

2020 SWCD & NRCS TOUR OF PRACTICES

**BENTON SOIL and WATER
CONSERVATION DISTRICT**



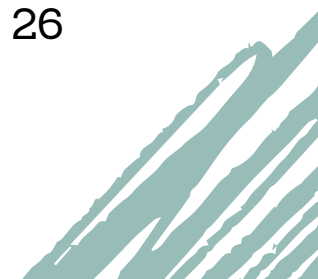
USDA NRCS
Natural Resources Conservation Service

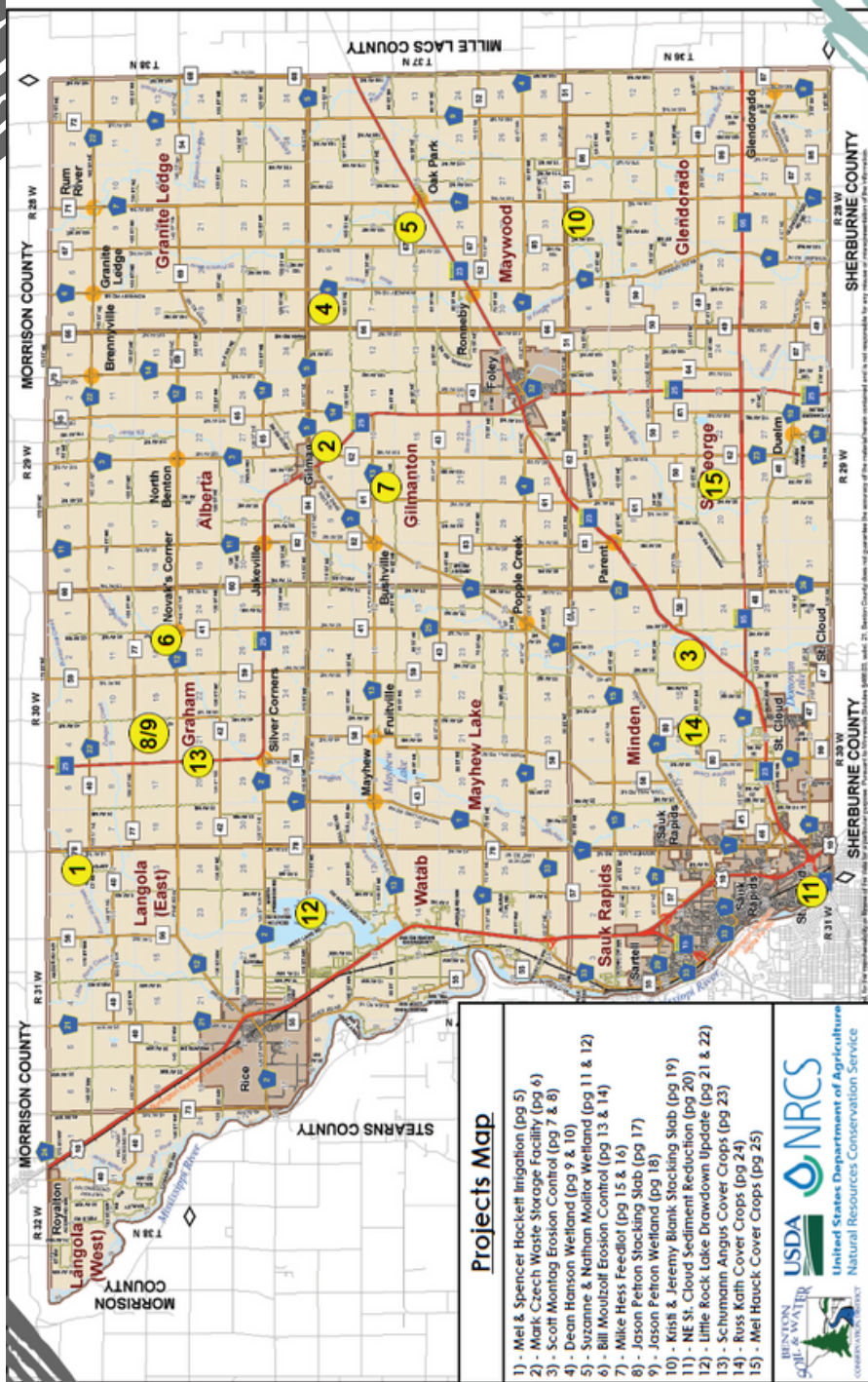
**NATURAL RESOURCES
CONSERVATION SERVICE**



