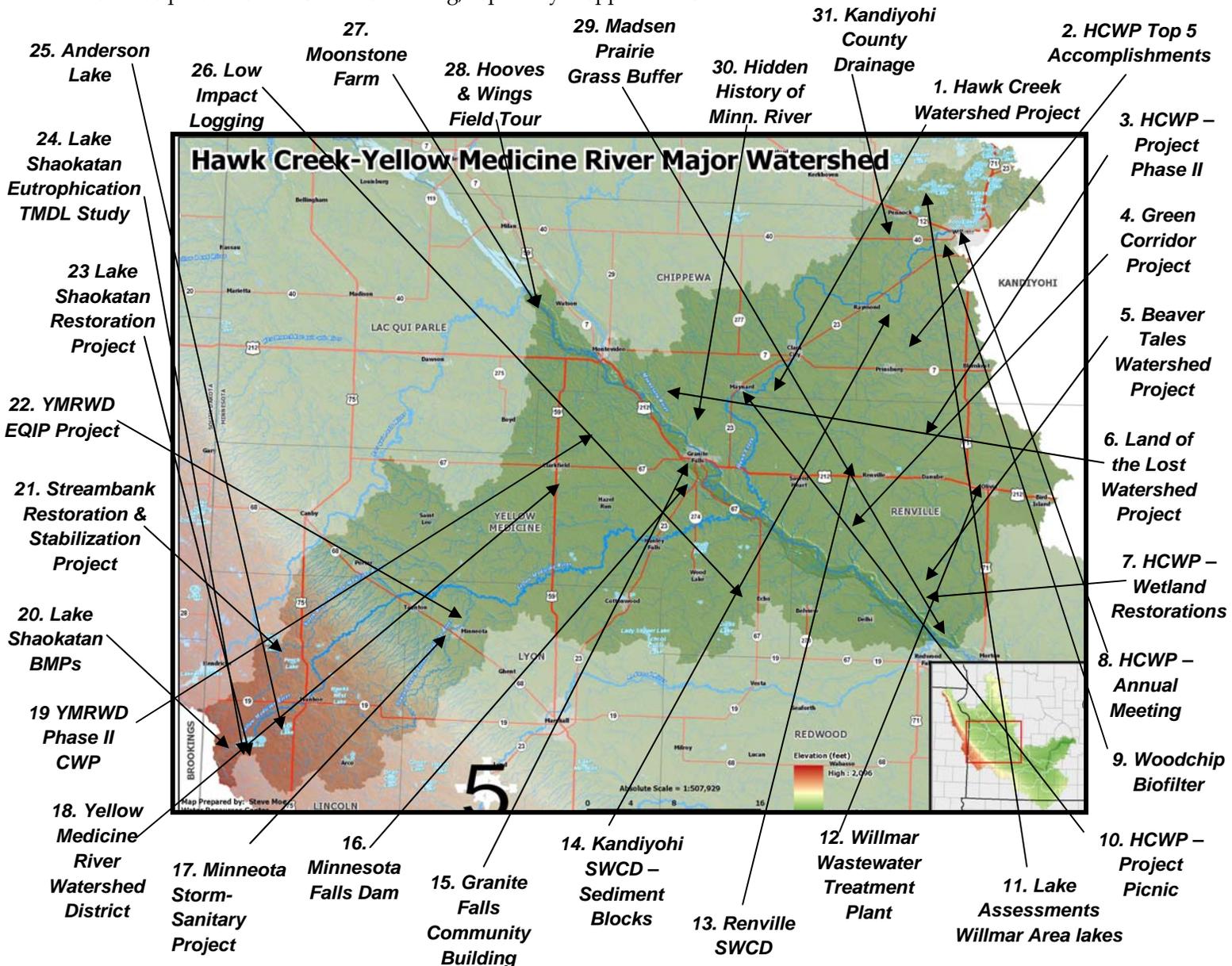


HAWK CREEK AND YELLOW MEDICINE RIVER WATERSHED

Classified as a major hydrologic watershed in the Minnesota River Basin, Hawk Creek and Yellow Medicine are separated into two management units. A section of land extending from the Lac qui Parle Reservoir to just below the mouth of the Redwood River along the Minnesota River's mainstem is part of the Hawk Creek & Yellow Medicine Watershed. There are also a number of smaller tributaries draining directly to the Minnesota River in the watershed including Beaver Creek on the north side. Hawk Creek and Yellow Medicine Watershed drains 2,020 square miles with approximately 85 miles of the Minnesota River flowing through this large basin. The watershed is primarily agricultural with over 80 percent of acres tied to farming, especially cropped lands.



Hawk Creek was named for the European Kestrel (a small falcon). Translation of Dakota name for hawk is chetambe. The Yellow Medicine River got its name from the Dakota for the bitter, yellow roots of the moonseed plant, growing as lush vines in thickets along the streams banks. The Dakota dug the yellow root of the moonseed and used it as a medicine - Warren Upham, *Minnesota Place Names - A geographical Encyclopedia*

HAWK CREEK – YELLOW MEDICINE RIVER WATERSHED

Normally, this major watershed is divided into two different management units with the Yellow Medicine River Watershed District involved in water quality issues on one half and the Hawk Creek Watershed Project handling water quality efforts on the other half. Both entities have made major strides in restoring and protecting the water resource along with assistance from government agencies, citizens, and nonprofit groups.

1. Project Spotlight - Hawk Creek Watershed Project

Established in 1999, the Hawk Creek Watershed Project (HCWP) focuses on implementing Best Management



Installing Alternative Tile Inlet

Practices (BMPs) to correct and prevent land use challenges that negatively affect water quality and quantity. By working with a variety of partners, the HCWP provides

assistance to landowners and others to implement BMPs through both cost-share programs and a septic system upgrade low interest loan program.



Hawk Creek Information Booth

Cost-share as of August 31, 2009: Abandoned Wells Sealing (7), Ag-waste structures (10), Alternative Intakes (100), Bank Stabilizations (7), Tile Bioreactor (1), Buffer Strips (133 at 1,192 acres), Critical Seeding (1), Field Windbreaks (2), Grade Stabilization (9), Nitrogen Management (7), Rain Gardens (3), Sediment Basins (34), Sediment Retention Ponds (1), Septic System Upgrades (370), Shelterbelt (1), Side Inlets (246), Terraces (7), Waterways (10 – 563 acres) and Wetland Restorations (9 at 2,264 acres).

2. Top 5 Accomplishments of HCWP

According to Cory Netland, project manager, one of the top accomplishments is the established reputation as a trusted partner with the agricultural producers of the watershed. This was done by working with, not against, farmers in the watershed. A visible example is the highly successful annual meetings that are attended by nearly 140 people each year, many of whom are people that have cooperated with the project on in-field Best Management Practices (BMPs).



