

March 5th, 2021

Dear Partner in Conservation,

On behalf of the Benton Soil and Water Conservation District and Natural Resources Conservation Service we would like to take this opportunity to thank you for your support of conservation. Without the support of the many partners we have we would not be able to effectively deliver the conservation and education activities to our communities. From community education and outreach to strategic planning and land use management to best management practices implementation, over two million dollars in conservation activities were completed in our community in 2020!

Enclosed is an annual report of many of the accomplishments of the Benton County "Conservation Office". Although the report is titled "Benton Soil and Water Conservation District 2020 Annual Report", it is really an overview of the many conservation programs offered by the SWCD, NRCS and its partners. Please take a moment to review the report. If you would like additional copies or would like additional information about the programs described in the report you can visit our website at www.soilandwater.org or contact our office at (320) 968-5300 extension 3.

Thank you for your commitment to conservation.

Sincerely,



Gerry Maciej
Benton SWCD
District Manager



Pat Gehling
NRCS
District Conservationist

**20
20**

**ANNUAL
REPORT**

**BENTON SOIL AND WATER
CONSERVATION DISTRICT**

14 2nd Ave W Foley MN 56329 * 320-968-5300 x3 * www.soilandwater.org



Benton Beach, Fall 2020

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BENTON SWCD

Our mission is to protect & enhance Benton County's soil, water & natural resources; to nurture a conservation ethic by educating county residents on conservation & environmental issues

One crucial niche districts fill, is that of providing soil and water conservation services to owners of private lands. Privately owned lands make up 78% of the land surface in Minnesota. Managing these private lands, whether agricultural, forest, lakes, or urban, is key to Minnesota's quality of life.

Soil and Water Conservation Districts (SWCDs) are local units of government that manage and direct natural resource management programs at the local level. Districts work in both urban and rural settings, with landowners and with other units of government, to carry out a program for the conservation, use, and development of soil, water, and related resources.

Minnesotans trust SWCDs to provide needed technology, funding and educational services as they are established in each community, governed by local leaders and focused on conservation of local soil and water resources.



Local and Federal Partnership

Although titled Benton Soil and Water Conservation District annual report, the accomplishments in this report would not be possible without the cooperation of many. One example is our exceptionally strong partnership with the Natural Resources Conservation Service (NRCS), a partnership that is not often apparent. Our agencies share field equipment and supplies, technical support and numerous other items not listed. The partnership provides the most efficient use of taxpayer resources, resulting in the greatest amount of targeted resource protection and restoration possible. It is truly a model for a successful federal/local partnership. The high level of service and diversity of conservation assistance available to the residents of Benton County is certainly the result of the cooperation of many.

SWCD Staff

Gerry Maciej
District Manager

Mike McMillin
District Technician

Casey Gwost
District Technician

Nathan Sanoski
District/Farm Bill Technician

Aaron Finke
District Technician

Amanda Guertin
Water Plan Technician

Renee Thell
Administrative Assistant

Sierra Steinbach
Summer Intern

NRCS Staff

Pat Gehling
District Conservationist

Barb Zeroth
Soil Conservationist

Joey LeBlanc
Civil Engineer Technician

Bonnie Haubenschild
Office Assistant



Back (L to R): Nathan, Casey, Mike, Joey, Pat, Gerry
Front (L to R): Renee, Bonnie, Amanda, Barb



The SWCD welcomed Aaron to the team in October. He works on the Wetland Conservation Act (WCA), MN Buffer Law Implementation Program and Erosion Control



Sierra Steinbach

Conservation at the Local Level

Supervisors play an important role in how the community deals with a wide variety of resource management issues, including wetlands, water quality and soil erosion. Serving as a supervisor is a terrific opportunity for people who want a voice in how we manage our environment.

Conservation at the State Level

Chuck Rau was recently elected as the Vice-President of the Minnesota Association of Soil and Water Conservation Districts (MASWCD). The election took place during the Association’s annual convention, which was held in an online format due to the circumstances of the COVID-19 pandemic.

Rau has served on the Board of Supervisors for the Benton Soil and Water Conservation District (SWCD) for more than ten years and for the past two years, Rau has served on the MASWCD Board of Directors, representing the west-central area SWCDs. “Chuck’s experience in conservation issues, both as a landowner and as a Supervisor for the Benton SWCD, give him a real advantage as Vice-President of our organization,” said LeAnn Buck, Executive Director of the MASWCD.

The MASWCD is a not-for-profit Association that represents Minnesota’s SWCDs and their elected governing boards. The Association is involved in helping to set policy for various conservation programs including: the state Erosion Control Cost-Share Program, Reinvest in Minnesota (RIM) Reserve Program, Minnesota Wetland Conservation Act, and the Clean Water, Land and Legacy Amendment, to name a few.

With over forty years of experience in all levels of business management, including strategic planning, Rau would like to utilize his two-year term as Vice-President to aid the Association in addressing the many challenges and opportunities facing the organization. Active in his local conservation district, Rau will also continue to serve as a supervisor for the Benton SWCD and represent area 2 SWCDs on the MASWCD board of directors.

AREA 1

Wade Bastian
320-266-6881

AREA 2

Joseph Jordan
763-856-3192

AREA 3

Jake Scherer
320-355-2343

AREA 4

Bernie Thole
320-266-8436

AREA 5

Chuck Rau
320-393-4834

*MASWCD Vice-President
& Board of Directors -
West Central Area 2*



Left to right: Wade Bastian, Joe Jordan, Bernie Thole, Jake Scherer, Chuck Rau

Partners in Conservation



Thank you to everyone involved including our Benton County Commissioners, state and federal legislators, state conservation agencies, local conservation organizations and our property owners for taking the initiative to improve this community. Also a special thank you to all of the partnering agencies involved with the Clean Water Legacy Program.



*Back: Warren Peschl, Jake Bauerly, Spencer Buerkle
Front: Steve Heinen, Ed Popp*



Ross Reiffenberger, Luke Herkenhoff, Gary Borash

2020 Benton County Board of Commissioners



The SWCD would not be able to operate at our current level without the continued support of the Benton County Commissioners. In 2020, \$239,500 was allocated to the SWCD by the County to support our conservation efforts.

We would like to thank Commissioners Peschl, Buerkle, and Bauerly for their service to Benton County. And we would like to welcome our new Benton County Commissioners - Scott Johnson, Jared Gapinski, and Beth Schlangen!

West Central Technical Service Area (WCTSA) Staff

The WCTSA fill a critical role for SWCD's by providing engineering and technical assistance for projects that could not be completed within an individual SWCD. By working cooperatively across political boundaries, TSAs are able to provide cost effective services across the state.

In 2020, the SWCD began utilizing the TSA staff more frequently to assist us with getting drone footage of conservation projects. The photos and videos the drone captures are able provide much more meaningful context to our projects, especially for before and after photos.

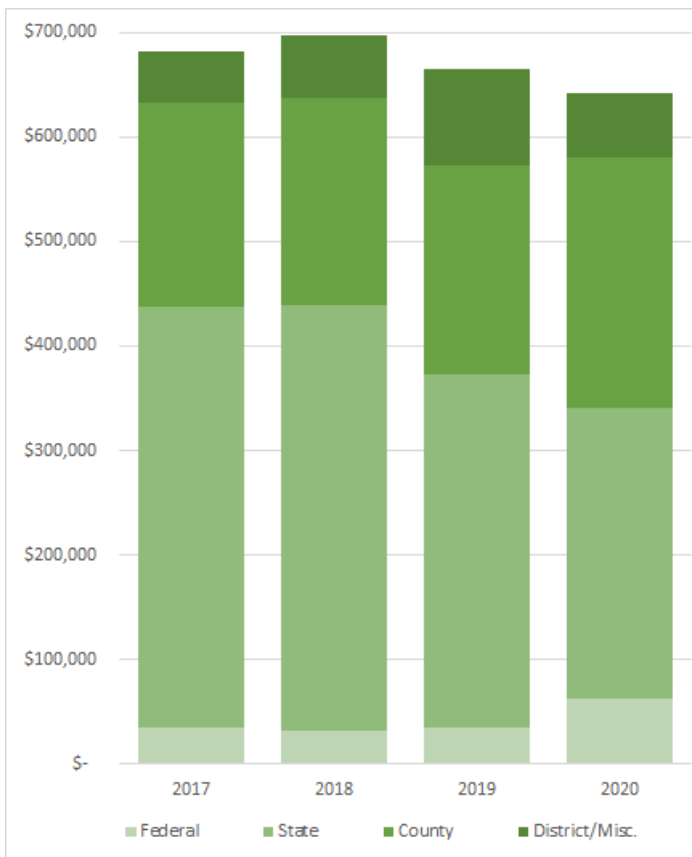


Financial Summary

Benton SWCD relies on a variety of revenue sources in order to finance day to day operations. Operational revenue sources include federal, state, county, district (tree and product sales, equipment rental, etc.) and other miscellaneous sources.

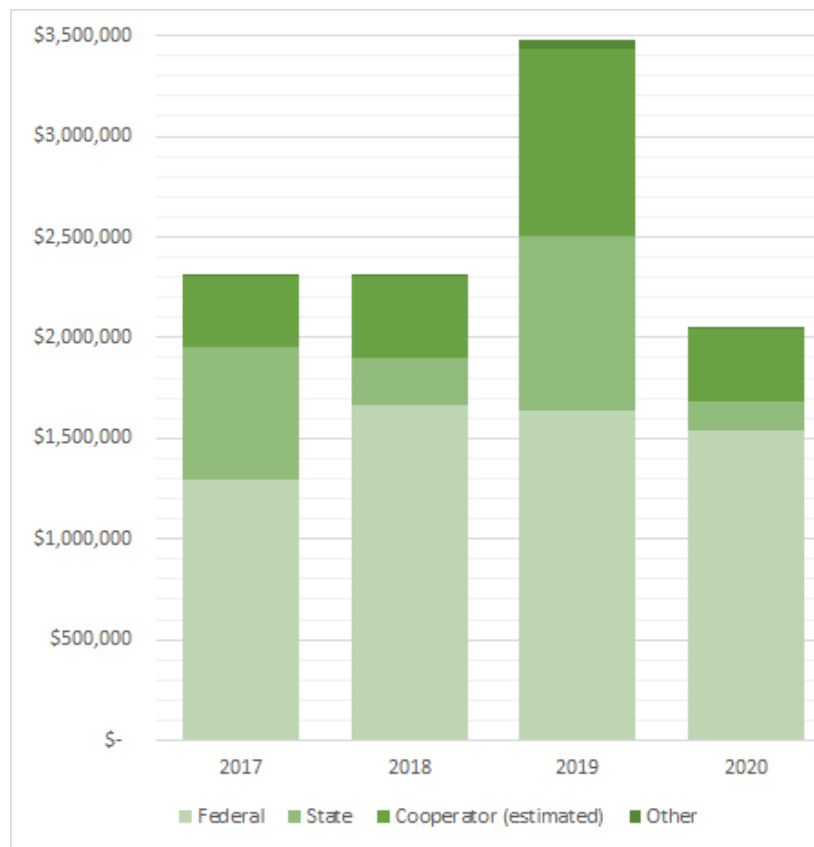
Installing best management practices, or making land use changes, not only results in cleaner water but has many other public benefits as well. The cost of adopting these practices, in some cases, exceeds the benefit to the individual and financial assistance becomes necessary. The SWCD also relies on a variety of financial contributions for conservation activities including cost-share, incentives, program development and annual rental payments.

Operational Revenue



This revenue is used for personnel salary and benefits, Supervisor and Water Resources Advisory Committee member expenses, rent, supplies, travel, tree program, environmental education programs and other related expenses

Financial Contributions for Conservation Projects



This graph includes funds administered through the SWCD, NRCS, FSA and Benton County Program. Landowner contributions for federal funded projects are not available and therefore the cooperator contributions displayed are estimates

2020 Operational Revenue was \$642,401

2020 Financial Contributions for Conservation Projects was \$2,049,912

2020 ECONOMIC IMPACTS

The work of the SWCD brings outside resources into Benton County and encourages citizens to invest their own resources locally. In addition to approving the quality of our community through conservation work, we also have a positive economic impact to Benton County.