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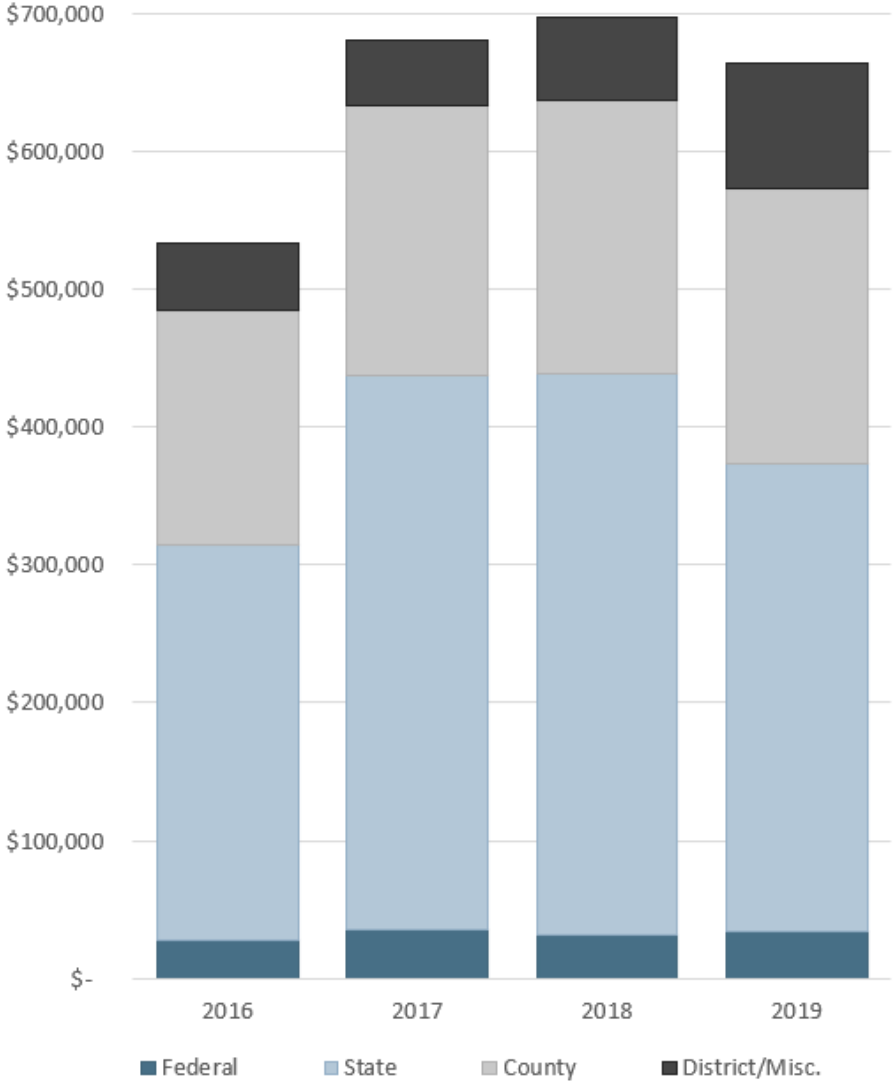
United States Department of Agriculture
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Financial Summary

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.

