968.0	100



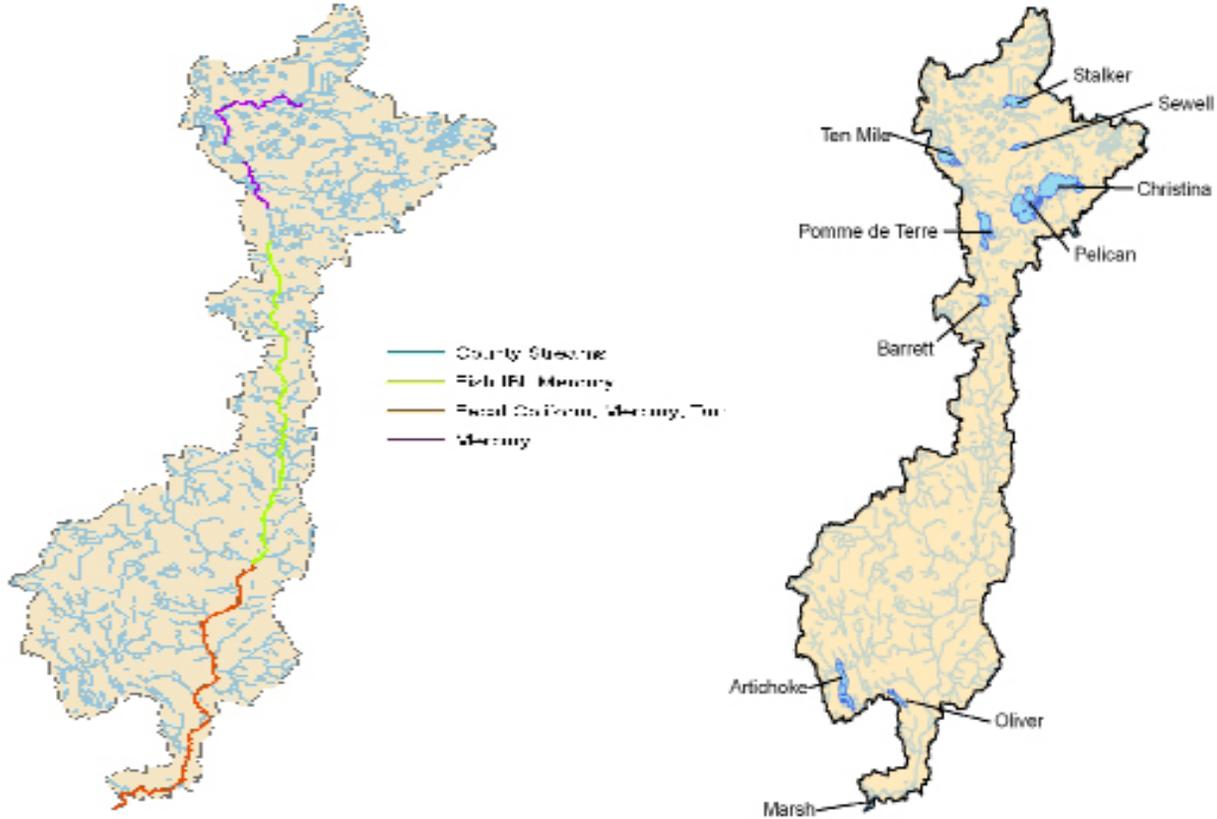
* Ownership totals derived from 2007 MN DNR GAP Stewardship data and are the best suited estimation of land stewardship available on a statewide scale at time of publication. See the bibliography section of this document for further information.

