

Traverse County's first ditch retrofit



Left: John Mathias' Dollymount Township farm borders Traverse County Ditch 37's Lateral 1, where a Clean Water Fund grant helped to pay for elements of a ditch retrofit with clean water benefits. Mathias said the fix alleviated flooding in his field.

Photo Credits: Ann Wessel, BWSR

Project eases flood damage as it improves water quality within the Bois de Sioux Watershed District, setting the stage for similar work



WHEATON — The Bois de Sioux Watershed District's first ditch retrofit could be the first of many retrofits designed to alleviate flooding and improve water quality.

The watershed spans 1,400 square miles in parts of six west-central Minnesota counties. The district serves as the ditch authority for 420 miles of ditches in Traverse County plus parts of Wilkin and Grant counties. The retrofit on Lateral 1 of Traverse County Ditch 37 benefits water quality as well as cropland.

Scott Gillespie sees it as a showpiece.

"It's huge. It will demonstrate what we're capable of and what the other ditches can be," Gillespie, a farmer and Bois de Sioux board member, said during a late September site visit.

John Mathias sees it as a solution.



Lateral 1 borders Mathias' 320-acre Dollymount Township field, where he said past flooding had cost him about \$50,000 a year.

"I would lose from a third to half of my crop," Mathias said, describing the

None of the road crossings changed in the Traverse County Ditch 37 retrofit, seen here from atop one of the culverts.

damage caused by 2 feet of standing water during the growing season. “Last fall was extremely wet, and it really did a great job. We had 11 inches at harvest time. It was really devastating, but the ditch kept up. It wasn’t overflowing. It did a great job.”

The work on 2.5-mile-long Lateral 1 is part of a \$637,600 retrofit and repair on 7-mile-long Traverse County Ditch 37.

A \$135,000 Clean Water Fund grant from the Minnesota Board of Water and Soil Resources (BWSR) helped pay for clean-water aspects of the Lateral 1 retrofit, which reins in sediment loss. Traverse Soil & Water Conservation District (SWCD) received \$10,000 of the grant for project development.

The 30-plus landowners whose 4,860 acres of cropland benefit from the entire Traverse County Ditch 37 project will pay \$512,600 in taxes levied by the watershed district over 15 years. A redetermination of benefits increased from \$18,990 to \$2.86 million the maximum amount the watershed district could levy to pay for repairs.

Contractors finished the project in 2017.

Chad Engels of Moore Engineering in Fergus Falls described the retrofit:

Contractors flattened the channel’s side slopes to create more stability. Material excavated from the channel was used to construct a berm adjacent to the ditch. Side inlet culverts were then installed through that berm to allow water to drain from adjacent fields into the ditch. The design results in less ditch-bank erosion and keeps more topsoil in the field.

“By installing the culvert, you are armoring that side slope,”



Bois de Sioux Watershed District Administrator Jamie Beyer and board member Scott Gillespie walk along the vegetated strip separating corn field from Lateral 1 of Traverse County Ditch 37.

Engels said. “The side-inlet culvert meters the flow. So when we have a large rain event that results in high runoff, the culvert will meter the flow and allow silt that’s being carried in the runoff to settle out in the field.”

Previously, Mathias said field after field would flood during the spring snowmelt when north-flowing water overran tree-shaded, ice-filled ditches.

Agricultural production accounts for about 93 percent of land use in the watershed, which lies in the flat bed of Glacial Lake Agassiz. Here, volume — not peak flow — drives flooding as snowmelt and north-flowing rivers send water into iced-up regions.

From Traverse County Ditch 37, water flows into Twelvemile Creek, the Mustinka River and Lake Traverse — headwaters of the Bois de Sioux River. The Bois de Sioux and Otter Tail rivers join to become the Red River at Breckenridge.

Built by horse-drawn equipment in 1902, Traverse County Ditch 37 had received only minor repairs. Before this project, the only maintenance since 1988 was silt and cattail removal. Cottonwood trees exceeding 3 feet in diameter grew in the channel.

“The project was really twofold,” Engels said. “There was a hydraulic component to restore the original capacity, and there was a water-quality component with the retrofit.”

The watershed district used ditch assessment proceeds to pay landowners for permanent right-of-way easements, installing buffers along both sides of Traverse County Ditch 37. Easements allow the watershed district access for maintenance work.

“Over time, someday all of the landowners in the Bois de Sioux Watershed District will be compensated for these buffers. That’s my goal. As we do the redetermination of benefits, that will naturally happen. We’re going to put in these easements and they’re going to be paid for the easements,” Engels said.

Less in-channel erosion will mean less maintenance and less cost to landowners. Ditch clean-outs cost about \$6,750 a mile and were necessary every five to seven years.

The way Gillespie sees it, everyone wins — and phosphorus and nitrates are kept in check by curbing erosion. The retrofit will keep an estimated 340 tons of sediment — about 26 dump trucks’ worth — out of the

ditch and downstream waters.

“We aren’t adding to flooding. We are cleaning the water because we’re keeping the dirt out of the ditch. We’re providing better drainage for the farmer. Buffer strips are getting installed but it is not controversial. So the water is winning. The landowner is winning,” Gillespie said.

Mathias, 68, who farms about 3,500 acres, said he’d been working for 30 years to get the ditch fixed.

“The ditch was virtually inoperative,” Mathias said. “Now that the water is going the correct direction, it’s taken pressure off of other ditches as well, and it’s improved the drainage and the timeliness of the water getting off the fields and going down the ditches properly.”

The watershed district partnered with the Wilkin Soil & Watershed Conservation District (SWCD) on a related project under construction in 2018. The SWCD received a \$176,500 Clean Water Fund multipurpose drainage management grant to install side-inlet culverts and berms on Wilkin County Ditch 8.

The watershed district this spring will begin retrofits on Wilkin County ditches 9 and 10. The Wilkin SWCD received a \$67,188 Clean Water Fund multipurpose drainage management grant from BWSR to cost-share some of the features of the project that benefit clean water.

“It’s the beginning of retrofitting all of the rest of the ditches. I’m convinced from discussions that the board has had that this is a long-term strategy. Over time, they intend to retrofit all the ditches in the Bois de Sioux,” Engels said.