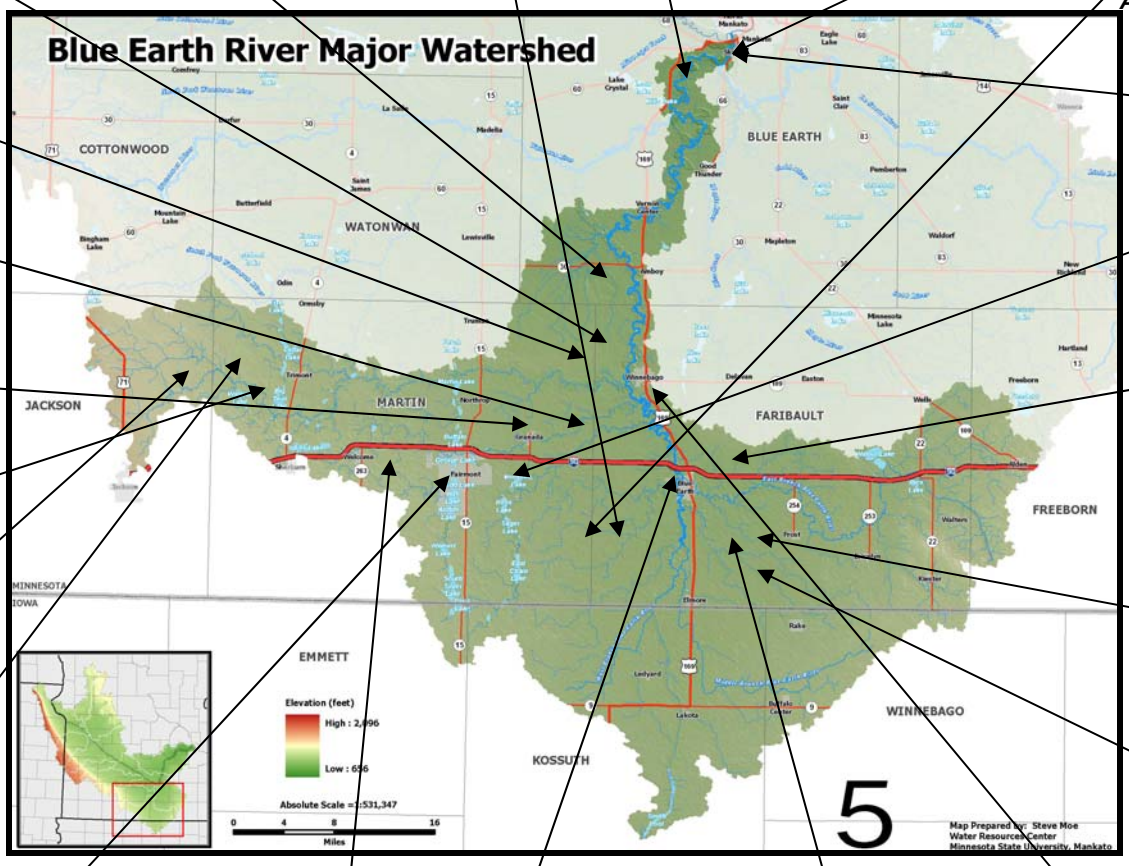
Blue Earth River Watershed

Part of the Greater Blue Earth River Basin, which also includes the Le Sueur River and Watonwan River watersheds, the Blue Earth River Watershed is characterized by a terrain of gently rolling prairie and glacial moraine with river valleys and ravines cut into the landscape. The Blue Earth River Watershed drains approximately 1,550 square miles or 992,034 acres with a total of 775,590 acres located in Minnesota and the rest in Iowa. Located in the intensive row-crop agriculture areas of south central Minnesota, this watershed carries one of the highest nutrient loads in the Minnesota River Basin. Major tributaries are the East, Middle and West branches, Elm and Center creeks along with smaller streams, public and private drainage systems, lakes and wetlands. Fairmont is the largest city in the Blue Earth River Watershed with part of the City of Mankato flowing into the river as it meets the Minnesota River.


Monitoring the Blue Earth River



15. BERBI Comprehensive Nutrient Management Plan

16. Conservation Marketplace of MN

17. Greater Blue Earth River Basin Initiative

18. Blue Earth River Landing

19. Mankato Sibley Parkway

20. Greater Blue Earth River Basin Alliance (GBERBA)

14. Blue Earth River Basin Initiative (BERBI)

21. Mankato Wastewater Treatment Plant

13. BERBI Intake Initiative

22. Simply Homemade

12. Rural Advantage

1. Faribault SWCD Conservation Practices

11. Dutch Creek Farms

2. Small Community Stormwater Project

10. Elm Creek Restoration Project

3. Faribault SWCD Rain Barrel Program

9. Center & Lily Creek watersheds CWP

7. Martin SWCD

6. Small Community Stormwater Workshop

5. GBERBA Clean Water Legacy Grant

4. Faribault Co Septic System Upgrade Project

8. Fairmont Rain Gardens

The river banks are from 20 to 80 feet high. The country is still more beautiful – we proceeded on about 5-8 miles more and encamped on the Mankato from which [Blue Earth River] rocky banks we could see above the woods and the windings of the river. This scenery is beautiful; the river is often interrupted by rocks and rapids. - Joseph Nicollet, August 16, 1838; Joseph N. Nicollet on the Plains and Prairies: The Expeditions of 1838-39 with Journals, Letters, and Notes on the Dakota Indians.

BLUE EARTH RIVER WATERSHED

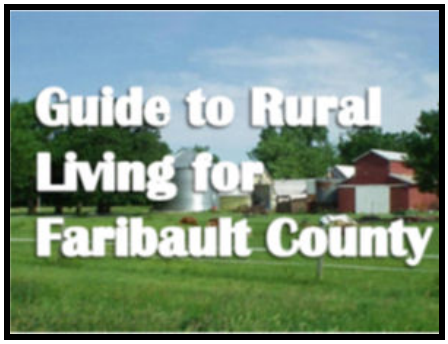
The Greater Blue Earth River Basin Alliance (GBERBA) formed in the summer of 2003 to create an organization dedicated to improving and protecting water resources in the Blue Earth River, Le Sueur River and Watonwan River watersheds. GBERBA works with the counties, SWCDs, state agencies, nonprofit organizations and others to work together installing conservation practices throughout the watershed along with connecting citizens to the Blue Earth River.

1. Faribault Soil and Water Conservation District

To improve water quality, reduce soil erosion and enhance wildlife habitat in Faribault County, the SWCD office works with the Faribault Planning and Zoning Department, Greater Blue Earth River Basin Alliance and many other organizations and citizens. In 2008, Faribault SWCD installed 17 projects utilizing state and Clean Water Legacy cost-share funding reducing 14,967 tons of sediment and 13,661 pounds per year from flowing into local waterways. Nine rock tile inlets were installed, saving 328 tons of sediment and reducing phosphorus by 488 pounds annually. The Stormwater Management Program assisted in the installation of six rain gardens, organized five workshops and worked with 11 communities providing stormwater education and outreach.


Grass Waterway

One recent effort included hiring of a resource conservation technician to assist Faribault SWCD in implementation of the Drainage Maintenance Program involving ditch inspections, inventories, and providing assistance to the County Drainage Authorities. This combined position will also assist with the county septic program, noxious weed program, and tile camera program. Faribault SWCD has also developed a "Guide to Rural Living" on their website to educate new, existing and potential homeowners within county about the rules and regulations that exist regarding rural living. One of the major conservation efforts has been the installation of rock tile inlets.




Storm Water Field Da

2. Small Community Stormwater Project

This project was developed to increase the understanding of the causes of storm water pollution, the consequences of stormwater, and options for managing stormwater in small, non-MS4 communities. An Urban Outreach Specialist works with individual communities' educational efforts and assisting with stormwater projects.

In July of 2008, a Stormwater U: Designing for Volume Control workshop was held in Faribault County by the University of Minnesota Extension Service, Washington Conservation District and BARR Engineering. The comprehensive training focused on designing large and small scale bioretention and infiltration practices for stormwater volume and quality control. Designers, engineers, SWCD technicians, and others attended the day-long training to learn about the most up-to-date techniques to ensure successful projects in their communities.

3. Faribault SWCD Rain Barrel Program

To promote stormwater conservation practices, Faribault SWCD through its urban outreach program offered rain barrels made out of recycling materials including old plastic or oak (wine) barrels for sale along with new hardware purchased from local stores. Faribault SWCD stresses this is a good way to transform something old into a functional rain barrel that captures and stores rain water preventing it from flowing untreated


Rain Barrel Giveaway

into local waterways. The program is promoted in local newspapers, flyers, a newsletter, and on the SWCD web site. During a rain barrel truckload sale on August 27 – 28, 2009 a total of 125 rain barrels were purchased through a multi-county region. The barrels were offered to the homeowners at wholesale cost through the county's Small Community Stormwater Project.