2.05 Million dollars was spent on conservation projects in Benton County in 2020

\$145,558 was spent as a result of state cost share

\$1,536,248 was spent as a result of federal cost share

\$365,605 was spent as a result of local landowner contributions

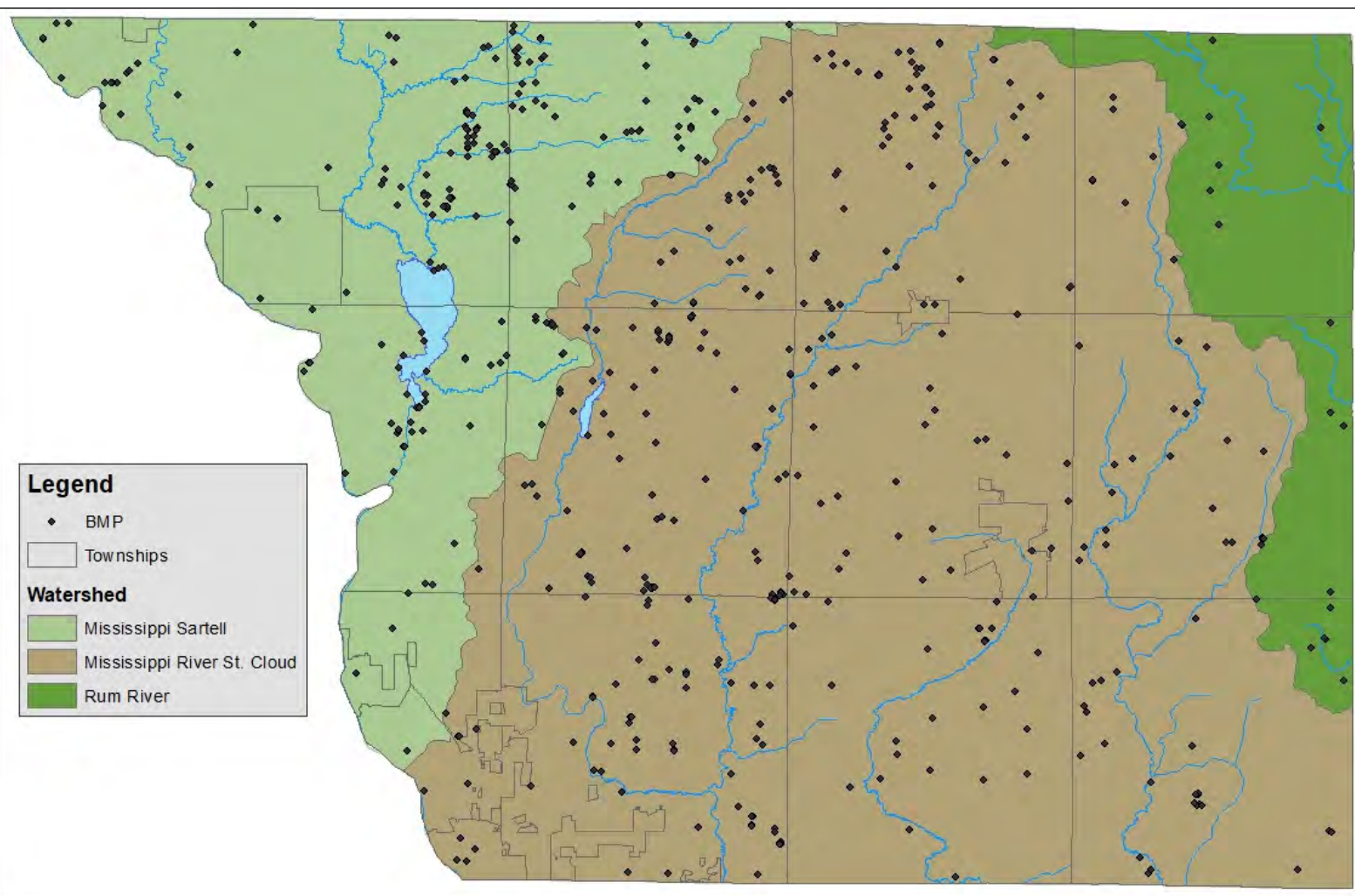
\$481 was spent as a result of other funding sources

A large amount of the funds spent for these projects were given to local contractors. Assuming that **50%** of the money given to local business' is recirculated locally, that's **1.02 Million dollars** recirculated back into the community

BEST MANAGEMENT PRACTICES

Benton County is extremely fortunate to have so many landowners invested in the protection and restoration of the County's natural resources and who are willing to implement projects on their property. Installing a project is no small decision for landowners, as usually they are expected to contribute 25% match. For feedlot projects in particular, this is a huge investment on their part as these projects can range from nearly \$100,000 up to around \$600,000 depending on the type and size of project. Some of the projects installed in 2020 are shown below and featured in the following pages.

State Funded Projects



The map above illustrates projects that have been installed using state funds from 2003-2020. During this time over 30 different conservation practices and over 700 projects were installed.

Benton SWCD Stresses Importance of State Funding to Legislators

Monies helped bring in \$1.5 million



Foley - Benton Soil and Water Conservation District staff and supervisors hosted online meetings as result of COVID-19 precautions with Minnesota Rep. Shane Mekeland and Sen. Jeff Howe in lieu of its annual trip to the state capital this year. Benton SWCD shared its annual report and information about funding and projects. Mekeland and Howe took up the organization's offer individually, and Amanda Guertin, a water plan technician for Benton SWCD, said the conversations were productive. Sen. Jerry Relph is scheduled for a meeting in the near future.

Benton SWCD's financial situation took up the bulk of the conversations with the legislators. "It seemed like they were really interested in the financial piece," Guertin said. "Where we're getting our funding from and how to secure it... One big thing they were asking us is if we're using federal dollars to leverage other funds." Gerry Maciej, district manager for Benton SWCD agreed the legislators were interested in how Benton SWCD is funded. He said the Conservation District relies on funds from the conservation district capacity program, a state-level funding source used mainly to pay for staff salaries and activities that help garner federal funding.

State funding allowed staff the ability to help residents apply for federal funding. Last year, staff helped secure \$1.5 million in assistance to landowners in Benton County solely from federal funding. Maciej said that kind of turn around is unlikely to happen again without state funds. "That's a really important program for our area," Maciej said. "Both Rep. Mekeland and Sen. Howe were very interested, and took a lot of notes." Despite its importance, the program may be one of many experiencing cuts in next year's budget. The state has devoted resources to fighting the novel coronavirus and to recuperate some of those lost dollars, substantial budget cuts are expected. "Funding is really going to be a challenge right now with the deficit we're facing," Mekeland said. "Everyone's budget is going to have to take a hit somewhere."

Maciej said he was confident Mekeland and Howe will advocate the importance of the funding after talking with them. He said both legislators said they were going to express concern to their fellow representatives and senators who sit on environmental committees about the cut in funding.

Aside from the funding, Mekeland and Howe were also updated with some of Benton SWCD's successes, like the Little Rock Lake drawdown project, which receded waters for a portion of the 2019 summer in attempts to restore water quality, shoreline and fishing habitat. Mekeland said he was pleased with the project's execution and the conservation district's overall dedication to conservation. "They have a lot of good programs within the realm of conservation and improving things." Mekeland said.

FEATURE PROJECT HIGHLIGHT

Little Rock Lake Drawdown

Project Background

Benton and Morrison SWCD's have been working with landowners for over 10 years to implement best management practices to reduce runoff in the watershed. While these projects produced positive results, Little Rock Lake was still experiencing significant algae blooms. Pollution reduction estimates from projects indicated the second phase of TMDL implementation should be initiated.

Project Overview

Little Rock Lake water levels have been artificially maintained for over 100 years. The lack of water fluctuation limits plant growth which allows algae to fill that void. Creating an artificial "drought" spurs plant growth that will utilize available phosphorus in the lake bed, providing shoreline stability and habitat.

On August 1 - September 15 2019, approximately 500 acres of shoreline became exposed on Little Rock Lake and the Mississippi River when water levels were lowered by three feet. To provide additional benefits, \$40,000 worth of native emergent plants were purchased and planted in the lake by volunteers in front of willing





Photo credit to Thul photography - Little Rock Lake a few days after the drawdown began

Partners Involved

- Little Rock Lake Association
- Eagle Creek Renewable Energy
- MN DNR
- BWSR
- Benton SWCD

Waters Protected

- Little Rock Lake
- Mississippi River



Screen shot of a zoom meeting with Legislators as an alternative to the Annual Legislative Briefing Day at the Capital. Pictured are District Manager Gerry Maciej, Water Plan Technician Amanda Guertin, Benton SWCD Supervisor and Board Chairperson Wade Bastian and Senator Jeff Howe.

ENVIRONMENTAL QUALITY INCENTIVES PROGRAM (EQIP)

EQIP provides federal conservation program funds to address local resource concerns. The program provides financial assistance, either to off-set the cost of implementation or as an incentive, to assist crop, livestock, and other operations.

EQIP 2020 Highlights

- In 2020, Benton County had **20 contracts** for **\$1,393,080**. The County was 4th in the state in both number of contracts and dollars allocated.
- From 2013 - 2020, EQIP has brought in a total of **\$8,964,329** in conservation funds

Summary of 2020 Practices

- 155 acres conservation tillage
- 1,083 acres nutrient management
- 3 Conservation Activity Plans
- 1 well sealing
- 28 acres hayland planting
- 4 manure storage stacking slabs
- 2 manure pits/manure storage facilities
- 2,158 feet shelterbelt/windbreak
- 3 acres upland wildlife habitat
- 9 water and sediment basins
- 5 terraces/diversions
- 1 grassed waterway
- 1 manure pit closure
- 186 acres irrigation water management
- 1,304 feet irrigation conversion
- 3 roof structures
- 1,166 acres cover crops
- 1 stream crossing
- 1 compost facility
- 1 energy plan implementation
- 13,944 sq ft lined waterways

See page 25 for a full article on a Variable Rate Irrigation System completed using EQIP funding



Picture above of an erosion project completed for Loris Vanhooser in 2020

"The success of EQIP in Benton County is a credit to the producers here. Their interest in doing conservation should be commended"
Pat Gehling, NRCS District Conservationist



NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS TECHNICAL ASSISTANCE GRANT

2020 marks the third year of the National Association of Conservation Districts (NACD) technical assistance grant program. This program was created with funds from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) for the purpose of increasing staffing at the field level and providing conservation services to farmers, ranchers and local communities across the U.S.

“Since 2018, NACD and NRCS have worked together to increase staffing at the field level for conservation districts,” NACD President Tim Palmer said. “This increased technical capacity helps to improve conservation services to farmers, ranchers and local communities across the nation.”

To date in 2020, NACD and NRCS have awarded \$15 million in technical assistance grants. Since the program’s inception, NACD has funded technical assistance in all 50 states and three U.S. territories.

“Even in this time of a national emergency, farmers and ranchers have conservation

concerns that need to be addressed,” Palmer said. “NACD is proud to provide funding to America’s conservation districts and allow for more boots on the ground, providing our growers with support for their individual landscapes and resource concerns.”

On July 21st, 2020 NACD awarded \$6.5 million in technical assistance grants to nearly 400 conservation districts, including a \$50,000 grant to Benton SWCD. The SWCD will utilize these funds for planning and designing activities associated with Environmental Quality Incentives Program (EQIP). Benton County is a very high workload area for EQIP and from 2013 to 2019 has received the highest contract allocation per square mile in Minnesota at just over \$15,000 per square mile. Benton is processing and ranking approximately \$3.0 million in 2020 applications, equal to over \$7,000 per square mile. This technical assistance grant will allow the SWCD to hire staff to plan, design, oversee installation and implementation of nutrient management, soil erosion, irrigation and other EQIP projects.

2020 Accomplishments

EQIP

Number of assisted contracts: 14
Practices Designed: 2 Nutrient Mgmt (590)
Contract Acres Benefitted: 773.0 acres

COTA

Conservation Operation Technical Assistance

Number of contacts: 20
Number of plans worked on: 10
Plans include: Prescribed Grazing, Irrigation
Water Management, Nutrient Management

A Word from NRCS MN State

Conservationist Troy Daniell

“The Collaborative Conservation Grant awarded to Benton County SWCD in 2020 will help address some of Minnesota’s pressing natural resource concerns in one of the busiest counties. The Natural Resources Conservation Service in Minnesota relies on our strong partnership with our soil and water conservation districts. We are pleased to see Benton County SWCD be selected for the award.”



CONSERVATION RESERVE PROGRAM

This program aims to re-establish valuable land cover to help improve water quality, prevent soil erosion and reduce loss of wildlife habitat. Since signed into law by President Ronald Reagan in 1985, the program has become one of the largest private-lands conservation programs in the United States. Thanks to the voluntary participation by farmers and landowners, over 20 million acres are being protected across the country.

Summary of 2020

The Conservation Reserve Program (CRP) is a land conservation program where, in exchange for a yearly rental payment, farmers/landowners who voluntarily enrolled in the CRP program agree to remove environmentally sensitive land from agricultural production and instead plant species that will improve environmental health and quality. Contracts for land enrolled in CRP are 10-15 years in length. Practices range from native prairie plantings to cool season grass plantings, tree plantings for wildlife habitat, pollinator habitat restorations, and wetland restorations. Thanks to voluntary participation by farmers and landowners, CRP has improved water quality, reduced soil erosion, and increased habitat for endangered and threatened species.

CRP General Signup:
Work completed in 2020
Contracts: 20
Acres: 282.14

CRP Continuous Signup:
Contracts: 1
Acres: 4.22



CONSERVATION STEWARDSHIP PROGRAM

This program looks at conservation practices currently being implemented on farms or woodlots and offers incentive payments to enhance these practices. Since 2010, 18,936 acres have been enrolled and over \$1,619,000 has been brought into Benton County for conservation through this program with 32 different enhancements in place.

