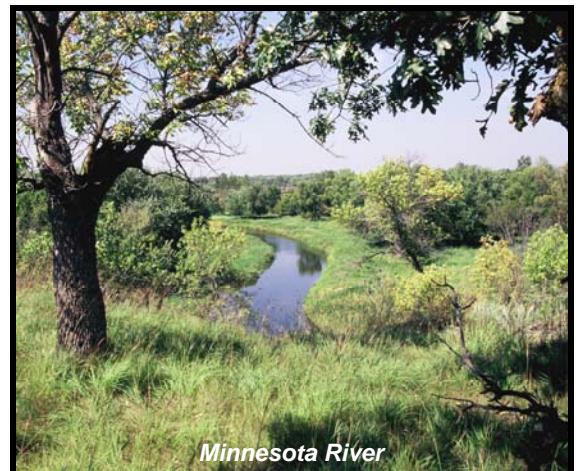
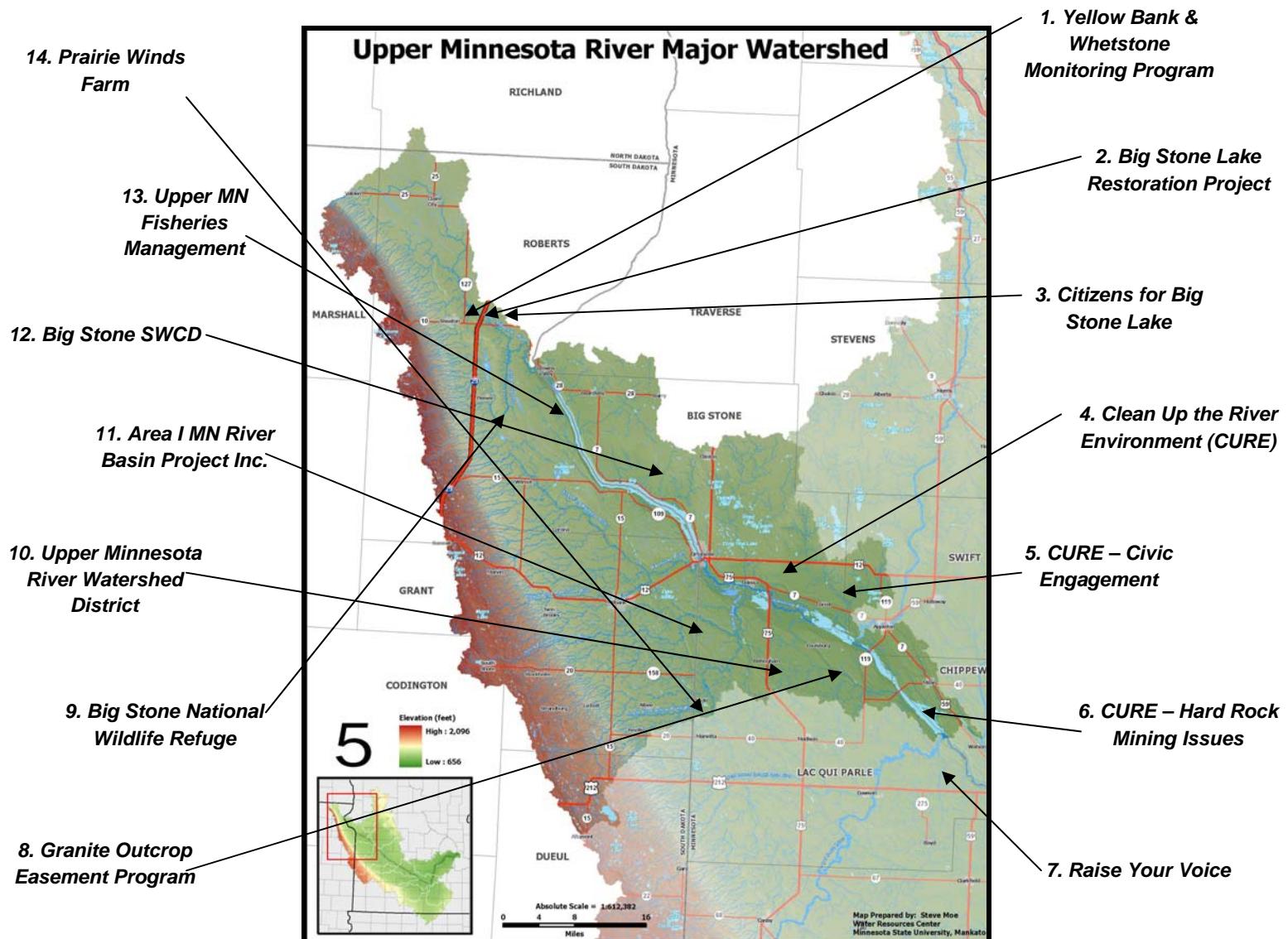