4. Faribault County Septic System Upgrade Project

Septic system upgrades have been the focus of a partnership between the Faribault SWCD and the county Planning and Zoning Office. Both organizations have been actively involved in establishing a plan to get all non-compliant septic systems upgraded throughout the county, including all unincorporated areas. Faribault County adopted an Subsurface Sewage Treatment Systems (SSTS) Ordinance requiring a septic system upgrade at property transfer and upon application of a building permit. This ordinance will enhance the current 12-year plan and effort to increase the compliance rate. Both groups have also been actively involved with an ongoing wastewater project in the unincorporated village of Huntley by piping wastewater from 50 homes and 10 businesses to a nearby municipal wastewater treatment facility.

Village of Huntley

5. GBERBA Clean Water Legacy Grant

The Greater Blue Earth River Basin Alliance (GBERBA) was awarded two Clean Water Legacy grants from BWSR to provide targeted technical assistance to landowners along with cost-share funds for agricultural and riparian BMPs in 2007. GBERBA focused on accelerating basin-wide projects to lower phosphorus levels during low flow conditions in the Greater Blue Earth River Basin to work towards meeting standards of the Lower Minnesota River Dissolved Oxygen TMDL.

Cost share to install seven different BMPs were offered landowners to for phosphorus and sediment reduction in the basin along with holding back and slowing down overland flow into these waterways. BMPs included Alternative Tile Intakes (46), Diversion (634 feet), Grade Stabilization Structure (2), Grass Waterways (23,930 feet), Pond (1), and Streambank and Shoreline Protection (1,150 feet) and Terraces (2).

6. Small Community Stormwater Workshop

In July 2008, a Stormwater U: Designing for Volume Control workshop was held in Faribault County by the University of Minnesota Extension Service, Washington Conservation District and BARR Engineering. The comprehensive training focused on designing large and small scale bioretention and infiltration practices for stormwater volume and quality control. Designers, engineers, SWCD technicians, and others attended the day-long training to learn about the most up-to-date techniques for ensuring successful projects in their communities.

Constructing a rain garden

7. Martin SWCD

Most of Martin County is located in the Blue Earth River Watershed with a portion in Watonwan River Watershed and the southwest part is out of the basin (Des Moines River Watershed. Martin SWCD offers a wide range of programs for county residents ranging from cost-share to conservation practices to an information and education initiative. Each year this SWCD office publishes a "Conservation Update" for the county-wide paper and hosts an Environmental Awareness Day for 5th grade students to help them become more aware of their responsibility to the environment.

The Native Buffer Cost-share Program concentrates on declining species and incorporates only local ecotype plants that are of a high priority. Martin SWCD has received a LCCMR grant to develop a Prairie Ecosystem Restoration Project to establish local ecotype native plants on land protected by perpetual conservation easements. Plant materials will be collected from remaining prairie remnants, propagated seeds planted on RIM easements.

For the Martin County Centennial, the SWCD office established a native planting on three sides of the

Courthouse and has been used as an educational tool. A total of 150 contracts were enrolled in CREP with 4,547 acres put into permanent easements. Out of these contracts, 93 were for wetland restorations at 1,965 acres. Several of these wetlands have been monitored by the University of Minnesota to collect data on water quality and water retention.


Wetland Restoration

8. Fairmont Rain Gardens

Two rain gardens – a 4,500-square foot and a 2,500-square foot – were constructed by Martin SWCD and city officials to help clean up stormwater before entering into local waterways. Both located in Lincoln Park, the rain gardens will hold rain water to let it slowly seep back into the soil. Martin SWCD has also offered to work with citizens in the City of Fairmont to build rain gardens on their own property including providing technical assistance and 75 percent cost-share. Native plants will be used in the rain gardens because of their massive root systems, which help filter the water and reduce erosion.


Lincoln Park Rain Garden

9. Center and Lily Creek watersheds CWP

Based on the 1996 Phase 1 Diagnostic Study of the Blue Earth River Watershed, Center and Lily Creek Watersheds were chosen as a priority area for an implementation project. Over the life of the project, 266 acres were put into filter strips, restored 1,361 acres of wetlands, set aside 24 acres for riparian buffers, enrolled 6,071 acres into residue management and 50 acres in an alternative easement for a total of 7,773 acres contributing to improving water quality. These conservation practices helped reduce total phosphorus by 41% and some reduction of total suspended solids.

In addition the project paid cost-share for the installation of 21 rock tile inlets, 1 bio-retention pond, 1 grade stabilization, 1 streambank stabilization, 19 rain gardens, and 250 rain barrels. The project helped out Martin SWCD with a rain barrel program by conducting classes on the use and construction of these plastic barrels. The barrels were supplied by Fairmont Foods and Hormel in Austin, who had been sending them to the landfill.


Wetland Restoration

Other educational efforts included a "No Dumping" in our storm sewer campaign, publishing a yearly newsletter and conducting a rain garden workshop. The project held nutrient management meetings, citizen stream monitoring workshops and presentations for schools and community events. The Center and Lily Creek watersheds CWP was also instrumental in sponsoring the Prairie Ecology Bus and also created an informational kiosk at Everret Park on Fox Lake.

10. Elm Creek Restoration Project

Martin SWCD along with the University of Minnesota and MPCA started a stream restoration project on an impaired section of Elm Creek in November 2007 to stabilize and restore the riverbank. The project demonstrated cost-effective methods to reduce channel erosion, sediment load and enhance channel stability. To divert stream-flow away from actively eroding banks by reducing erosive peak flows, construction activities involved re-grading channel banks and place-ment of natural tree structures and root wads, into an abandoned oxbow channel. The final construction phase stabilized the streambank by planting native grasses on the upland areas and willows on the creek's perimeter.


Planting native vegetation

11. Dutch Creek Farm

On their 4,460-acres of cropland, Dick and Diane Gerhardt are using innovative farm technology by utilizing no-till on all of their acres and using mostly hog manure as fertilizer with nitrogen side-dressed as needed. Under the EQIP program, the Gerhardt's are converting to strip till to avoid building up excessive nutrients in the soil along with reducing soil erosion and improving water quality. Under the Conservation Security Program (CSP) program they have planted filter strips and trees around the farmstead and hog sites, established waterways, and improved their pasture.

Diane and Dick Gerhardt

12. Rural Advantage

This nonprofit organization based out of Fairmont works with farmers to utilize third crops in addition to their soybean and corn rotation. Some of these alternative crops include alfalfa and native grasses from which seeds are harvested and sold or be used as bioenergy to make ethanol. These types of crops hold soil in place better than row crops and filter out fertilizers that carry phosphorus into streams. To promote third crops, Rural Advantage hosts a series of producer meetings annually. One meeting focused on the production of four different fruits – Aronia Berries, grapes, serviceberries, and apples.

Rural Advantage is heavily involved with a program using conservation efforts to reduce nutrient runoff by keeping it in the soil and out of the water. Some of the conservation practices range from perennials, water storage and cover crops, with the goal of promoting markets for third crops instead of land retirement. Recognized as an expert on nitrogen runoff, Company President and founder Linda Meschke was interviewed by filmmakers producing a film on the dangers of hypoxia in the Gulf of Mexico.

Conservation Tour

13. Blue Earth River Basin Initiative (BERBI)

In thirteen years of existence (1993 to 2006), the Blue Earth River Basin Initiative (BERBI) was one of the first groups to join forces to create a new alliance for developing conservation-related projects in the basin. A coalition of Soil and Water Conservation Districts from seven counties came together to work on watershed management by using grant money to provide cost-share on conservation projects for landowners and farmers.

Over its lifespan, BERBI brought in nearly $5 million in grant funding to help install terraces, Agricultural waste improvements, sediment control structures, buffer strips around open tile intakes, streambank stabilizations, individual septic system upgrades, and community wastewater projects. The number of projects installed by BERBI has been estimated to have reduced 75,000 tons of sediment and 72,000 pounds of phosphorus annually from reaching the Blue Earth River. Officially formed in 1993, this Joint Powers Organization of Soil and Water Conservation Districts (SWCDs) came from Blue Earth, Cottonwood, Jackson, Martin, Steele, Waseca and Watonwan counties.

Launch of the Blue Earth River Basin Initiative

14. BERBI Comprehensive Nutrient Management Plan

In 2004, the U.S. Department of Agriculture and the Natural Resources Conservation Service (NRCS) initiated the Conservation Security Program (CSP) to provide financial rewards to farmers and ranchers practicing conservation on their working lands that meet NRCS soil and water quality criteria.