Erosion on Drainage Ditch

Two, the project has developed an excellent network of partnerships with the conservation professionals in the watershed. They have partnered with most, if not all, of the entities who work on conservation related issues in our watershed, including NRCS, SWCDs, DNR, US Fish & wildlife Service, Ducks Unlimited, Pheasants Forever, County Drainage Authorities, County Environmental Offices, Prairie Woods Environmental Learning Center, among others.

Three is the routine success in obtaining grant dollars in highly competitive situations. More importantly, the project has encumbered and spent every dime it has been awarded, with a high percentage of the funds going to on-the-ground BMPs implemented on a 100 percent voluntary basis.

Four, the project along with its partners has contributed to dramatically reduced Total Suspended Solids (TSS) in all of the streams they monitor. The buffer initiative and other BMPs have had a direct impact on the amount of sediment in the waterways.

Five and final top accomplishment is how the project has directed its focus to on-ground BMPs and those efforts have been very successful with an impressive 949 BMPs implemented since 2001. The amount of phosphorus and sediment saved from these BMPs has been quite astounding. If an average project life span of 20 years is met, these projects will reduce sediment by 205,802 tons, total phosphorus by 415,792 pounds, and reducing fecal coliform bacteria by 4,023,380,000 organisms.

3. Hawk Creek Watershed Project Phase II

From August of 2004 to August of 2005, the Hawk Creek Watershed Project conducted a Phase II Clean Water Partnership Continuation Grant by helping installing Best Management Practices (BMPs) and upgrading out-of-compliance septic systems along with educational and monitoring activities.

Results of this continuation grant were as follows: cost-share for 117 BMPs treating 5,177 acres; maintained an active Citizen Monitoring Network with 27 volunteers; continued water sampling at six primary and four additional sites; continued to hold the annual public information meeting; promoted the project at county fairs and made presentations to schools, local organizations and agricultural shows. Water quality benefits of the BMPs translate into sediment and phosphorus reductions of 2,302 tons and 3,368 pounds per year.



4. Green Corridor Project

Hawk Creek Watershed Project (HCWP) received a Clean Water Partnership grant to work exclusively in the Green



Corridor area of the watershed. Over the lifespan of the project – July, 2006 to July, 2009 – HCWP helped install 43 side/drop inlets affecting 549 acres, 22

alternative intakes and tile intake protection projects affecting 106 acres, 17 buffer strips of 106 acres, restoring 553 acres of wetlands and 4 additional BMPs affecting 59 acres. This total of 89 BMPs affects 1,419 acres with an estimated soil loss reduction of 474 tons per year and reduced phosphorus loading by 539 pounds per year. Major accomplishments of the information and education program included the distributing 6,000 newsletters to watershed residents, hosting public meetings, and presenting at local schools and community organizations.

5. Beaver Tales Watershed Project

As one of the smaller, direct tributaries to the Minnesota River in the Hawk Creek Watershed, the “Beaver Tales” project is sponsored by the Hawk Creek Watershed Project and consists of approximately 122,302 acres over 161 miles of water courses. Beaver Creek and similar

tributaries can play a significant role in determining the health of the Minnesota River. A U.S. EPA 319 grant funded the installation of 23 buffer strips (122 acres), two side inlet/drop inlets affecting 54 acres, four alternative surface drainage systems intakes and tile intake protection projects affecting 21 acres, eight projects with 21 individual sediment basins affecting 196 acres and six additional BMPs affecting 1,319 acres. These BMPs provided an estimated soil loss reduction of 705 tons/yr. and reduced phosphorus loading by

561 lbs. /yr.



6. Land of the Lost Watershed Project

Sponsored by the Hawk Creek Watershed Project (HCWP), the “Land of the Lost” project focuses on 25 small streams along the Minnesota River an area comprising of approximately 197,765 acres and over 191 miles of watercourses. According to the HCWP, these tributaries are often forgotten about but play a significant role in determining the health of the Minnesota River. The HCWP installed 12 buffer strips affecting 178.2 acres, 22 side inlet/drop inlets affecting 257.1 acres and 13 additional BMPs affecting 977 acres. A total of 86 BMPs have been installed since the project started in 2002 affecting 1,627 acres. These BMPs provide an estimated soil loss reduction of 1,193 tons/yr. and reduced phosphorus loading by 1,485 lbs. /yr.



7. HCWP - Wetland Restorations

Incentives are being offered by Hawk Creek Watershed Project in an effort to reduce the phosphorus runoff into the Minnesota River, suffering from low oxygen levels in its lower reaches. The basin-wide effort will use \$326,768 in grant funds to restore wetlands in Chippewa, Renville and Kandiyohi counties. In addition, other agencies will be offering funding and technical assistance to help address the problem of low oxygen levels.



Wetland Restoration

Wetland restorations will help improve the basin's water quality by holding and absorbing nutrients now being carried by smaller tributaries to the Minnesota River. Hawk Creek Watershed Project hopes to see 320 acres of wetland restored and another 120 acres of vegetative buffers. Other incentive and technical assistance will be offered by the project for additional Best Management Practices ranging from installing alternative intake structures and upgrading feedlots to stop run-off.

8. Hawk Creek Annual Meeting

To thank supporters of the Hawk Creek Watershed Project and offer water quality-related presentations, the Hawk



Hawk Creek Annual Meeting

Creek staff holds an annual meeting in February at the Kandi Entertainment Center in Willmar. More than 100 people

come out to hear presentations on the status of the Hawk Creek Watershed Project, effects of land retirement on water quality and aquatic biology in the streams of the Minnesota River Basin, Discovery Farms - Understanding Agricultural Water Impacts, Basin-wide studies to understand turbidity in the Minnesota River and tributaries, and use of 210Pb and 137Cs to fingerprint sources of sediment to agricultural rivers.

9. Hawk Creek Woodchip Biofilter

A woodchip "bioreactor" was installed on a subsurface drain tile line near Willmar to remove nitrogen and phosphorus from the water before it reached a waterway. Hawk Creek Watershed Project installed the demonstration project on June 20, 2009 to treat a six acre portion of a cornfield. The filtered tile water



Constructing Biofilter

will be monitored to determine reductions in sediment and nutrients on the estimated \$1,800 project. A second biofilter was installed to treat runoff from an area draining a pasture and residential homes. Water quality monitoring will provide data on pollutant reduction from the two different land-use areas. The Hawk Creek Watershed Project worked with the Kandiyohi County Public Works and BWSR on the project.

10. Hawk Creek Watershed Project Picnic

To help nurture and strength relationships and shared ideas in a casual setting, the Hawk Creek Watershed Project has developed an annual appreciation picnic for project partners, active citizens and landowners. A group of 34 people gathered at the Maynard Lions Park located along Hawk Creek on September 11, 2009 to enjoy grilled foods, positive conversation and informally network to discuss issues related to the mission of the project. Keeping it simple and informal there was no formal presentation.



Hawk Creek Picnic at Maynard Lions Park

11. Lake Assessments of Willmar area lakes

Hawk Creek Watershed Project undertook an assessment project of lakes in the Willmar area. The watershed



project is overseeing separate, two-year studies to analyze the water quality on Long and Ringo Lake. The second study

the Hawk Creek Basin: Eagle, Skataas, Swan, Willmar and Foot. The testing will help determine what is flowing into these lakes, and what that means to water quality. It's generally recognized that some of these lakes hold excess nutrients, which trigger algae blooms and other problems.