UPPER MINNESOTA RIVER WATERSHED

Draining 2,020 square miles, the Upper Minnesota River Watershed features a number of significant landscape features including the Continental Divide at Browns Valley, a low area of land separating the Mississippi River Basin from the Red River Basin. The watershed's headwater is found in South Dakota on the Coteau des Prairies, with the Little Minnesota River flowing into the northern edge of Big Stone Lake. In addition to the Little Minnesota, the other major tributaries are the Whetstone River found at the lake's southern end and further downstream is the Yellow Bank River. Two major impoundments are located on the Minnesota River in the Upper Minnesota River Watershed – Marsh and Lac qui Parle reservoirs. Both of these lakes are incorporated into some of the largest and most important wildlife management areas and public hunting grounds in Minnesota and stopovers for great concentrations of migrating waterfowl.



Minnesota River



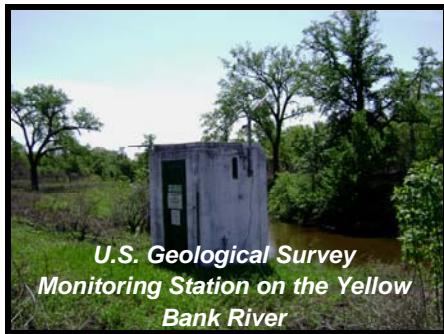
A most delightful country, abounding with the necessities of life that grow spontaneously. Wild rice grows here in great abundance; and every part is filled with trees bending under their loads of fruit, such as plums, grapples and apples. – Jonathan Carver, Travels Through Interior Parts of North America in the Years 1766, 1767 and 1768

UPPER MINNESOTA RIVER WATERSHED

Water quality efforts in this major watershed crosses state lines with Citizens for Big Stone Lake taking a lead role to install conservation practices and engage citizens. Other efforts involve the non-profit group Clean Up the River Environment (CURE), Minnesota DNR, Lac qui Parle and Big Stone SWCD, Area II, the Upper Minnesota River Watershed District along with the East Dakota Water Development District.

1. Yellow Bank and Whetstone Monitoring Program

An extensive two-year monitoring program is being launched in 2010 to analyze water quality in two



**U.S. Geological Survey
Monitoring Station on the Yellow
Bank River**

tributaries – the Yellow Bank River and Whetstone River – flowing out of South Dakota into Minnesota. Fourteen sites will be set up in

the two sub-watersheds of the Upper Minnesota River Watershed by the East Dakota Water Development District. Only limited monitoring has been conducted in the Yellow Bank and Whetstone watersheds, which hasn't provided a thorough understanding of the two watersheds. This form of comprehensive monitoring will help South Dakota determine the types of water quality issues that may need addressing.

2. Big Stone Lake Restoration Project

To reduce nuisance algae blooms in Big Stone Lake, a group of organizations came together to install a diverse selection of agricultural-related Best Management Practices (BMPs).

The Upper Minnesota River Watershed District partnered with Big Stone SWCD, City of Ortonville, Big Stone County, Citizens for Big Stone Lake,



Streambank Restoration Project

DNR, U.S. Fish & Wildlife Service, and MPCA along with state and local groups from South Dakota.

