

Restored river channel improves safety



Warroad River Watershed District's first major undertaking taps Clean Water Fund, disaster relief grants; sediment reduction expected in Roseau County waters downstream



YouTube
video: <https://youtu.be/tMe4E2W9z3k>

WARROAD — The Warroad River Watershed District (WRWD) eliminated a safety hazard on a township road this season when contractors moved a stretch of the West Branch Warroad River from the erosion-prone road ditch back to its historic channel.

A \$414,000 Disaster Relief Assistance Program grant from the Minnesota Board of Water and Soil Resources (BWSR) covered the cost. The grant was part of \$3 million in additional disaster aid made available in 2016 to 15 local governments handling the aftermath of 2014 flooding.



Thompson



Landin

In late July, heavy equipment drove sheet piling into the ground — part of a 50-foot-long, riprap-armored water control structure — while WRWD Board President Bill Thompson and

Treasurer Keith Landin monitored progress at the site. A dam separated the restored channel from the ditch. Ferns flourished along the restored riverbank.

Since the 1970s when a landowner diverted the West Branch into the ditch, the river had repeatedly eroded the gravel road. The steep ditch was especially dangerous during flood conditions.

From left:
Warroad River Watershed District Board President Bill Thompson discussed final elements of a project to reduce erosion and downstream sediment deposition on the West Branch Warroad River in late July with Derek Kayser of Houston Engineering, WRWD Treasurer Keith Landin and BWSR Board Conservationist Matt Fischer.
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Ann Wessel, BWSR

The weir is designed to contain water within the river channel except during high flows. During high flows, the floodwater is meant to spill over the top; the ditch is meant to handle that overflow.

The structure held up to September's severe flooding, but water spilled around the edges and into the seeded area. Landin said that part of the weir will be raised. Some spots eroded at the field's edge; those will be fortified.

Returning the stream segment to its natural, meandering channel more than doubled its length — from a 4,300-foot straightened state to about 10,750 feet of twists and turns that cut velocity and reduce erosion.

Reducing erosion and downstream sediment deposition benefits the entire Warroad River system.

A top priority for the WRWD, the project also advanced the Roseau County Local Water Management Plan's No. 1 goal: Reduce erosion and sedimentation.

Nearly half of the sediment deposited into Warroad River harbor — about 1,000 tons a year — is from in-channel sources, a 2013 Houston Engineering study estimated.



A previously straightened stretch of the West Branch Warroad River flowed down a township road ditch. The gravel road was prone to erosion.

A \$73,720 Clean Water Fund accelerated implementation grant from BWSR in 2016 allowed the watershed district to further analyze the Warroad River's in-channel sediment and how it affects the harbor. Data helped to develop the targeted implementation plan. Houston Engineering completed the analysis.

"Now they have a pretty clear picture where sediment is coming from," said Matt Fischer, Bemidji-based BWSR

board conservationist.

This project on 570th Avenue in Roseau County's Cedarbend Township would keep an estimated 35 tons of sediment out of the river annually.

Among its secondary benefits: Curbing sediment will preserve water quality and improve fish and wildlife habitat. Cutting the velocity makes it easier for fish to swim upstream. The restored channel has the potential to serve as spawning habitat.

Residents' concerns about how sedimentation would affect Lake of the Woods and related tourism revived the WRWD, which was established in the 1960s but remained largely inactive until 2007.

"It's nice to see this district take this project on. Hopefully it ignites in them the desire to do more projects like this," Fischer said.

The Warroad River is the second-longest Lake of the Woods tributary in the U.S. Streambank erosion is a perennial issue. Backflow from Lake of the Woods contributes to sediment deposits in the channel.

The disaster relief project is the WRWD's largest undertaking to date. The Roseau Soil & Water Conservation District (SWCD) administers the grants. The watershed district contracted with Houston Engineering to complete survey design and to oversee construction. Thompson said the district was taking steps to hire a part-time administrator to help apply for grants.

"We're just thankful that we're able to do a project like this," Landin said. "This is a good first step in the management of the water resources of the Warroad River."



Left: A Warroad River Watershed District project that returned a stretch of the West Branch Warroad River to its natural, sinuous streambank was nearly complete in late July. **Center:** The structure held up to severe flooding in September. Some spots that eroded at the field's edge, seen here in July, will be fortified. **Right:** Returning a segment of the West Branch Warroad River to its natural channel more than doubled its length to about 10,750 feet. The natural twists and turns cut velocity and reduce erosion.