12. Willmar Wastewater Treatment Plant

On August 25, 2010, city staff began to incrementally redirect flow from Willmar's old wastewater treatment plant to the new \$86.2 million facility located about five miles west of the city. The new facility includes the treatment plant, two pump stations and separate pipelines for conveying the industrial waste from the Benson Avenue and Willmar Avenue Jennie-O Turkey Store plants and municipal waste. The new plant improves the conveyance system in order to address more stringent requirements for phosphorus and ammonia along with meeting projected population and industrial growth to the year 2030.

Unlike the old plant, the new treatment system removes both ammonia and phosphorus along with



reducing the pollutant load from 97.2 to 99.3 percent. The plant is expected to reduce the discharge of phosphorus concentration from 7-8

milligrams per liter (mgL) to less than 1 mgL. When fully operating, the plant will treat more than 5 million gallons of waste per day. Downstream of the plant discharge is a Hawk Creek Watershed Project monitoring site.

13. Renville Soil and Water Conservation District

Established in August of 1955, the Renville SWCD concentrates on promoting conservation practices to protect water, soil and natural resources in the county. Renville SWCD also partners with Renville County to conduct feedlot inspections to help landowners obtain cost-share to upgrade systems and assists the Renville County Environmental office with technical assistance with mine reclamation plans, rain garden design and installation and other conservation activities. A major focus of Renville SWCD is to assist a number of watershed projects including Hawk Creek Watershed Project and High Island Creek Clean Water Partnership in the Minnesota River Basin.



In 2008, Renville SWCD conducted education programs for county schools, put on Green Career Day for all Renville County West High School students and hosted the BWSR Board meeting in August which featured a tour of conservation practices. A total of 553 acres involving 60 new contracts were enrolled into the federal CRP program. One roadbank easement of 153 acres was recorded and restored the following year.

Under the RIM/WRP program one 103 acre project was accepted in Renville County. Other projects involved partnering with MN DOT on a Living Snow Fence project, cost-sharing on nine local water management projects and assisting with the design of three rain gardens. Renville SWCD led the effort with Redwood SWCD to develop the Granite Outcropping Easement Program in the Upper Minnesota River portion of the basin.



14. Kandiyohi SWCD – Five Sediment Blocks

Five sediment blocks were installed to reduce soil erosion and improve water quality, especially benefiting Eagle Lake and other downstream waters. Prior to the installation of the sediment blocks, water overtopped the township road adjacent to the project during rain events and created farming problems. Erosion has been reduced and water volume controlled after the completion of the project. Funding came from BWSR's State Cost-Share, Hawk Creek Watershed Project and Kandiyohi County Water Plan funds.



16. Minnesota Falls Dam

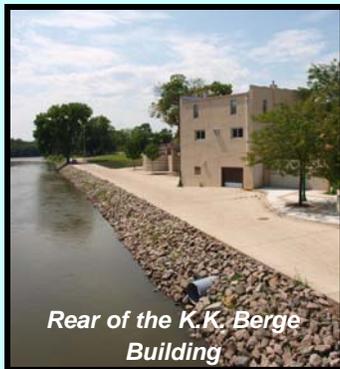
Xcel Energy and Minnesota DNR sponsored a collaborative study to determine the condition of the Minnesota Falls Dam downstream of Granite Falls and analyze future use scenarios. To study the dam's structure, water levels in the reservoir were lowered in incremental stages to protect against any significant negative effects. BARR Engineering was commissioned to determine the dam's status along with how the structure alteration or removal would affect the upstream area. Three options have been outlined: (1). Fix the dam and leave it as is; (2). Augment the dam, adjusting its height lower; and (3). Remove the dam completely. Constructed in 1905, the dam originally produced electricity until 1961 and then as a cooling reservoir for the Minnesota Valley Generating Plant, which closed in 2004. While the dam serves no purpose for Xcel Energy, it does maintain a higher water level for the Granite Falls Ethanol Plant and local golf course. Recreation enthusiasts see positive benefits in removing the dam for the migration of fish and paddling opportunities.



15. Project Spotlight - Granite Falls

The City of Granite Falls has embraced the Minnesota River flowing through the heart of this community along with suffering from its destructive powers. After the devastating 1997 flood and to lesser extent those in 2001 and 2009, Granite Falls worked to counter balance the beauty of the river and the undesirable side. One neighborhood overlooking the river was removed and is now being replaced by a community park.

On the business side of the river the construction of a floodwall incorporated some of the buildings and better public access to the river. Like many other structures



along the riverbank, the K.K. Berge Building was slated to be removed before a group of citizens recognized its unique aspects and saw a lot of potential for community and river related activities. Now, the effort has moved to preserving the building

to be used as the Chamber of Commerce office, public space for a new Arts Council, Historical Society displays along with other uses including rentals on the second floor. In the basement, CURE plans to have an office to help host river-based events along with a canoe/kayak and bike rental shop.

17. Minneota Storm-Sanitary Sewer Separation Project

Many communities historically combined the storm and sanitary system resulting in water quality problems. The city of Minneota has undertaken a \$2.5 million project to complete the separation of storm water and sanitary sewer lines. Currently the system backs up during heavy rains and sends sewage sludge into the Yellow Medicine River, impaired with excessive levels of fecal coliform bacteria. A Fecal Coliform Bacteria TMDL has been approved to reduce this pollutant.

18. Yellow Medicine River Watershed District

On the south side of the Minnesota River, the Yellow Medicine River Watershed District came into existence on August 27, 1971 as the result of a county petition. Today, the watershed is a mixture of smaller lakes, tributaries to Yellow Medicine River and numerous ditch systems. The District works with landowners on tiling and drainage permits, flood control projects and watershed ditch berm inspections.



Yellow Medicine River

A major focus of the District is implementing best management practices with assistance from the MPCA and the three SWCDS in the watershed to reduce nonpoint source pollution in the Yellow Medicine River and its tributaries. One recent initiative launched by the District is the South Branch of the Yellow Medicine River Fecal Coliform Bacteria TMDL Implementation Project to provide incentive funds for installing filter strips, feedlot upgrades, alternative tile intakes, rotational grazing, nutrient/manure management plans, and a residue management incentive program.

Over the last ten years, the Yellow Medicine River Watershed District has completed many water quality and quantity projects to prevent flooding and improve water



Road Retention Structure

quality in the watershed. The District has partnered with other agencies to design and fund eight major flood control projects, retention structures and six road retention structures incorporating road and flood control repair projects. On the Alta Vista 36 Road retention project, the District worked with the landowner, Lincoln County and Lyon County highway departments and Area II Minnesota River Basin Project to make the project cost effective.