BMPs ranged from wetland restorations, no-till drill program, nutrient management, shoreline, more than 50 animal waste management systems, and streambank erosion control and Whetstone River flow management, resulting in significant lake water quality improvements. Other water quality improvements came from the upgrading of six municipal wastewater treatment systems. The restored Steen wetland located on Meadowlark Creek in Big Stone County demonstrated that significant reductions in concentrations and loads of suspended sediments and nutrients could be achieved. An important component in developing project goals and management involved both public input and involvement.

3. Organization Spotlight - Citizens for Big Stone Lake

An 800-member nonprofit organization in Minnesota and South Dakota, the Citizens for Big Stone Lake initiated and coordinated projects and activities related to water quality of Big Stone Lake. This dedicated group of citizens has been working since 1977 including a number of state and federal grants, achieving significant water quality improvement.



Big Stone Lake

The group has helped get more lake monitors, tougher feedlot ordinances, lobbied for clean water through the Clean Water Alliance, created a resource library, held public events including a shoreline restoration seminar with assistance from the Minnesota DNR, contributed to the CRP native grass program for field runoff control and provided funds for water-related programs at the Bonanza Education Center in Big Stone State Park. Their biggest success came by working with farmers to secure grants to pay for conservation practices like no-till planting, wetland restorations, permanent easements of cropland and 50 livestock waste management systems.

4. Clean Up the River Environment (CURE)

CURE is a grassroots, nonprofit organization working with citizens, government staff and many others to restore



and protect and cultural change. For close to twenty years the

group has sponsored or funded river observation trips, wetland restorations, cleanup campaigns, river celebrations, publicity, and informational meetings. CURE works in the Upper Minnesota River Watershed to "focus public awareness on the watershed and to take actions to restore its water quality, biological integrity and natural beauty for all generations."

This nonprofit organization services a 16 county region involving approximately 3.5 million acres and a watershed encompassing many of the most economically-depressed counties in the southwest part of Minnesota. Historically, CURE focused on changing the federal farm policy as a way to improve the water quality of the Minnesota River before positioning itself to serve the region in developing new economic opportunities centered on green tourism concentrating on natural and cultural resources.



High School Paddle Trip

5. CURE - Civic Engagement

This citizen-based organization is constantly involved and leading programs tied to civic engagement and getting people involved in issues that focus on the natural environment and water quality. CURE hosted the "Green Carpet Film Festival" at the Hollywood Theater in Montevideo to highlight environmental-related films and promote locally produced videos. Every year CURE sponsors the annual River and History Weekend drawing more than 100 people to experience area rivers and learn about the history of the Upper Minnesota River Watershed.

The organization has also been involved in restoring and revitalizing downtown Granite Falls, promoting the annual Meander Upper Minnesota River Arts Crawl, and organizing river trips including a three day adventure for high school students. On annual basis CURE conducts a clean-up along the Minnesota



Annual MN River Clean Up

River and a two mile stretch of the highway between Granite Falls and Montevideo. Recently, the group raised public awareness about concerns over the construction of a second coal-fired plant at Big Stone Lake.



Patrick Moore (center), Executive Director of CURE talks at Minnesota River Watershed Alliance meeting

6. CURE - Hard Rock Mining Issues

One effort by CURE involved hosting a public reception on hard rock mining in the Minnesota River with the Rivers Council of Minnesota. Over 50 people came out to take part in a group discussion on concerns over hard rock mining in the Minnesota River Valley including how it impacts the natural resource, local communities and citizens. The issue of hard rock mining revolves around the Minnesota's Wild & Scenic Rivers Program with the parts of the Minnesota River added in 1977. Two segments - Lac qui Parle Dam to the U.S. Highway 212 bridge and Great Lakes Pipeline to the Redwood County Highway 11 Bridge have been classified as scenic and one as recreational - U.S. Highway 212 bridge in the city limits of Montevideo to Great Lakes Pipeline one-quarter mile downstream of the Minnesota Falls dam.