Physical Description (continued)

		cu. ft./sec		
Stream Flow Data	USGS 05294000 POMME DE TERRE RIVER AT APPLETON, MN	2006 Total Avg.	248.4	
		May – Sept. 2006 Avg.	207.6	
Stream Data¹⁴ (*Percent of Total HUC Stream Miles)		ACRES/MILES	PERCENT	
	Total Miles – Major (100K Hydro GIS Layer)	1,274.6	---	
	Total Miles –303d/TMDL Listed Streams	113.5	8.9%*	
Riparian Land Cover/Land Use¹⁵ (Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)	Dev/Barren	95.8	0.3	
	Fallow	0	0	
	Forest	3,504.2	11.5	
	Grain Crops	300.9	1.0	
	Grass/Pasture	3843.8	12.6	
	Orchards/Vine	0	0	
	Row Crops	8,306.5	27.1	
	Shrub/Range	2.1	0.01	
	Water	7,775.0	25.4	
	Wetlands	6,774.2	22.1	
		Total Buffer Acres	30,602.5	---
Crop and Pastureland Land Capability Class¹⁶ (Croplands & Pasturelands Only) (1997 NRI Estimates for Non- Federal Lands Only)	1 – slight limitations	34,200	9%	
	2 – moderate limitations	175,900	45%	
	3 – severe limitations	106,900	28%	
	4 – very severe limitations	52,100	13%	
	5 – no erosion hazard, but other limitations	3,800	1%	
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	15,600	4%	
	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 Crop & Pastureland	388,500	---
Irrigated Lands¹⁷ (1997 NRI Estimates for Non- Federal Lands Only)	TYPE OF LAND	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	46,000	100	8.21
	Uncultivated Cropland	0	0	0
	Pastureland	0	0	0
	Total Irrigated Lands	46,000	---	8.21%

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.

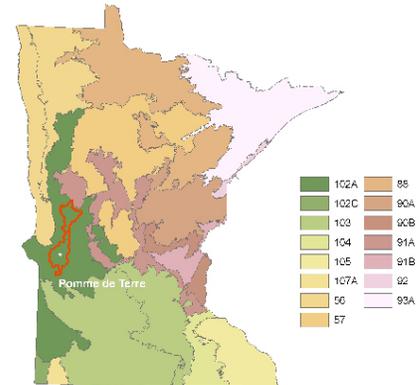


Listed Stream / Lake ¹⁸	Impairment	Affected Use
Pomme de Terre River: Muddy Creek to Minnesota River (Marsh Lake)	Fecal Coliform, Mercury, Turbidity	Aquatic Consumption, Aquatic Life, Aquatic Recreation
Pomme de Terre River: Pomme de Terre Lake to Muddy Creek	Fish IBI, Mercury	Aquatic Consumption and Aquatic Life
Pomme de Terre River: Pelican Creek to Pomme de Terre Lake	Mercury	Aquatic Consumption
Pomme de Terre River: Tenmile Lake to Pelican Creek	Mercury	Aquatic Consumption
Pomme de Terre River: Stalker Lake to Tenmile Lake	Mercury	Aquatic Consumption
Listed Lakes	Impairment	Affected Use
Marsh	Mercury	Aquatic Consumption
Artichoke	Mercury	Aquatic Consumption
Christina	Mercury	Aquatic Consumption
Pelican	Mercury	Aquatic Consumption
Barrett	Mercury	Aquatic Consumption
Pomme de Terre	Mercury	Aquatic Consumption
Sewell	Mercury	Aquatic Consumption
Stalker	Mercury	Aquatic Consumption
Ten Mile	Mercury	Aquatic Consumption
Oliver	Mercury	Aquatic Consumption

Common Resource Areas

Pomme de Terre Watershed encompasses two common resource areas, CRA 91A and 102A.1⁹

91A - 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. Forest land 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.



102A - 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.

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

Soils / Geology¹⁰

The oldest and deepest rocks in the Pomme De Terre Watershed are Precambrian in age. These hard, relatively impermeable, crystalline rocks are of igneous and metamorphic origins. Overlying the Precambrian rocks are shales and sandstones of the Cretaceous age. Covering these deposits and extending over the entire watershed, lay deposits of glacial drift, including: till, clay, silt, sand, and gravel. Till depths range from 150 to 300 feet deep.