The Yellow Medicine River Watershed District successfully completed two Clean Water Partnership Implementation Programs from 2001 to 2008. They installed a diverse selection of BMPs: filter strips (214 acres), water-control basins (47), clean water diversion and grassed waterways (5,700 feet). By implementing these practices, the District has met its goal of improving water quality by at least 25 percent in the six year period. Other efforts by the District include holding public informational meetings, mailings, and working with citizens and groups on water quality issues.

19. Greater Yellow Medicine River Phase II CWP

During the initial Phase II CWP from 2001 to 2005, the Yellow Medicine Watershed District worked with its project partners – Lyon, Lincoln and Yellow Medicine SCWDs – to install Best Management Practices (BMPs) across the Yellow Medicine River Watershed. The priority centered on installing filter strips, for a total of 445 acres.

Other successful tasks included upgrading a total of 105 out-of-compliance septic systems and 57 nutrient



Water Quality Education Program

management assessments to reduce nutrient loading. Information and education was an important part of the project with the District sending out newsletters and

fact sheets, holding public open houses, hosting a booth at the county fairs and conducting watershed tours. Other education activities focused on classroom and on-site presentations to local junior and senior high school students.

Initiated by the Yellow Medicine River Watershed District, the Greater Yellow Medicine River Phase II CWP during the time period of February, 2005 to January, 2009 focused on providing incentives to promote the installation of conservation practices with an emphasis on addressing Conservation Reserve Program (CRP) lands along the corridors of the Yellow Medicine River. The District partnered with Lincoln, Lyon and Yellow Medicine SWCD offices and NRCS to install numerous BMPs including filter strips, sediment basins and septic system upgrades.

A total of 67 septic system upgrades were completed during this project – Lyon County (14), Lincoln County (37) and Yellow Medicine County (16).

Conservation practices installed during the project included 31 sediment basins, one clean water diversion, 333 acres of filter strips and 5,700 feet of grassed waterways. As part of the education and information effort, the District worked with the Minneota Public School students to make classroom presentations and field trips to learn about monitoring and river assessment.

20. Lake Shaokatan Best Management Practices

Lincoln SWCD worked in cooperation with the Yellow Medicine River Watershed District to promote and install



Drainage Tile Diversion

BMPs in the Lake Shaokatan Watershed to improve the lake's water quality. BMPs installed included 20 rock/blind intakes and a drainage tile diversion and wetland

enhancement under a partnership with the Lake Shaokatan Sportsman's Club and a private landowner. Finally, the two organizations along with the DNR, Lake Shaokatan Sportsmen Club, Lincoln Co. Parks and Southwest Prairie Technical Service Area restored a wetland on a 48 acre pasture site, rerouted the tile line through the wetland and built a control structure at the outlet to reduce nutrients.

21. Clean Water Legacy Streambank Restoration and Stabilization Project

Lyon SWCD partnered with the Yellow Medicine River Watershed District and City of Minneota with engineering assistance from the SW MN Technical Service Area on a streambank restoration and stabilization project. Funds from the Clean Water Legacy grant program and in-kind stabilized the streambank to protect water quality and reduce erosion. Located in Minneota on the Yellow Medicine River, this area is next to a ball park used by the school and private groups. This project also addressed safety issues for the children and public utilizing the park and several privately owned buildings on the other side of the river.

22. Yellow Medicine River Watershed EQIP Project

Lincoln Soil and Water Conservation District sponsored a 319 project to increase the implementation of best management

practices, enhance water quality and overall benefits in the entire watershed by reducing



soil erosion, improving water quality and reducing flooding. Project staff worked with willing landowners to implement a variety of projects, using existing program processes such as ranking, cost-share and contracting.

A result of this project was the installation of 86 water and sediment control basins, and one dam structure along with upgrading and improving one grazing system. The implementation of 88 BMPs reduced soil loss by 1,214 tons per year, sediment reduction of 897 tons per year and phosphorus reduction of 1,015 pounds per year.

23. Lake Shaokatan Restoration Project

A CWP-continuation grant helped modify various watershed land use practices to significantly reduce inputs



Interpretive Sign in front of wetland

to Lake Shaokatan. This resulted in a measurable improvement to water quality. Lincoln County Environmental Office led the effort to re-route and relocate a

large 12 inch tile line that directly outlet into the lake. The tile line carried runoff from land around a nearby dairy, which was a major contributor of phosphorus to the lake. By relocating the tile line, it reduces phosphorus and treats water flowing from the tile into the lake. A total of 34 out-of-compliance septic systems have been upgraded for a 69 percent compliance rate. As a result, there is a resurgence of native plant populations in the lake including Sago Pondweed, Richardson's Clasping Leaf Pondweed, cattail and coontail.

24. Lake Shaokatan Eutrophication TMDL Study

Located in west central Lincoln County, Lake Shaokatan has a watershed area of 8,400 acres. Lake Shaokatan itself has a surface of 1,018 acres with an average depth of eight feet and a maximum depth for 12 feet. Historically, the lake was once home to American Indian encampments. Water quality monitoring data showed a declining trend in water quality due to excessive watershed loading and lake sediment phosphorus sources. These sources of phosphorus are mostly human influenced including improper fertilizer application, livestock manure runoff, noncompliant septic systems, and runoff from uplands.

The focus of this TMDL study is to better characterize phosphorus levels, probable sources, and estimated reductions required to meet water quality standards. From 2005 to 2007, water quality samples were collected throughout the watershed to determine phosphorus concentrations.



Nutrient Management

In addition, surveys, GIS data and personal contact were completed to quantify the individual nonpoint sources of pollution. The study determined that the annual watershed load is 4,575 kg/yr as total phosphorus under average conditions with the average lake phosphorus concentration at about 150 ug/L. To meet the water quality goal a 67 percent reduction of all watershed phosphorus and a 90 percent inhibition of lake sediment phosphorus fertilization is needed.

Sixty five comments were received during the initial comment period in 2009 resulting in the study being revised. A public meeting was held at the Picnic Point County Park on Lake Shaokatan to present information on the TMDL report and provided an opportunity for public comment. On an earlier project, Yellow Medicine River Watershed District cooperated with the Yellow Medicine SWCD, Lake Shaokatan Association, Sportsman's Club, Lincoln County Water Task Force, Lincoln County, Ducks Unlimited, U.S. Fish & Wildlife Service, Farm Service Agency, NRCS, DNR and MPCA to implement priorities like feedlot containment systems, wetland restorations, livestock exclusion, drain-tile rerouting and agronomic BMPs.

25. Anderson Lake

At one time this 350 acre shallow lake of 3 to 4 feet deep of water functioned as a feeding ground for waterfowl until Lincoln County constructed County Ditch 37 in 1920. After being drained it was used as a wet pasture, for hay and then plowed up until the landowners found it poorly suited for crops. In 1956, DNR purchased 60 acres of the lake bed and another 58 acres of adjoining upland to be included in the wildlife management area program.