Operational Revenue



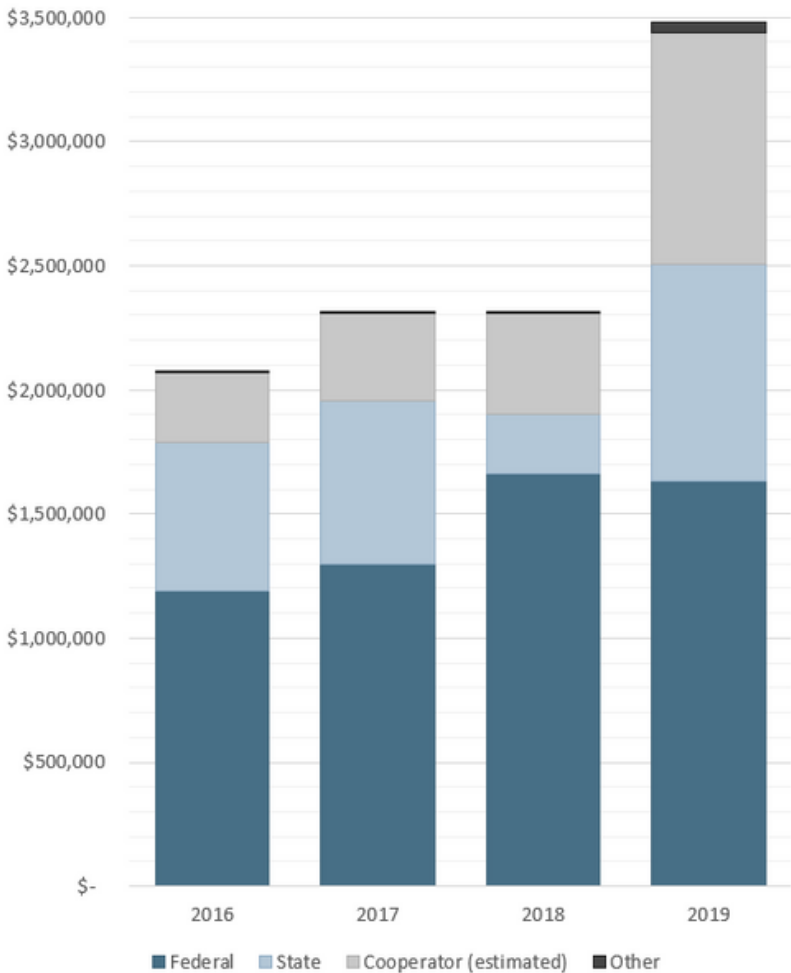
This revenue is used for personnel salary and benefits, Supervisor and Water Resources Advisory Committee member expenses, rent, supplies, travel, tree program, environmental education programs and other related expenses

2019 Operational Revenue was \$664,323

Financial Summary

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.

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

2019 Financial Contributions for Conservation Projects was \$3,479,303

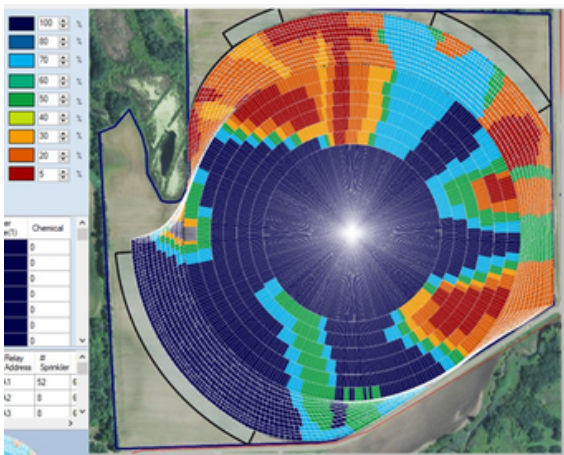
Mel & Spencer Hackett - Irrigation

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 with assistance from the Environmental Quality Incentive Program (EQIP). 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 of variable rate, especially for this field, a brief look at the soils is helpful. The United States Department of Agriculture (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.

The picture below 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 0.5". With this pivot the new end also has the ability to "swing" and can avoid going through 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.

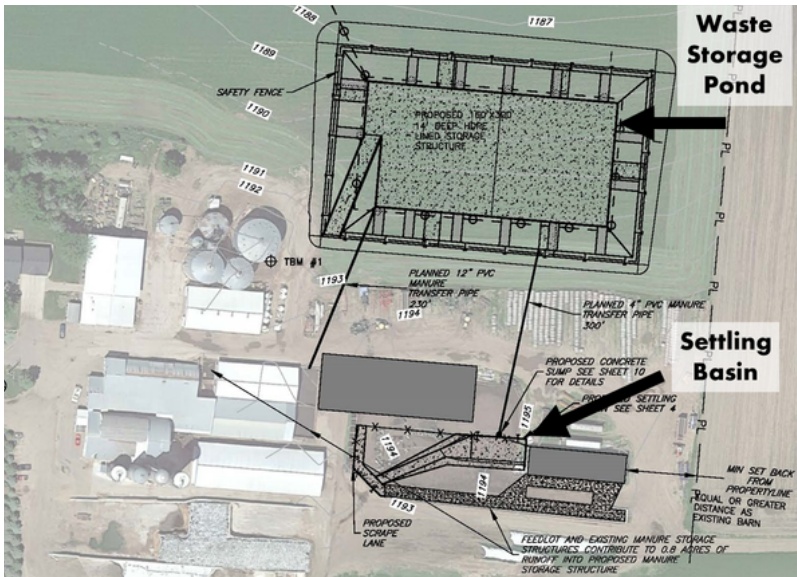


Mark Czech - Waste Storage Facility

In 2018, Mark and Shelley Czech began work on a waste storage system for their dairy farm to address feedlot runoff issues and increase their manure storage. The project consists of a waste storage pond and a settling basin. Manure from the existing barns is scraped to a storage tank and pumped into the constructed storage pond. Feedlot runoff is collected in the settling basin then piped to an existing manure tank and finally pumped to the newly constructed storage pond.