FEEDLOT & NUTRIENT MANAGEMENT

County Water Management Plan Priority: Protect surface water quality by encouraging proper nutrient management of animal manure and fertilizers

The soils and relatively flat landscape has allowed for abundant farming throughout Benton County, which has remained consistent with approximately 70% farm land since 1982. Feedlot and nutrient management have always been identified as priority concerns in the County Water Plan. Excellent landowner participation over the years have led to momentous accomplishments. Thousands of acres of land are regularly following nutrient management BMPs to ensure the proper amount, source, placement, form, and timing of manure and fertilizer application, to avoid over application and reduce the potential for nutrient rich runoff.

2020 Highlights

- Implemented nutrient management on 1,344 acres
- Completed 41 manure tests with 24 farmers
- Completed 50+ soil tests
- 20 manure spreader calibrations with 12 farmers
- Rented out manure spreader 18 times
- Installed 5 manure storage facilities
 - *2 manure pits *3 manure storage stacking slabs
- Completed 1 manure pit closure
- Installed 1 compost facility

Services & Practices Offered

- Long term farm resource conservation planning for animals, feedlots & manure storage
- Nutrient & manure management
- Test plots
- Grazing
- Feedlot runoff control
- Waste storage facilities
- Poultry manure spreader rental
- Soil & manure testing

Photos to the right show a feedlot project that has been in the works for a few years. The open feedlot was abandoned and now all steers are under the roof structure and all manure and runoff is contained within the manure pit under the floor.



Photo to the left shows a waste storage pond completed in 2020 that had been in works for a few years. The pond is 14 feet deep, 234 feet wide, and 398 feet long. It will hold 6.1 million gallons providing storage for over nine months.

Sauk Rapids Herald Article Excerpt - by staff writer Jennifer Coyne

A Livelihood Worth Creating

Skrochs named Benton County Farm Family of the Year

Rice - As Mark and Pam Skroch commuted back and forth from the Twin Cities area to Pam's home farm in Rice, they knew it was not a lifestyle they wanted to last very long. They longed for the freedoms of the country and the great responsibility of raising their family on a dairy farm. "We wanted to continue farming with my family, the way of life it gave us and our kids," Pam said. "We had the opportunity to move out here and still take advantage of the opportunities available in town, so we took it."

The Skrochs milk 118 cows, feedout about 180 steers and run 500 acres of land on their farm, Sunny Oak Farm, near Rice. For the couple's contributions to their community and farming philosophy, they were named this year's Benton County Farm Family of the Year. "I hope this recognition shows others that it's possible to raise a family and expand a farm and make a living farming," Mark said. "All our hard work is paying off."

Mark and Pam begin their day around 4:30 a.m. Mark starts milking the herd in their double-8 parallel parlor and Pam joins him shortly after. Once milking is complete, Pam feeds the calves as Mark cleans the parlor and checks the herd. Their youngest son, Eric, makes up the total mixed ration for the lactating group before going to his full-time job as a diesel mechanic. Throughout the day, Mark and Pam work together on the farm, and then Eric joins again for evening chores. Pam also does the farm's bookwork. "Family has been our focus right from the beginning," Mark said. Pam grew up on the farm, which was purchased by her parents in 1965. The family began milking 34 cows on the farm site in the 1970s. Throughout the years, they expanded the dairy operation and focused solely on milking cows in what became a 51-stall tiestall barn. In 1985, Mark and Pam married, and shortly after began farming in partnership with Pam's parents. By 2002, the couple purchased the farm, although Pam's 82-year-old father, Alvin Kloss, helps with fieldwork to this day.

The Skrochs made improvements to the farm that would allow their dairy to continue being a sustainable venture for the couple and their four children - Eric, Jason, Amy and Stacy. And now, they get to enjoy time with their grown children and grandchildren, playing card games and cribbage. "When the kids were young we played cribbage, and now we play mostly 500," Mark said. "Children and grandchildren are our greatest blessing." In 2009, the Skrochs built the parlor and compost barn to replace the tiestall barn which gave the Skrochs room to double their herd size. "The new parlor and barn saved our bodies," Mark said. "The old barn was 100 years old and could not be retrofitted. We built the bedded pack for cow comfort and honestly, building a freestall barn was too much cost up front." Pam agreed. "If we ever wanted to, it would be easy to retrofit this barn with compost stalls," she said about the compost facility. The Skrochs also installed a stacking slab for manure management in 2012, and built a calf shed three years later. In addition to the structural improvements on the farm, the Skrochs have implemented and upheld practices that have focused on soil and water conservation, including no till, grade stabilization, contour farming, and manure, nutrient and pest management among other practices. "Alvin did some conservation farming, but one of the first things we did was sell our moldboard plow and bought a hay merger," Mark said. "It's a more sustainable way to farm and the right thing to do."

Mark and Pam work with a crop consultant to understand how effective their management practices are and where room for improvement lies. While each practice has bettered the environment in which they farm, there have also been financial incentives for the Skrochs. The most notable has been how Mark spreads manure. "The timing and location of where we spread for nitrogen benefits and the manure is not leeching which gives us the biggest financial benefit," he said. The Skrochs believe their continued conservation efforts were part of the reason they were nominated for this year's farm family award. In 2014, the family was recognized as the Benton County Soil and Water Conservation District Outstanding Conservation Cooperators.

Mark also serves on the county's American Dairy Association board and is involved in the area irrigation association. Both Mark and Pam are members of Minnesota Milk Producers Association, the national Farmers Assuring Responsible Management program and their church. Pam said "We both grew up with a hard work ethic and that helped us."

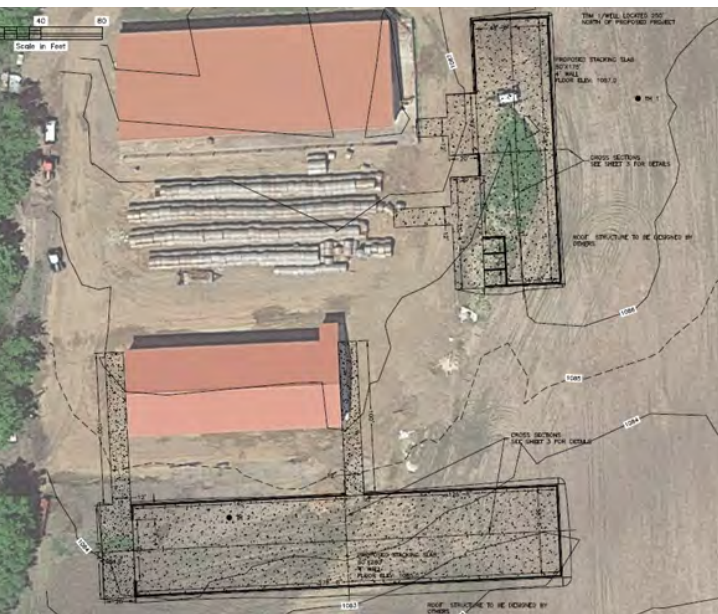
As dairy farmers, the Skrochs have been through some of the greatest of times and the worst of times. Their keen sense of finances and fostering important relationships early on in their career allowed Mark and Pam to both work on the farm and raise their family in the livelihood they always envisioned. "This is our home, and we're going to keep working on it," Mark said.



Photo by Jennifer Coyne - Mark & Pam Skroch milk 118 cows at their dairy farm, Sunny Oak Farm, near Rice.

FEATURE PROJECT HIGHLIGHT

Stacking Slabs



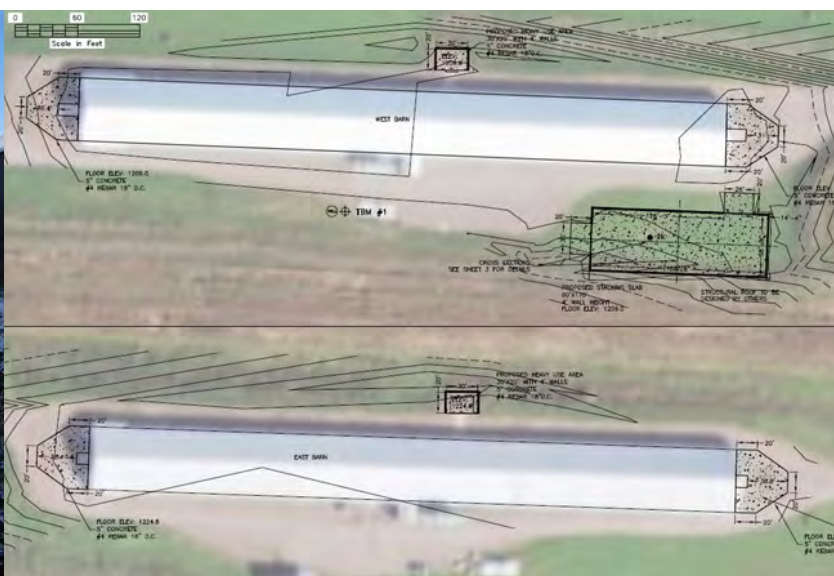
Overview of the Project

According to the MPCA manure stockpiling requirements, stockpiling is not allowed on coarse or wet soils. In Benton County, only approximately 10% (22,400 acres) of soils meet these requirements and are considered suitable making manure storage necessary for many producers.

Stacking slabs allow manure to be stored safely so any runoff or leaching is eliminated thereby reducing the risk of contaminating surface and groundwater resources. Stacking slabs also protect the manure from rain and snow which allows farmers to have a more consistent and uniform product for spreading and will decrease the chance of over application.

Landowners are able to decide the layout and how large their stacking slabs are but typical slabs are designed to hold 9-12 months of manure. They are designed with 4 feet high concrete walls to keep the manure in and clean water out. A private engineer is required for the roof design which needs to meet residential snow and wind load requirements.

The photo above is showing the design for a 60' x 280' roofed stacking slab and a 50' x 175' roofed stacking slab and mortality facility that are being installed to store manure and compost mortalities for one year. This will allow the landowner to spread and incorporate manure while also meeting MPCA stockpiling requirements as all the soils around the farm and crop land have high water table issues and stockpiling is not allowed.



Pictured left: Temporary stockpile site located next to a waterway. Pictured right: 60' x 170' covered stacking slab to store the manure from two chicken barns for one year. Currently, the manure is stockpiled by the barn doors until it's hauled offsite. The stacking slab will allow manure to be stored on concrete to avoid storing manure on soils with a high-water table.

EROSION AND SEDIMENTATION

County Water Management Plan Priority: Excess runoff and sediment in surface waters can have negative impacts on surface water quality

The overall geologic landscape and soil textures in Benton County have led to increasingly significant erosion and sedimentation issues which have also been exacerbated by changing climate trends and increased development. The soil health movement is on the rise and farmers are beginning to help spread their innovative ideas. From no-tilling and strip tilling to interseeding cover crops into standing cash crops, Benton County Farmers are on the forefront of adopting soil health principles into their farm management

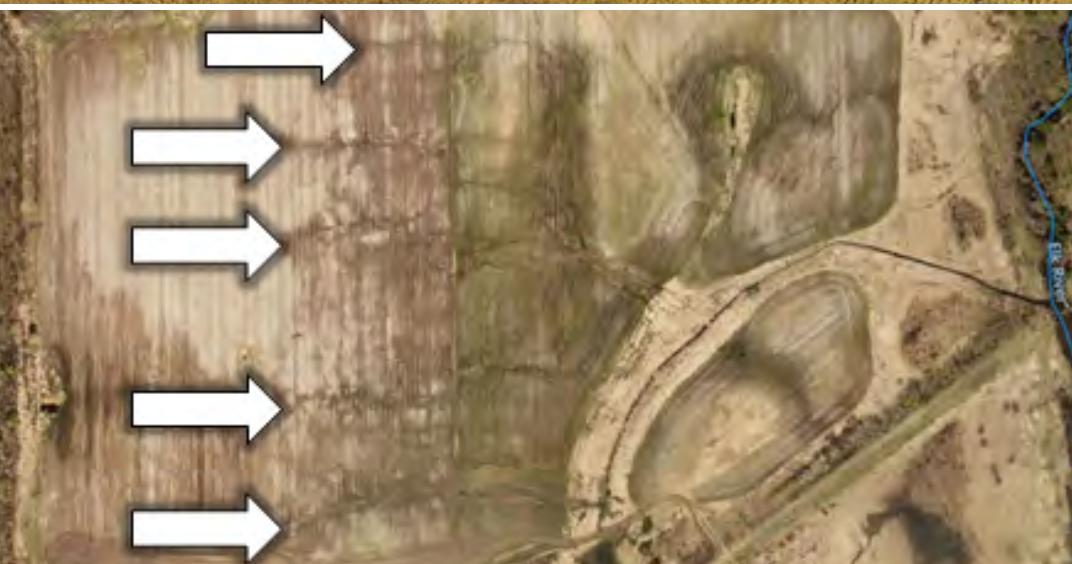
Services & Practices Offered

- Cover crops
- Residue management
- Grade stabilization structures
- Water & sediment control basins
- Windbreaks
- Buffers
- Streambank stabilization



2020 Highlights

- Implemented 155 acres of conservation tillage
- Implemented 2,158 feet of windbreaks & shelterbelts
- Installed 9 WASCOBs
- Installed 5 terraces/diversions
- Planted 1,166 acres of cover crops
- Installed 13,944 square feet of lined waterways