When Lincoln County proposed making drainage improvements to County Ditch 37 in 1979, a lawsuit by DNR stopped the project. In turn, the DNR partnered with The Nature Conservancy through a large loan from the Richard King Mellon Foundation to purchase the remaining tracts of land, 290 acres of lake bed and 130 acres of adjoining upland. Today, the DNR manages water levels at a depth of 2.5 feet with a dam on County Ditch 37. Anderson Lake Wildlife Management Area at 600 acres is considered one of best birding locations in southwestern Minnesota.



Anderson Lake

26. Low Impact Logging

Seven Belgian and Belgian-cross horses were an important part of the effort to restore and protect a unique native prairie on 160 acres on Minnesota River Valley bluff land. Landowner Gary Lenz worked with the horses' owners to remove red cedar trees on more sensitive areas of the prairie to protect its integrity with its light soils, hills and steep ravine slopes. They are working with Green River Greening of St. Paul to develop a management plan and NRCS to fund conservation practices for cedar removal. In the future, the Lenz family hopes to make the site an outdoor classroom for students.



Hauling Logs by horse power

River Advocate – Tom Kalahar

A self-described river rat and district technician for the Renville SWCD, Tom Kalahar has spent over thirty years embracing the Minnesota River and doing his part to protect and restore this unique resource. Kalahar has been a leader in the conservation field by helping to enroll thousands of acres into conservation easements and installing hundreds of conservation practices on the ground. As a result, Renville County supports the most acres in the Conservation Reserve Enhancement Program (CREP) more than any other county in the Minnesota River Basin.



Tom Kalahar on the right confers with a landowner

Recently, Tom Kalahar played a leading role in the development of the Granite Outcropping Easement Program for a number of counties in the Upper Minnesota River portion of the basin. This program will help protect unique granite outcroppings and associated wetlands from hard rock mining. In his free time you will find Kalahar on the Minnesota River introducing people to the beauty of the river valley and its thriving fishery. He runs his own canoe rental business and leads paddling trips down to the Minnesota River to people of all ages.

Tom Kalahar set forth his vision for the Minnesota River: *Leaving as many perpetual easements both riparian and wetland restorations as possible on this agriculture dominated landscape. Protection of the Minnesota River valley and its rock outcrops. Raise a generation of kids that get it when it comes to how we need to live sustainable life style. Pass this earth on to other generations in better shape than when we inherited it. Change the federal farm policy in the country to be the solution and not the problem.*

27. Moonstone Farm

Located on a small watershed draining directly into the Minnesota River, Moonstone Farm is 240 acres of gently rolling bluff land offering a varied landscape, plenty of trees, and home to humans, cattle, alfalfa and hay, beaver and coyote, coneflowers and big blue stem. Moonstone produces natural, organic, grass-fed beef through perennial and multi-year cropping to reduce soil loss and increase organic matter. Most of the moisture falling on Moonstone Farm is absorbed by this grass and forested landscape before entering Moon Creek. Established in 1872 by the



Vineyard Production Work

Handeen Family, today the goal is to profit from crops and livestock by producing food for home consumption. Moonstone Farm also produces grapes, nut trees and other third crops along with their pasture grazing system to protect the creek and river from runoff.

28. Hooves and Wings Farm Field Day

Pheasants Forever, Sustainable Farming Association and the Land Stewardship Project sponsored a farm field day at Moonstone Farm in July of 2009 to learn about the multiple benefits of a diversified, grass-based farm and what individuals can do to create a healthy environment for the land and wildlife. Participants took in a number of presentations including a prairie flora and fauna tour of native prairie led by Kylene Olson of the Chippewa River Watershed Project. Moonstone Farm owners Richard



Prairie Flora and Fauna Tour

Handeen and Audrey Arner along with regional birding experts led a walking tour of the farm highlighting this unique working landscape.

Moonstone Farm has been transformed over the years from conventional row-crop agriculture into a diversified enterprise with grass-fed beef, herbs, grapes, and vegetables.

29. Madsen Prairie Grass Buffer

Steve Madsen and his sons farms 1,100 acres near Hwy. 71 running through Renville County in the Minnesota River Basin. A thousand of those acres produce the traditional

crops of corn and soybeans. The other 100 acres have been strategically planted into prairie grasses, tree windbreaks and shelterbelts. Enrolled into the Conservation

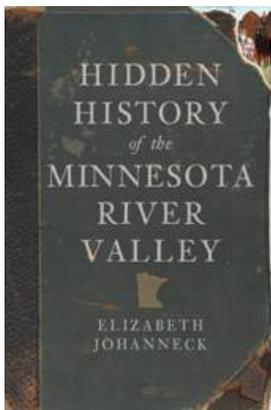


Reserve Program (CRP), 50 of those acres are planted in a riparian buffer along a bluff overlooking the Minnesota River. This native plant buffer filters sediments and nutrients off of cropfields to keep it from reaching public waters along with providing valuable wildlife habitat.

Madsen became inspired to take land out of production when the Minnesota DNR purchased 320 acres near his farm. He saw how the restored wetlands and native prairie protected water quality and attracted a wide variety of wildlife like whitetail deer and Ringneck pheasants. A Renville County farmer since the early 1970s, Madsen has served on the local Soil and Water Conservation Board for 12 years. Madsen has also put in shrubs and trees like lilac and red cedar to help keep snow off Hwy. 71 and wildlife plantings. Originally this story came from "Minnesota Water Stories," a MPCA program highlighting videos of people working to protect and restore the state's waterbodies.

30. Book: Hidden History of the Minn. River Valley

People, places, events, lore, and other stories of the Minnesota River Valley can be found in this nonfiction



book by Elizabeth Johanneck known for her Minnesota County Mouse Folk Blog. Learn about Andrew J. Volstead, the Olof Swenson Farm, the Granite Falls Grinder, Bootlegger's Supper Club, Jerry Ostensoe, among other stories of what is unique about this river valley. This is especially true of the characters that have made it their home.