BEBRI was selected to pilot this program that also provides financial incentives to those who expand their conservation efforts through implementing management activities that involve enhanced protection beyond minimum requirements. As a result of the CSP, comprehensive nutrient management was applied to approximately 25,000 acres of corn/soybeans with annual pollution reductions of 125 tons of nitrogen and 187.5 tons of phosphorus. Twenty-four producers participated in a three-day field seminar that had soil analyses conducted and a discussion on state feedlot regulations.

15. BERBI Tile Intake Initiative

Funding from the US EPA 319 program concentrated on elevating awareness about the environmental impacts of open tile intakes in the Blue Earth River Basin. The project promoted this issue through the wide distribution of a fact sheet, holding nine field demonstrations and working with county and SWCD staff on the environmental impacts of tile intakes. By removing 23 open tile inlets, installing rock tile inlets or more concentrated buried tile at 347 locations and planting of nine vegetative buffers helped reduce an estimated 379 tons of sediment per year. Education activities resulted in contacts with landowners owning 25 percent of the watershed's open tile intakes.


Construction of a rock tile inlet

16. Project Spotlight: Conservation Marketplace MN

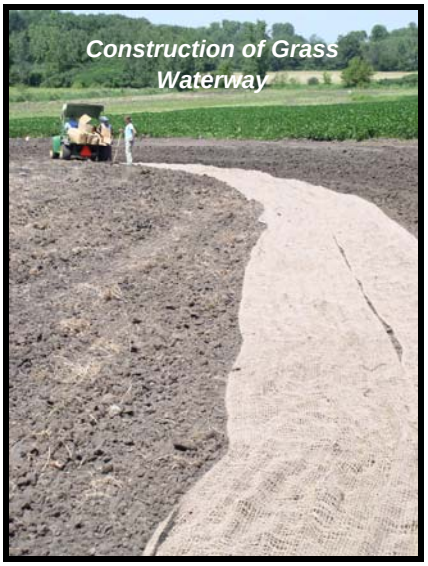
The Minnesota River Board is working with three watershed groups representing the Sauk River, Blue Earth River, and the middle and lower reaches of the Minnesota River to launch an ecosystem credit trading program. Landowners who put in conservation practices to reduce targeted pollutants like phosphorus in waterways would be compensated under this new program called Conservation Marketplace of Minnesota. Cities who need to upgrade wastewater treatment plants to meet new tougher water quality standards could buy these eco-credits from farmers who in turn would make a profit off of their conservation practices. Grant funding and in-kind services totaling more than a $1 million have been committed to successfully getting this program up and running. The goal is to create a voluntary marketplace like the Chicago Carbon Trading Market. In addition, the program could offer more flexibility than a government program because it would allow selling credits for multiple benefits.


Conservation Marketplace Team

17. Greater Blue Earth River Watershed Initiative

This initiative to improve water quality came together in 2003 to install conservation practices in the Greater Blue Earth River Watershed. In a short four years the Greater Blue Earth River Watershed Initiative helped provide cost-share and technical assistance on 232 Best Management Practices (BMPs) and put in 190 acres of riparian buffers.

BMPs installed in the watershed have included twenty-six traditional implementation cost-share projects (13 agricultural waste projects, four stream bank stabilization projects, four terrace/ sediment blocks, three waterways and one grade stabilization; 17 innovative implementation cost-share projects (six tile intake conversions, four wetland restorations, four innovative stream/ stream bank projects and three water storage retention projects and initiated seventeen 20-year easements converting 120 acres of environmentally sensitive land to perennial crops.


Construction of Grass Waterway

Part of this effort was to look at alternative farming methods like organic livestock production. An Organic Livestock Production and Marketing Seminar was attended by over 30 people to learn about marketing and production of organic livestock. The initiative wanted to encourage productive conservation measures to make improvements to environmental quality and continuing productive use of the land. In addition, an Ag Waste Pit Abandonment Training was conducted by the Watonwan SWCD.


Information Booth


Paddling on the Blue Earth River

19. Blue Earth River Landing

In the summer of 2009, Blue Earth County constructed a new landing and parking lot on the Blue Earth River at the intersection with County Road 90. Paddlers now have a safe access to the river including a place to park their vehicles and a 500-foot trail down to the water. Before this new landing, paddlers used the Jones Ford Crossing for access after the Rapidan Dam but there were safety issues because of no parking except along the roadway.


View of the Minnesota River from Riverfront Park in Mankato

20. Mankato Sibley Parkway

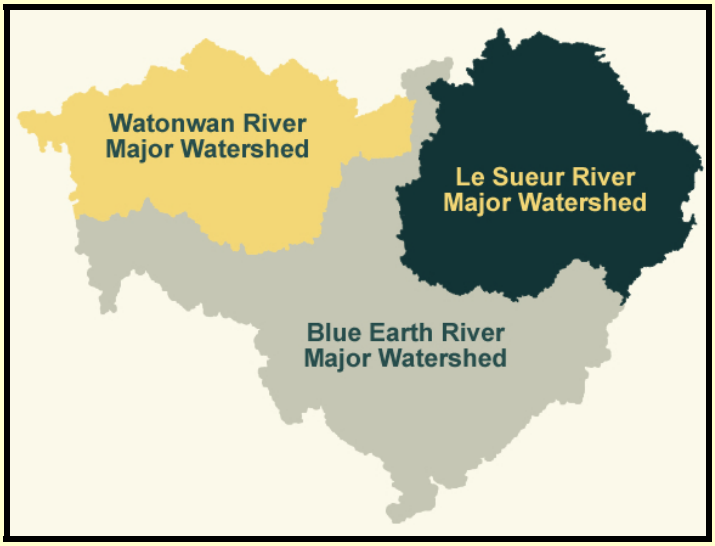
The City of Mankato worked with the DNR and U.S. Corps of Engineers to develop a new park along the Minnesota River and cover up an old lime sludge pit, once used to store a chemical used to treat drinking water. To redirect water back into the channel and prevent streambank erosion, four rock weirs extending up to 100 feet into the river and angled upstream were constructed. These weirs and other boulders placed in the water will also help create fish habitat. The seven acre mini-park will slope down to the river with native plants to add an aesthetic quality to the Minnesota River as it flows past the floodwall.

21. Organization Spotlight - Greater Blue Earth River Basin Alliance

The mission of the Greater Blue Earth River Basin Alliance (GBERBA) is to lead in the promotion of economically viable watershed activities through the combined efforts of partners and this Alliance. Formed during the summer of 2003 when two natural resource groups (Blue Earth River Basin Initiative and the South Central Minnesota Comprehensive Water Planning Project) joined forces to form GBERBA.

GBERBA brought together the educational, regulatory, inventory, monitoring, planning and land & water treatment capabilities of local government within the Greater Blue Earth River Basin. This alliance consists of Commissioners and County Local Water Management staff, Soil and Water Conservation (SWCD) Supervisors and staff of nine counties – Blue Earth, Cottonwood, Faribault, Freeborn, Jackson, Le Sueur, Martin, Waseca, and Watonwan.

GBERBA has a vision to restore and revitalize local water resources to improve the quality of life, local communities and its citizens. Part of this effort has been sharing resources among the partners by securing funding for positions to conduct resource programs including a Small Communities Stormwater Project, a Conservation Agronomist and a Nutrient Management.



The group also hosts field tours to highlight effective conservation practices like the July 2007 tour of the Judicial Ditch 10 wetland restoration. The Small Communities Stormwater Project created an Urban Outreach Specialist position to assist Faribault and Martin counties' communities with issues revolving stormwater. A Conservation Agronomist promotes sustainable farming systems and the Nutrient Management position develops nutrient management plans for landowners.

This joint-powers organization has received Clean Water Legacy funding in excess of $1.5 million to be used as loans for agricultural BMPs, upgrading non-compliance septic systems, and to hire a number of conservation resource positions. These funds along with contributions from landowners and other agencies have led to the installation of a variety of conservation practices: one diversion (634 feet), two grade stabilization structures, 20 grass waterways (26 acres), one pond, four streambank and shoreline protection projects (1,150 feet), two terraces (0.8 acres), nine water and sediment control basins and 46 alternative tile intakes.


Grass Waterway

River Advocate – Linda Meschke

As the founder and president of Rural Advantage, Linda believes in developing a balance between agriculture and protecting water quality in the Minnesota River Basin. Rural Advantage is a nonprofit organization dedicated to continuing the Third Crop Initiative started under the Blue Earth River Basin Initiative (BERBI). Linda and Rural Advantage promotes the connections between agriculture, the environment and rural communities in order to improve ecological health, economic viability and rural vitality. This Park Rapids native grew up on a family beef farm and came to southern Minnesota in 1988 to work as an agriculture inspector for Martin County before getting involved in BERBI. Linda serves on the Martin SWCD Board of Supervisors.