The landowner is experiencing significant gully erosion across multiple fields. He plans to install 3 terraces with tile intakes and an earthen diversion in 2021

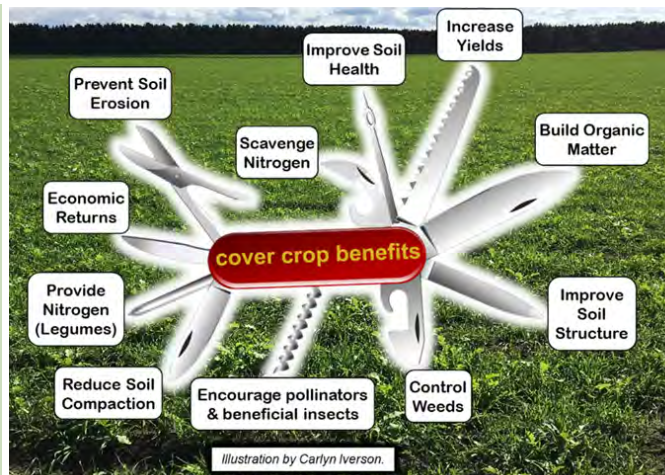


FEATURE PROJECT HIGHLIGHT

Russ Kath Cover Crops

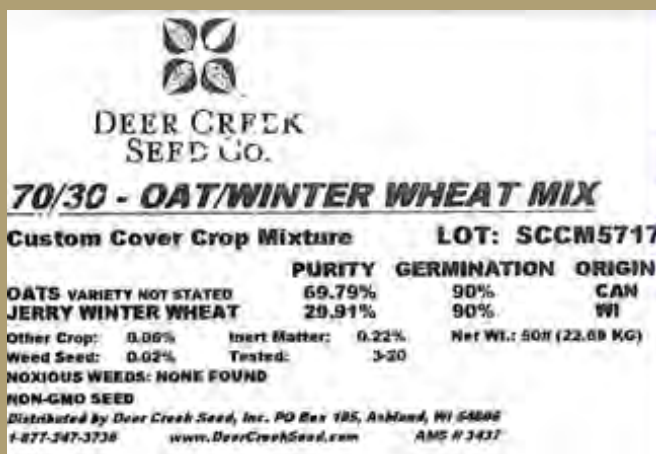
Overview of the Practice

Cover crops have the potential to provide multiple benefits in a cropping system. They can prevent soil and wind erosion, improve soil's physical and biological properties, supply nutrients, suppress weeds, improve the availability of soil water, and break pest cycles along with various other benefits.



Overview of the Project

Russ is looking to increase his soil health and the grazing season on some fields. This would allow him to get an extra crop of hay off so he could think about expanding his beef cow numbers. His seed mix is below.



Before



After

Mindful Farming*Kaschmitters manage nutrient application to promote soil health*

Photo by Jennifer Coyne - Glen and Brian Kaschmitter farm 850 acres of cropland in rural Sauk Rapids. The brothers carefully manage nutrient application on their fields to promote soil health, reduce runoff and meet the Kaschmitters' farming goals. Not pictured is Brian's wife, Brenda, who is also part of the business.

Sauk Rapids - Brian and Glen Kashchmitter understand the importance of farming mindfully. "We can't tear down a field and rebuild the soil," Brian said. "We have to be able to sustain the land year after year in order to raise a good crop." The Kaschmitter brothers and Brian's wife, Brenda, carefully manage nutrient application on their 850-acre crop farm near Sauk Rapids with the assistance of local organizations and programs that help determine the best practices for the soil condition and the Kashmitters' farming goals.

The family raises corn, soybeans, alfalfa and grass hay, and a herd of beef cows. They also run a custom soybean roasting business which the family began in 1987. Until last year, the Kaschmitters managed a farrow-to-finish hog facility where they raised about 1,500 feeder pigs each year. Across Minnesota, farmers are restricted from applying nitrogen on cropland in the fall or on frozen soils in vulnerable groundwater areas under the Groundwater Protection Rule. While parts of Benton County are considered vulnerable areas, the Kaschmitters are not affected by the

inability to apply nitrogen during this time because of practices they have already implemented. "When it comes to applying fertilizer in the fall, most farmers aren't doing that," Glen said. "The nitrogen rule is a good thing. It was developed with input from the agriculture community."

The rule was established to prevent nutrient runoff when weather conditions do not allow for nutrient absorption. When the soil temperature is below 50 degrees Fahrenheit, the nitrification of converting nitrogen to ammonia does not occur. The process is more stable when soil temperatures are warmer in the spring and summer. "As farmers, our purpose is to manage the land in the most efficient way possible to deliver a high-quality product," Glen said. "We've made changes to our farm to become more conservative as we're able."

The single greatest change the brothers made to nutrient management was choosing to apply fertilizer once before seeds are planted and then once during the growing season. "When we apply nitrogen, we have to make sure it goes on gradually so it doesn't leach away," Glen said. "Otherwise, it could get into the air with a hot, windy day." They then test the soil's nutrient composition and apply manure and apply manure accordingly following best management practices. "In the eastern half of the state, the soil is low in pH but high in phosphorus," Glen said. "So when we spread manure, we look at phosphorus levels to apply to the soil versus nitrogen." Brian agreed. "Weather we're applying for phosphorus or nitrogen, we look at removal rates and make sure what is applied will be utilized," he said.

The Kaschmitters closely monitor their irrigation system by using 12- and 14-inch meters that measure soil moisture. These readings help the family decide when and how much water to apply to the fields. "We have to be careful because when nitrogen is converted to nitrates that's easily lost with the infiltration of water," Glen said. Every year, the family works with the NRCS and Benton SWCD to appropriately apply fertilizer to the soil. "It's important to work with programs, and we work with good people," Brian said. "We wouldn't try any of it if we knew there wasn't a benefit to farming differently." Brian was a longtime board member on the Elk River Watershed Association before it dissolved.

Not only is this important for soil health and long-term sustainability of the land, there is also a financial incentive to apply nutrients responsibly. "Fertilizer costs went way up in the '80s and farmers became more aware of what they were spending," said Glen who worked as an agronomist before returning to farm full time with his brother and sister-in-law. "Nitrogen, in particular, went crazy." For reference, 40 years ago when farmers would apply nitrogen, the cost to do so was about \$0.08 per pound. Now, the cost is between \$0.24 and \$0.40 per pound.

To further assist with nutrient management, Glen and Brian implemented a buffer strip along their drainage ditches nearly a decade ago, and use cover crops and no till farming practices on certain fields. While all of these practices have made crop farming more desirable for the Kaschmitters, it has become ever more important as they continue farming in a location prone to urban sprawl. "It's great for the community," said Glen about the growing population. "But people have to understand agriculture is a large part of this community." Together, the Kaschmitters choose to implement practices that benefit their operation and the community that surrounds them. And, they are not alone. "While mother nature controls what we do and how we farm, most all farmers farm in a way that is good," Brian said.

FEATURE PROJECT HIGHLIGHT

Skroch Erosion Control

Overview of the Project

Mark has been having erosion issues with an intermittent stream that runs through his property since 2013. There are sandy soils at this site, and there is approximately 12 feet of elevation drop over 1,350 feet of stream length with marginal vegetation growing on the banks of the stream. Over the last few years, Mark says he has lost 4-5 feet on each bank.

To solve the sites erosion issues, the stream channel was lined with fabric and rock to control the base flow and the streambanks were flattened out to a 3:1 slope and reseeded with grass to stabilize the soils on the banks during periods of high flow.

The project was funded with a combination of EQIP funds, Clean Water, Land and Legacy Amendment funds, and landowner contributions.

Pollution reductions to Zuleger Creek and Little Rock Lake include 59 tons of sediment and soil per year and 50 pounds of phosphorus per year.

A Word from the Landowner

The problem we have is the ditch keeps cutting down and getting wider. I cross the ditch with my irrigator in 3 spots so as it gets wider my bridges cave in. It seemed like every year I was fixing one of the three and it just became a hassle and this project will solve that."

Partners Involved

- NRCS
- WCTSA (see page 5)

Waters Protected

- Zuleger Creek
- Little Rock Lake

Project Benefits

- Erosion control
- Phosphorus reduction

Before



After



FEATURE PROJECT HIGHLIGHT

Moulzolf Erosion Control

Overview of the Project

Bill began working with the SWCD in 2019 after expressing interest in fixing a few erosion problems on his field. On the north end of the field, the road ditch is now higher than the field and the water flows down the end rows before cutting across the field. The south end of the field has a terrace that was installed in the late 50's that has been failing the last few years with several gullies starting to form below that terrace.

To fix the erosion problems on the north end, a terrace was installed that outlets to the wetland on the west side of the field and reshaped a road ditch/waterway on the east side of the field that outlets into the county road ditch.

The project was funded with a combination of EQIP funds, Clean Water Legacy funds and landowner contributions. Pollution reductions include 267 tons of sediment/year (TSS), 294 tons of soil/year and 227 pounds of phosphorus per year. The terraces were installed this fall.

Partners Involved

- NRCS
- WCTSA (see page 5)

Waters Protected

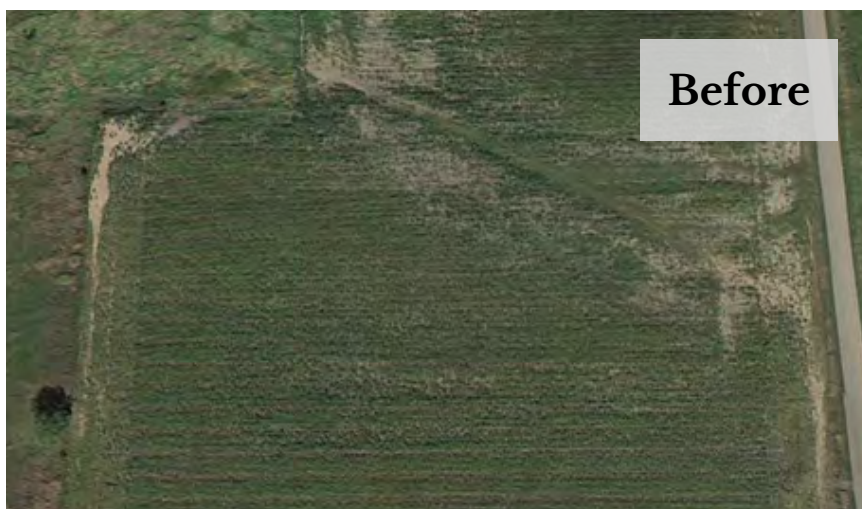
- Mayhew Creek

Project Benefits

- Erosion control



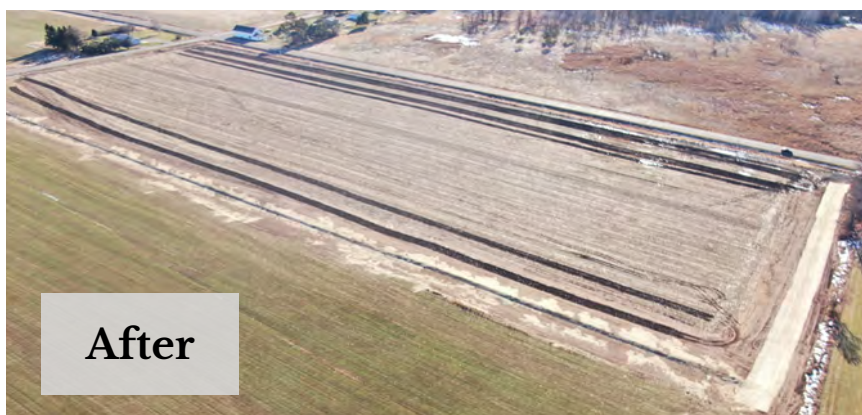
Before



Before



After



After

FEATURE PROJECT HIGHLIGHT

VanHooser Erosion Control

Overview of the Project

Loris installed a water and sediment control basin to address an erosion problem in one of her fields after she contacted our office in 2019. The project consisted of building a 390 foot long berm with a maximum height of 5 feet across the area of concern, and installing 390 feet of tile to deliver the water to a stable outlet.

The water and sediment basin will trap water and sediment behind the berm, allowing the suspended sediment to settle out and the water will be drained within 24-36 hours. Pollution reductions to the Elk River include 57 tons/year of sediment, 162 tons/year of soil, and 48 lbs./year of phosphorus.

The project was funded with a combination of EQIP funds, Clean Water Legacy funds, and landowner contributions.

Partners Involved

- NRCS

Waters Protected

- Elk River

Project Benefits

- Erosion control
- Protect and improve water quality (sediment & phosphorus reduction)
- Maintain productivity



Before



Before



After



After

FEATURE PROJECT HIGHLIGHT

Northeast St. Cloud Sediment Reduction

Background on the Water Quality Issue

After noticing a sediment plume entering the Mississippi River from a stormdrain outfall in northeast St. Cloud, the City completed an analysis of this 367-acre drainage area in 2012. This drainage area consists primarily of industrial and commercial land uses, developed prior to current water quality standards. Analysis found that that 135,000 pounds of sediment and 326 pounds of phosphorus is entering the Mississippi River from this area alone and negatively affecting downstream water quality. Over the next couple years, the city designed projects and began applying for funding and set the goal of reducing sediment loading to the river by 70% by 2029.

