Metro lakes' delistings tied to Clean Water Fund-backed work

CLEAN WATER LAND & LEGACY AMENDMENT

THREE MORE DELISTINGS TIED TO CLEAN WATER FUNDS FROM BWSR: Three more delistings involved improvements tied to Clean Water Fund grants from BWSR. Fish Lake in Hennepin County was the subject of a February Snapshot. Details about two more — a 48-mile-long Wright County segment of the North Fork Crow River; and a stretch of Beaver Creek, a Winona County trout stream — are featured in a BWSR blog post, which also contains more detail about those described here.

Clean Water Funds from the Minnesota Board of Water and Soil Resources (BWSR) supported conservation work that contributed to seven Twin Cities metro lakes' proposed removal from the state's impaired waters list. U.S. Environmental Protection Agency (EPA) approval finalizes that status. Minnesota Pollution Control Agency (MPCA) staff will submit the list to the EPA by April 1; it has 30 days to respond.

Alum treatments, iron-enhanced sand filters, rain gardens and a wetland rehabilitation are among the Clean Water Fund-backed projects and practices that contributed to water-quality improvements. BWSR awarded the Clean Water Funds — in the form of competitive grants and, more recently, via Watershed-Based Implementation Funding (WBIF) — to the soil and water conservation districts, watershed districts and watershed management commissions that worked directly with partners and private landowners.

Anoka County

BALD EAGLE LAKE: Deemed "the most popular muskie lake in the east metro" by the Minnesota Department of Natural Resources, 1,010-acre Bald Eagle Lake offers a public boat access at Ramsey County's Bald Eagle-Otter Lakes Regional Park. Listed as impaired for aquatic recreation in 2002, the lake lies within a heavily developed suburban area north of White Bear Lake. (The lake spans Ramsey, Washington and Anoka counties. Anoka is the county named in the MPCA's list of delisted waters.)

"Prior to any of the restoration work, there could be some pretty severe blue-green algae blooms out there that would maybe scare away some fishermen later in the summer," said Matt Kocian, lake and stream manager at Rice Creek Watershed District (RCWD).

Clean Water Fund grants supported two RCWD projects that contributed to phosphorus reductions leading to the delisting: a stormwater reuse project in Hugo and an iron-enhanced sand filter in Ramsey County's White Bear Township. Both phosphorus and algae levels have decreased by about 50% compared with 2014, and water clarity has increased by about 50% during the same timeframe, according to the RCWD's long-term data.

"This went from a resource where residents would say, 'I need to shut my windows late in the summer because the blue-green algae blooms are so bad and they smell,' to they're using the lake more than ever," Kocian said. "They're swimming in it again."

The $689,000 Oneka Ridge Golf Course stormwater reuse project in Hugo drew from a $497,100 Clean Water Fund

Left: *The Minnesota DNR stocks Bald Eagle Lake with muskellunge and walleye. Clean Water Funds supported stormwater reuse and iron-enhanced sand filter projects that contributed to improvements in the lake's water quality.* **Middle:** *Golden Lake is a popular fishing and paddling lake. Clean Water Funds supported the Anoka Conservation District's iron-enhanced sand filter projects designed to reduce phosphorus-loading.* **Photo Credits:** Rice Creek Watershed District

Right: *A Clean Water Fund grant awarded to the Shingle Creek Watershed Management Commission backed an alum treatment that addressed in-lake phosphorus-loading on Bass Lake in Plymouth.* **Photo Credit:** Ben Scharenbroich, City of Plymouth



From left: *A Clean Water Fund grant awarded to the Shingle Creek Watershed Management Commission supported an alum treatment on Pomerleau Lake in Plymouth.* **Photo Credit:** Ben Scharenbroich, City of Plymouth *Kohlman Lake is the first lake in the Phalen Chain of Lakes. The Ramsey-Washington Metro Watershed District and its partners completed projects that contributed to water-quality improvements.* **Photo Credit:** Gareth Becker, Barr Engineering *The Comfort Lake-Forest Lake Watershed District's water-quality improvement work has focused on a 5,586-acre drainage area affecting Bone Lake.* **Photo Courtesy of Comfort Lake-Forest Lake Watershed District**

grant awarded in 2012. Work finished in 2014. Now, stormwater runoff from 915 acres irrigates 116 acres of the golf course. RCWD provided matching funds; Hugo provided in-kind support.

The $499,900 iron-enhanced sand filter and pond project on Ramsey County Ditch 11 drew from a $392,000 Clean Water Fund grant awarded in 2019. It pumps ditch runoff to a series of iron-enhanced sand filters on township-owned land adjacent to the ditch. The constructed pond allows sediment and the pollutants it carries to settle out.

"The iron-enhanced sand filter would not have been done without those funds," Kocian said.

The RCWD provided matching funds; the township and lake association were project partners.

GOLDEN LAKE: Bisected by an Anoka County ditch and bordered by a Circle Pines city park, 55-acre Golden Lake feeds into Rice Creek. Situated in a fully developed area of the Twin Cities metro, the lake — popular among paddlers — was listed as impaired for aquatic recreation in 2002.

"Without the Clean Water Fund, neither of these projects would have gone in the ground. Typically, the financial hurdles are often the hardest to get over, and the Clean Water Fund provides a fantastic opportunity to bridge that gap," said Mitch Haustein, Anoka Conservation District stormwater and shoreland specialist.