River Advocate - Patrick Moore

Patrick Moore grew up at Fort Snelling next the confluence of the Minnesota and Mississippi rivers, married a girl from Mankato and has made his home in Montevideo. In the early 1990s, Moore helped launch the nonprofit organization Clean Up the River Environment (CURE) and became its executive director on March 24, 2005 on a unanimous vote after serving as its Development Director. After moving to southwest Minnesota, Patrick worked as an editor of the Milan Standard Journal and a producer with Pioneer Public TV in Appleton. From there he went onto work for the Land Stewardship Project as an organizer and program director for 17 years before starting the Java River coffeehouse in Montevideo.



7. Raise Your Voice

The Higher Education Consortium on Urban Affairs and Clean Up the River Environment (CURE) has sponsored an annual literary gathering at the Java River Coffee house in Montevideo. College students from the Twin Cities and community members of the Upper Minnesota River Watershed come together for an interchange of ideas and a way to celebrate the arts and their power to impact social issues and create vibrant communities. This collaboration between higher education and the community can have a lasting impact for everyone, especially on the students.

8. Project Spotlight - Granite Outcrop Easement Program

Renville SWCD and Redwood SWCD partnered in 2007 to secure funding from the Legislature-Citizen Commission on Natural Resources (LCCMR) to secure funding to protect outcrops of granite along the Upper Minnesota River. These outcroppings are among the oldest rocks in North American dating back more than 3 million years and home to rare plants and animals, including several types of cactus and Minnesota's only lizard, the five-line skink. Over the last few years, these rock outcroppings have increasingly been threatened by mining, overgrazing and development. The original two SWCDs are now working with Lac qui Parle, Chippewa and Yellow Medicine SWCDs to acquire permanent easements to preserve close to 1,000 acres of endangered habitat and also restore their ecological integrity by removing non-native plants.



Granite Outcrops

Renville and Redwood SWCDs approached the LCCMR in 2007 for funding to protect critically sensitive rock outcrops and associated wetlands along the Minnesota River. LCCMR provided \$563,000 in funds to pay for 212 acres of permanent easements and assist in restoring the areas to their natural conditions. In 2009, the easement program received another \$1.5 million from LCCMR to protect rock outcroppings in three additional counties – Chippewa, Yellow Medicine and Lac qui Parle. Thirty applications were accepted for a total of 1,417 acres. For 2010, the Granite Outcropping Easement Program requested another \$4.4 million from LCCMR for its final allotment.



Granite Outcrops

9. Big Stone National Wildlife Refuge

Encompassing almost 12,000 acres of the Upper Minnesota River Valley, the Big Stone National Wildlife Refuge features tall-grass prairie, scenic granite rock outcrops, two large wetland complexes known as the east and west pools, and 11 miles of the Minnesota River.

Recreational

opportunities at the refuge include hunting, hiking, bird watching, sightseeing and the popular Auto Tour Route recently reopened to the public.

In addition to the roadway, the upgrades in the \$1 million project included hiking trails, observation platforms, fishing piers and restrooms. In 1975, the refuge

opened on lands managed for flood control by the U.S Corps of Engineers. One project involved the 1,662-acre West Pool Project that used funds from Ducks



Information Kiosk at Big Stone National Wildlife Refuge

Unlimited, Minnesota DNR, the Legislative-Citizen Commission on Minnesota Resources, the Christina-Ina-Anka Lake Association, private landowners, Independence Tube Corporation and the U.S. Fish and Wildlife Service to improve this large wetland habitat by developing water level management.

10. Upper Minnesota River Watershed District

Petitioned in 1967 by Big Stone County, the Upper Minnesota River Watershed District starts at Browns Valley and ends at Appleton with portions of Big Stone, Stevens, Swift, Traverse and Lac qui Parle counties.



Water Control Structure at Big Stone National Wildlife Refuge

Projects by the District include partnering with the University of Minnesota Morris, Pioneer Public TV and the U.S. Fish & Wildlife Service to produce a one-hour education documentary *Echoes of Cry of the Marsh*. The District has helped restore 832 acres of wetlands, constructed a new sediment retention basin and completed over 15 years of the Fourth Wetland Restoration Educational Project.