Projects Summary

Since 2015, significant progress has been made towards water quality goals. Numerous water quality efforts have been implemented including purchasing & utilizing a new street sweeper, installing green right of ways, installing 4 sump catch basins, creating a rain garden, & installing 3 underground stormwater treatment systems.

Implementation Plan Timeline: 70% Sediment Reduction by 2029



Drainage area the 2020 sump structures will treat



Once or twice a year, the City of St. Cloud performs maintenance on the sumps and underground treatment systems. The photo above shows a truck emptying water and sediment collected and removed from the City's sump structures in late fall 2020.

2020 Projects

In 2020, we received additional funding to install two sump manhole structures and one rain garden. The sump structures will be strategically placed within the watershed to maximize the amount of runoff treated. The rain garden will be installed in partnership with a private property owner. The project will remove an estimated 1,800 pounds of sediment annually. With the installation of these projects, we will be halfway towards our goal of reducing 70% of sediment from the northeast drainage area.

WATER QUALITY & QUANTITY

County Water Management Plan Priority: Protect water resources from increasing demands to prevent potential problems with water quantity. Protect and prevent surface and groundwater from contamination and other impairment factors which negatively affect water quality.

Water quality and quantity have always been identified as priority concerns in the County Water Plan as water resources play a significant role in the recreational and economic value of the county and are vital to the everyday life of residents. The Mississippi River provides drinking water to nearly 70,000 residents in the City of St. Cloud and all adjacent downstream cities, making the quality of water leaving Benton County tremendously important. The County's groundwater is also a substantial resource as many landowners use private wells and groundwater resources are an asset to the agricultural industry for irrigation purposes. Water quality has started to improve over the past few years thanks to landowners willingness to implement wide varieties of BMPs throughout the County.

2020 Highlights

- 900 pounds of pharmaceutical waste was collected and properly disposed
- Completed 7 wetland restoration projects. 6 in the Elk River Watershed and 1 in the Little Rock Watershed
- Installed the counties first variable rate irrigation system
- Completed 6 septic system upgrades
- Completed nitrate tests for 13 landowners
- Sealed 11 wells
- Two MAWQCP applications (see next page) that are currently under the assessment process are anticipated to lead to certifying 1,731 acres of conservation managed land into the program.

Services & Practices Offered

- Irrigation management
- Riparian & native buffers
- Well sealings
- Septic system upgrades
- Wetland restorations
- Nitrate testing
- Pharmaceutical waste collection



*Testing
using
lysimeters*



Boxes of Pharmaceuticals collected for disposal

FEATURE PROJECT HIGHLIGHT

Minnesota Agriculture Water Quality Certification

Overview of the Program

The Minnesota Ag Water Quality Certification Program is a voluntary program for farmers and landowners that protects the state’s water resources. Farmers are land stewards, and the MAWQCP recognizes producers locally and statewide for their work in protecting water quality and our natural resources. The MAWQCP puts farmers in touch with local conservation district experts to identify and mitigate any risks their farm poses to water quality. After being certified, each farm is deemed in compliance with water quality laws and regulations for 10 years. The program has proven to be a valuable marketing tool. Farmers can use their certification status to promote their operations as protective of water quality.

Benton County currently has 13 water quality certified farms totaling just over 9,000 acres.



Minnesota Agricultural Water Quality Certification Program announces 1-million-acre goal

The Minnesota Agricultural Water Quality Certification Program (MAWQCP) was the first of its kind in the nation. The program ensures farmers are protecting natural resources while giving them regulatory certainty. Now MAWQCP is doing something else unique. It’s setting a major milestone to enroll one million acres by the end of 2022.

Governor Tim Walz made the announcement on December 22, 2020.

“This is a key effort we can undertake to ensure our lakes, rivers and drinking water are protected for future generations,” said Governor Walz. “We must do this because Minnesota’s natural resources are a unique part of our state and culture. Farmers understand this. They are stewards of our land and water and are already helping to protect these resources.”

At the end of 2020, more than 980 farms totaling over 685,000 acres have been certified across the state. Minnesota Agricultural Water Quality certified farms have added 2,000 new conservation practices, including over 110,000 acres of new cover crops, that protect Minnesota’s waters. Those new practices have kept over 38,000 tons of sediment out of Minnesota rivers while saving nearly 108,000 tons of soil and 48,000 pounds of phosphorous on farms each year. The conservation practices have also reduced nitrogen loss up to 49% and cut greenhouse gas emissions by more than 39,000 tons per year.

There are also extra endorsements available to water quality certified producers for soil health, integrated pest management, and wildlife. These endorsements celebrate farmers and landowners who are going above and beyond to implement conservation efforts on their land.

MAWQCP Staff



Mark Greve, Grant Pearson

A Word from the Agricultural Commissioner

“We already know that certified farms have a major impact on our environment for the better, but the certification program is also good for our ag economy,” said Agriculture Commissioner Thom Petersen.

According to a study by AgCentric, a program of Minnesota State, the average net income of ag water quality certified farms is 26% higher, or \$19,000 more per year, than non-certified farms. Other key financial metrics are also better, such as debt-to-asset ratios and operating expense ratios. The study also indicated increased yield for corn, soybeans, and alfalfa on certified land.

“This provides more stability during these uncertain times, and I encourage farmers and landowners to looking into the advantages of certifying their land,” added Petersen.



FEATURE PROJECT HIGHLIGHT

Variable Rate Irrigation System

Overview of the Project

The Hackett's (Mel and Darlene, Spencer and Stacey) have installed several conservation practices in the past couple years, but the most notable is one of the center pivot's they replaced in the spring of 2020. The field, which had been irrigated with a conventional center pivot system, is now irrigated with a variable rate system. This allows them to use a "prescription" to apply varying amounts of water to different parts of the field. To the best of our knowledge this is the first in the county.

To understand the importance variable rate, especially for this field, a brief look at the soils is helpful. USDA has a rating system that classifies soils based on their drainage, which ranges from "very poorly drained" to "excessively drained". In this irrigated field there are soils from both ends of the drainage class, with parts of the field that are under the pivot having standing water most of the growing season to sandy soils that are susceptible to drought, and soils in between. The majority of the field is excessively drained.

Under the old conventional center pivot, the wet areas received the same amount of irrigation water as the dry areas. The end result is either the dry areas were underwatered, the wet areas were overwatered, or both. With the new system the overall amount of water used is reduced and it's applied in a more productive pattern.

In addition to the water savings Hackett's are also seeing a reduction in energy use. This is partly due to the reduced water usage, and partly due to other changes. When the new irrigation system was installed they also replaced the old diesel-powered irrigation pump with a new electric pump with a variable frequency drive to reduce energy consumption.

Partners Involved

Funded by NRCS

Technical assistance
NRCS and SWCD

Waters Protected

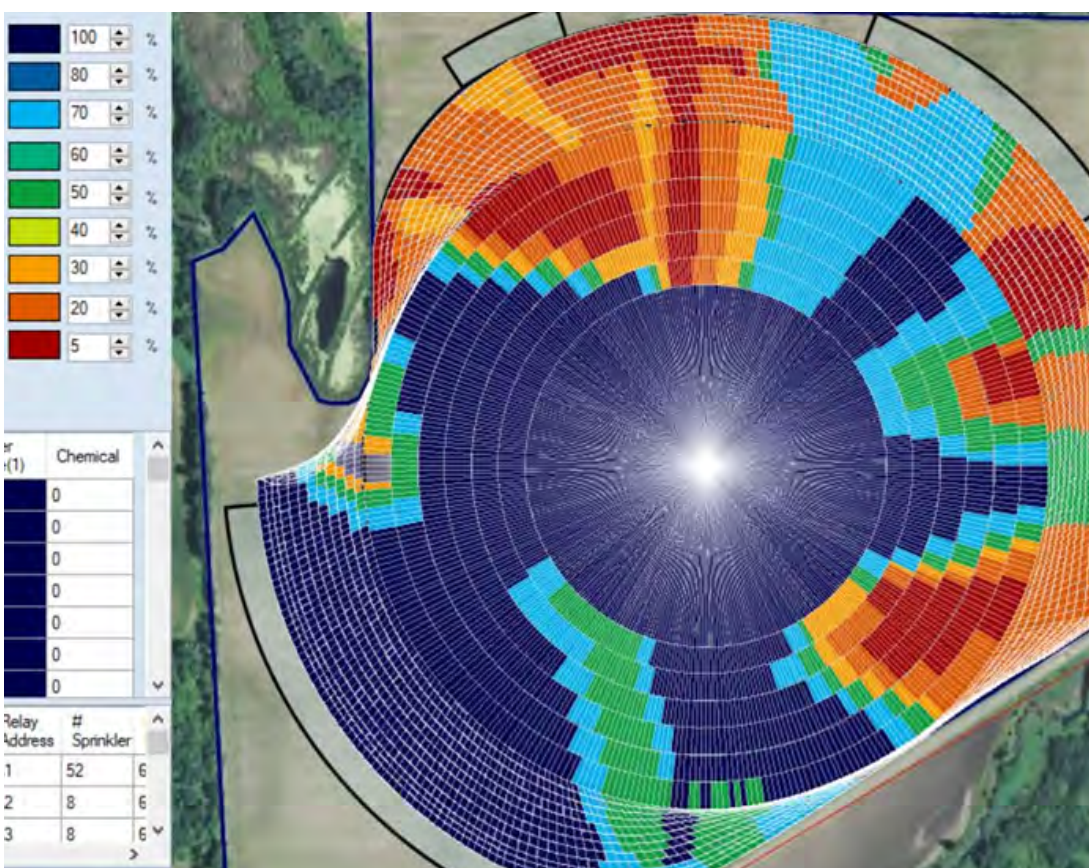
Groundwater
Bunker Hill Creek

Project Benefits

Improved irrigation
efficiency and
water use

Reduced leaching
potential

Reduced energy use



The picture shows how the water is applied under the new system. Each color represents a percentage of the full application rate. For example, if 1" of water is needed, the dark blue areas would receive an inch of water, light blue 0.7", green 0.5" to 0.6", lime 0.4", orange 0.3", dark orange 0.2", and red 0.05". With this pivot the new end also has the ability to "swing" and can avoid going thru and applying water in the wet area in the upper left side of the aerial image. In the past this area would have received the same amount of irrigation water as the rest of the field.

FEATURE PROJECT HIGHLIGHT

Wetland Restoration - Suzanne & Nathan Molitor

Overview of the Project

Suzanne and Nathan Molitor purchased property that had an existing wetland restoration project that was completed by Benton SWCD in 1998. A weir structure was installed to plug an existing ditch in order to restore 7.75 acres of drained degraded wetland habitat. During the life of the wetland, the weir structure experienced some damage prior to the Molitor's owning the property and the Molitor's were interested in repairing the structure to restore the wetland back to its original water level.

The SWCD partnered with the U.S. Fish and Wildlife Service to repair the weir structure and remove some non-native cattails that have started to grow along the berm structure to promote more native aquatic vegetation. The old weir structure was removed, and a new weir structure was installed along with a rock spillway for the water to flow through during high water.

Partners Involved

- Suzanne and Nathan
- Benton SWCD
- U.S. Fish & Wildlife Service

Watershed Protected

- Elk River Watershed

Project Benefits

- Nitrogen & phosphorus reduction
- Floodwater retention
- Groundwater retention
- Wildlife habitat



Before



After



A Word from the U.S. Fish & Wildlife Service

"When looking at marginal landscapes, we wonder what value there can be. Land that's not produced on can provide extreme value to Benton County residents. In this instance, we had a low wet area that was not being produced on in any capacity. In this value we have a wetland restoration. A wetland restoration in this setting provides copious amounts of wildlife habitat to an array of species and water quality benefits. Nitrogen reduction, phosphorus reduction, flood water retention and groundwater recharge, all these things can be improved with the installation of a wetland restoration".

FEATURE PROJECT HIGHLIGHT

Wetland Restoration - Dean Hanson

Overview of the Project

Dean partnered with the SWCD and U.S. Fish and Wildlife Service to create some wetland areas on his property. Three different areas had berm structures installed to restore three acres of drained and degraded wetland habitat. The sites were also scraped of non-native vegetation in the wetland pool area to create more open water and to promote native vegetation re-growth. The existing 18-acre crop field is scheduled to be planted to a native prairie in spring 2021.

Partners Involved

- Dean Hanson
- Benton SWCD
- U.S. Fish & Wildlife Service

Waters Protected

- Elk River Watershed

Project Benefits

- Nitrogen & phosphorus reduction
- Floodwater retention
- Groundwater retention
- Wildlife habitat

A Word from the U.S. Fish & Wildlife Service

The U.S. Fish & Wildlife Service Partners for Fish and Wildlife program, has been assisting landowners such as Dean Hanson, enhance and restore their recreation property to improve it for their personal needs. Wetland restorations, prairie restorations, among a host of other habitat restoration projects, are all part of the partners for fish and wildlife program at little to no cost to the landowner and an easy agreement process.