The settling basin was constructed in 2018 and construction of the storage pond began in 2019 but extensive rain caused the project to be delayed until 2020. This year the concrete bottom of the storage pond was poured and then lined with a HDPE (high density polyethylene liner). Concrete pump out ramps and a safety fence was also installed around the pond. Overall, the pond is 14 feet deep, 234 feet wide, 398 feet long and it will hold 6.1 million gallons.

The system will provide manure storage for nine or more months compared to the old system which had to be emptied once a month. The new system will also allow manure to be incorporated into the soil immediately reducing the potential runoff from winter manure spreading and will also have cost benefits by reducing commercial fertilizer use.



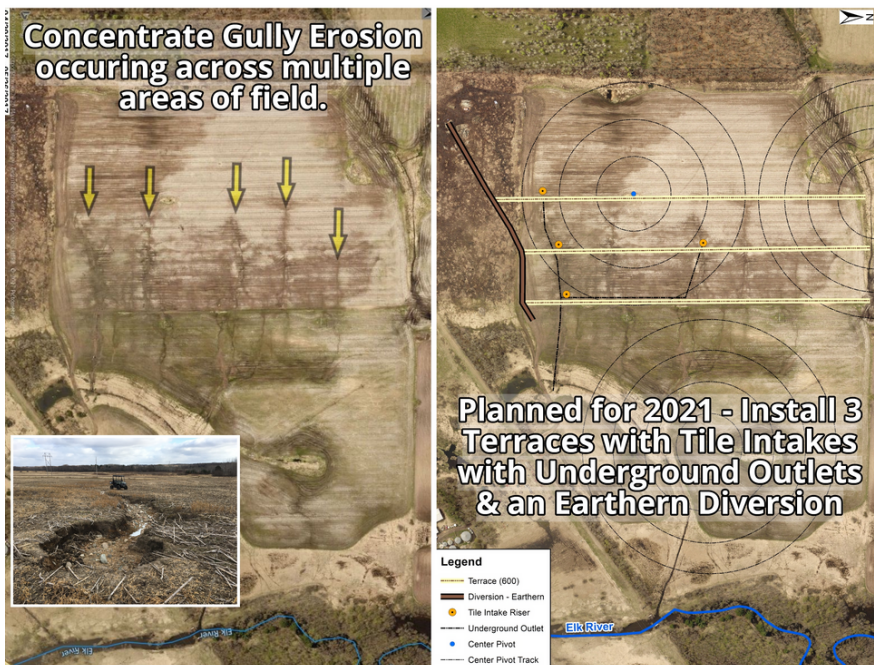
Scott Montag - Erosion Control

This crop field in Minden Township has had a history of erosion problems. Benton SWCD & NRCS collaborated with the previous producer on a potential erosion control plan to alleviate the erosion. Scott took over renting and farming this land in 2018/2019. He continues to no-till corn and soybean rotation the field, and with advice from the previous producer, contacted our office about the erosion concern.

In spring of 2019, staff from West Central Technical Service Area (WCTSA) and Benton SWCD met with Scott out on site to discuss potential options to stop the gully erosion. After a preliminary survey, a design plan was developed. The plan is to install three terraces down the slope of the hill with tile intakes and underground outlets. This will help break up the large watershed that flows down the hillside and direct it to collect at the three intakes. The tile intakes will have an orifice plate that will steadily drain the surface water underground to a stable outlet. An earthen diversion will be installed on the south end of the field to contain and help divert the sub-watersheds to the terraces and outlets.

With help from NRCS Environmental Quality Incentive Program (EQIP) and Benton SWCD's FY2020 Elk River-Mayhew Lake Clean Water Fund Grant, the plan is to install this erosion control project in 2021. In addition to the erosion control practice, Scott is also going to seed down a cover crop mix on the field after construction to help provide erosion protection and alleviate compaction on the field to mellow the soils out before 2022 cash crop.

This project is estimated to provide savings of 221 tons of soil per year. That is the equivalent to 15 dump truck loads (10 yards/truck) of soil per year!!! The project will also provide an estimated reduction of 188 lbs of Phosphorous per year from entering the Elk River which is less than 1,000 feet away.