31. Kandiyohi County Drainage

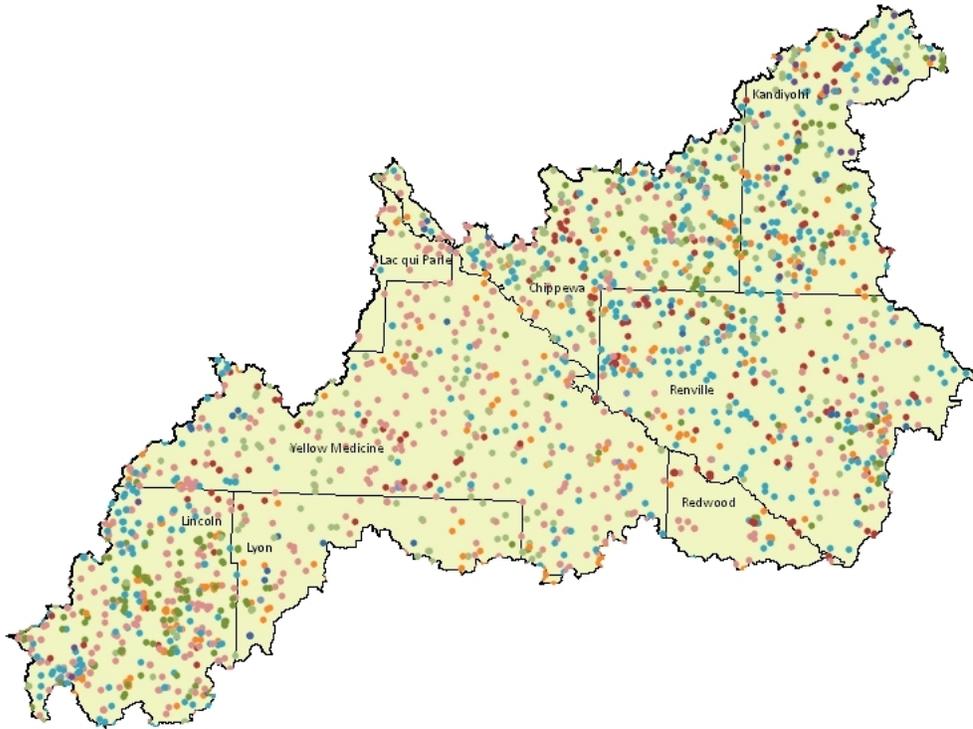
To reduce sediment, nutrients and other pollutants from reaching lakes and rivers, Kandiyohi County began to implement Best Management Practices (BMPs) like biofilters, rock inlets, drop inlets and stream barbs. According to the county Drainage Inspector Loren Engelby, they are focusing on water quality by taking responsibility for these issues in the agriculture community through improvements to the 850 miles of publicly owned drainage ditches and tile lines.

One of the BMPs the county has initiated is an underground bed of wood chips or biofilter to slowly filter water runoff from cropfields. The biofilter is a seven foot deep hole measuring 10 by 30 feet filled with 30 cubic yards of woodchips. Engelby said research has reported this construction practice has the potential of removing 90 percent of nitrates from water flowing through tile lines. Half of the \$3,000 project came from the Hawk Creek Watershed Project and water quality monitoring to measure the effectiveness of the biofilter will be paid by the county water plan.

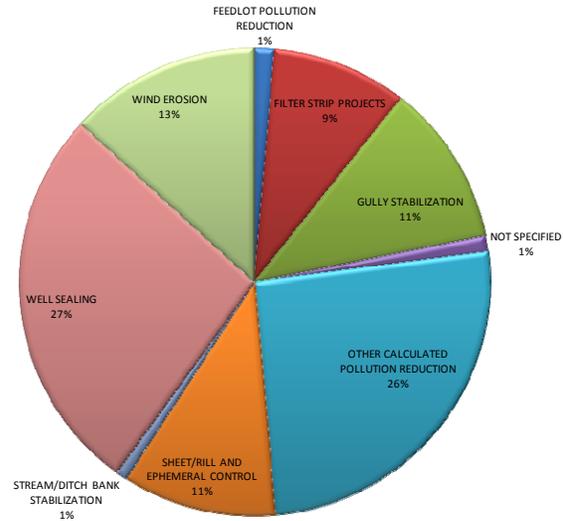


Kandiyohi County is installing additional BMPs like alternative intakes in fields by using a bed of rocks to filter out sediment and phosphorus. Stream barbs (large rocks along the ditch banks) are being used to push the water current back into the middle of the ditch to prevent erosion. All of this work is paid by the landowners benefiting from the drainage. Eight of the drainage systems will go through a redetermination of benefits process to make sure all landowners are paying their fair share. The county is also reaching out to landowners with private drainage systems by providing information on research, installation and cost share of BMPs.

