

Modeling and design grants prepare for water storage work



FUNDING SOURCE: In 2023 the Minnesota Legislature appropriated \$17 million in general fund dollars for the Water Quality and Storage Program. About \$3 million was available this year; \$500,000 of that was available for modeling and conceptual design.

For the first time, this year the Minnesota Board of Water and Soil Resources (BWSR) made Water Quality and Storage Program grants available for modeling and conceptual design.

Nine local governments applied. BWSR awarded five grants totaling \$213,250. Individual awards ranged from \$12,000 to \$82,250.

“What (our partners) need are models that will help them develop a feasibility study or a conceptual design on a very specific project,” said BWSR Chief



Weaver

Engineer Rita Weaver. “That was the missing piece that we wanted to fill.”

Other funding sources that could be used for modeling, such as Watershed-Based Implementation

Funding, are typically dedicated to watershed plan-driven projects. The Water Quality and Storage modeling and conceptual design grants can focus on projects that might not rank as highly in the watershed-wide



Clockwise from top:

An aerial view of Judicial Ditch 13 in Jackson County after summer flooding shows where water naturally ponds, and where water storage sites are being considered. **Photo Credit:** ISG Inc.

Judicial Ditch 4 runs through Brewster in Nobles County. The town’s storm sewer is linked to the flood-prone ditch. **Photo Credit:** Loretta Halbur, Nobles County

Beaver Creek flows through Renville County to the Minnesota River. **Photo Credit:** Pamela Winzenburg, Renville County SWCD

plan, but involve willing landowners and projects that are valuable in terms of improving water quality and mitigating the effects of flooding.

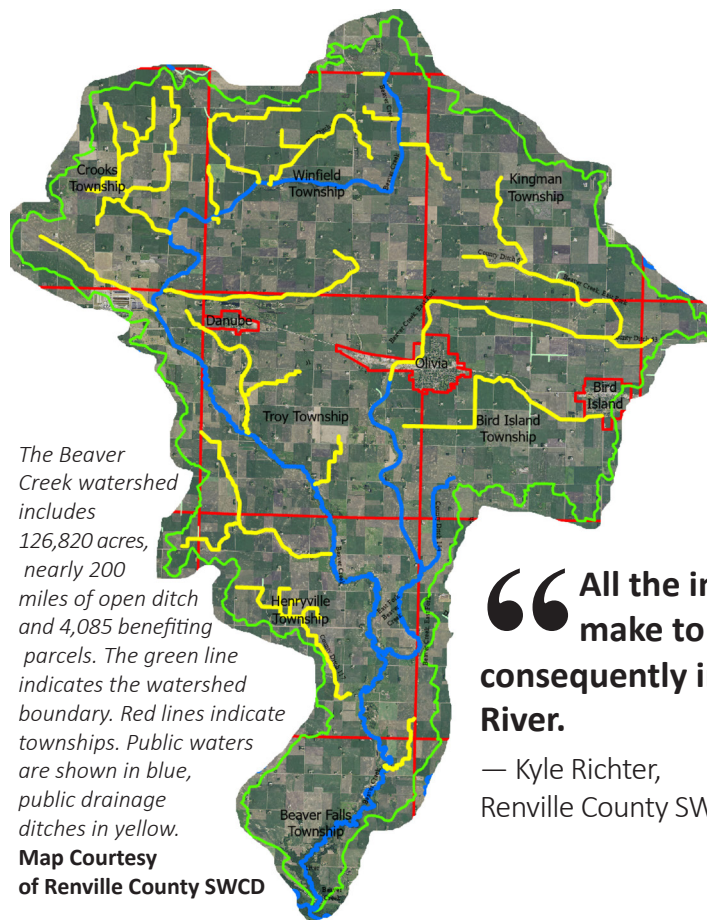
“The bigger picture with the whole program is really to add more storage to our landscape. Storage that’s essentially been lost after years and years (of modifying) our landscape — we want to add some of that storage back. We’re never going to be able to replicate the way it was, but any time that we can retain water on the landscape to reduce peak flows, to promote infiltration, that’s going to be beneficial,” Weaver said.

Site-specific modeling and conceptual design will position local governments to apply for implementation dollars. Up to \$500,000 of the \$3 million in Water Quality and Storage Grant Program funding this year was available for modeling and conceptual design for water storage projects. Previously, those grant dollars could only be used for implementation.

The Minnesota Legislature in 2021 passed a law directing BWSR to develop a program to protect infrastructure, improve water quality and mitigate the effects of climate change. The result: the Water Quality and Storage Grant Program, which started as a pilot. In 2023 the Legislature appropriated \$17 million for the program from the general fund; about \$12 million remains.

Following are a few examples of how the modeling and conceptual design grants will be used.

The Renville County Soil



The Beaver Creek watershed includes 126,820 acres, nearly 200 miles of open ditch and 4,085 benefiting parcels. The green line indicates the watershed boundary. Red lines indicate townships. Public waters are shown in blue, public drainage ditches in yellow.