Drainage on the eastern side of the river is off the Big Stone Moraine, characterized by landscapes that are gently sloping to moderately steep (6-12%) and well drained silty and loamy soils. Water erosion potential within the Big Stone Moraine is generally classified as moderate.

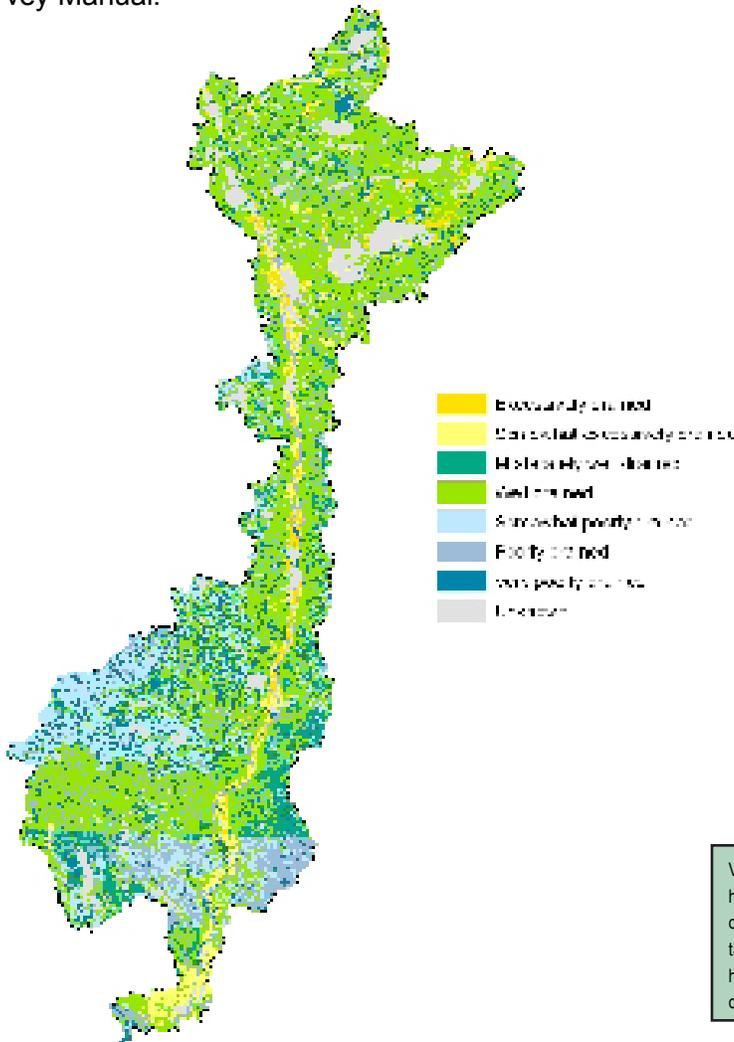
Waters falling on the western side of the basin drain the Fergus Falls Till Plain, an outwash plain of nearly level to moderately sloping (0-6%) composed of poorly drained clayey and loamy soils. Slight to high water and wind erosion potentials exist across this section of the basin and are reflected by the character of the Pomme De Terre below the town of Morris. South of this point, flowing through southern Stevens and eastern Swift counties, the River is bordered by eroding, muddy banks, becoming increasingly turbid before discharging into the Minnesota River at Marsh Lake.

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.”