Scott Montag - Erosion Control



Dean Hanson - Wetland

Benton SWCD partnered with U.S. Fish & Wildlife Service to work with Dean Hanson who expressed interest in creating some wetland areas on his property. There were three areas where berm structures were installed to restore a total of three acres of drained and degraded wetland habitat. The berms were installed in 2020 and there was also some scraping 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 the spring of 2021.

Hanson Overview





The completed scraping of the non native vegetation for one of the wetland restoration areas.



The wetland area partially filled a month after completion.

Suzanne & Nathan Molitor - Wetland

Suzanne & 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 to restore 7.75 acres of drained and degraded wetland habitat. During the life of the wetland the weir structure experienced some damage sometime prior to the Molitor's owning the property, and the Molitor's were interested in repairing the structure to restore the wetland habitat back to its original water level.

Benton SWCD partnered with U.S. Fish & 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.



The original weir structure.



The new weir structure that was installed with the rock spillway installed over the top.



One month after project completion.

Bill Moulzolf - Erosion Control

Bill came to the SWCD office in 2019 interested in fixing a couple of erosion problems in one of his fields. 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 that last few years with several gullies starting to form below that terrace.

To fix the erosion problems on the north end, a terrace will be installed that will outlet to the wetland on the west side of the field and to a reshaped road ditch/waterway on the east side of the field. On the south side the terrace will be rebuilt to drain to a waterway on the west side of the field that will outlet into the county road ditch.

The project will be 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 lbs. of phosphorus/year. The plan is to install the terraces this fall.





Mike Hess - Feedlot

Mike had a 2.5-acre dirt lot that fed out 100 – 150 steers on. The feedlot had groundwater and surface water concerns that were addressed with the project. Over the years of use the feedlot had become a “hole” that would fill up with water with any rain and with high water table soils there was a high likelihood of ground water contamination. When the feedlot would “fill up” with water it would overflow to small drainage ditch that empties into the Elk River.

To eliminate the pollution concerns Mike has abandoned the open feedlot and plans to crop the dirt lot. He also installed a 340' x 74' roof structure with a 300' x 57' x 12' manure pit under the floor with 12 months storage (1.9 million gallons) to hold up to 500 steers. Since it was completed earlier this year, all the steers are under the roof and all manure/runoff is contained in the pit. The project was funded through the Federal EQIP program, MN Dept. of Ag. Livestock Investment Grant and landowner contributions.



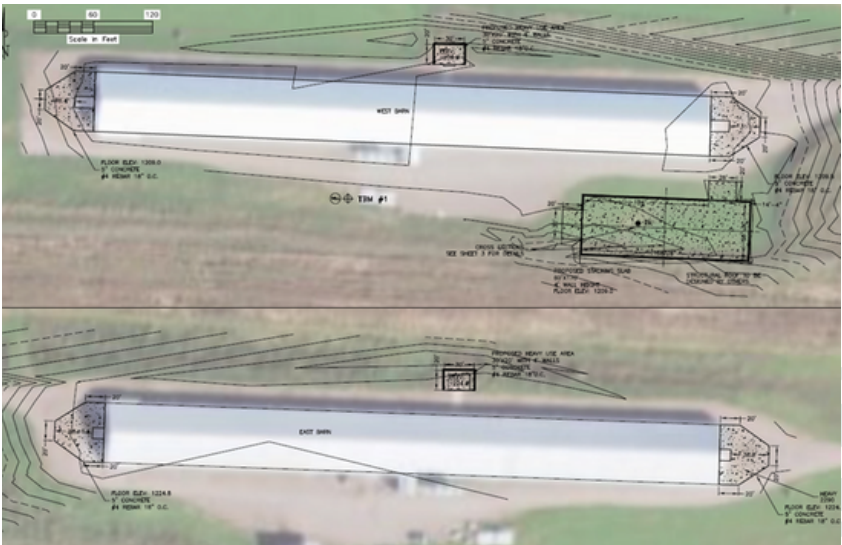


Jason Petron – Stacking Slab

Jason is in the process of building a 60' x 170' covered stacking slab to store manure from his two chicken barns for one year. Currently, the manure is stockpiled by the barn doors until it is hauled offsite and stockpiled. The stacking slab will allow Jason to store his manure on concrete and avoid storing manure on soils with a high-water table. Jason has already installed a mortality facility that allows him to properly compost his dead birds. Also included in the project are some heavy use concrete pads and curbs that will allow Jason to push the manure out of the barn and move it to the stacking slab. Funding will be provided by the EQIP program.