22. Mankato Wastewater Treatment Plant

The recently constructed water reclamation facility in Mankato not only treats effluent from its wastewater treatment plant but also supplies treated water for a nearby privately owned electric power generation plant. Built by Calpine Corp, an independent power producer that focuses on clean natural gas and geothermal electricity generation, this project is the first in the state to treat municipal wastewater for industrial use.


Mankato Wastewater Treatment

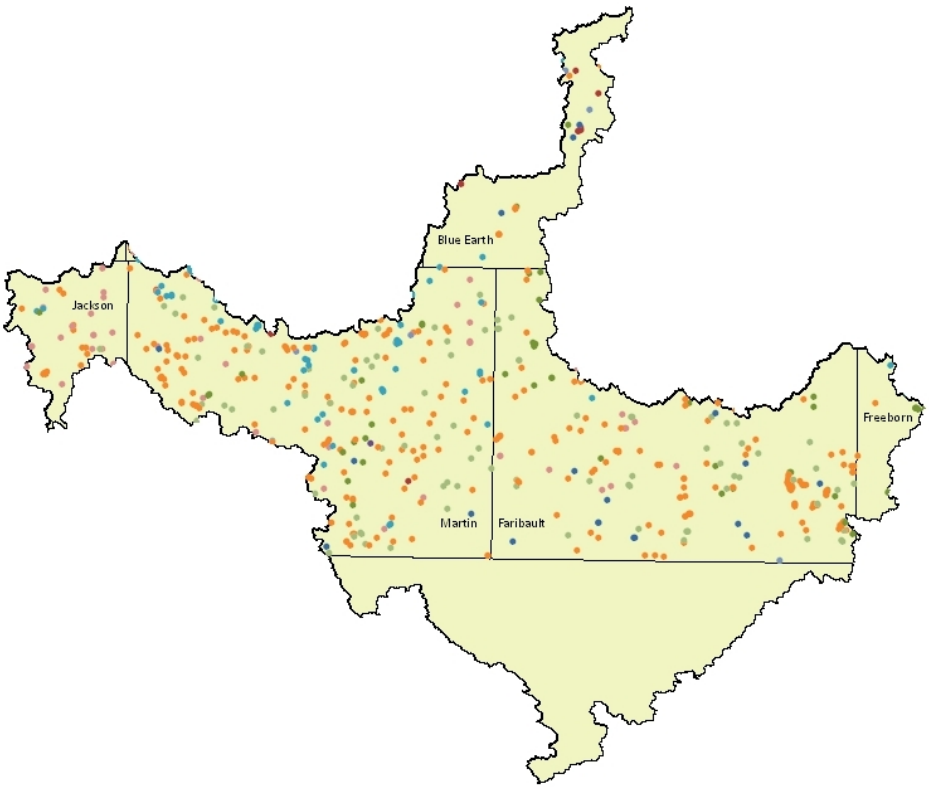
The $20 million, two-state tertiary treatment facility is also helping improve water quality in the Lower Minnesota River and preserve the city's drinking water supply. The first stage removes phosphorus to a concentration well below the state's requirements, and the second stage filters and chlorinates the water to a level suitable for cooling and process use. In 2007, the facility earned Project of the Year in the Environment category (for projects greater than $10 million) from the Minnesota Chapter of the American Public Works Association.

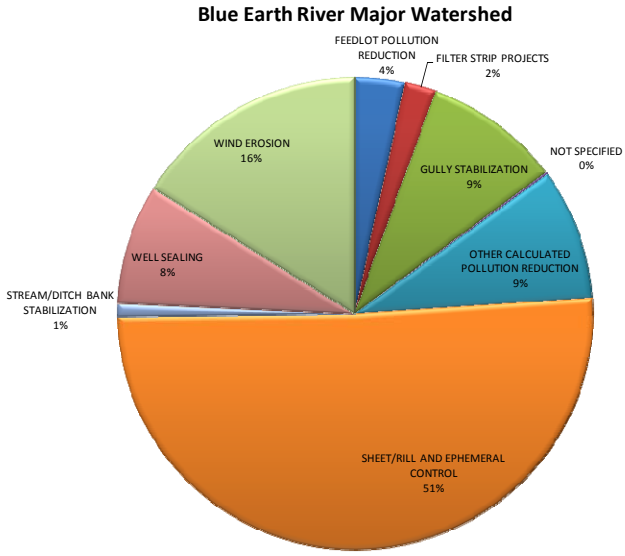
23. Simply Homemade

Sandy Kuhlers or better known as "The Jam Lady" has created her own profitable business by making and selling home-made jam. After starting out in the late 1980s by selling a few years at a garage sale, Kuhlers has expanded her business – Simply Homemade – enough to make it a sustainable venture.

Most of the fruit she uses in the nearly 30 products comes from area growers, opening up new markets for them, including specialty growers supplying her with organic elderberries. Kuhlers sells her jam at local farmers' market along with about 20 retailers in Minnesota, Iowa and Nebraska along with the St. Peter Food Co-op. Many of her customers are health conscious people looking for real sugar, gluten-free and handmade items.

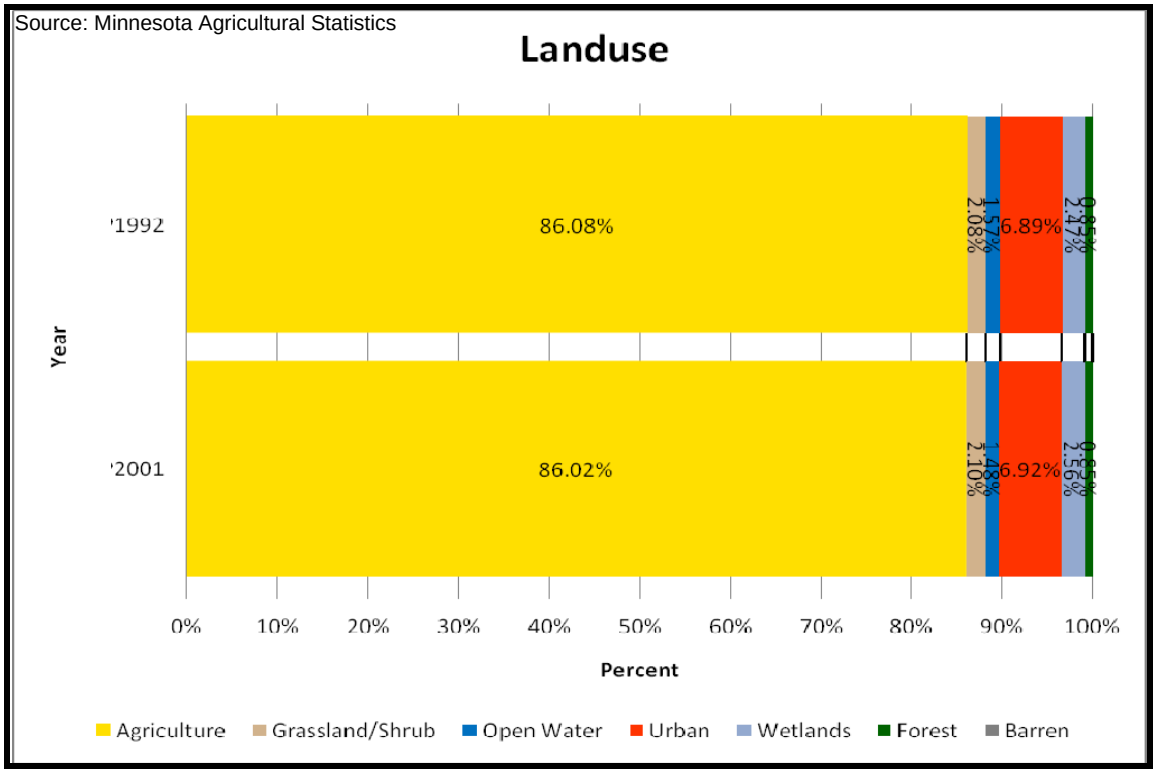
Blue Earth River Watershed Conservation Practices and Land Use



