

ROSEAU RIVER WATERSHED DISTRICT



Torin McCormack, Roseau River Watershed District specialist, puts into perspective the size of a grade stabilization structure bordering Tony Brateng's fields on Aug. 2 south of Roseau. Contractors removed trees, resloped the ditch banks and lined them with fabric and rock where erosion once cut away at the field and sediment once entered the creek that empties into the Roseau River. **Photo Credits:** Ann Wessel, BWSR

Fixes bring 100-year-old ditch into alignment with modern ag practices

Clean Water Fund projects curb rain-induced, perennial erosion



ROSEAU – It used to take a gully washer to bring farmers into the Roseau River Watershed District office.

Before a \$147,700 Clean Water Fund grant got them talking about fixing perennial problems on the 100-year-old County Ditch 8 system, District Administrator Tracy Halstensgard would hear from landowners only when heavy rains caused severe damage.

For some farmers, clearing out a sediment- and debris-filled ditch every year was routine. So was losing topsoil.

“What we want to help the



landowners do is work on those annual, every-few-year events so they're not being hit consistently,” Halstensgard said.

In the past 10 years, landowners on the County Ditch 8 system have paid more than \$84,000 in repairs and maintenance.

McCormack walks along Roseau County Ditch 8, which empties into the Roseau River. A \$147,700 Clean Water Fund project will keep an estimated 275 tons of sediment out of the turbidity-impaired river.

The Minnesota Board of Water and Soil Resources grant targeted trouble spots within the 18-square-mile subwatershed.

In 2016, contractors built 21 side-inlet control structures designed to stabilize field outlets, and two rock grade-stabilization structures designed to stop gully erosion and cut the amount of sediment entering the ditch.

By late summer, a 325-foot bank stabilization had begun on the stream that connects the ditch to the Roseau River. The Roseau River joins the Red River 9 miles across the U.S.-Canada border, and eventually empties into Lake Winnipeg.

BWSR estimates the entire project will keep 275 tons of sediment out of the Roseau River annually. The river is impaired for turbidity.

“Downstream water quality impacts are not usually the selling point for best management practices in this part of the state,” said Matt Fischer, BWSR Board Conservationist. “Local governments more often have success by laying out the economic benefits such as reduced ditch and field maintenance.”

Erosion control coupled with grant assistance got landowners’ attention. Ten signed up.

The Clean Water Fund grant covers 75 percent of the \$184,625 total project cost.

The cost and scope of each project determined who paid the balance: the landowner, or the watershed district. For example, the watershed district paid the balance of the \$40,000 channel stabilization. The



The Roseau River runs through Roseau. Nine miles across the U.S.-Canada border it joins the Red River, which empties into Lake Winnipeg. Fixes to a 100-year-old ditch system will cut soil erosion and the river’s turbidity.

Photo Credit: Ann Wessel, BWSR

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Instead of just putting tax money into cleaning, we can work with (landowners) and do programs like side-inlets, buffers, to keep that topsoil on the landscape vs. in the water.

– Tracy Halstengard,
Roseau River Watershed District administrator

watershed district is the ditch authority for CD8.

The work will demonstrate how the district can help farmers; Halstengard said she hoped it would spark other landowners to act.

“A lot of the ditch systems in Roseau County and Northwest Minnesota in general are fairly antiquated. They were constructed

100 years ago. Over time, they’ve changed from erosion and sedimentation and the cleaning that took place,” Halstengard said. “Instead of just putting tax money into cleaning, we can work with (landowners) and do programs like side-inlets, buffers, to keep that topsoil on the landscape vs. in the water.”

County Ditch 8 was built

in 1911. As agriculture expanded and grew, the ditch remained largely unchanged.

With bigger machinery came the ability to farm more land. As it became easier to handle more acres, some farmers converted pasture to cropland and put Conservation Reserve Program land back into production. (In Roseau County, the Farm Service Agency reported 126,096 CRP acres in 2012; 85,717 acres in 2017.)

The net result: More drainage is entering the ditch system.

Precision drainage techniques more efficiently direct water into the ditch systems, too.

“Instead of having water sitting on a flatter landscape and being able to absorb down into the soil, it is able to run off more efficiently. It carries that sediment and that topsoil with it,” Halstengard said.

District watershed specialist Torin McCormack drove past acres of soybeans and bare fields of post-harvest Kentucky bluegrass on the way to project sites south of town.

Before it was tilled and ditched, this land in the northwest corner of the state was a mix of prairie and wet meadows punctuated by islands of aspen and willow brush.

The County Ditch 8 headwaters sits amid a series of long, linear wetlands interspersed with strips of farmland. Glacial Lake Agassiz defined the topography here.

“We have these ridges of slightly higher ground and

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these troughs that were basically the shallows of Lake Agassiz. The troughs became wetlands once the lake had subsided and the landscape formed up and became vegetated. If you look at the terrain on a larger scale, you can see the shoreline, you can see beaches,” McCormack said.

A lateral ditch and mile-long gravel road cut a perpendicular line through those wetlands. At some point, McCormack said the road washed out in the middle. At some point, fields were drained directly into the ditch.

The minimum-maintenance road had been cut in low, swampy spots. It was a destination for thrill-seekers.