Currently, the Upper Minnesota River Watershed District is working with Big Stone National Wildlife Refuge, DNR, U.S. Corps of Engineers and East Dakota Water Development District to partially restore flows to the Whetstone River, which had been diverted in the early

1940s. The District is also cost-sharing on a rain garden program and restoring flows to the old Minnesota River Channel within the Big Stone Lake/Whetstone River Flood Control Area.

11. Area II Minnesota River Basin Projects, Inc.

In 1978, nine counties – Brown, Cottonwood, Lac qui Parle, Lincoln, Lyon, Murray, Pipestone, Redwood and Yellow Medicine – formed a joint powers organization to provide cost-share and technical assistance for the implementation of flood retarding and retention projects. Six major watersheds make up of Area II Minnesota River Basin Projects, Inc. (Area II) – Yellow Bank River, Lac qui Parle River, Yellow Medicine River, Redwood River, Cottonwood River, and the Little Cottonwood River.

After thirty years of existence, Area II has assisted in the



Water Storage Facility

planning and construction of nine reservoirs and numerous road retention/culvert downsizings throughout the six watersheds in the Minnesota River Basin. In the Yellow

Medicine River Watershed, Area II has helped install conservation practices ranging from streambank stabilizations, wetland restorations and road retentions.

12. Big Stone SWCD

A total of 450 acres including 156 wetland acres have been enrolled into the Conservation Reserve Enhancement Program (CREP) with one 45 acre wetland featuring a weir that regulates the water level. Five different landowners came together to restore 200 acres of land including 110 acres of wetlands that had been drained more than 50 years. Named and dedicated to Charles Hanson, a lifelong resident and area conservationist.

The restored wetlands filter sediment and pollutants from runoff water before it enters Artichoke Lake. The upland areas



Charles Hanson Wetland Restoration and Waterfowl Area

and wetland fringes have been seeded to native grasses. the project was coordinated by Big Stone SWCD with a large number of cooperating agencies – USDA Farm Service Agency and Natural Resources Conservation Service, Big Stone County Highway Department, Artichoke Township, Stevens Township (Stevens County), Board of Water and Soil Resources, the Upper Minnesota River Watershed District and area fourth grade students.

natural reproducing population. To encourage fishing, the DNR works with communities to provide access for anglers including a fishing platform in Granite Falls and Ortonville. Another example of fish management is the removal of man made barriers like channel plugs to restore the connectivity of rivers and their floodplains.



Fishing on Big Stone Lake

The Kadermacher Family has transformed their farm operation to an organic one to provide healthy food for consumers. In 1977, their farm was certified organic and thirteen years later with the cattle. They utilize manure from 30 dairy cattle through a compost system on their cropfields instead of purchasing commercial fertilizer.



Sustainable Farming Tour

13. Fisheries Management

Fish populations in the Upper Minnesota River are evaluated annually by DNR Fisheries staff by using a special boat that produces electricity. The fish are temporarily stunned, netted, examined,