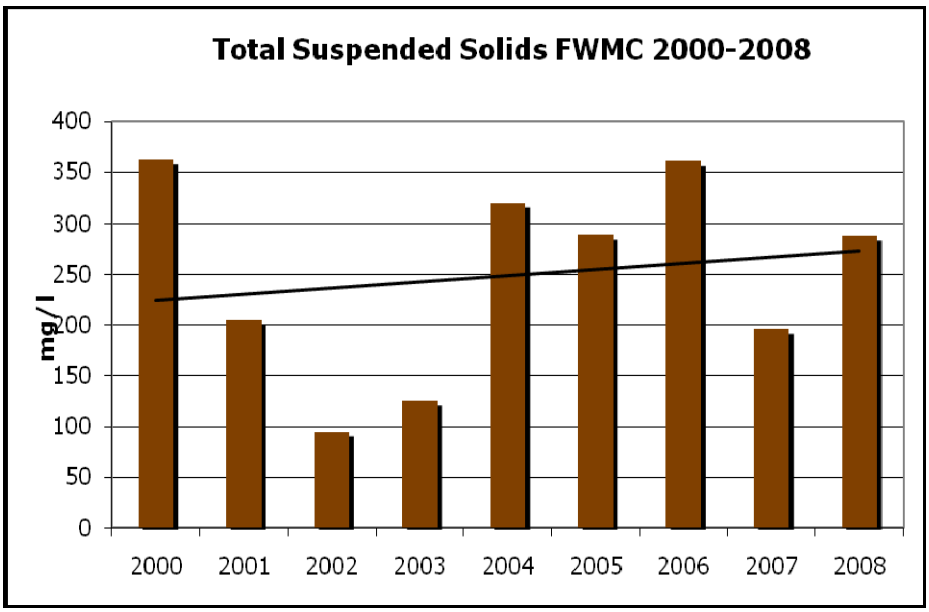


Conservation Practices

A concentration effort to improve water quality began with the Blue Earth River Basin Initiative in 1993 and continues with the Greater Blue Earth River Basin Alliance. The map above and pie chart to the right illustrates conservation practices in the Blue Earth 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 B but not recorded in either LARS or eLINK.

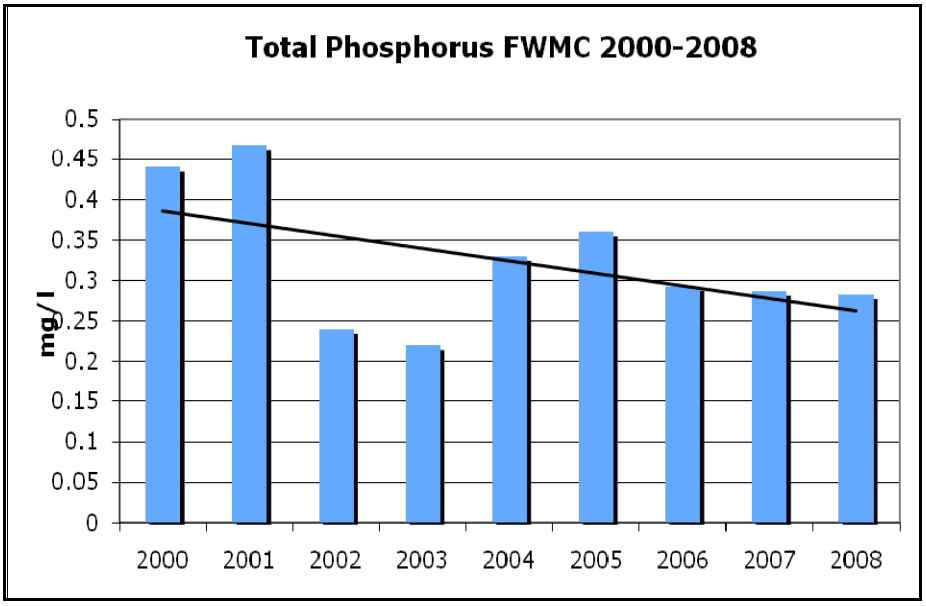


Blue Earth River Watershed Pollution Reduction



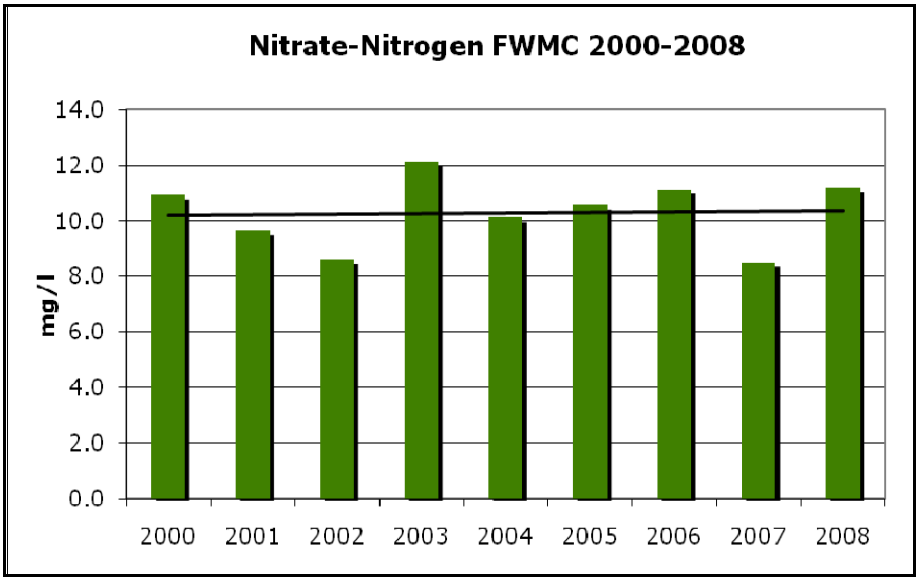
Total Suspended Solids

The Blue Earth River Watershed is one of the most intensively cropped (corn and soybeans) watersheds in the Minnesota River Basin. Geology plays a significant role in the amount of sediment in the Blue Earth River (early explorers reported turbid conditions at the confluence of this stream and the Minnesota River) and the dominance of agricultural in the watershed. In the last decade there has been a dramatic increase in the amount of drainage including denser pattern tiling resulting in water levels on the rivers rising faster and more power for eroding the streambanks.



Total Phosphorus

The main sources of phosphorus in the rivers come from cropfield and urban runoff along with the discharge of wastewater treatment facilities and other septic systems. Snowmelt runoff in the spring is normally high in phosphorus. A concentrated effort by local governments with the assistance of MPCA has seen the upgrading of wastewater treatment plants and individual septic systems.



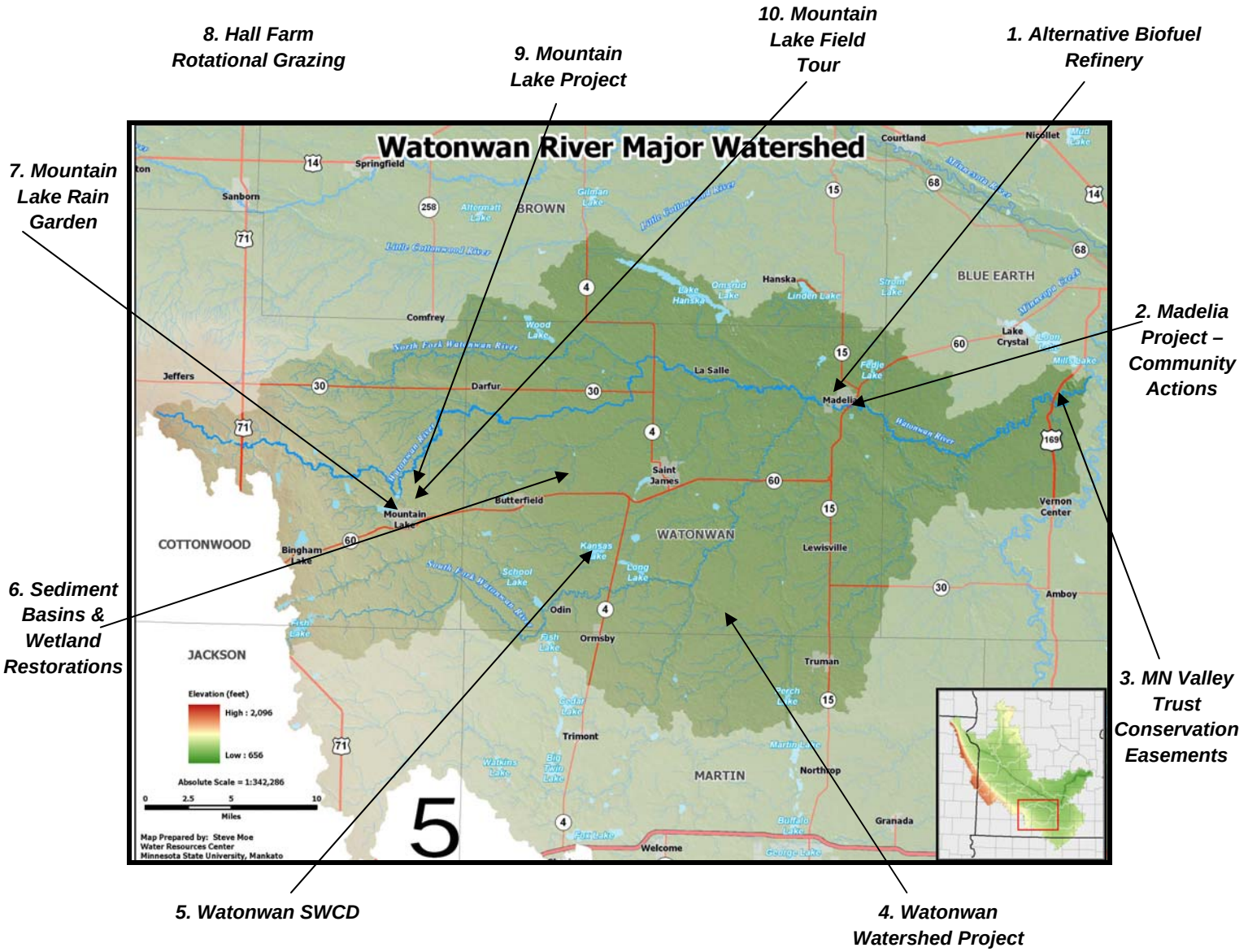
Nitrate Nitrogen

Climate plays a major factor with nitrate levels in the Blue Earth River along with field application the timing of rain events. A dramatic increase in tiling and drainage increases the loss of nitrates from the landscape into the rivers.