Hawk Creek & Yellow Medicine River Watershed Conservation Practices

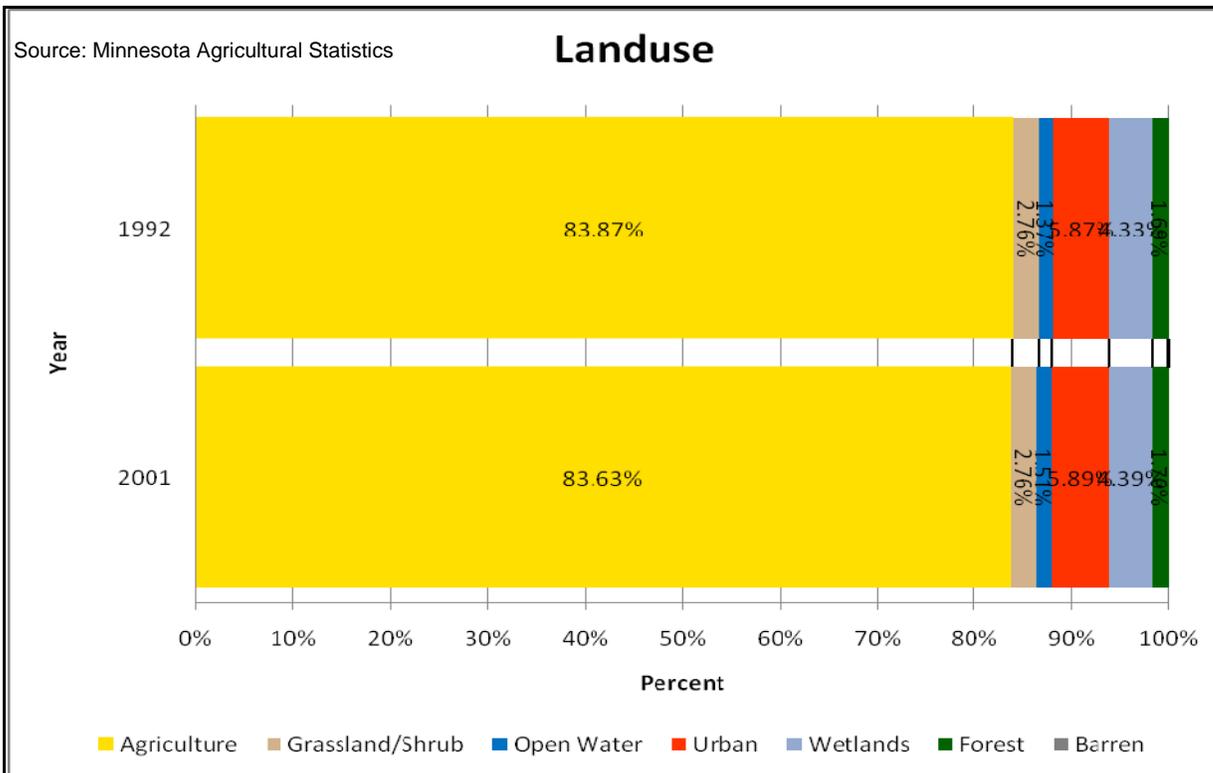


Hawk Creek-Yellow Medicine River Major Watershed

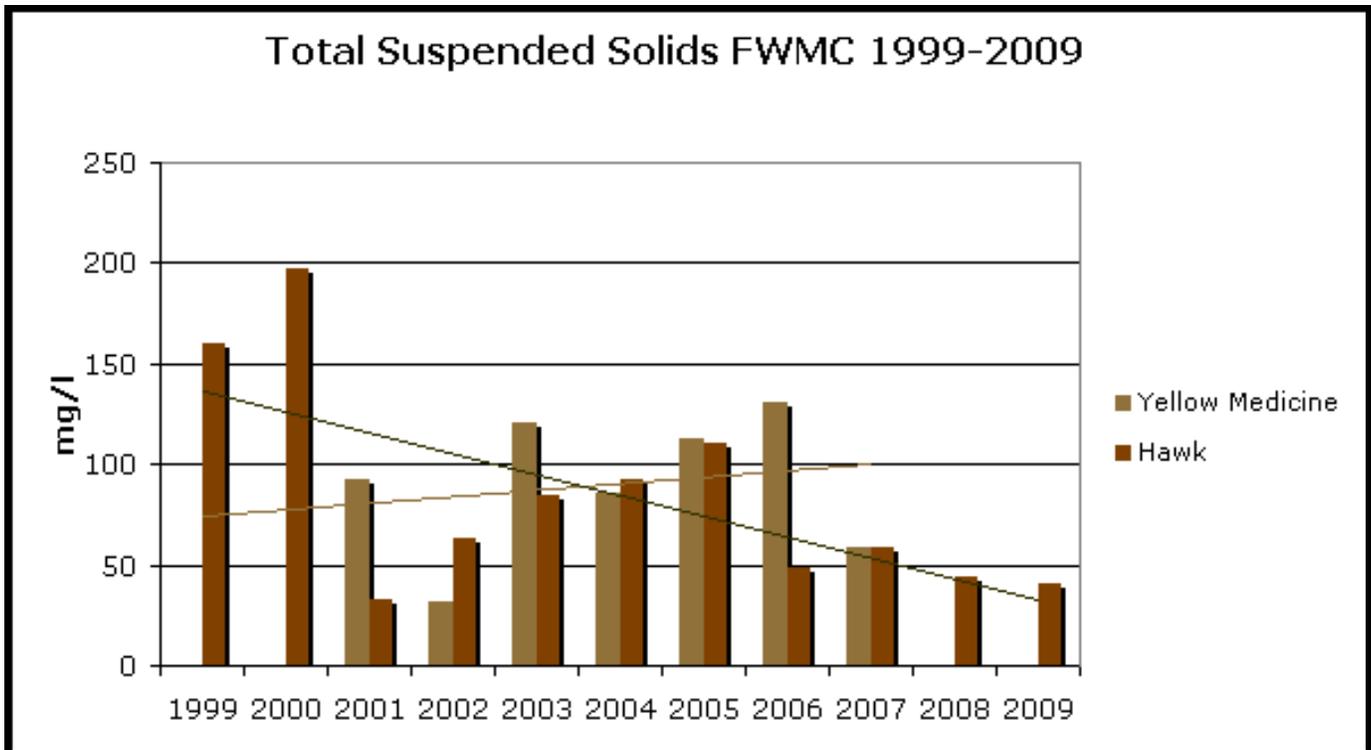


Conservation Practices

An effort for improving water quality picked up steam in the 1990s on both sides of the Minnesota River. The map above and pie chart to the right illustrates conservation practices in the Hawk Creek – Yellow Medicine 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 Hawk Creek and Yellow Medicine Watershed but not recorded in either LARS or eLINK.



Hawk Creek & Yellow Medicine River Watershed Pollution Reduction

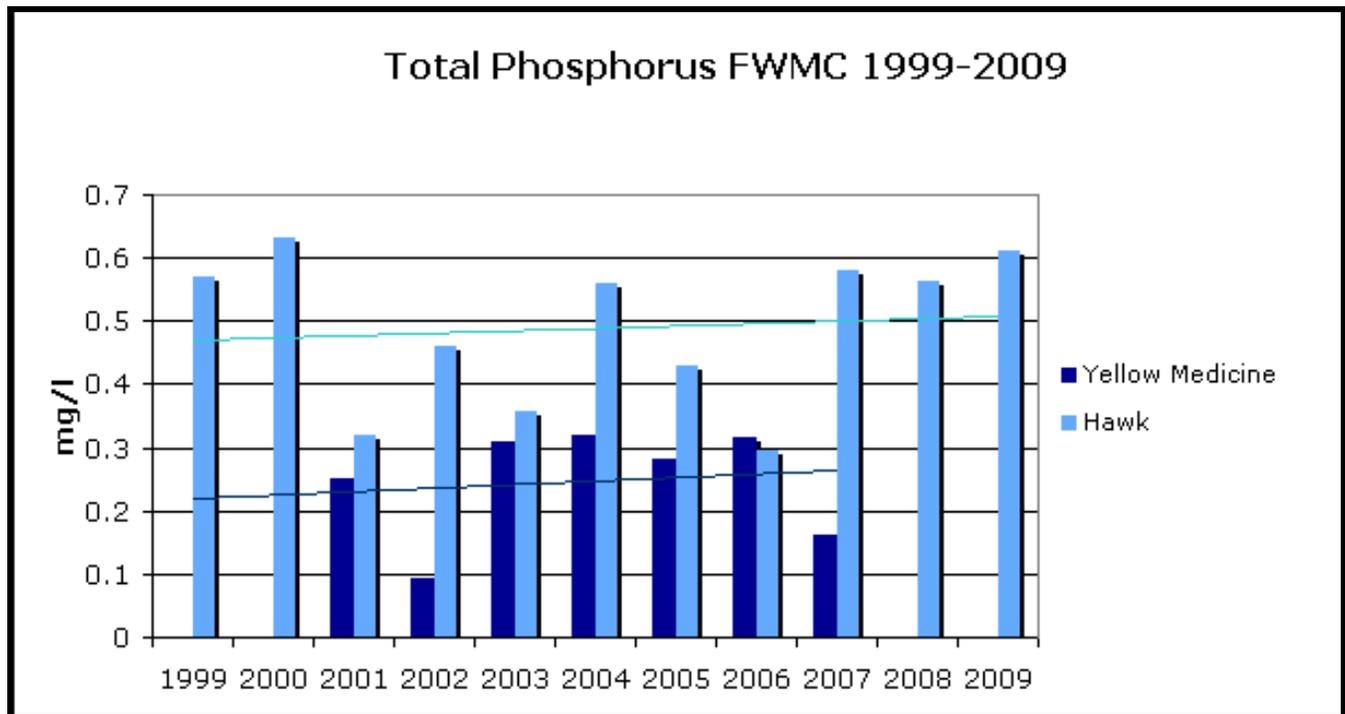


Hawk Creek

The Hawk Creek Watershed Project (HCWP) started monitoring water quality in 1999. The first two years of monitoring revealed very high TSS in nearly every stream in the watershed. In 2001, a dramatic decrease in TSS was observed in Hawk Creek. While TSS has fluctuated since, the 2008 and 2009 results represent two of the three lowest over the past decade. The MN River Conservation Reserve Enhancement Program (CREP) began in the fall of 1998 and by 2001 a noticeable change was occurring in the riparian landscapes in the watershed. The newly established native grasses and wetlands, both in and out of the floodplain, were beginning to make a measurable impact with respect to sediment levels in adjacent streams. Along with CREP, the Hawk Creek Watershed Project received agricultural best management practice (BMP) cost-share dollars in 2001. These dollars have undoubtedly made an impact in reducing sediment transport in the watershed as well.