measured and released. Over 50 species of fish

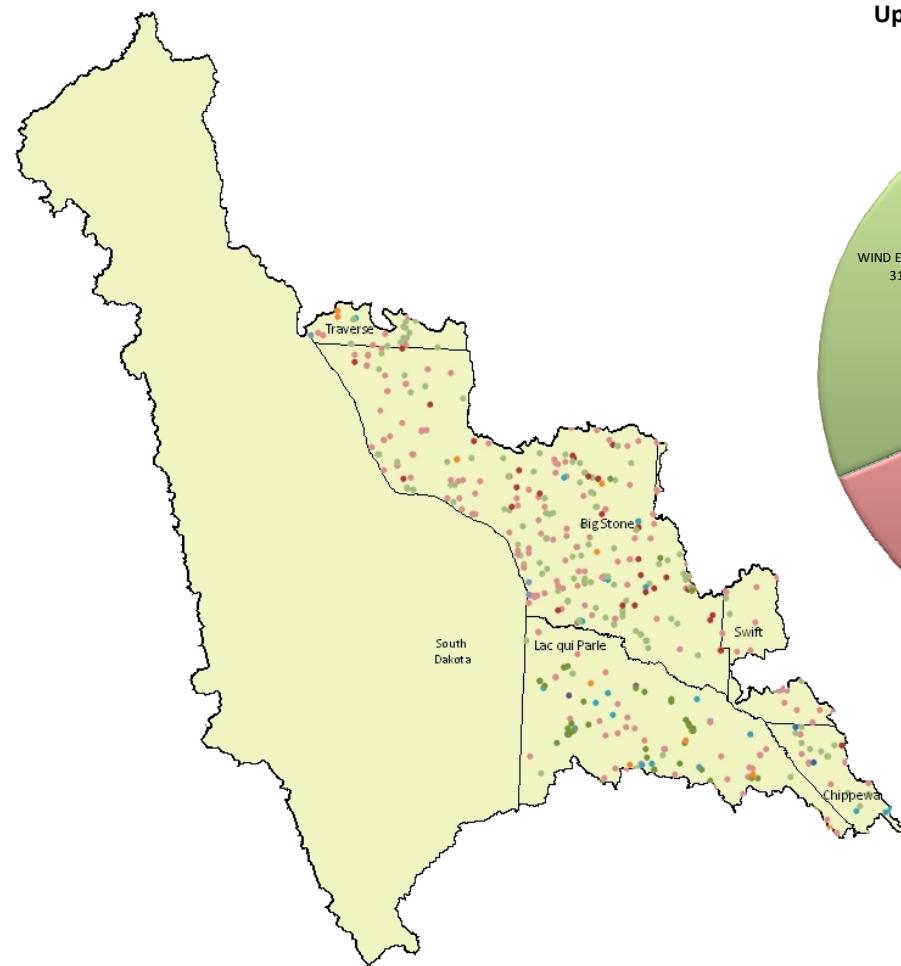


Fish Survey on the Minnesota River

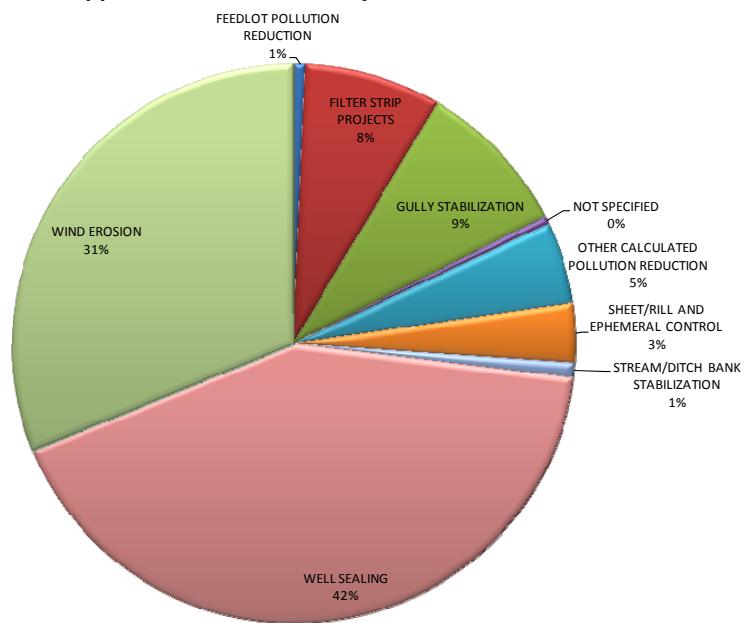
have been sampled in recent years with unique catches including American eel, gizzard shad, greater redhorse, northern hog sucker, and river carpsucker. The DNR Fisheries staff has stocked the Upper Minnesota with approximately 20,000 trout since 2004 to help “boost” the

Prairie Wind Farms raise organic wheat, millet and soybeans for markets in the Twin Cities and Europe. To continue improving their soil and water quality, the Radermachers have participated in a Holistic Resource Management Course sponsored by the Land Stewardship Project that helped them develop a rotational grazing system with high tensile and polywire fences. To help promote these healthy land-use practices they have hosted 6th grade Soil and Water Conservation District Tours, Sustainable Farming Tours and Pasture Walks.