WATONWAN RIVER WATERSHED

The Watonwan River Watershed drains 544,543 acres or 851 square miles and lies in south-central and south-western Minnesota including a major portion of Blue Earth, Watonwan and Cottonwood counties and a smaller portion of Jackson, Brown and Martin counties. As the eleventh largest watershed in the Minnesota River Basin, the Watonwan River Watershed supports a population of around 21, 000 with over 30 lakes, a stream network of 561,620 miles and 12 towns. St. James is the largest municipality in the watershed. The Watonwan River begins as small creek in northwest Cottonwood County flowing to the east for over 110 miles to its confluence with the Blue Earth River near Garden City.


Paddling on the Watonwan River



Where the Watonwan River enters the Blue Earth, there is an angular piece of land that once was the center of a beautiful valley, shaded by great oaks on the river's bluffs and containing a sparkling, clear-water lake and outlet stream. Wild game, fish, berries, and other wild fruit were abundant. – Thomas F. Waters, The Streams and Rivers of Minnesota, 1977

WATONWAN RIVER WATERSHED

As part of the Greater Blue River Basin, the Watonwan River Watershed receives a lot of attention from the joint-powers organization the Greater Blue River Basin Alliance (GBRBA). Other major initiatives in the watershed for conservation and water quality benefits are the Madelia Project sponsored by Rural Advantage and the purchase of land for conservation easements through the Minnesota Valley National Wildlife Refuge Trust.

1. Project Spotlight - Alternative Biofuel Refinery

One of the major projects of Rural Advantage is the potential construction of an alternative biofuel refinery near Madelia. The goal is to encourage local farmers to grow alternative or third crops for the refinery, helping to increase biodiversity on the landscape and promote soil health. Third crops can also improve water quality by reducing nutrient runoff and minimizing erosion. The Madelia Project is about growing biomass crops for bio energy and bio processing in a 25 mile radius of Madelia to support rural revitalization, clean water and economic sustainability in the region. Financial support has come from the Minnesota Pollution Control Agency for the "Madelia Model" to assess how rural sustainable development could be pursued to improve the area's water quality and create a unique competitive advantage to benefit rural community members.

One proposed option called for converting marginal agricultural land into perennial prairie grasses with the idea this biomass would be as profitable as corn when used as energy production and also have a water quality benefit. The Madelia Model proposes conversion of about 20 percent of the 1.9 million acres in row crop cultivation in the 25 mile radius for energy production, allowing of corn and soybeans to grow on the most productive land. Three steps are outlined in the model as necessary for eco-industrial development in Madelia: (1). A biomass supply; (2). A facility for energy conversion and (3). A demand for the energy to make it profitable.

Hay bales would provide a fuel source for the Alternative Biofuel Refinery

2. Creating Community Principles for the Madelia Model

Located in south central Minnesota, Madelia is a rural farming community of about 2,500 people and a rich history of settlement conflict. Today, a growing immigration population, primarily Latinos, has been drawn to jobs at local agricultural processing plants. As demographics and economic realities continue to evolve for these rural communities, Madelia undertook an evaluation of individual and community needs to decide the best approach for implementing the Madelia Model.


The Madelia Model [continued]

Emerging Bioindustrial Development

Five focus groups were developed to represent five sectors: Agriculture, Government and Public Service, Business and Industry, and Community Residents, and the immigrant population. Out of these vision sessions, three Madelia principles were created including one on the Environment: (1). Manage the landscape in a diversified and sustainable manner through alternative and perennial crops; (2). Utilize local products for value-added processing; (3).Create and utilize sustainable and renewable energy; and (4). Have a clean air and water with no noxious fumes. The other two principles dealt with Social/ Community and Economic factors.

3. Minnesota Valley National Wildlife Refuge Trust – Conservation Easements

In 2000, this private, nonprofit corporation was established during the settlement between the U.S. Fish and Wildlife Service and the Metropolitan Airports Commission over a Minneapolis – St. Paul International Airport runway expansion into the Minnesota River Valley National Wildlife Refuge.


Jessenland Unit

The Minnesota Valley Trust partners with a diverse selection of organizations including U.S. Fish & Wildlife Service, Blue Earth SWCD, Carl and Verna Schmidt Foundation, Minnesota Pheasants Inc., Friends of the Minnesota Valley, Minnesota Environment and Natural Trust Fund, and Minnesota River Watershed Alliance through collaboration to collectively conserve and restore critically environmentally sensitive land. .

One project involved the purchase of 520 acres to be added to the Lincoln WPA located in near Lake Crystal and the head of Judicial Ditch 15. Now almost 1,000 acres have been permanently restored in the Lincoln WPA with major a major wetland restoration in 2010 and the possibility of removing land from the county ditch, break a significant number of private lines and restore 120 acres of wetlands. A diverse mix of native prairie grasses and forbs will be seeded on the associated uplands. According to the U.S. Fish and Wildlife Service, restoring marginal cropland will benefit wildlife habitat, help improve water quality in the Watonwan and Minnesota rivers and provide public recreational opportunities. The property was purchased from three landowners.


Native Prairie Restoration at Lincoln WPA

4. Watonwan River Watershed Project

A group of five SWCD and NRCS offices worked together to install a series of Best Management Practices to reduce pollutant loading from nonpoint source pollution through targeted, planned implementation of management strategies. The partnership also strived to increase public awareness of water quality and quantity issues in the watershed along with access and evaluating the project's effectiveness through stream water quality monitoring, land use management changes and tracking the implementation of management strategies.

A U.S. EPA grant helped complete 481 water quality related projects creating reductions of 4,107 tons/yr in soil loss, 8,899 tons/yr of sediment and a reduction in phosphorus of 15,703 lbs/yr. Twenty self-designed and determined school grants were supported during the project involving nine schools along with thirteen education events (county fairs, Green Saturdays, etc.) and sponsorship of the Prairie Ecology Bus.

Prairie Ecology Bus

5. Watonwan SWCD

Nearly all of Watonwan County is located within the Watonwan River Watershed and the local SWCD office works with landowners to install conservation practices including a partnership with Rural Advantage to plant six shelterbelts, pay for a stream bank stabilization project and promote third crops. A total of 19 tons of sediment will be prevented from flowing into the stream. The Watonwan SWCD also worked with landowners on a 50 acre wetland road bank site and 50 acres to be deposited in the wetland banking program.

Over 100 people attend the 3rd Habitat Workshop to hear presentations and updates from the NRCS, Farm Service Agency, and one on pollinators by the DNR. Other presentations focused on Managing Predation of Upland Birds and Riparian Buffers. The SWCD office also put on a 6th Grade Environmental Awareness Day from all over the county at the Environmental Learning Center.

6. Watonwan SWCD – Sediment Basins and Wetland Restoration

A series of sediment basins and streambank stabilization sites have been installed on a one mile section of Watonwan County JD #7 to reduce sediment and phosphorus from entering the Watonwan River. Six sediment basins have been constructed for a total of 1,300 feet and three riprap sites have been installed for a total of 1,100 feet. In addition, a one rod filter strip was established on this one mile section. This project will have a sediment reduction of 27 tons per year and a phosphorus reduction of 29 pounds per year. Another series of four sediment basins ranging from 400 to 500 feet long were installed to protect the water quality of Perch Creek. Besides saving many tons of soil and sediment from entering Perch Creek and also phosphorus, the basins will be farmable.


Construction of Sediment Basins

Many hours of effort among a wide variety of people got the Goose Lake wetland restoration project off the ground. A 438 acre Conservation Reserve Enhancement Program (CREP) easement, this is a large basin approximately 95 acres with three smaller basins of approximately 20 acres restored on the south side of the lake. Watonwan SWCD also has developed two educational opportunities for area residents – Green Saturday started to introduce environmental issues and Habitat Workshop targeting property owners who have developed wildlife habitat on their property. An Arbor Day Program is given to all the county first grade students and an Environmental Awareness Program is conducted for the sixth grade students.


