



Stormwater site protects Lake Bemidji

BEMIDJI — What’s good for Lake Irving is good for Lake Bemidji, the Mississippi River and the downstream communities that rely on the river as a source of drinking water.

Beltrami Soil & Water Conservation District’s stormwater treatment constructed in fall 2021 is designed to improve the water quality of nutrient-impaired Lake Irving. The

Lake Bemidji
Beltrami SWCD’s Clean Water Fund-backed work targets nutrient-impaired Lake Irving, but its benefits extend to Lake Bemidji. The project also will safeguard a drinking water source, contain the flow in case of an oil spill, beautify a bike trail and boost pollinator habitat.

Mississippi River, which flows through both lakes, supplies St. Cloud and

parts of the Twin Cities metropolitan area with drinking water.



Christenson

“We’re cleaning up water that goes into the Mississippi River,” said Beltrami SWCD Board

Supervisor Sam Christenson. “The impacts can go way downstream.”

The \$490,000 project —



Top: From left: Zach Gutknecht of Beltrami County SWCD checked progress Sept. 9, 2021, in Bemidji with Tim Terrill, Mississippi Headwaters Board executive director; Shawn Tracy, HR Green lead scientist; and Chad Severts, BWSR board conservationist. **Above:** Because the ditch flowing into the constructed wetland intersected with groundwater, water was pumped to the surface during construction, and then allowed to infiltrate through the sand. A skimmer cleaned water before it discharged to the lake. **Middle:** Gutknecht, Tracy and Severts viewed the site. **Right:** Clouds and trees reflect in water. **Photo Credits:** Ann Wessel, BWSR

a stormwater treatment wetland, iron enhanced sand filter and re-meandered stretch of ditch that collects city stormwater runoff from an 886-acre drainage area including a Bemidji industrial park — taps a \$156,000 Clean Water Fund grant from the Minnesota Board of Water and Soil Resources.

“What we’re trying to do here is reduce as much of the negative impact from human use around the lake as possible,” said Zach Gutknecht, Beltrami SWCD clean water specialist. He said water-quality issues arise in lakes with a 50:1 watershed-to-lake surface area ratio. The higher the ratio, the more potential for pollution. “Lake Irving has a 500:1 ratio.”

Project partners include the city of Bemidji, the Mississippi Headwaters Board and Enbridge.

At the city’s request, the SWCD expanded the project to re-meander an 800-foot-long stretch of ditch and plant native grasses, forbs and shrubs throughout the site. Those plants will not only improve aesthetics along the Paul Bunyan State Trail but also add pollinator habitat.

Bemidji will draw \$300,000 from its stormwater utility fund to cover most of the remaining cost. The city will own the treatment system and maintain the iron enhanced sand filter.

“Bemidji is the first city on the Mississippi, so stormwater treatment is very important,” said Craig Gray, city engineer and public works director. “Our city is on Lake Bemidji and Lake Irving and the Mississippi River. Without



The Lake Irving ditch is being re-meandered to look and function more like a stream. It’s part of the Beltrami SWCD’s Clean Water Fund-backed stormwater treatment project, which is designed to benefit nutrient-impaired Lake Irving and estimated to keep 233 pounds of phosphorus out of the lake each year.

those three bodies of water, we really don’t have a city. The water quality of those bodies of water

is very, very important to us, so we really try to do whatever we can to reduce any nutrient loading going into those lakes and the river.”

Street sweeping and existing stormwater ponds weren’t enough to cut phosphorus loading to Lake Irving by 268 pounds a year — the 36%



Gray



Terrill

reduction that the [Minnesota Pollution Control Agency](#) determined necessary to meet water-

quality standards.

This project will keep an estimated 233 pounds of phosphorus — 87% of the reduction goal — out of Lake Irving each year. Phosphorus feeds the algae that can turn lakes green.

Lake Irving ranked in the Top 5 for phosphorus

“**The lake is kind of a regional hub for the local economy. It’s a fairly well-developed lake for the area, and it’s a major ecological resource as well. There’s several different important fish species including walleye and muskie.**”

— Zach Gutknecht, Beltrami SWCD

removal in a Mississippi Headwaters Board study that identified more than 150 potential pollution-reduction projects for 12 cities on the first 400 miles of the Mississippi River. An \$81,000 Clean Water Fund grant from BWSR backed the study, which gave cities stormwater planning options that prioritized, targeted and calculated the effectiveness of best management practices.

“When we protect cities and we work on projects like Lake Irving, we’re doing a service not just to the people that live there but everyone downstream,” said Tim Terrill, MHB executive director.

“The Mississippi is used for drinking water in the Twin Cities,” Terrill said, and improving water quality upstream is more cost-effective than treating it downstream.

“The Mississippi isn’t just a river that has a recreational value. It has a very important drinking water



Gutknecht, center, visited the construction site of a stormwater treatment project Sept. 9, 2021, in Bemidji with Tracy, right, and Severts. An iron enhanced sand filter is part of the Clean Water Fund-backed stormwater project designed to improve the water quality of nutrient-impaired Lake Irving. The Mississippi River connects Lake Irving to Lake Bemidji; the project also will protect Lake Bemidji's water quality. The work will keep an estimated 233 pounds of phosphorus out of Lake Irving each year.

component to it," Terrill said.

The MHB developed a public-private partnership with Enbridge, which contributed \$50,000 to the Lake Irving project. An Enbridge oil pipeline runs south of the site, which incorporates an outlet structure that can be closed in the event of an oil spill.

Work began in early September 2021.

Shawn Tracy, a lead scientist with HR Green, worked with Bemidji on its stormwater retrofit analysis that led to a Lake Irving feasibility study. He was in Bemidji in early September to monitor construction.

By then, contractors had hauled in topsoil to boost the success of native seeds

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— Zach Gutknecht, Beltrami SWCD



sown at the sandy site.

A skimmer mechanism at the temporary outlet cleaned water before it discharged to the lake. Along with additional de-watering, the skimmer safeguards groundwater

that intersects with the ditch. During construction, the ditch was closed off via the outlet structure that Enbridge would close in case of an oil spill.

Tracy described how the Lake Irving project will work:

Water from the re-meandered ditch will enter the stormwater wetland. There, sediment-bound phosphorus will settle out. Dissolved phosphorus will be stripped from runoff as it flows through the iron enhanced sand filter to Lake Irving.

Construction was expected to finish by the first week of November.

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