Upper River Watershed Conservation Practices and Land Use



Upper Minnesota River Major Watershed

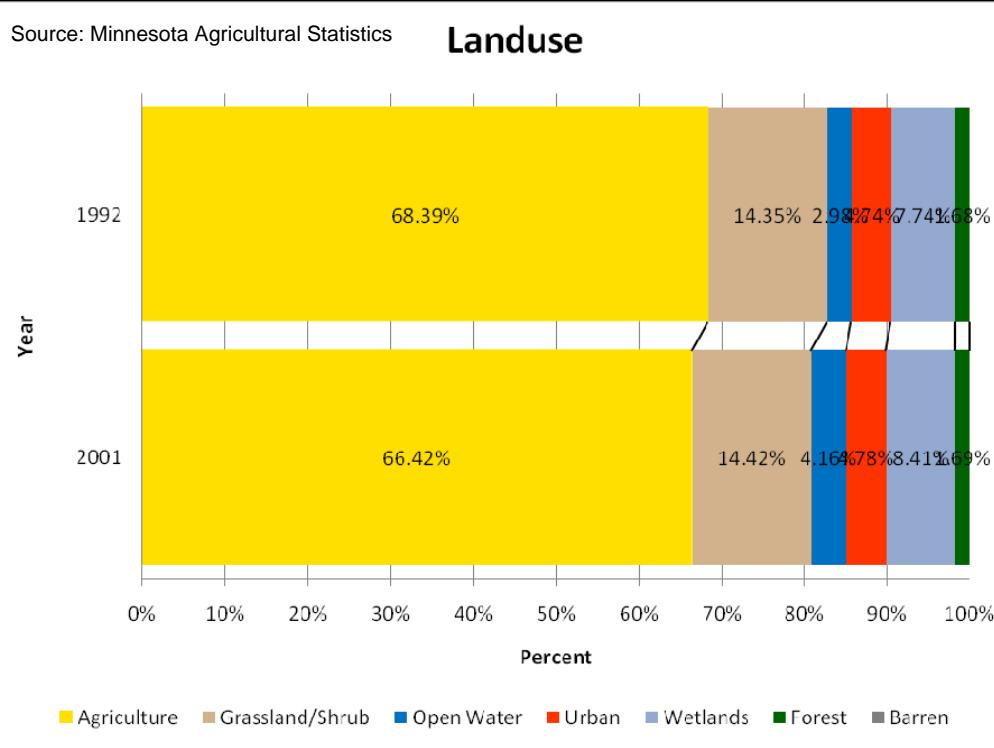


Conservation Practices

Numerous groups including the Upper Minnesota River Watershed District, Lac qui Parle – Yellow Bank CWP and East Dakota Water Development District have been involved in the water quality effort since the late 1990s and early 2000s. The map to the left and the pie chart above illustrates conservation practices in the Upper Minnesota River Watershed. The conservation practices data comes from the Board of Water and Soil Resources (BWSR) program compiles information on a county, watershed, and individual-project basis from 1997 to 2008. The number of conservation practices reflects only actual contract and not the acres. There are additional conservation practices installed in the Upper Minnesota River Watershed but not recorded in either LARS or eLINK.