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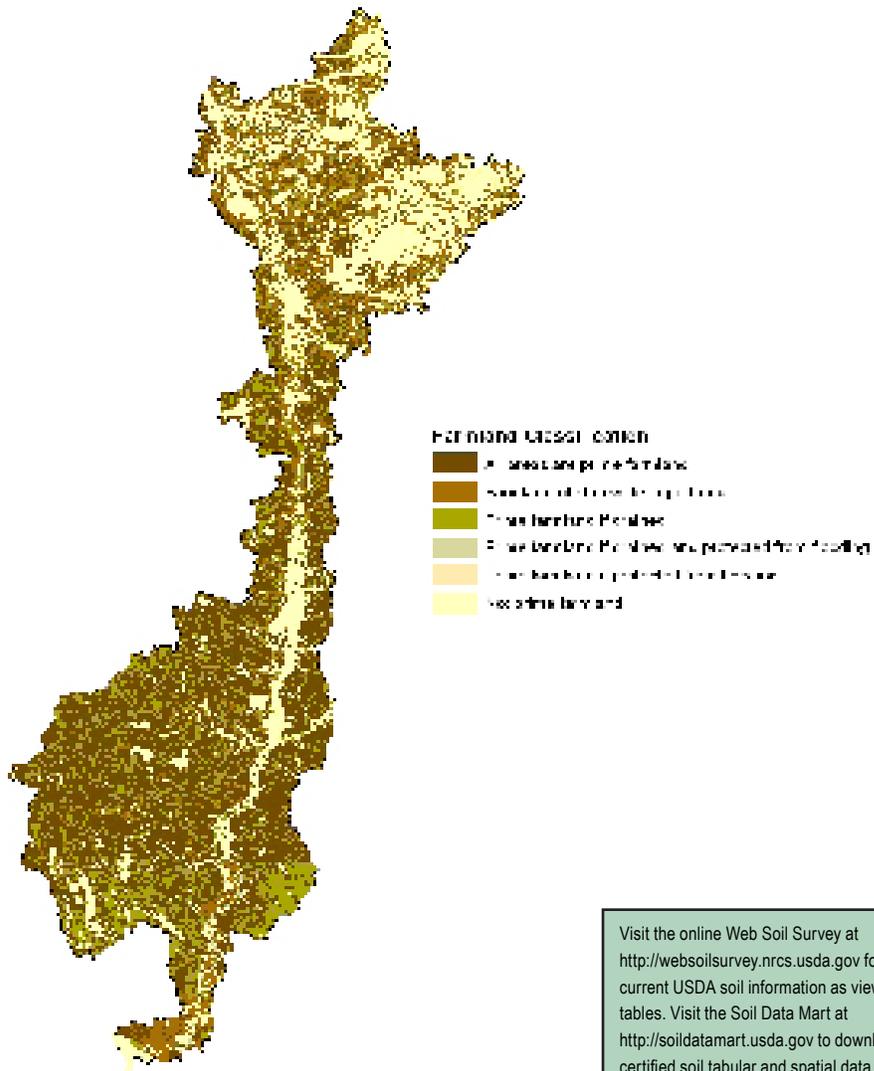
 certified soil tabular and spatial data.

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.