Environmental Awareness Program

7. Mountain Lake Rain Garden

A newly installed urban rain garden received a major workout during a wetter-than-normal October. The garden is located along a city street with a curb cut to allow storm water to enter the garden to take-up pollutants and reduce flow into nearby waterways. Built with help from many local volunteers, the boulevard style rain garden is about 10 feet by 20 feet and six inches deep. Funded by a Coteau Des Prairies RC&D grant, the Metro Blooms of Minneapolis staff provided the expertise and also brought the plants for the garden. The Mountain Lake's Lake Commission and Tree Commission are promoting rain gardens and hope to see more built in the city.


Mountain Lake H.S. students removing buckthorn

8. Hall Farm Rotational Grazing

This one-time row-crop farmer began to move toward a rotational grazing system in the mid-80s after losing a lot of money operating a more traditional feedlot. By 1993, Hall's operation consisted of 200 acres of grass pasture without borrowing any capital to make the change. Hall has been satisfied with the results of balancing the natural environment with his 160 cattle and 80 ewes' farm. According to Hall, grazing is more peaceful due to less need for machinery, an astonishing reduction in use of fossil fuels and bypassing the need for fertilizers since grass-fed cattle fertilize the pastures as they go. Now Hall sees this as a way of life and it has become a viable post-retirement option because it's not labor-intensive.


An example of rotational grazing system

9. Mountain Lake Project

The City of Mountain Lake cooperated with Cottonwood County, Cottonwood SWCD, Mountain Lake Improvement Commission, Mountain Lake Sportsmans' Club, NRCS, MPCA, DNR and citizens to improve water quality on largest body of water in Cottonwood County. The project undertook a public information and education campaign, fertilizer management, conservation tillage, gully erosion control, mechanical weed harvesting, and effectiveness monitoring. A MPCA Clean Water Partnership Project seeded 30 acres of a critical area filter strip and 72 acres of land was enrolled into CREP on highly erodible land immediately upstream and adjacent to Mountain Lake. Other accomplishments was the addition of a storm sewer removal plunge pool added to the Mountain Lake municipal storm sewer and a 5.2 mile trail built around the lake to increase environmentally awareness, and finally the construction of a rain garden adjacent to the lake and the trail.

Mountain Lake Storm Water System

10. Mountain Lake Field Day

To provide a better understanding of a new concept called "Ecosystems Services," the Greater Blue Earth River Basin Alliance (GBERBA), Minnesota River Board, Rural Advantage, and University of Minnesota Extension hosted a field tour outside of Mountain Lake. Participants learned about the development and advancements in environmental markets on a two hour walk-n-talk. This is part of the effort to establish an ecosystem service market in the state by the Conservation Marketplace of Minnesota (CMM). The field tour also included background information on CMM's demonstration site, agricultural best management practices well-suited for credits, and opportunities for market-based conservation and water quality trading from local, regional, and state professionals.

River Advocate – Pat Baskfield

A hydrologist with the Minnesota Pollution Control Agency (MCPA), Pat Baskfield spends his days studying and monitoring rivers across the state. Pat worked most of his MPCA career on water quality issues in the Minnesota River Basin before becoming the state-wide monitoring coordinator for the Clean Water Legacy Watershed Load Monitoring Program. During this time he has played an important role in training and offering guidance to many of the people currently monitoring rivers in the Minnesota River Basin.

Pat Baskfield taking a water sample

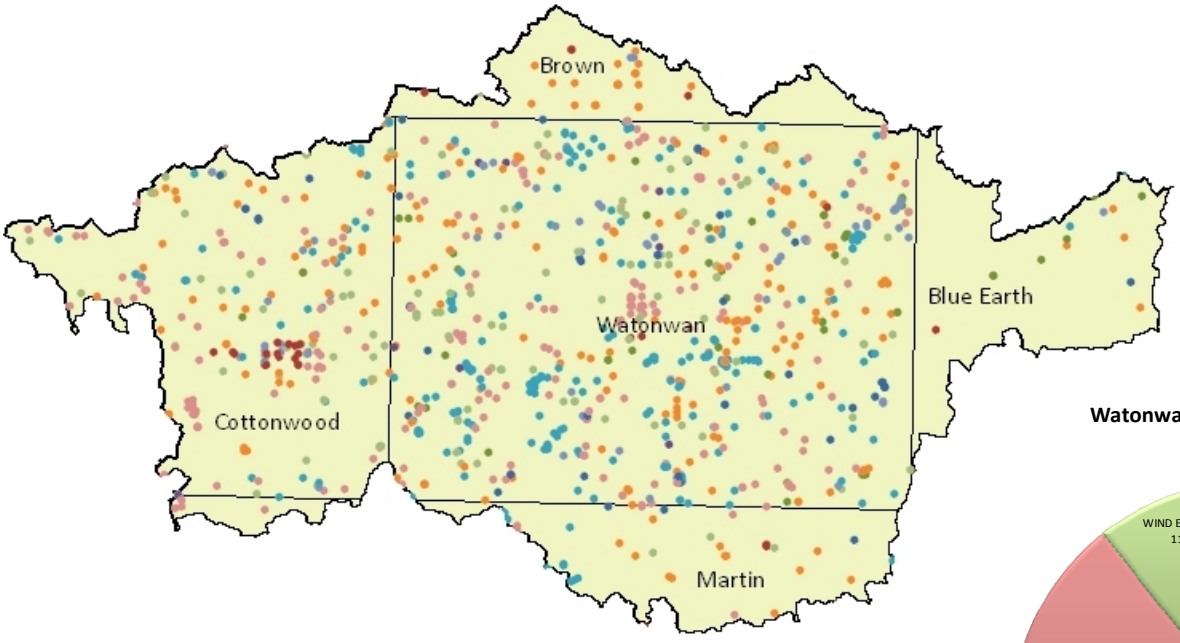
Living in the area allows me the opportunity to observe. Watching the landscape, climatic patterns and how the rivers respond to varying conditions gives me the best feel for what is going on. – Pat Baskfield

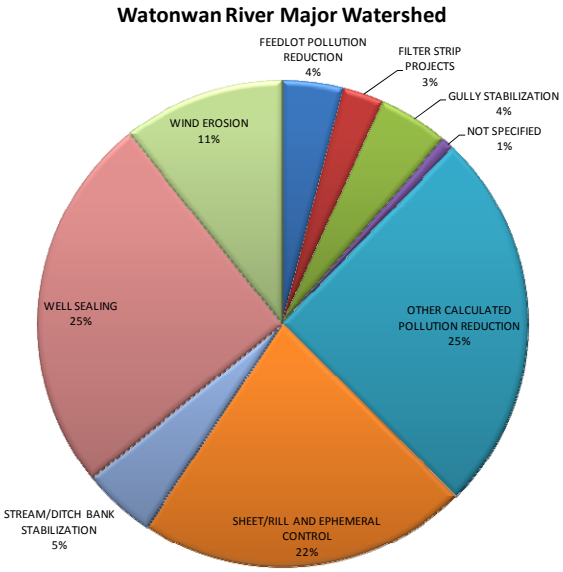
In his downtime, Pat has relished living along the Watonwan River by getting out to paddle it as often as possible depending on flow and if the walleyes are biting. Pat has enjoyed paddling many of the rivers in the area including the Big Cobb and Blue Earth. He finds the lower Blue Earth River absolutely beautiful with its incised valley and scenic spots like the Devil's Gorge and Triple Falls. All this time on the rivers has allowed Pat to become a major advocate of getting people out paddling and helping keep them clean by volunteering with the Mankato Paddling and Outing Club.

