City, SWCD curb runoff to Lake Pepin

Lake City-Goodhue SWCD stormwater work aligned with MnDOT's Highway 61 reconstruction, tapped Clean Water Funds

CLEAN WATER LAND & LEGACY AMENDMENT

LAKE CITY — Goodhue Soil & Water Conservation District's (SWCD) first urban stormwater project is likely its most visible work in the county: A pair of sediment-slowing basins along Highway 61 in Lake City.

Lake City staff worked directly with contractors, who built the infiltration basins as part of the Minnesota Department of Transportation's (MnDOT) $14.1 million, nearly 2-mile-long highway reconstruction.

So conspicuous are the tall plants growing in the mowed ditch paralleling Lake Pepin that a kiosk will be installed to explain their purpose.

"They see tall stuff growing in there, and maybe to some people it's not the most attractive thing," said Lake City Public Works Director Scott Jensen, describing residents' and adjacent business owners' initial response. "That's a sacrifice we make to try to do something positive."

Jensen

Kennedy

Plants help to filter and remove nutrients from stormwater.

"We're taking 15 acres of untreated stormwater that was piped directly to the lake and nearby Gilbert Creek," said Beau Kennedy, Goodhue SWCD manager. "We're keeping lawn chemicals out of the lake, like fertilizer with nitrogen and phosphorus, as well as sediment leaving those streets."

A Clean Water Fund-backed stormwater project that treats urban runoff was built in conjunction with MnDOT's nearly 2-mile-long Highway 61 reconstruction on the north end of Lake City. The combined length of two infiltration basins is about 800 feet. Lake City staff helped with project design.

Photos Contributed by Goodhue SWCD

The project aims to reduce peak stormwater flow discharge, and curb how much sediment and phosphorus flows directly into Lake Pepin.

A $181,900 Clean Water Fund grant from the Minnesota Board of Water and Soil Resources (BWSR) in 2019 leveraged Lake City's $45,475 cash and in-kind contribution. To date, the project is running about $40,000 under budget. The grant runs through December 2021.

"If we were going to do this project on our own, it would be funded out of our stormwater enterprise fund. That fund certainly doesn't have that much money," Jensen said. "It would've been a capital improvement project that we wouldn't have been able to touch. The Clean Water Funds made the difference."

The basins — which together measure 800 feet long — filter water through several feet of sand and gravel. Tiles slowly convey that treated stormwater to catch basins, which double as overflow ponds designed to handle heavy rains.

"We're really not moving the needle much on a Lake Pepin TDML (Total Daily Maximum Load) where there's tons and tons of sediment that needs to be removed. But at the doorstep of the lake we're reducing things by a lot," Kennedy said.

A watershed hydrology and water-quality simulation estimated total phosphorus reductions of nearly 13 pounds a year and total suspended solids reductions of nearly 4,388 pounds a year. One pound of phosphorus can produce 500 pounds of algae.

Before the stormwater basins were installed on the north end of Lake City, urban runoff from 15 acres drained directly into Lake Pepin and a nearby creek. Lake Pepin is a 21-mile-long widening of the Mississippi River. When it became apparent during construction that one of the basins was close to a city water main, city staff located the pipe, which was then insulated to avoid freezing in the winter.

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About 48,600 square miles drain into Lake Pepin, which was listed among the state's impaired waters in 2002 because nutrient levels exceeded state water-quality standards. The Minnesota Pollution Control Agency's (MPCA) April 2021 TDML report notes high phosphorus levels, mentions sedimentation that's starting to fill in the north end of the lake, and acknowledges that the most significant reductions must come from upstream. The Minnesota River is the No. 1 contributor.

Lake Pepin, a 21-mile-long widening of the Mississippi River, defines Lake City and draws tourists to town.

"People that live here love it because it's a beautiful spot. You've got the lake on one side and you've got the bluffs on the other side of the city. The people that the lake brings to town is huge. We have a fantastic marina here. It's all about the lake in many ways," Jensen said.

Construction started in April 2020 and finished in October. Lake City staff worked directly with design and engineering consultant SEH, and hired the contractors.

An operation and maintenance agreement between the SWCD and city will ensure the basins continue functioning for years to come.

While it's the first time the SWCD has worked on this type of urban project, Kennedy said it likely won't be the last. Pine Island staff has inquired about a series of rain gardens. Potential wellhead projection work is emerging elsewhere in the county.