Before



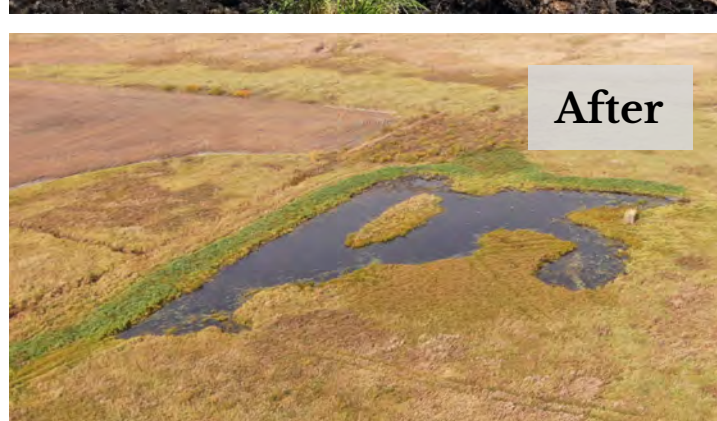
Before



After



After

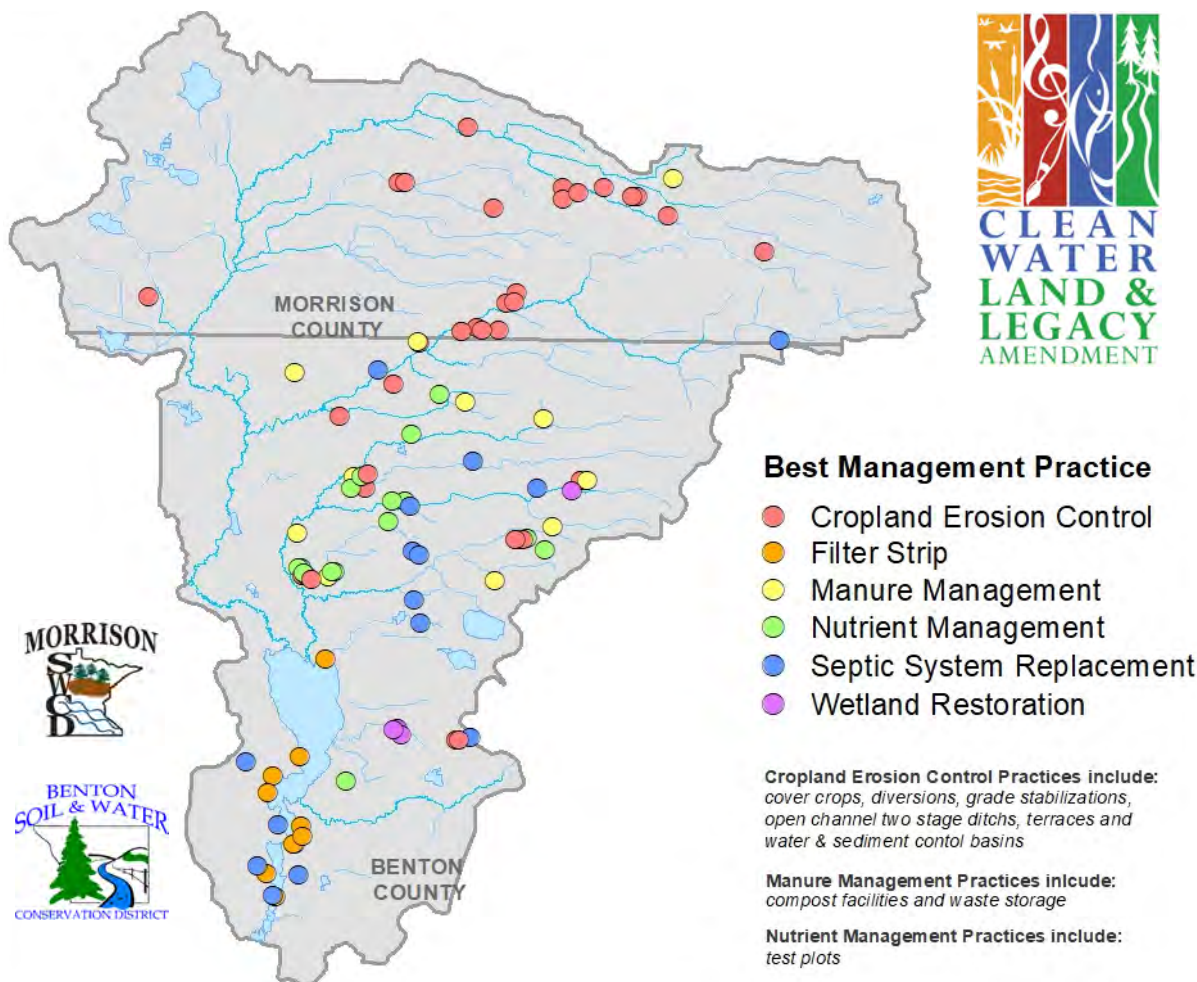


LITTLE ROCK WATERSHED

In 2012, the Little Rock Lake Total Maximum Daily Load (TMDL) study and Implementation Plan were completed. The severe water quality results in the study spurred more conservation efforts by Benton and Morrison SWCDs as well as the Minnesota Board of Water and Soil Resources (BWSR). Since the TMDL was completed, there have been a total of 92 projects completed in this watershed including three which were installed in 2020. The projects were implemented using cost-share funds provided by the Minnesota Clean Water Land and Legacy Amendment, the landowner, Little Rock Lake Association, and federal program funds. These conservation efforts have had substantial effects on pollution reductions in the Little Rock Lake watershed with significant reductions in suspended solids, sediment, phosphorus, nitrogen and fecal coliform.

The following few pages highlight some of the work done in this watershed.

Little Rock Watershed Best Management Practices



Annual Pollution Reduction Estimates

Total Suspended Solids
1,898 tons

Soil Loss Prevented
1,903 tons

Phosphorus
4,512 pounds

Nitrogen
13,591 pounds

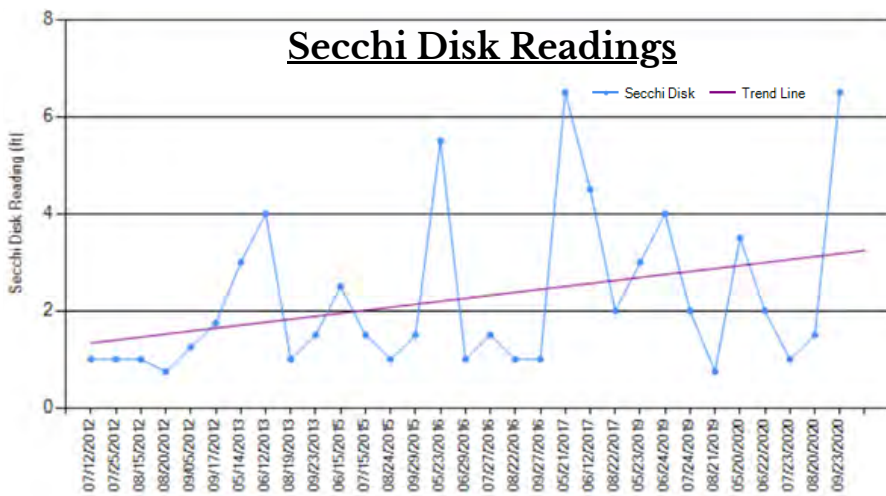
Bacteria
1.11E+15 CFU

LITTLE ROCK WATERSHED MONITORING

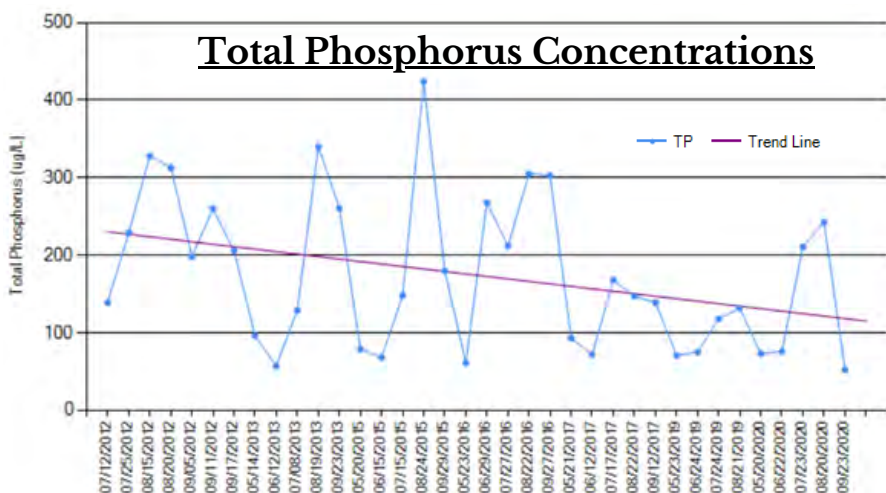
The Little Rock Lake Association has been monitoring water quality of Little Rock Lake since 2012. Secchi depth water clarity measurements and water chemistry samples for total phosphorus and Chlorophyll-a are taken monthly at three different sites. The data provided by these eight years of monitoring is indicating that the best management practices showcased on the previous page are leading to positive water quality impacts in Little Rock Lake. While chlorophyll-a measurements do not meet statistically acceptable trend criteria, the other data shows that total phosphorus, secchi depth, and trophic state index are all improving with over 90% confidence.



Secchi Disk Readings



Total Phosphorus Concentrations



Parameters	Site 204	Site 205	Site 212
Secchi Depth Mean:	2.3	2.3	2.0
Secchi Depth Min:	0.8	0.8	0.5
Secchi Depth Max:	6.5	7.5	6.5
Secchi depth is increasing, which indicates improving water quality (90 confidence)			
Total Phosphorus Mean:	174.3	171.1	182.2
Total Phosphorus Min:	52	49	39
Total Phosphorus Max:	424	398	390
Total Phosphorus is decreasing, which indicates improving water quality (95% confidence)			

All graphs and statistical data obtained from RMB Lakes Database

FEATURE PROJECT HIGHLIGHT

Little Rock Lake Drawdown Update

Project Background

Benton and Morrison SWCD's and NRCS have been working with landowners for over 10 years to implement best management practices to reduce runoff in the watershed. While these projects produced positive results, Little Rock Lake was still experiencing significant algae blooms. Pollution reduction estimates from projects indicated the second phase of TMDL implementation should be initiated.



Plantings at Benton Beach in fall 2020

Project Overview

Little Rock Lake water levels have been artificially maintained for over 100 years. The lack of water fluctuation limits plant growth which allows algae to fill that void. Creating an artificial "drought" spurs plant growth that will utilize available phosphorus in the lake bed, providing shoreline stability and habitat.

In 2019, Little Rock Lake was drawn down three feet for a period of six weeks and 46,000 native emergent plants were purchased and planted in the lake to provide additional benefits. Now that the project has been completed we are starting to see the water quality benefits with significantly increased water clarity and decrease phosphorus levels.



Native plantings at a landowners property on Little Rock Lake

Partners Involved

- Little Rock Lake Association
- Eagle Creek Renewable Energy
- MN DNR
- BWSR
- Benton SWCD

Waters Protected

- Little Rock Lake
- Mississippi River

Project Benefits

- Shoreline stability
- Decreased erosion
- Improved water clarity
- Decreased phosphorus
- Improved fish/wildlife habitat

Project Funding

- 198,250 in Clean Water Funds
- \$96,750 in matching funds
 - Lake Association - \$66,750
 - Eagle Creek Energy - \$30,000
- \$171,000 in non-matching funds provided by the MN DNR

FEATURE PROJECT HIGHLIGHT

Little Rock Lake Drawdown Update



Native plants planted at the Benton Beach boat launch



Lake front property pictures provided by drone

While water quality is predicted to increase throughout the years, 2020 water quality data is already showing improvements. Total phosphorus is decreasing and Secchi depth (water clarity) is increasing. Algae is still present in the lake, however, it is not the same toxic algae that was present before the drawdown. Microcystin algae before the drawdown was 100 times more than normal but post drawdown numbers show it is now within a scale that is normal (though still high). St. Cloud State University scientists have identified golden algae present in the lake which may also signify improving trends as the Department of Natural Resources says this may support a robust fishery.

Post Drawdown



Drone footage from Benton Beach in fall 2020 shows native plants that were planted along the shoreline and the sandbar dropoff where the lake gets deeper.

Golden Algae Bloom on Little Rock Lake a Good Sign After Drawdown

RICE - After more than a decade of absence, a springtime bloom of golden algae is good news at Little Rock Lake. An April plankton sample on Little Rock Lake was "dominated by golden algae," according to recent news release from the Minnesota Department of Natural Resources.

"In the spring, the golden algae is what we want," St. Cloud State University biology professor Matt Julius said. Julius conducted the sampling April 17.

This is good news because golden algae is "characteristic of a spring algal bloom in a healthy aquatic system," the release said. And those words - healthy aquatic system - have not been used for years to describe Little Rock Lake, a shallow, 1,270-acre artificial lake created after a dam was built in 1907 downstream from where the Mississippi River and Little Rock Creek meet.