Yellow Medicine River

Water quality monitoring was collected over a series of time periods (1997 to 1999, 2002 to 2005 and 2005 to 2008) by the Yellow Medicine River Watershed District (YMRW). The 2001 to 2007 represent the years after the YMRW District began to work with its partners including the three county Soil and Water Conservation Districts of Lincoln, Lyon and Yellow Medicine on an implementation phase. Under the Greater Yellow Medicine River Phase II CWP implementation project, a wide variety of conservation practices were installed using incentive dollars and technical assistance along with utilizing the CREP, CRP and RIM programs. This effort also included upgrading septic systems and several information and education initiatives. According to the YMRW District, the Yellow Medicine River watershed discharges are highly variable in both runoff and nutrient discharges. However, much of the data could be explained by random occurrence. A need for continuing monitoring to bring further certainty to the data interpretations has been stressed. The YMRW District reports that reductions in total suspended solids appear to be substantial in most of the sub watersheds and indicate a dampening of erosion rates.



Hawk Creek

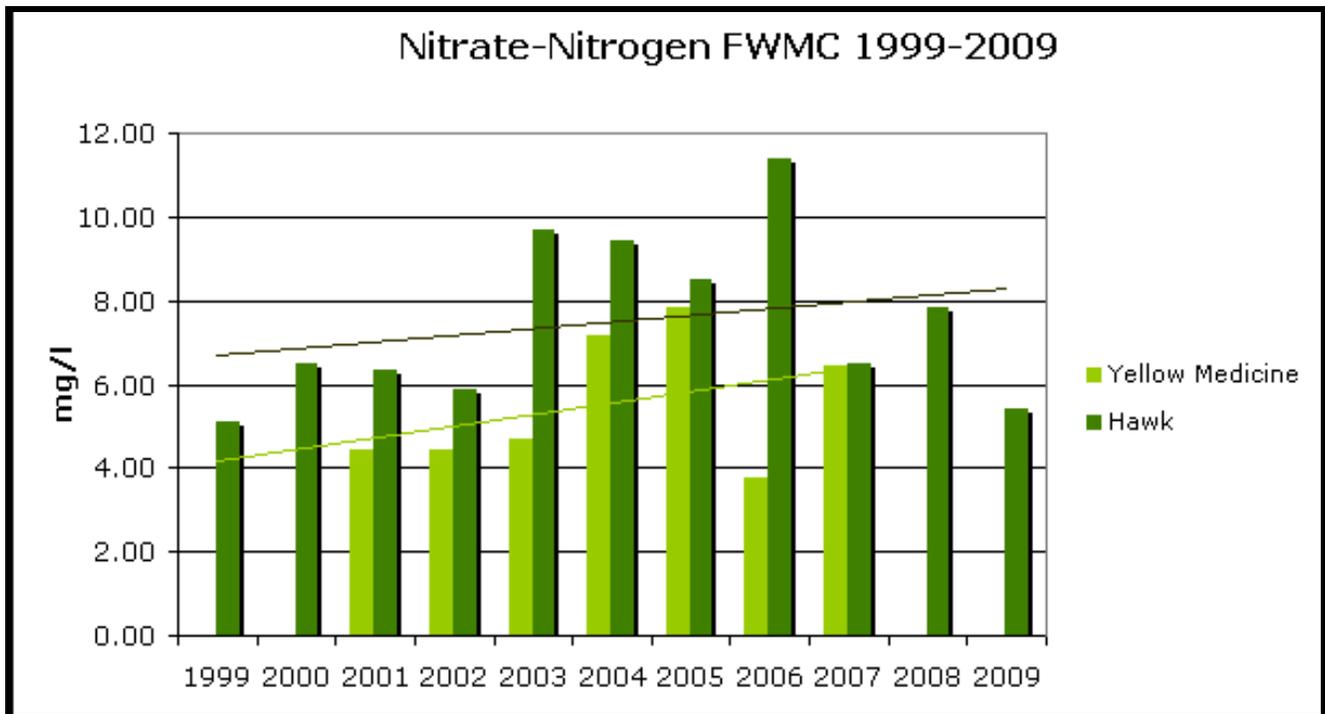
Phosphorus levels in Hawk Creek were high at the on-set of the HCWP monitoring efforts in 1999 and 2000. Levels were lower from 2001 through 2006, only to rise again in the later part of the decade. The overall trend line is basically flat over the past ten years. While the elevated levels over the past three years are a little discouraging, it is an accomplishment to have weathered the ethanol boom years and not have increased phosphorus levels in the watershed as compared to a decade ago. If TSS continues to trend downward, we (HCWP) expect that phosphorus will eventually follow that downward trend as well. One significant contributor, the City of Willmar, is scheduled to have a new wastewater treatment facility up and running in the fall of 2010.



Yellow Medicine River

Water quality monitoring data indicates that total phosphorus remained approximately the same within most of the sub-watersheds; however the data indicates a reduction at site 1 which is near the river mouth (confluence with the Minnesota River at Upper Sioux Agency State Park) and represents the entire watershed discharge according to the Yellow Medicine River Watershed District. Starting in the 1980s, a partnership between federal, state and local agencies has made it a priority to upgrade wastewater treatments which is a major source of phosphorous throughout the Minnesota River Basin the community of Minneota.





Hawk Creek

Nitrogen levels within the watershed have exceeded ecoregion standard for much of the past 10 years. The middle of the decade, from 2003-2006, a marked increase was noticed. This is likely due to the fact that these years coincided with an increase in corn production as the ethanol industry was booming. Many producers began to crop corn in the same field year after year, a practice that requires significant nitrogen inputs. Since 2006, nitrogen levels have dropped significantly. This is due in part to the price of corn falling and the price of fertilizer inputs rising. Simply from an economic standpoint, producers are becoming more cognizant of the amount of nitrogen they are applying, as it is expensive to over-apply. The 2009 season revealed the lowest nitrogen concentration in over a decade, a trend that hopefully continues.



Hawk Creek Confluence with the Minnesota River



Yellow Medicine River Confluence with the Minnesota River

Yellow Medicine River

In a Greater Yellow Medicine River Phase II CWP Final Report to MPCA, the Yellow Bank River Watershed District stated, "nitrate-nitrite nitrogen and the total nitrogen [levels] seem to be less influenced by the implementation activities. Water quality studies have pointed that nitrate rates are driven by climate compared to other water quality parameters including Total Suspended Solids and Total Phosphorus.