Source: Minnesota Agricultural Statistics

Landuse

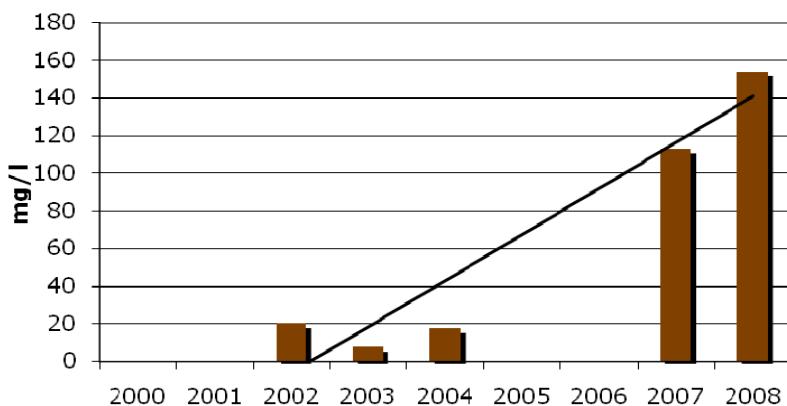


Upper Minnesota River Watershed Pollution Reduction

Yellow Bank River - Introduction

The Yellow Bank River located in the northern portion of Lac qui Parle County with the majority of watershed being in South Dakota. Monitoring styles changed in the yellow Bank because the samples sent in did not show a serious problem. In 2005 and 2006 there was not funding available for sampling. The Yellow Bank River is currently being monitored by MPCA as part of the Major Watershed Loading Project.

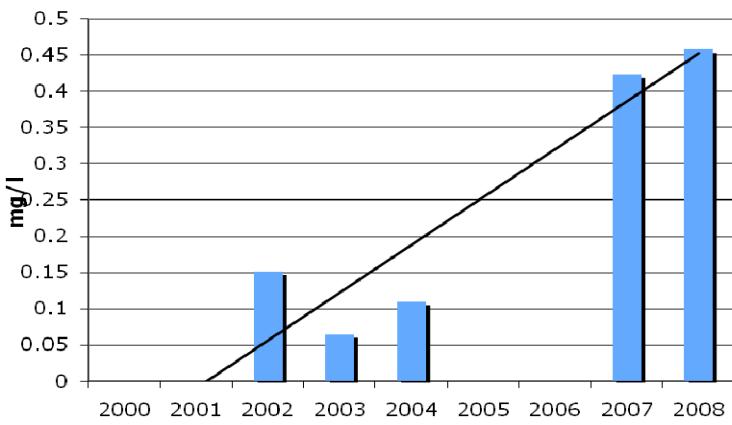
Total Suspended Solids FWMC 2000-2008



Total Suspended Solids

The Yellow Bank River is very flashy and rain events have a large impact on this river. The type of monitoring changed from 2002-2004 to 2007 and 2008. The Major Watershed Loading Project is now doing the monitoring at this site. From personal visits to the river the transparency tube often reads 60+ and mussels can be seen on the river bed.

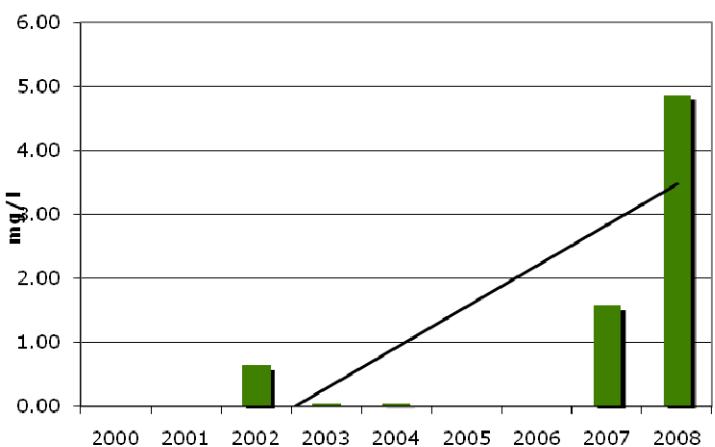
Total Phosphorus FWMC 2000-2008



Total Phosphorus

The monitoring styles are again reflected in this chart. During snowmelt is when the phosphorus reads the highest. This site is in a protected grassland area of the Big Stone Wildlife Refuge.

Nitrate-Nitrogen FWMC 2000-2008



Nitrate-Nitrite

Nitrogen levels within the watershed are continually well below the drinking water standard of 10 mg/L. The difference in monitoring objectives are clearly shown here.