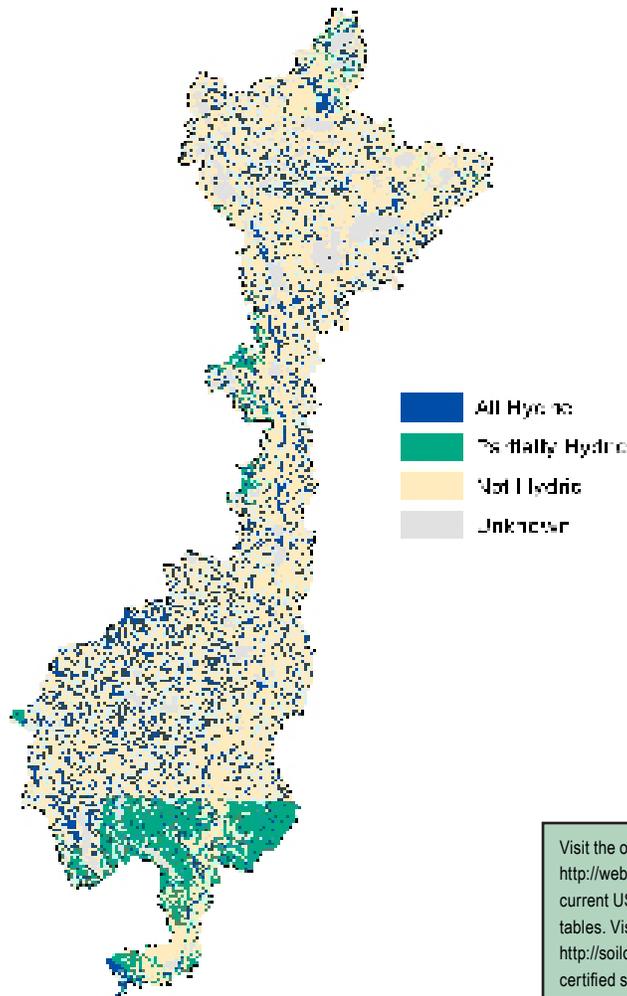


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Hydric Soils

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).



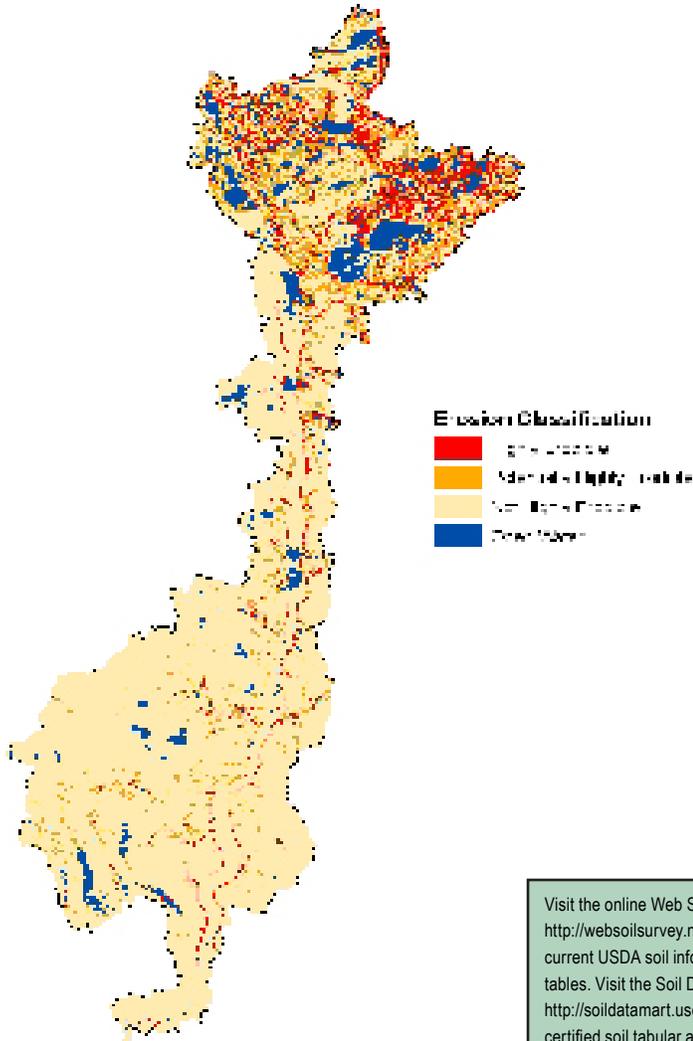
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Highly Erodible Land (HEL)

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.