Temporary stockpile site located right next to a waterway.



Jason Petron – Wetland

Benton SWCD partnered with U.S. Fish & Wildlife Service to work with Jason Petron who expressed interest in restoring wetland habitat on his property. There was a ditch located on the property that drained 3.8 acres of degraded semi-marsh wetland habitat. A ditch plug was installed in the fall of 2020 to restore the historic wetland area and scraping of non-native vegetation in the wetland pool area was completed to create more open water and to promote native vegetation growth.

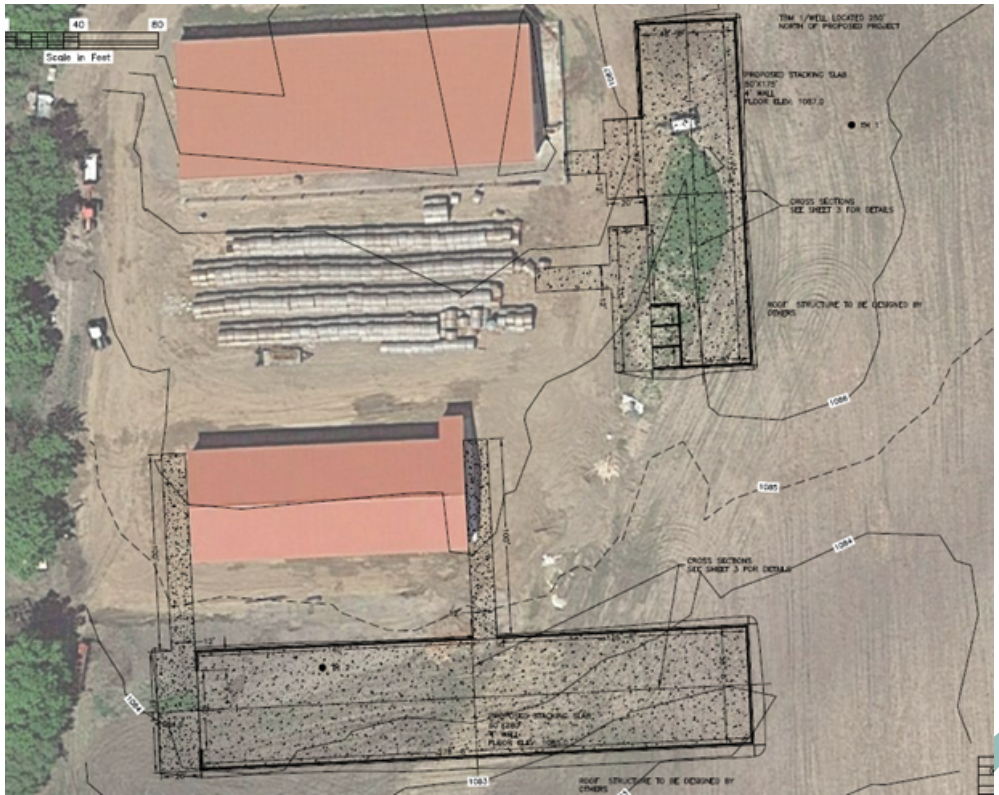


The completed scraping of the non native vegetation for the wetland restoration area.

Kristi & Jeremy Blank – Stacking Slab

Kristi and Jeremy Blank feed out 350 steers in two sheds and are in the process of a third shed to raise another 100 animals. They typically bed the animals every few days and clean the sheds out every month. Once cleaned, manure is stockpiled during the growing season until crops come off and spread the rest of the year. Manure is typically stockpiled where it will be spread and when the snow gets too deep its stockpiled at the farm and hauled out in the spring.

All the soils around the farm and crop land have high water table issues and stockpiling is not allowed. Blanks are planning to install a 60' x 280' roofed stacking slab and a 50' x 175' roofed stacking slab and mortality facility to store manure and compost mortalities for one year and allow them to spread and incorporate manure to maximize its potential and meet State requirements. Funding will be provided by the EQIP program and landowner contributions.



Northeast St. Cloud - Sediment Reduction

In 2015, the City of St. Cloud began implementing stormwater treatment projects to improve the quality of the rainwater-runoff draining from NE St. Cloud's 367-acre drainage area. This drainage area consists primarily of industrial and commercial land uses, developed prior to current water quality standards.