“It was a magnet for big pickups with mud tires,” said landowner Norbert Pastir.

Side inlets

The road is the only access to 440 acres Pastir owns with his son Perry. Pastir, 79, a retired sixth-grade teacher and baseball coach from Roseau, bought the property in the 1980s for hunting. It’s mostly wetlands and manmade ponds. He rents out tillable parcels totaling about 85 acres.

Access was only certain in the winter by snowmobile.

Driving through after a rain left ruts. McCormack said that led to one of two things:

“The next event would push that material into the ditch. Or sometimes they’d try and reshape it and start altering the ditch dimensions which caused more potential for soil loss. We wanted to stabilize it so it would stop that sediment



In wet conditions, this minimum-maintenance road was nearly impassable. The road had been cut in low, swampy spots. It drew big trucks with mud tires. Photo Credit: Roseau River Watershed District



Top: Nine side-inlet control structures were installed in fall 2016 where a lateral feeding County Ditch 8 runs parallel to a mile-long stretch of minimum maintenance road. Crushed asphalt tops the road where culverts were installed. The road slices through long, linear wetlands. **Bottom:** Once fixes are made farther up in the watershed, the culverts will be cleared of excess sediment. Photo Credits: Ann Wessel, BWSR



contribution.”

Now, crushed asphalt tops the road where nine side-inlet control structures were installed last fall. Because the primary land use was wetland or forest – not farming – ditch funds paid the required match.

The structures allow sediment to settle back onto the land, reducing the load downstream. The ditch will become more efficient once sources of inland sedimentation are identified and fixed, and the overgrown willows and cattails can be cleared.

“We have total access now to the whole mile in the spring, summer and fall,” Pastir said. “It’s made quite a difference for us and it’s made quite a difference for the four-wheelers. They use it less and less. The challenge is gone.”

Grade stabilization

Roseau County Ditch 8 divides Tony Brateng’s fields east of Highway 89. Here, the county ditch system ends where that east-west waterway empties into a smaller, tree-lined ditch that joins the Roseau River.

Brateng, 32, grows wheat, grass seed and soybeans in Jadis and Stafford townships. His wife, Amy, is a DuPont Pioneer sales representative. This year, they planted soybeans on the south side of the ditch, wheat on the north.

Tony described the need for the two rock grade-stabilization structures installed in fall 2016.

“The water would back up and it wouldn’t let that spring runoff happen as fast,” Brateng said.



Top: Before the nine side-inlet control structures were installed, the lateral feeding County Ditch 8 drew thrill-seekers with big pickups with mud tires. Each culvert was sized to fit the area affected. **Bottom:** A perforated, above-ground inlet pipe provides another release for backed-up water at locations where water is meant to stand for a short time, allowing sediment to settle out. **Photo Credits:** Ann Wessel, BWSR

“Initially it was pretty wooded back there, so with northwest winds, it would drift in and create some pretty massive snowdrifts which, in the springtime, would take forever to dry out. The water would get forced down there and spiral and eat away at the banks and the integrity of the ditch. Everything was getting chewed up,” Brateng said.

Contractors removed some trees, resloped the ditch banks, and lined the banks with fabric and rock. Rocks stabilized another spot where the creek was working its way into the field. Now, a sediment trap catches anything that’s carried through the grass.

“This year we had some pretty big rainfalls, and everything drained off real nice and the flow was real good,” Brateng said.

After a recent hard rain – 2.5 inches at the site, 5

inches where water enters the ditch system to the west – Brateng didn’t notice any bank sloughing.

Bank stabilization

Michelle Mekash has noticed plenty of erosion on her land south of town, where a stream that connects County Ditch 8 to the Roseau River threatened to undercut an 80-foot-long shed.

“It just keeps caving in,” Mekash said.

Mekash, 53, manages the Roseau VFW. She’s lived 3 miles south of town, a half-mile from the Roseau River, since age 14; she lives there now with her husband, Mark.

“It’s 6 acres plus, but it’s probably less than that now because all the banks have been washing in,” Mekash said. “It used to be you could put a board across



there. As kids, you could just walk across there. Now it’s way bigger than that.”

Mekash said where once the land was flat, it had sloped to the water.

“It keeps leaning in and leaning in,” Mekash said before work began. “Pretty soon the shed is actually going to be in the creek.”

Saving the shed would be a secondary benefit of the 325-foot bank stabilization,

meant to cut the amount of sediment entering the Roseau River.

“They’re straight vertical walls, and they continue to fail over time into the channel and then wash away downstream,” McCormack said. “We’re just trying to help the landowner by retaining their yard and help the river by keeping the material on the landscape and out of the channel.”

McCormack approached each of the landowners about the project. One day, he hopes landowners come into the office unprompted.

“Ideally, it would be a steady stream of people coming in wanting to get enrolled in some conservation practice. Our big point is to try to help landowners start adopting these practices early and seeing the secondary benefits to them. The primary benefits are to water quality,” McCormack said.



The Minnesota Board of Water and Soil Resources’ mission is to improve and protect Minnesota’s water and soil resources by working in partnership with local organizations and private landowners. Website: www.bwsr.state.mn.us.