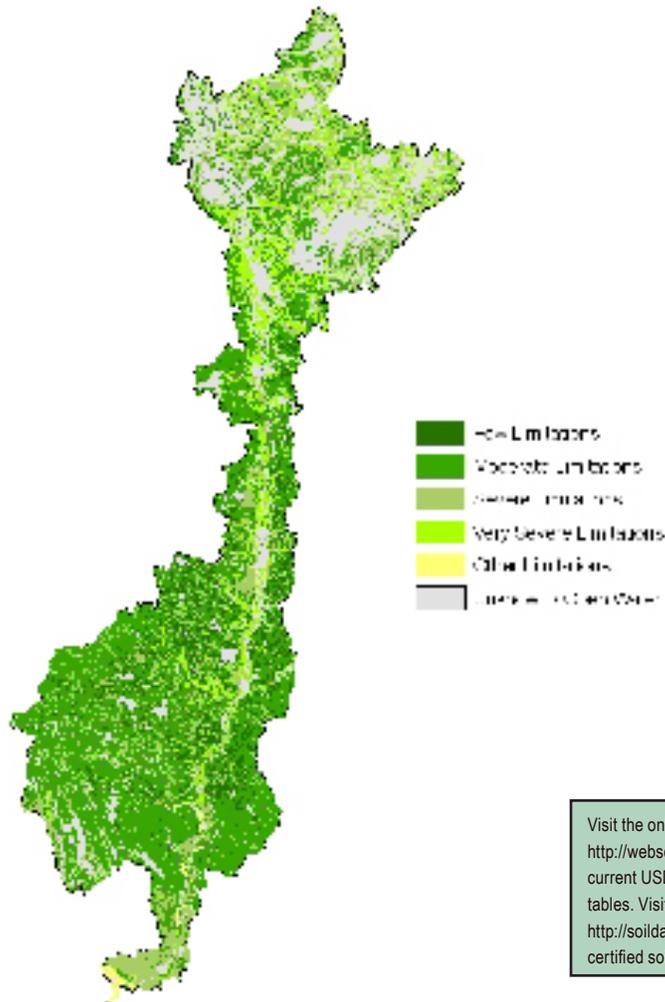


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Land Capability Classification

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 and Other Data

NRCS conservation treatment practices applied or prescribed within the Pomme de Terre watershed in the three year reporting period have primarily concentrated on Conservation tillage (6,154 acres/yr average), Nutrient Management (2,518 acres/yr), Conservation Crop Rotations (1,277 acres/yr), Pest Management (1,021 acres/yr), and Prescribed Grazing (902 acres/yr). Other notable efforts have been made in areas of air quality/ wind erosion management, with the addition of an average 36,550 feet of windbreak annually.

Conservation Treatment	NRCS Practice Code	FY 04	FY 05	FY 06	Avg/Year	Total
Waste Management (Number)	313, 317, 359	0	0	0	0	0
Buffers (Acres)	391, 393	135	184	125	148	444
Erosion Control (Acres)	311, 332, 589, 386, 412, 600, 601, 603, 380, 650	23	4	4	10.3	31
Irrigation Water Management (Acres)	449	0	40	138	59	178
Wind Break (ft)	380	77,881	16,179	15,590	36550	109650
Atmospheric Resource Quality Management (Acres)	370	0	0	0	0	0
Nutrient Management (Acres)	590	4,448	2,079	1,026	2518	7553
Pest Management (Acres)	595	1,403	1,659	0	1021	3062
Prescribed Grazing (Acres)	528, 472, 528A	511	654	1,540	902	2705
Prescribed Burning (Acres)	338	0	0	0	0	0
Trees & Shrubs (Acres)	612, 666	132	9	66	69	207
Conservation Tillage (Acres)	329A, 329B, 329C	5,199	5,782	7,481	6154	18462
Conservation Crop Rotations (Acres)	328	1,983	74	1,774	1277	3831
Cover Crops (Acres)	340	11	0	0	4	11
Wildlife Habitat (Acres)	644, 645	286	14	486	262	786
Brush Management (Acres)	314	0	0	0	0	0
Restoration of Declining Habitat (Acres)	643	278	44	1,037	453	1359
Wetland Wildlife Habitat Management (Acres)	644	0	0	298	99	298
Wetlands (Acres)	657, 658, 659	209	195	248	217	652
LANDS REMOVED FROM PRODUCTION THROUGH FARM BILL PROGRAMS¹¹						
Program					Acres	
Conservation Reserve Program (CRP)					30,477	
Wetland Restoration Program (WRP)					862	
Conservation Reserve Enhancement Program (CREP)					1,691	

Socioeconomic and Agricultural Data (Relevant)

The Pomme de Terre subbasin has a population of just over 16,400 people. Median household income throughout the district is \$34,947 yearly, roughly 75% of the national average. Sixty two percent of the population over the age of 18 is active in the workforce, and approximately 10% of the residents in the watershed are below the national poverty level.