This NE drainage area contributes an estimated 135,600 pounds of sediment and 326 pounds of phosphorus into the Mississippi River annually, which negatively affects downstream water quality. The City set a goal to reduce sediment loading into the Mississippi River by 70% by 2029 from this area.

Since the SWCD began partnering with City of St. Cloud we have completed about 50% of the sediment reduction goal with funding provided by Clean Water Legacy funds.

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. The proposed project area is outlined below.



Little Rock Lake Drawdown Update

In 2019, Little Rock Lake was drawn down by three feet for a period of six weeks in order to create an artificial "drought" which would spur plant growth that would utilize available phosphorus in the lake bed and provide shoreline stability and habitat. To provide additional benefits, \$40,000 worth of native emergent plants were purchased and planted in the lake by volunteers in front of willing riparian landowners properties, at the public boat launches at Benton Beach and St. Regis Park and at the rock pile in Little Rock Lake.

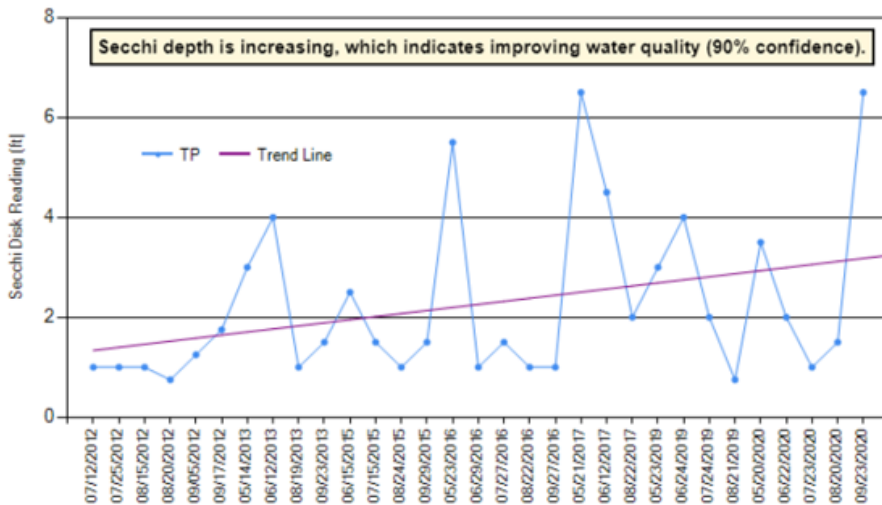
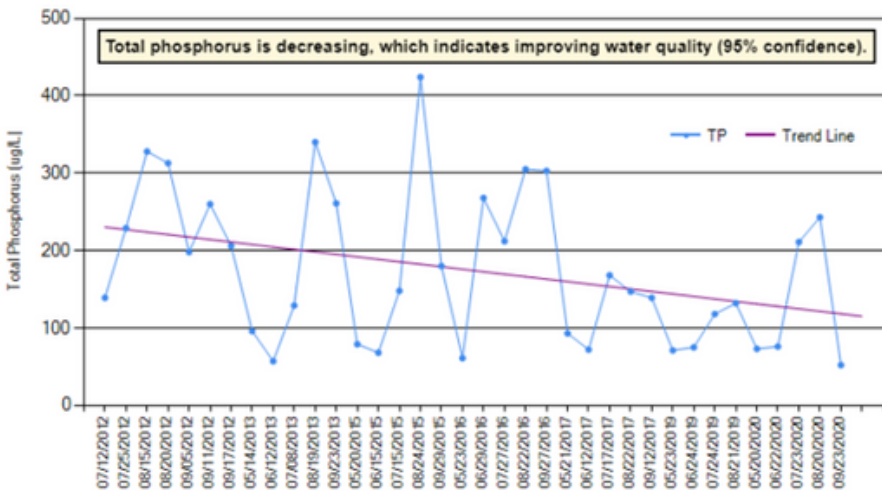
The exchange of water as the lake was re-filled increased water clarity to five feet compared to the few inches previously. The benefits of the drawdown and native planting will continue to increase throughout the years as the plants continue to establish and utilize more and more phosphorus from the lake. A majority of the plantings survived the winter and have been growing well throughout the summer.



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.

Little Rock Lake Drawdown Update

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.



Schumann Angus - Cover Crops

David seeded his cover crops when he spread urea in early July. The cover crop includes red clover, winter rye, annual rye grass and radish. David hopes to graze the cover crops after the corn is combined this fall.