A magnified image of golden algae Synura, part of the sample taken April 17, 2020 at Little Rock Lake. (Photo by: Matt Julius)

The lake was first listed as impaired by the state in 2008 and underwent a drawdown late last summer. The intent of lowering the water level about 3 feet for about two months was to flush out excess nutrients, expose the lake's soil to air and sun and grow plants, all in an effort to reduce phosphorus in the lake, DNR Area Fisheries Manager Eric Altena said.

Some phosphorus came into the lake from runoff or non-compliant septic systems, and over time, phosphorus began to build up in lake sediment, Julius said. Extra phosphorus in a lake causes blue-green algae blooms to happen earlier - or, at Little Rock Lake, exclusively. "The phosphorus balance was so out of kilter that the lake never had a chance to have greens or golden algae," Julius said. "They just started with blue-greens."

Typically, golden algae is the first of three major groups of algae to bloom in the spring. After the ice melts, there is a bloom of golden algae, and fish and small animals eat the golden algae, which is full of healthy oils, Julius said. "That sort of promotes a healthy food base for the fish that carries through," he said. Golden algae is dependent on the nutrient ration that heavily favors nitrogen. When the lake warms up, some of the nutrients previously circulating through the whole lake no longer circulate through the bottom layer of the lake as it becomes cold, Julius said. Algae starts to use up the nitrogen and phosphorus in the lake. Typically, you get an imbalance, where the nitrogen gets used up first," he said.

The lake transitions into green algae, but late in the fall, as the nitrogen is used up, bacteria that can pull nitrogen out of the atmosphere - that's blue green algae, Julius said - take over. When there is more phosphorus in the lake, blue-green algae blooms occur earlier, accelerating the natural succession. And when people talk about a lake

Golden Algae Bloom on Little Rock Lake a Good Sign After Drawdown

turning green in the late summer, that is what's going on, Julius said. That is why a golden algae bloom on Little Rock Lake is exciting for Julius. "This was a really good first event because it's exactly what a healthy system is supposed to look like in the spring," Julius said. It is a good indicator that the drawdown had a positive effect. "The question is... how long is that gonna last as we're starting to put phosphorus back into that system?" he said.

According to Altena, phosphorus coming into Little Rock Lake has been greatly reduced through work done by Benton and Morrison counties' Soil and Water Conservation Districts and landowners in the watershed. Their efforts have reduced phosphorus coming into the lake by over 2,500 pounds a year since 2012. That equates to over 1 million pounds of algae in bloom, Altena said.

Water clarity measurements taken last fall as soon as the lake refilled showed transparency quintupled, Altena said. Many of more than 45,000 aquatic plants - of which about half were purchased and planted during the drawdown by members of the Little Rock Lake Association - look to be doing well and are sprouting, she said. But it is still spring, and the days have been cool. "Is the water more clear in July, or not?" Altena said. "That's ultimately what everybody's looking for." Standard water quality sampling comes in June, taken by the Lake Association and sent to a lab to measure phosphorus and water clarity, he said. He will also conduct a vegetation survey and continue to check plantings.

Julius, who is interested in Little Rock Lake and communicates with the DNR about the health of the lake, plans to continue monitoring progress. This summer, he plans to learn how much sediment left in the lake and how much phosphorus went with it. He said the lake needs less phosphorus coming in than going out. "We're worried about that legacy phosphorus," Julius said.

Though concerns about water clarity and algae blooms have existed for decades (since at least 1990, according to Benton County Soil and Water Conservation District), a 2007 blue-green algae bloom tipped the scale toward a public health risk.

The goal is sustained clear-water environment with emerging vegetation to protect the shoreline and provide fish habitat, Altena said. And while golden algae is a good sign, the lake is not "cured," he said. "It's not just an instantaneous flip of a switch," Altena said. "... The hope is there, but the fact is Mother Nature doesn't work that way... It's not always right away, it might not be an instantaneous fix, but you might see portions and glimmers of hope... We all need to do our part to make sure the water quality gets better and continues to improve."



Bulrush begins to emerge from the water at Little Rock Lake Tuesday, May 12, 2020, at Benton Beach. The Lake is being watched intently this year after a drawdown late last summer aimed to improve its water quality. (Photo by Zach Dwyer, zdwyer@stcloudtimes.com)

DNR OBSERVATION WELLS & CLEAN WATER FUND WELL SEALINGS



Nathan Sanoski downloading data from an observation well in Benton County

DNR Observation Wells

In 2015, Benton SWCD began partnering with the Department of Natural Resources (DNR) in a pilot program to monitor DNR observation wells. The program provides a better understanding of water levels in aquifers in response to climate and groundwater pumping and will assist with planning for water conservation. There are approximately 980 observation wells located throughout Minnesota, including ten in Benton County. The SWCD assists the DNR by manually measuring the distance to groundwater with a tape measure in each of these wells quarterly. Automatic data recorders installed in the wells also allows the SWCD to download time series data to submit to the DNR. In addition to the Benton County wells, the SWCD also monitors 17 wells in Morrison County and 23 wells in Sherburne County.

Well Sealings

Groundwater protection has been a consistent priority in the County Water Plan. Sealing abandoned or unused wells is one way to protect groundwater from contamination as an unsealed or improperly sealed well can act as a drain, allowing surface water runoff, polluted water and improperly disposed of solid or other waste to reach and contaminate groundwater resources. These unused wells also pose a significant safety hazard. Sometimes the exact location of the well is lost through ownership changes or other ways and large diameter wells can be large enough to trap children, adults and animals.

The SWCD operates under Clean Water Fund grants to seal unused wells in Benton county. Accomplishments for 2020 include sealing a total of 11 unused wells, 9 dug wells and 2 drilled. The SWCD received another grant in 2019 and sealed an additional two wells with three more scheduled for 2021 so far.



Before



After



Before



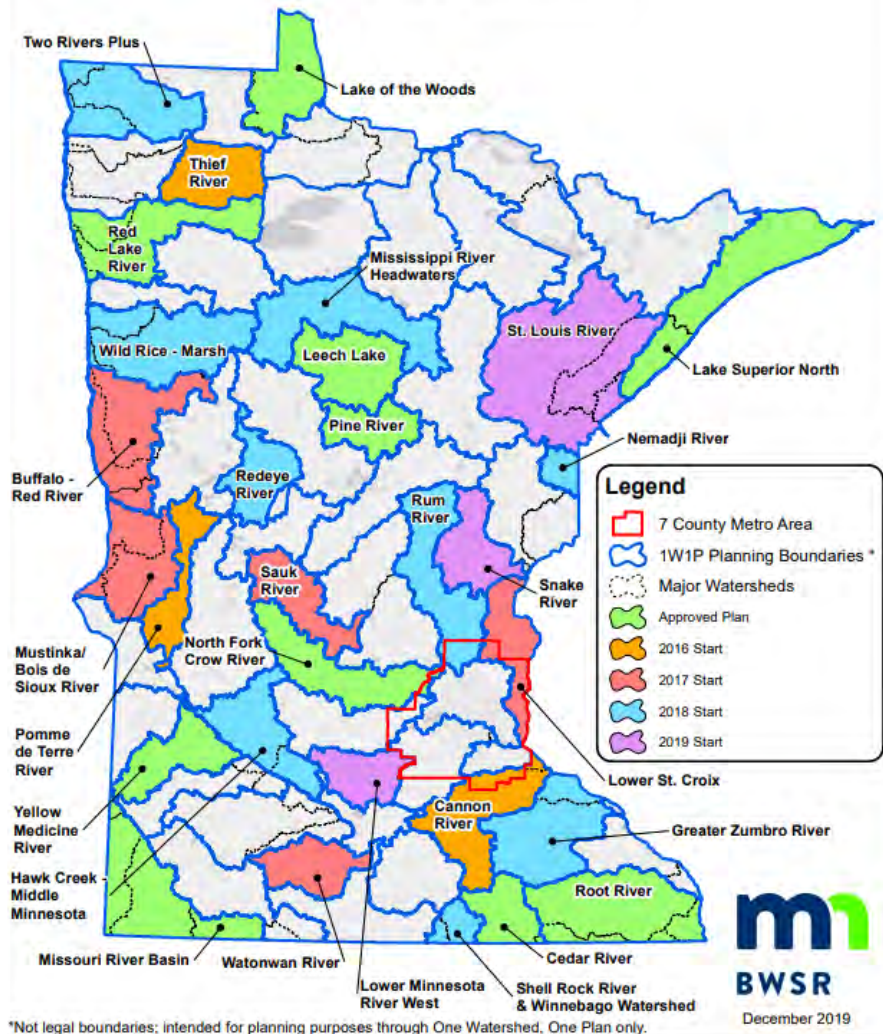
After



ONE WATERSHED ONE PLAN

The structure of water resource management has started to shift to management based on watershed boundaries rather than county boundaries. The One Watershed One Plan (IWIP) program emphasizes forming stronger partnerships between local governments and upstream and downstream neighbors in order to develop a more prioritized, targeted and measurable implementation plan. These comprehensive watershed management plans address water quality and quantity, groundwater, drinking water, habitat, recreation, and other issues. Once the comprehensive water management plans are completed, each watershed will be provided funding by the state to implement the highest priority projects as decided by watershed partners.

One Watershed, One Plan
Participating Watersheds



*Not legal boundaries; intended for planning purposes through One Watershed, One Plan only.
Minnesota was divided into 63 different planning boundaries based on major watersheds. The goal is to have plans started for each planning boundary by the year 2025. Benton County is currently involved with the Rum River Watershed.

Rum River IWIP

The Rum River Watershed boundary covers 1,013,760 acres of the Upper Mississippi River Basin in central Minnesota, stretching from Mille Lacs Lake in the north to the confluence with the Mississippi River in the city of Anoka.

The Rum River IWIP planning process began in late 2018. Since then, watershed partners have been meeting approximately once per month to begin discussions on watershed priority concerns and priority areas. The plan is scheduled to be completed in the fall of 2021.



EDUCATION AND OUTREACH

In recent years, Benton SWCD has made a conscious effort to increase our education and outreach to the community. In 2019, we created an Education and Outreach plan to direct our efforts. The Plan will ensure our efforts are reaching a wide ranged audience including students, County residents, cities and townships, and agencies and other watershed partners as well as ensuring we are continuing our efforts consistently throughout the year. One of our newest efforts is to regularly submit feature project articles to our local newspapers to provide recognition to our project partners as well as enlighten the community on conservation. A few of these articles have been featured throughout this report.

In 2020 the SWCD worked on putting together project videos using drone footage. This helped the district showcase our work completed when we presented our 2020 Tour of Practices virtual style to our Benton County Commissioners.

2020 Education Outreach Highlights

- Poster, mural, essay, coloring contests
- Pharmaceutical collection
- SWCD Tour of Practices-virtual
- Newspaper feature project articles
- Project timelapse videos -
- Soil and water stewardship
- Farm Friends Barn
- Videos
- Weekly Facebook posts
- Central MN Farm Show
- Mississippi-Sartell Watershed
- Scholarships to Soil Health School
- Rain Gauge Reader Program



Taya was presented with the First Place Overall Award for her Essay Contest entry.



Calvin was presented with the First Place Award for his class Essay Contest entry.

Battle of the Buckthorn

*Kroska works tirelessly to control
invasive species*



Foley - Mike Kroska and his family have worked toward controlling buckthorn on their property southeast of Foley. "I grew up cutting wood, learning about the different species of wood," Kroska said. "My dad was always clearing out his 40-acre wooded area."

According to Benton Soil and Water Conservation District and Natural Resources Conservation Service, common buckthorn (*Rhamnus cathartica*) was brought to Minnesota in the mid-1800s from Europe. Shortly after its introduction, buckthorn was found to be an aggressive invasive species.

"The vines and branches intertwine and out-compete native plants for nutrients, light and moisture," Kroska said. "Buckthorn is a shrub, but it can also grow into a small tree, reaching up to or over 20 feet."

Kroska's father, Jerry, was the first person to realize the prevalence of buckthorn on their property and taught his children the importance of clearing the invasive species. After Jerry's passing in 2015, Kroska took to the woods as a coping mechanism, maintaining his 10 acres. With the knowledge of woodland species and determination to clear his land while leaving saplings of native plants, Kroska developed his own method.

"Nothing was done with the land before I moved here," Kroska said. "Buckthorn continuously gets worse until you do something about it, so it turned into a weekend thing for me." Kroska typically spends eight days a month, for two to three hours, clearing his woods during the winter months. From December to March, Kroska is busy in his woods with the help of his Daughters, Peyton, 11, and Alivia, 8. With a brush saw, Kroska spends 15 minutes cutting down buckthorn trees and shrubs. "After I get done cutting, my girls then help me gather the brush and put it in a pile to burn," Kroska said. "While burning, I go around and spray the stumps to kill the root. The plant cannot merely be cut. Spraying is the only way I have found to get rid of it."