There are 966 farms in the subbasin. Approximately 48 percent of the operations are less than 180 acres in size, nearly 37 percent are 180 to 1000 acres in size, and the remaining farms are larger than 1000 acres. Sixty five percent of the producers are full time operators and do not rely on off farm income.

Pomme de Terre (MN) HUC# 7020002 ¹²		
Population Data	Watershed Population	16,428
	Unemployment Rate	4.28%
	Median Household Income	34,947
	% below poverty level	10.0%
	Median Value of Home	67,733
Farms	# of Farms	966
	# of Operators	966
	# of Full Time Operators	635
	# of Part Time Operators	331
	Total Crop/Pasturelands	338,500
Farm Size	1 to 49 Acres	211
	50 to 179 Acres	256
	180 to 499 Acres	234
	500 to 999 Acres	125
	1,000 Acres or more	140
Livestock & Poultry	Cattle - Beef	25,498
	Cattle - Dairy	23,327
	Chicken	77,119
	Swine	92,840
	Turkey	424,887
	Other	66,392
	Animal Count Total:	710,062
	Total Permitted AFOs:	249
Chem (Acres Applied)	Insecticides	11,997
	Herbicides	232,513
	Wormicides	776
	Fruiticides	5,269
	Total Chemicals	250,555
	% State Chemical Totals	1.76%

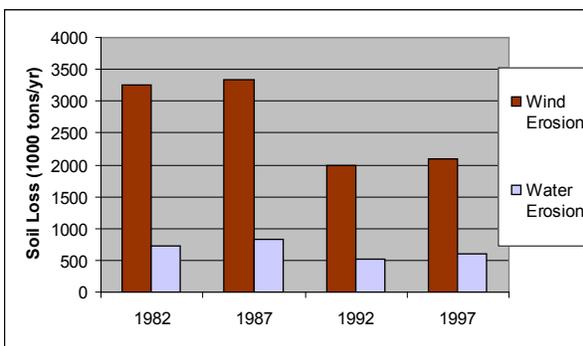
RESOURCE CONCERNS

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. Soil Erosion and Deposition has ranked as a top concern in each county within the watershed.
- Soil Quality, Excessive Wind Erosion. Topography makes wind erosion a major conservation issue. Wind erosion physically removes the lighter, less dense soil constituents such as organic matter, clays, silts, thus removing the fertile part of the soil and lowering productivity.
- Surface Water Quality, Nutrients. 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 an unbalanced fish community with depressed populations and limited diversity.
- Ground Water Quality, Nutrients, Organics, Animal and Human Waste. Aging septic systems, feedlot runoff, cropland nutrient runoff, tilling practices, and abandoned wells all pose significant threats to groundwater quality throughout the region. Sealing of abandoned wells is a priority in addressing ground water quality.
- Surface Water Management, Flood Control, Drainage Management. Drained wetlands, crop production in flood prone areas, and aging dams all diminish surface water quality and productivity. Restoration of wetlands, dam repair and placing flood-prone lands in CRP/RIM all serve to lessen the impact of flooding and improve drainage.



- Sheet and rill erosion by water on the cropland and pastureland decreased by approximately 114,100 tons of soil (15.81%) between the years 1982 and 1997.
- Wind erosion rates on agricultural lands in the subbasin decreased by 1,172,900 tons of soil (36.02%) between the years 1982 and 1997.