Cover Crops on 8/18/20



Russ Kath - Cover Crops

Russ planted cover crops on 200 acres this summer/fall after spring wheat was combined. The mix included winter wheat, oats and spring wheat.

The plan is to harvest some/all for feed this fall and then plan soybeans into the field in the spring.

Cover crops on 8/31/20



Mel & Marianne Hauck - Cover Crops

The Hauck's have been utilizing cover crops on their farm since 2015, when they seeded cover crops following oats. Mel was hoping to begin the process of improving the soil health and productivity in a rented piece of land that was under-performing. One of the side benefits that he saw was improved weed control the following year, especially in regard to waterhemp.

Since 2015, he's been rotating cover crops onto other fields, broadcasting seed with fertilizer in late July or early August into soybeans that were no-tilled into corn residue. In addition to the improved weed control, Mel has seen less sediment being lost during heavy rains. It is also expected that soil health (drainage, organic matter, tilth) will improve over time.

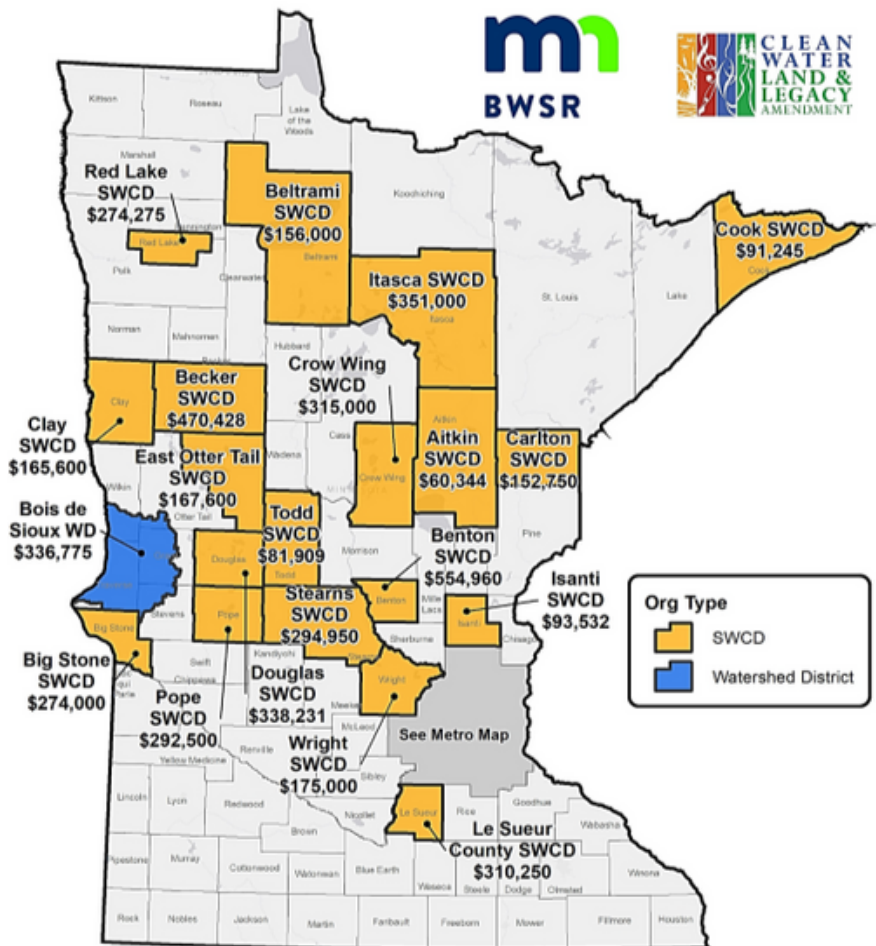
Mel has been a strong advocate for cover crops and very willing to share his experience with other producers interested in doing something similar.

In 2020, Mel seeded Annual Ryegrass and Berseem Clover into standing soybeans on July 31st. Financial assistance was received from the Environmental Quality Incentive Program (EQIP) to help off-set the cost of seed and seeding.

The pictures show how growth increases when the soybean leaves start dropping and the cover crop gets more light. The cover crop should winter kill and corn will be no-tilled into the residue next spring.



FY 2020 Clean Water Fund
Projects and Practices Recommended Funding
Total Outstate Recommended Funding: \$4,956,349
Total Metro Recommended Funding: \$6,090,393



December 2019

“Our mission is to protect and enhance Benton County’s soil, water & other natural resources; to nurture a conservation ethic by educating county residents on conservation & environmental issues.”

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Serving Benton County since 1948



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