When he began, Kroska mixed blue dye into Tordon, a highly concentrated picloram herbicide, as a way to easily mark where he had sprayed. He now uses a less abrasive brush spray because a lot of the hard work has been done. "It only takes one spray to kill the plant," Kroska said. "I just have to make sure to get it in either the stump or directly on the bark. The plant just has to be actively growing." The Foley native said people can spray in summer months to avoid cutting down trees and brush, but he prefers a cooler climate due to the lack of insects.

"I take the time and spray each plant because I don't want to kill my woods, just the buckthorn," Kroska said. "By doing that, the saplings of other trees have a chance of grow." Because of the hours and time put into clearing his woods of the invasive vegetation, Kroska's daughters have even learned how to identify buckthorn. "In the late fall, my girls are pointing to the tree lines as we drive down the road," Kroska said. "Buckthorn is easy to identify because the leaves are the last to fall while all the other trees are bare." The invasive species is not only the last to lose its leaves but also fight for the edge of the tree line because of the light.

"It is the worse brush there is because it grows every which way to reach for the sun," Kroska said. "And, the seeds can germinate even years after falling of the branches." Buckthorn seeds can remain viable in the soil for up to 10 years, Mike said.



Photo by Jennifer Coyne - Peyton (left) and Alivia Kroska stand outside with their father Mike Kroska Dec. 31, 2019, at their property southeast of Foley. Kroska has been working at clearing buckthorn, an invasive species, in his 10-acre wooded area for the past four winters.

Battle of the Buckthorn

Kroska works tirelessly to control invasive species



"Buckthorn is a major problem because eventually if no one does anything about the regrowth and once the mature native trees die, there will be nothing able to grow but buckthorn," Kroska said. "I'm not going to sugar coat it. It can get pretty expensive. I've probably spent around \$250 each winter on the spray, but the end result is worth it."

After four winters, Kroska's hard labor has been minimized. "I just have to go back and spray the regrowth and little stuff every year now," he said. "Every time I go out, I know I'm making a difference. I can see 400 feet through my woods versus 40 feet through my neighbor's woods." Kroska and his children may not see it in their lifetime, but the fruits of his labor will pay off when the saplings of native trees start to grow and thrive. "Someone tackling this kind of feat might not think they're doing much until they start to look around and see a difference," Kroska said. "They're not going to see a difference overnight, but the key is to keep pecking at it and not over do it."

Before



"Someone tackling this kind of feat might not think they're doing much until they start to look around and see a difference," Kroska said. "They're not going to see a difference overnight, but the key is to keep pecking at it and not over do it."

- Mike Kroska

Buckthorn fills Mike Kroska's wooded area February 2017 on his property southeast of Foley. From December to March, Kroska spends about eight days a month in his woods clearing the invasive plant.

After



A part of Mike Kroska's property is clear of buckthorn February 2017 southeast of Foley. Kroska uses a brush saw to cut down buckthorn while leaving other native saplings to thrive



Mike Kroska holds a brush saw Dec. 31, 2019 on his property southeast of Foley. Kroska spends two days a week for two or three hours cutting, burning and removing buckthorn.

Reading the Rain

Rice's Hovda reaches 30 years as a climatology volunteer



Rice - Everyone has a morning routine. Some people read the morning paper, while others go for a run. Oftentimes, the activities they choose are reflective of who they are as individuals. At 7 a.m. every morning, Rice resident Jim Hovda checks his rain gauge and records the rainfall total from the past 24 hours. It is a duty the detailed Hovda has conducted for decades, and this year, he celebrates 30 years as a volunteer precipitation reader for the Minnesota Climatology Network. "My reaction was one of surprise, because I didn't realize I had been doing it that long," he said. "I thought, "Well, that is a milestone." I went back and did some math, and that's more than 10,950 daily entries.

That staggering amount exemplifies Hovda's consistency as the longest serving volunteer from Benton County. One of over 20,000 contributors to the Community Collaborative Rain, Hail and Snow Network, Hovda not only logs the previous day's rainfall amount, but also the high and low temperature and also phenological observations, including the patterns of area wildlife. Occasionally, he will even record his GPS location to aid the state climatological office in their research. "He has wonderful comments and is a great observer of nature," Pete Boulay, assistant state climatologist at the Minnesota State Climatology Office. "He notices comings and goings of animals, plants and also keeps track of the ice on Little Rock Lake. Ice in and ice out is a big deal in Minnesota; we all want to know when the ice is out." The task is a yearlong endeavor. Hovda's rain gauge also intakes snow, which can be melted and provide an accurate snowfall measurement. The devoted volunteer also breaks out his light blue snow measuring stick when winter arrives to track how much snow is on the ground at a given time.



Hovda next to his rain gauge he uses to record daily precipitation amounts



Hovda showing one of his monthly precipitation observation forms



Hovda is one of around 1500 observers in the State that work through their Soil & Water Conservation District

Reading the Rain

Rice's Hovda reaches 30 years as a climatology volunteer



Hovda was a radio operator during his active duty in Vietnam, and the day-to-day weather patterns were important even then. One of his objectives was to send out the daily weather, and Hovda would relay the same message every day: "Same." The temperature and cloud cover remained mostly unchanged as the days progresses. That is not the case in Minnesota, which has garnered a reputation for having a hard-to-predict daily, weekly and monthly forecast. "It's like guessing who is going to win the Kentucky Derby," Hovda said. Hovda's experience, however, helps him to notice certain trends, such as the departure of the orioles in late August, followed shortly thereafter by the hummingbirds. Unlike the sporadic temperatures, the behavior of area wildlife is a consistent indicator of upcoming weather changes and fluctuations.

"Usually there are five or six orioles sitting on our grape jelly feeder," Hovda said. "We feed the birds and watch them. They're a good barometer of what is going to happen." And sometimes, extraordinary weather occurrences take place. Hovda witnesses a once-in-a-lifetime downburst that took place in Rice August 13, 2010, creating winds harsh enough to displace Hovda's 40-foot steel weather tower and blow it onto the roof of his house. He clocked the gale's top wind speed at 81 mph and left the gauge needle right on that exact spot, where it sits today to remember the awe inspiring moment, known as a terrain-altering event. "They didn't know if it was a tornado, but it turned out to be a gigantic downburst of weather," Hovda said. "It flattened thousands of trees. Some of these events, you need to write on paper. It can be very useful."

Hovda submits the information learned from past days to the Minnesota State Climatology Office website, along with the CoCoRaHS database. St his desk, he keeps a record of his notes, going back at least a decade. He maintains his climatological interest through owning a Minnesota Weater guide calendar and appearing on Mike Augustyniak's Weather Watcher Network.

While Hovda has been responsible for a majority of the readings at his location, he has not documented the weather alone. His wife, Jan, takes note of the environmental happenings and documents them whenever Hovda is away. When the couple leaves their residence for vacation together, two trusted friends, Nancy Anderson and Randy Fernholz, take down the totals for them. "This is not one person doing everything," Hovda said. "I've got some real stalwart helpers."

And for the Minnesota Climatology Network, helpers are encouraged. Hovda is one of six precipitation readers in the county, but there is a lot of ground yet to cover. The more volunteers within a given area, the higher the likelihood of catching a rain or snow event.

"I would encourage anyone to become a weather watcher and involve themselves in the Benton County program," Hovda said. Soon enough, the orioles will migrate south in preparation for the winter, and Hovda will mark it on his light-green logbook, as he has done so for three decade. After all, there is something about the weather that peaks people's curiosity.

"Everybody is interested in the weather," Boulay said. "It's the unifying thing everyone has."

For more information about the Minnesota State Climatology Office or to view monthly precipitation records for the entire state visit their website: www.climate.umn.edu.



CONSERVATION CONTESTS

Every spring the SWCD sponsors a variety of conservation contests that students in the County can participate in. There is a conservation coloring contest for kindergarten through fourth grade, and fifth and sixth grade can get involved with the poster, mural, and essay contests. The 2020 theme was "Where would we BEE without Pollinators?". The SWCD has been sponsoring the esay contest since 1957 and the poster contests since 1982. The top three posters and murals from the County are brought to the West Central MN Association of SWCDs Area 2 meeting where they are judged against the top posters and murals from the 11 participating counties.



2020 Highlights

This year we received a total of 1,035 entries between all of the contests and issued a total of \$1,560 worth of prize money to the winning students and teachers.

- 475 posters
- 53 murals
- 71 essays
- 541 students participated in the coloring contest



1st Place Essay winner: Taya Barry, Mississippi Heights



1st Place Mural winner: Karina Travis, Pleasantview



1st Place Group A: Sadie Niedzielski, Foley



1st Place Group B winner: Lexi Garceau, Foley



Essay Classroom Winner - Roman Rudnitski

County Water Management Plans (pg. 13, 16 and 23) and One Watershed One Plans (pg. 35) give local government units the opportunity to work with other agencies, local interest groups and citizens to identify existing and potential opportunities for the protection, management and development of water and land resources. Objectives are then determined in order to reach resource conservation goals. Benton County's goals and 2020 accomplishments are identified in the County Water Management Plan sections listed above of this report.

Little Rock Lake Watershed

Our overall goal is to improve Little Rock Lake water quality from a hypereutrophic state (excessive algae blooms) to a eutrophic state (some algae present). To accomplish this we have an interim phosphorus reduction goal of 5,375 pounds (35%). This scale of reductions is only possible with the voluntary cooperation of land users in the watershed. Projects implemented in Benton and Morrison Counties have resulted in an estimated phosphorus reduction of over 4,500 pounds of phosphorus. Phosphorus reductions from the 2019 drawdown have not been estimated, however based on the changes to the lake we know they have been significant.

2020 was a year to monitor and evaluate the effectiveness of the drawdown. There are several pages in this report dedicated to that. Overall we have seen much clearer water and the plants and fish are doing great overall. Although this was a year of reflection and evaluation of the drawdown, work continued in the watershed in 2020.

- 2020 Watershed Projects (pg. 28 and 19)
- Little Rock Lake Monitoring (pg. 29)
- Post Drawdown Changes (pg. 30 - 33)

Groundwater

Maintain quality and quantity as measured by quantity of protection efforts

- Groundwater level monitoring (pg. 34)
- Sealing abandoned wells (pg. 34)
- Irrigation Water Management (pg. 25)

HOW WE ARE REACHING THESE GOALS

There are two main ways Benton SWCD works to reach our goals. One is through education and outreach with students, County residents, cities and townships, and agencies and other watershed partners. The SWCD has been working to increase our outreach efforts over the past few years and in 2020 we accelerated Education and Outreach Plan implementation efforts. This Annual Report is just one avenue of our education and outreach efforts. See page 36 for a summary of our education and outreach efforts.

The second way we work to reach our conservation goals is by working with landowners to implement best management practices (pg. 8). Throughout this report are examples of these projects. It is also important to note that a big component of project implementation is education and outreach. Funding to implement projects comes primarily through leveraging federal dollars, state cost share and landowner contributions (pg. 6).

Capacity Funding Impact Report Benton SWCD

STATE FUNDING AT WORK FOR SOIL AND WATER

Resource Concerns Addressed Operational Needs



IMPLEMENTATION ACTIVITIES	RESOURCE AREA			
	Excess Nutrients	Water Storage & Treatment	Soil Erosion	Riparian Zone Mgmt
Project Development	✓		✓	
Technical/Engineering Assistance	✓		✓	

MAKING A DIFFERENCE IN BENTON COUNTY

Benton SWCD works with farmers and landowners providing advice and resources on best management practices (BMPs) to protect and enhance our natural resources. Recognizing how effective SWCDs are at being the “Boots on the Ground” for conservation, State Legislation has dedicated Clean Water Funding to invest in building district capacities to target four resource concern areas: soil erosion, riparian zone management, water storage and treatment, and excess nutrients.

Our communities greatest need included professional advice for water quality BMPs that target reducing excess nutrients and soil erosion. Benton SWCD allocated these funds to employ additional staff to assist Benton County landowners with conservation planning for various water quality projects. Assistance was provided for site assessments to help identify and treat potential resource concerns. Staff assisted landowners with designing and implementing conservation practices including – Erosion control practices on agricultural fields, Comprehensive Nutrient Management Plans for livestock operators, Grazing Management Plans, implementing cover crops to diversify crop rotations, and animal waste storage facilities to properly store livestock manure until field conditions are suitable for applying manure at agronomic rates for cash crops. These activities all keep excess nutrients and soil out of our lakes, streams, and groundwater. These funds have been critical for Benton SWCD to meet the high demand for providing technical assistance to Benton County Landowners.

Benton SWCD has made a conscious effort to increase our education and outreach to the community - education leads to land and water stewardship. A portion of the Local Capacity Services Clean Water Funding was dedicated to creating an Education and Outreach Plan for the District. The plan provides a framework to direct our efforts and ensures we are reaching a wide range of audience including local students, County residents, city and township officials, local businesses, and our watershed partners. Some highlights from this effort has been creating a social media platform for the District to help promote land and water stewardship projects being done. We have also been working closely with local newspaper writers and editors providing them with local conservation topics and projects, so they can take the lead in writing articles to enlighten the community on land and water stewardship. During this time, the District has also participated in over 26 different education and outreach activities and events within the community.