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Federally Listed Threatened And Endangered Species ^{/14}	
ENDANGERED SPECIES	CANDIDATE SPECIES
Fish – Topeka Shiner	Insect – Dakota Skipper
THREATENED SPECIES	PROPOSED SPECIES
Gray Wolf, Bald Eagle, Alasmidonta marginata (Elktoe Mussel)	None
Essential Habitat - Prairie river and stream habitat for the Topeka Shiner, Native Prairie for Dakota Skipper	

Watershed Projects, Plans and Monitoring

- Marsh Lake Dam, Lac Qui Parle Flood Control Project, US Corps of Engineers. The restoration effort identifies measures to restore wetland habitat within the existing reservoir and reconnect Lac qui Parle to more than 750 miles of streams in the Pomme de Terre River basin.

- Barrett Lake - Lake Assessment Program. MPCA Lake Assessment Program (LAP). The project area includes all or portions of minor watersheds within or adjacent to Barrett Lake Watershed

- Friends of The Minnesota Valley Watershed Initiative. Puts an exciting twist on traditional approaches to watershed management within the Minnesota River Valley. This creative grass-roots program is the culmination of years of planning, and is based on the input of many individuals representing a variety of interests and possessing significant expertise on Minnesota River issues

- Perkins Lake - Lake Assessment Program. MPCA Lake Assessment Program (LAP), 1992. The project area is the Perkins Lake watershed which includes all or portions of the following minor watersheds: 23019, 23020, 23021, 23022, 23023, 23024, 23025, 23026, 23027, 23031, 23032, 23033, 23034, 23035, 23036, 23037, 23038, 23046, 23051, and 23052.

- Greater Minnesota River Turbidity TMDL Work Plan, MPCA. This project concerns turbidity impairments in the Minnesota River Basin. The project area begins near Lac Qui Parle, and ends at Jordan. The effort involves 18 reaches on the mainstem and lower tributaries.

- Pelican Lake - Lake Assessment Program. MPCA Lake Assessment Program (LAP). The project area is the Pelican Lake watershed which includes portions of minor watersheds 23025 and 23026 in Grant County.

- Minnesota River Assessment Project (MRAP) Land Use Assessment. Inventories non-point source as well as small-point sources of pollution within the 37 select minor watersheds in the Minnesota River Basin. Potential small-point pollution sources include: dumps, wells, septic systems, tile intakes and outlets, feedlots, unique areas (such as auto body shops and golf courses), and gravel pits.

- Minnesota River Assessment Project (MRAP) Biological and Toxicological Assessment. The study adapts and calibrates the Index of Biotic Integrity (IBI) for application in the basin; evaluates stream quality using IBI within select minor watersheds; and assesses the biological conditions of watersheds using the IBI. Fish communities are analyzed at 116 sites along the Minnesota River mainstem and tributaries.

* 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

- **Big Stone County SWCD**
342 NW 2nd Street Ortonville, MN 56278
Phone 320-839-6149

- **Coalition for a Clean Minnesota River**
P.O. Box 488 New Ulm, MN 56073
Phone 507-359-2346

- **Douglas County SWCD**
900 Robert Street Suite 102 Alexandria, MN 56308
Phone 320-763-3191 Ext. 3

- **Friends of the Minnesota Valley**
3815 American Blvd. E. Bloomington, MN 55425
Phone 952-858-0737

- **Grant County SWCD**
17 Central Avenue N #177 Elbow Lake, MN 56531
Phone 218-685-5395

- **Minnesota River Basin Joint Powers Board**
600 E. 4th St #14 Chaska, MN 55318-2108
Phone 952-361-6590 Fax 952-361-6594

- **Ottertail County SWCD**
655 3rd Avenue SE Perham, MN 56573
Phone 218-346-2050

- **Prairie Country RC&D**
1005 High Avenue NE Willmar, MN 56201-4817
Phone 320-231-0008 Fax 320-235-8151

- **Stevens County SWCD**
12 Hwy 28 E Suite 2 Morris MN 56267
Phone (320) 589-4886 ext. 3

- **Swift County SWCD**
1430 Utah Ave. Benson, MN 56215
Phone 320 843-7201

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. 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)

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 (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>.