Map Courtesy of Renville County SWCD

Modeling & design grant recipients

BWSR this spring awarded the following grants Water Quality and Storage Program grants for modeling and conceptual design. Grants required a 10% match.

RENVILLE COUNTY SWCD: \$82,250, centered on the Beaver Creek watershed

APPLE VALLEY: \$60,000, centered on Duchess, Greening and Pennock parks within the

Keller Lake watershed

JACKSON COUNTY: \$35,000, centered on the Judicial Ditch 13 watershed

NOBLES COUNTY: \$24,000, centered on the Judicial Ditch 4 watershed, including the city of Brewster

LYON SWCD: \$12,000, centered on the County Ditch 12 subwatershed

and Water Conservation District (SWCD) will focus on obtaining conceptual designs for two sites, and a list of 100-plus potential water storage locations within the 126,820-acre Beaver Creek watershed.

The watershed includes 4,085 benefiting parcels and nearly 200 miles of open ditch that drains corn, soybean and sugar beet fields. The creek flows directly into the Minnesota River.

The Minnesota and Lower Mississippi river basins are a focus of the program.

“All the improvements we make to Beaver Creek should consequently improve the Minnesota River,” said Kyle Richter, Renville County SWCD resource conservationist.

“When we’re selling conservation, we have it in the back of our minds that it’s for water quality. But in order to effectively sell it to

these producers, we need to effectively sell (it) in a way that’s going to keep (them) profitable,” Richter said.

When cropland floods, it can cost farmers thousands of dollars in lost profits. Curbing overland water flow can mitigate those losses. Another direct benefit to landowners, Renville County SWCD Administrator Holly Hatlewick said, is saving tons of topsoil that otherwise would erode. That also saves landowners

“All the improvements we make to Beaver Creek should consequently improve the Minnesota River.”

— Kyle Richter, Renville County SWCD resource conservationist

the cost of cleaning out the ditch. Flood mitigation is a collaboration among landowners, the SWCD and county ditch authority.

“Once we can show them numbers and data, it’s not just anecdotal,” Hatlewick said. “They’re more impressed by seeing the landscape and seeing the change in water movement and reducing erosion.”

Jackson County will focus on Judicial Ditch 13, a 100-year-old ditch system that drains about 15,300 acres in Jackson and Nobles counties. Jackson County Drainage Coordinator Kelly Rasche said the second phase of ditch improvements is underway. The grant will focus on eight sites and develop modeling for up to five sites based on water-quality benefits.

“With this money we’re able to get that information on paper so it’s ready to go



Richter



Rasche



Halbur

so when we do (receive) additional petitions (from landowners for ditch improvements) we can move forward,” Rasche said.

Benefiting landowners initiate major ditch repairs and improvements. A petition starts that process. The grant makes it possible to plan before a petition is submitted.

“There’s a benefit to storage for everyone. It’s just identifying them and communicating those benefits to landowners. Getting their buy-in is important, and this will be a tool that will absolutely help us get that buy-in,” Rasche said. “The modeling will show them how quickly the water will drain.”

The benefits extend beyond Judicial Ditch 13, which flows to Skunk Creek, the West Fork Little Sioux River and the Missouri River.

“Water storage in Southwest Minnesota potentially

“ There's a benefit to storage for everyone. ... Getting (landowners) buy-in is important, and this will be a tool that will absolutely help us get that buy-in. ”

— Kelly Rasche,
Jackson County drainage coordinator

benefits landowners where the Missouri and the Mississippi meet,” Rasche said. “This money helps us study those locations to put storage to make water quality better for everyone in the state of Minnesota.”

In Nobles County, grant-funded modeling and design work will focus on Judicial Ditch 4, which runs through the town of Brewster. The city’s storm sewer is linked to the ditch.

“The city of Brewster will flood even in a dry year,”

said Nobles County Drainage Coordinator Loretta Halbur.

Tree roots and sediment plug the concrete drainage tile. Streets flood. Basements flood. In a town of 495 people where the per-capita annual income is about \$32,000, she said the grant will take the edge off of the cost of determining the best solution.

“Having access to these grants is so important when we’re talking about repairing and potentially improving county drainage

systems, especially as so many of these county drainage systems are aging out,” Halbur said.

The grant-funded work will model up to five potential water storage sites and produce conceptual designs for three. Located within the Lower Mississippi River basin, the ditch flows to a private ditch, and then Okabena Creek, Heron Lake and the Des Moines River.

Feedback from the pilot program drove the decision to offer modeling and conceptual design grants.

“In addition to project readiness, we are hoping applicants will use these funds to develop feasibility studies so they can apply for final design and construction funds the next time the program is open for applications,” Weaver said.

The next application period is expected to open late this year or early next year.



The Infoworks ICM model is used to evaluate the inundation time of a proposed storage area along a ditch system in Faribault County. This is compared against existing conditions and shown to producers to illustrate how flood levels could change if they decided to add storage to their property. Image Courtesy of ISG Inc.