LOCAL

Minnesota's cleaned-up lakes and rivers show path forward for polluted waters

Eagan proves it's far easier to shield lakes from pollutants than to clean them up.

By Greg Stanley (https://www.startribune.com/greg-stanley/6370510/) Star Tribune

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LeMay Lake was doomed.

Harmful levels of nutrients poured into the small and shallow lake for decades, carried in by the stormwater running off the highways, homes and pavement built up over the last century. In 2014, to the surprise of none, the nutrient pollution forced the state to add LeMay in the city of Eagan to its ignoble list of impaired waters.

But just seven years later, the lake's water is clearer. The nutrients are under control.

Like LeMay, dozens of other polluted lakes and rivers across the state have been made healthy over the past decade. That number pales in comparison with the thousands of waters that have been added to the state's polluted and impaired list over that time, but it shows that municipalities, lake associations and other water managers have the tools needed to bring their lakes back to life.

It takes time, money and will, said Eric Macbeth, Eagan's water resource manager.

"One size doesn't fit all," he said. "We had to find specific projects that would get phosphorus away from the lake. With so much impervious surface, we knew it would be a challenge."

Since the Clean Water Act was passed in the 1970s, Minnesota and the rest of the country have made enormous strides in cutting water pollution. Long gone are the days where raw sewage was dumped straight into the Mississippi River and companies had free rein to release whatever they would into Duluth Harbor. But Minnesota and the Upper Midwest have never gotten control of nutrient pollution.

Farmers, whose fertilizers are the largest source of nutrient pollution, are largely exempt from the Clean Water Act. And in urban areas, so much land has been paved that creeks, rivers and lakes are collecting far more stormwater than they did decades ago. That runoff brings nutrients from all the fallen leaves, grass clippings, yard waste, and pet and animal excrement it touches.

Nutrients, especially phosphorus, become a problem when there are too much. They're the reason that so many ponds and shallow bays in the Twin Cities and their surrounding suburbs turn a bright sickly green in the summer. They spark algae blooms that make waters too foul to dip a toe in, and lead to outbreaks of cyanobacteria that can poison dogs and hospitalize swimmers. When algae dies off, it sucks oxygen out of a lake, which stresses or even kills fish and bugs.

Nearly 750 of Minnesota's waters have unhealthy levels of nutrients, according to the Minnesota Pollution Control Agency's proposed 2022 list of impaired waters (https://www.pca.state.mn.us/water/minnesotas-impaired-waters-list) . Another 891

have too much bacteria and 444 are too cloudy from mud, sediment and erosion, caused by similar runoff problems to nutrient pollution.

But the state might be turning a corner. In the past two years, 53 lakes and rivers have been taken off the list, many of them, like LeMay, because cities were able to cut nutrient pollution. That is the most that have ever been removed at one time, said Miranda Nichols, impaired water list coordinator for the Pollution Control Agency.

"Restorations get really complicated really fast," she said. "Sometimes it might be as easy as replacing a culvert or removing an impediment to a stream — the low-hanging fruit. But every de-listing and project is completely different."

The biggest improvements have been in eliminating phosphorus pollution.

Changes aren't going to happen overnight, but progress is happening, said Wayne Cords, watershed section manager for the Pollution Control Agency.

"Water is really a reflection of the land around it," he said. "It comes down to the science, which is advancing and helping us get better at figuring out where the sources are. You have to stop the source."

The city of Eagan found the phosphorus was getting into LeMay lake from all the stormwater running through its gutters. An in-depth study led to one site in particular where the stormwater was draining into the lake.

At that site, the city installed a filter using a sand and iron mixture developed by the University of Minnesota for about $450,000. Phosphorus and iron molecules bond together, so when the stormwater runs through the sand, the phosphorus attaches to the iron and gets trapped before it reaches the lake.

The city has also spent about $80,000 spraying the lake with an aluminum hydroxide mixture that has been used in lake management for decades, said Macbeth, the water resource manager. Like iron, phosphorus binds to the alum, sinking it out of the surface waters and trapping it on the lake bottom where it can do no harm.

"So we found projects to stop it from coming in externally and to reduce it internally," he said.

Health standards would allow a lake the size of LeMay to have phosphorus levels at about 60 parts per billion. Before the filters were added and treatment began, LeMay was up to nearly 90 parts per billion. Two-thirds have since been removed, leaving the lake with less than 27 parts per billion.

The city also just completed a $600,000 underground vault that will divert a great deal of excess stormwater from the lake, which is expected to bring down the nutrient pollution even more.

"When you're changing capital infrastructure it can easily add up to over $1 million that the city has invested," Macbeth said. "But we're pretty optimistic. We're going to have this lake off the list. I was not expecting to even imagine that during my time it was going to be able to have such an improvement."

Nutrient treatments can get trickier in rural areas, but they are possible.

Wright County has cut 25 pounds of phosphorus a year from reaching Waverly Lake by installing basins to temporarily store rainwater on two nearby farms. The total cost was about $45,000.

The city of Waverly also did some shoreline restoration and farmers added cover crops to keep erosion down, said Dan Nadeau, senior resource conservationist for the Wright Soil and Water Conservation District.

"That's the icing on the cake," he said. "Farmers lose money when their topsoil goes into the lake, so it's about finding these win-wins."

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