Pat Baskfield paddling the Blue Earth River

Early morning trips, especially during the spring when the birds are migrating; hard to deny the hand of God during a sunrise trip in May. – Pat Baskfield

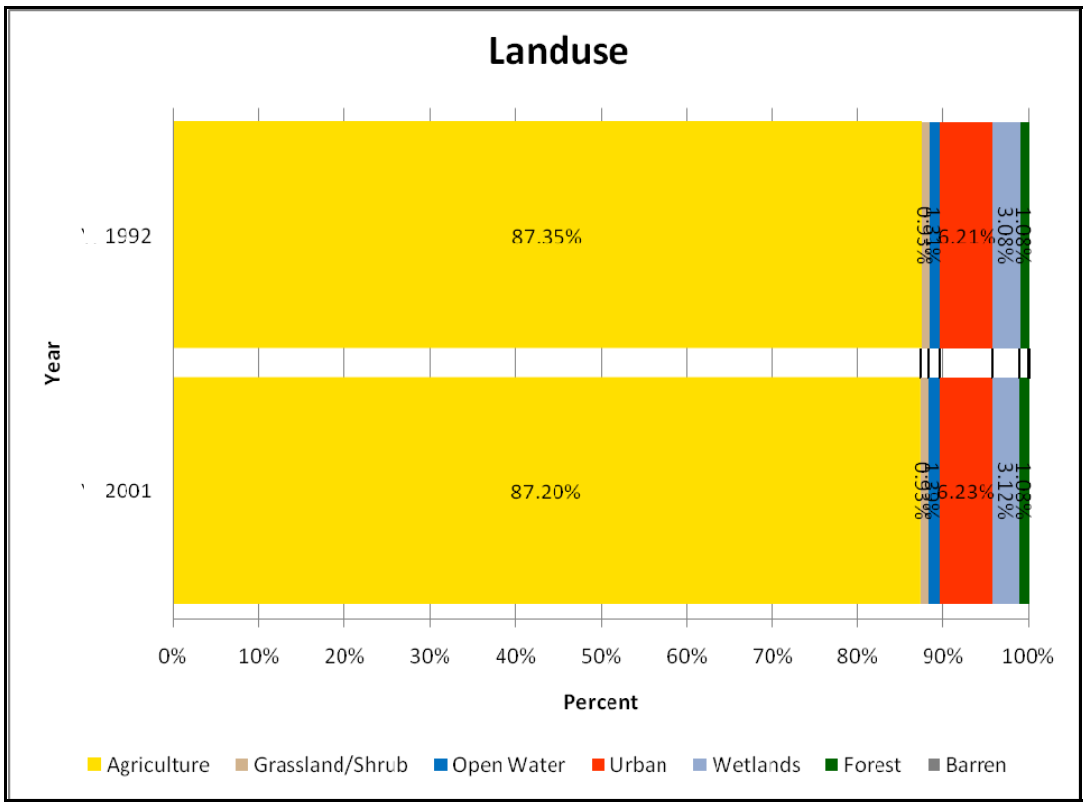
Watonwan River Watershed Conservation Practices and Land Use



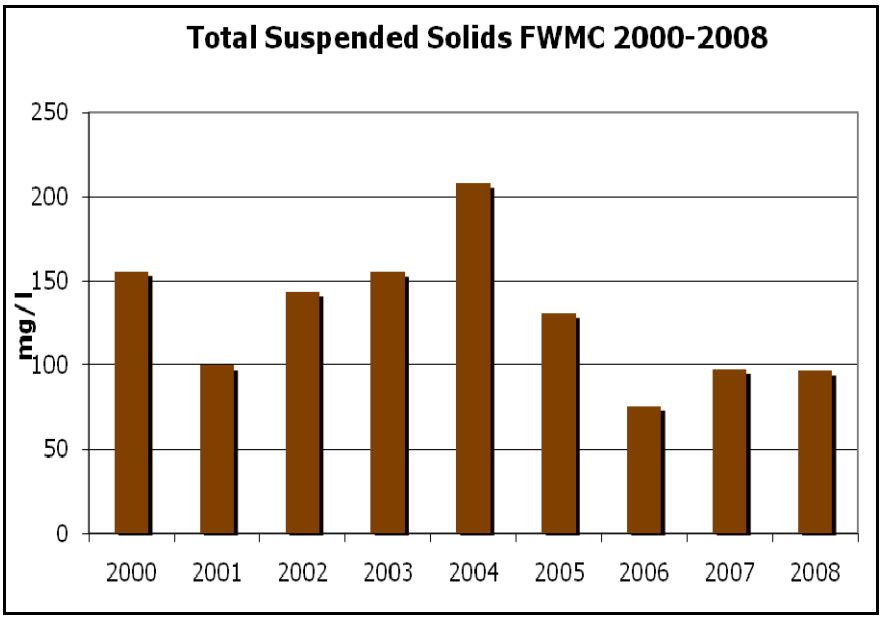


Conservation Practices

As part of the Greater Blue Earth River Basin, the Watonwan River Watershed has been part of the work to improve water quality since the 1990s. The map above and pie chart to the right illustrates conservation practices in this 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 Watonwan River Watershed but not recorded in either LARS or eLINK.

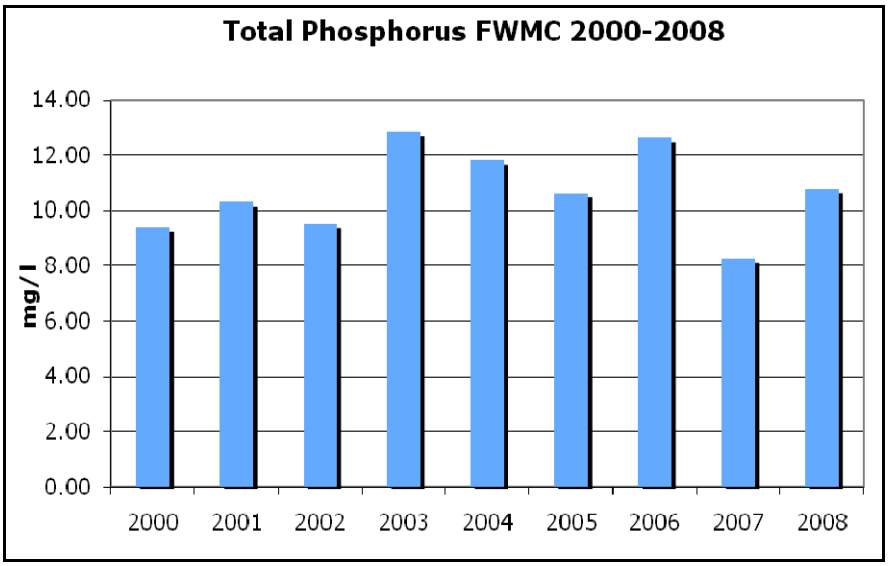


Watonwan River Watershed Pollution Reduction



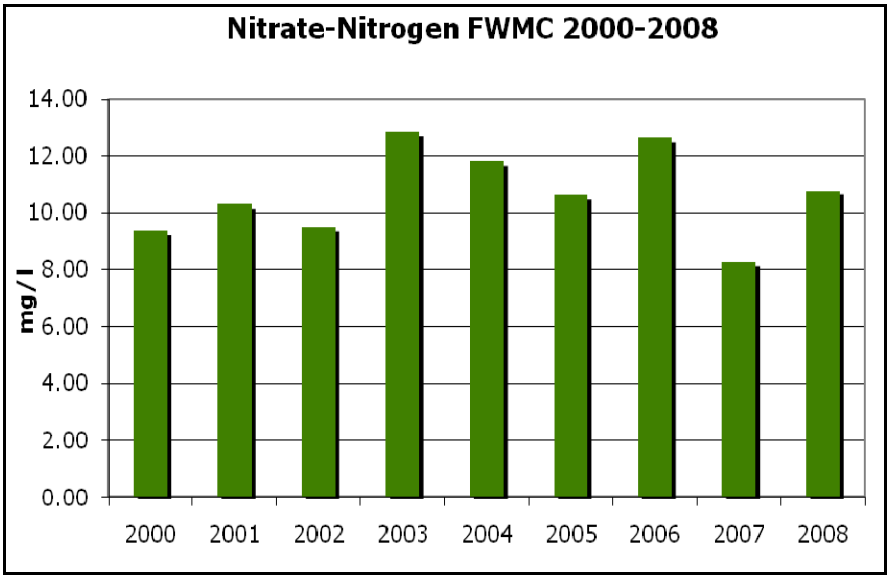
Total Suspended Solids

The level of sediment in the Watonwan River has been affected by the large chunks of CRP and other temporary or permanent easements along the stream. Other BMPs like residue management, wetland restoration and planting of native grass have also been positive for water quality in the watershed. According to local paddlers, they aren't seeing the piles of sediment on boat landings along the river in the last few years. As part of the Greater Blue Earth River Basin, there has been a concentrated effort to provide funding for a large selection of Best Management Practices.



Total Phosphorus

Over the last two decades there has been a large scale effort by federal, state and local government agencies to improve wastewater treatment systems (a major source of phosphorus) in the Minnesota River Basin. This includes upgrades systems at communities like Madelia. There is still the issue of phosphorus runoff from cropfields, urban stormwater, out of compliance septic systems, and unincorporated towns without an adequate wastewater system. Local paddlers have observed the Watonwan River does look cleaner with the elimination of toilet paper and other waste.



Nitrate Nitrogen

The level of nitrate continues to peak at the end of May usually within two weeks each year. An extensive drainage system that increases with additional tiling has been a major factor in the level of nitrogen in the Watonwan River. Nitrate rates are driven by climate more than other water quality parameters like Total Suspended Solids and Total Phosphorus especially the timing of rain events.