Working with the city of Blaine, the RCWD and an $88,950 Clean Water Fund grant awarded in 2014, the district retrofitted a stormwater treatment pond in Blaine with an iron-enhanced sand filter bench, estimated to achieve 11% of phosphorus-reduction goals needed to meet state water-quality standards. The project was completed in 2015 at Centennial Green Park. An iron-enhanced sand filter bench was installed along the perimeter of an existing stormwater pond, which captures runoff from about 200 acres. Water now filters through the pond bench before entering the ditch.

A $467,970 Clean Water Fund grant awarded in 2017 supported a pump-controlled iron-enhanced sand filter basin installed near an existing stormwater pond on Circle Pines-owned property adjacent to Golden Lake. The project targeted dissolved phosphorus entering the pond from Anoka County Ditch 53-62, which carries stormwater runoff from about 6,425 acres. Partners included the city of Circle Pines and the RCWD. The project was completed in 2019. Water is pumped from an existing pond to two iron-enhanced sand filter beds, and then drained and filtered before it reaches an outlet to the lake.

Over the past eight years, RCWD monitoring data show phosphorus levels are down 20% to 50% compared with the longtime average. Golden Lake monitoring records date to 1976.

Hennepin County

BASS & POMERLEAU LAKES: Alum treatments on two Plymouth lakes — Bass and Pomerleau — achieved the phosphorus reductions necessary to be considered for delisting in 2024.

The two-part treatments, applied to each lake in fall 2019 and fall 2020, drew from a $267,040 Clean Water Fund grant awarded to the Shingle Creek Watershed Management Commission (WMC) in 2018. The treatments addressed internal phosphorus-loading, following nutrient-load reduction work in the watershed.

Bass and Pomerleau are part of a three-lake chain listed as impaired for nutrients in 2002. The third, Schmidt Lake, was delisted in 2014.

Ringed by homes and bordered by a small city park with a fishing pier, 183-acre Bass Lake flows to Bass Creek, a Shingle Creek tributary. The shallow lake is heavily used by lakeshore residents with private access.

Twenty-six feet deep at its deepest point, 26-acre Pomerleau Lake is bordered by wetlands within the Northwest Greenway. Rapid residential development about 20 years ago helped to protect Pomerleau Lake's water quality because it coincided with efforts to preserve natural areas, and infiltration stormwater ponds were built into the new development.

"It was something that the city really saw as being a gem, and that just added to the value of undertaking the alum treatment," said Diane Spector, a senior water resources planner with the engineering consultant firm Stantec who advises the WMC on technical matters.

While delisting Shingle Creek, a highly impacted urban stream, "is going to be a long haul," Spector said the proposed delistings demonstrate the possibility — and the necessity of partnerships among the WMC, cities, lake associations, citizen groups and funders.

Ramsey County

KOHLMAN LAKE: First in the six-lake Phalen Chain of Lakes, Kohlman Lake draws wildlife-watchers — plus paddlers, anglers and boaters who gain access via Lake Gervais. The 79-acre shallow lake in Maplewood is part of the chain of lakes' water trail.

A nutrient impairment affecting aquatic recreation put Kohlman Lake on the state's impaired waters list in 2002. After years of work to curb runoff and pollutants, it's poised to shed that impairment. Phosphorus levels began meeting the state standard for shallow lakes in 2010, and Chlorophyll-a in 2011.

Drawing from six Clean Water Fund grants plus two WBIF awards from BWSR, the Ramsey-Washington Metro Watershed District (RWMWD) and its partners worked with property owners, churches, schools and businesses to install retrofits, rain gardens and other best management practices — projects that directly contributed to the water-quality improvements.

From 2010 through 2016, BWSR awarded the RWMWD Clean Water Fund grants totaling $1,208,515, plus WBIF dollars in 2019 and 2021.

Among those grant-funded projects affecting Kohlman Lake: stormwater treatment at six churches — Lakeview Lutheran, Redeeming Love, St. Stephen's, Parkview United, North Presbyterian and House of Prayer Lutheran; runoff filtration projects at Harmony Learning Center and Maplewood Middle School; rain garden installations in the 208-acre Casey Lake neighborhood, a 15-acre wetland; stormwater treatment at Target in North St. Paul; and stormwater treatment via a cistern, tree trenches, rock filter, permeable pavers and rain gardens at the Maplewood Mall.

The RWMWD's targeted retrofit and stewardship grant programs prioritized impaired or at-risk waters — including Kohlman Lake and the waters that drain to it.

Paige Ahlborg, RWMWD project manager, described the impact of Clean Water Funds combined with watershed district dollars: "We were able to create these partnerships where we could approach the churches and schools that usually don't have those extra funds to put these projects in."

The $858,000 project at Target in North St. Paul drew $93,000 from WBIF. Completed in 2021, it removed 50 parking spaces, and treated the remaining 4 acres of impermeable surface with rain gardens and tree trenches.

The $6.5 million Maplewood Mall retrofit treats 20 million gallons of stormwater a year, handling runoff from 35 acres of pavement and concrete that carried phosphorus to Kohlman Lake. A $500,000 Clean Water Fund grant awarded to the RWMWD in 2010 supported the work. The project filters 67% of rainwater — compared with 3% previously.

Delisting Kohlman Lake's nutrient impairment was based on data from 2011-21.

"Just because it has been delisted, we can't just forget about it. We want to keep these good projects going in, maintain that good water quality," Ahlborg said.

An uptick in phosphorus and Chlorophyll-a levels over the past few years has prompted the watershed district to examine whether another alum treatment is necessary.

MPCA Details

IMPAIRED WATERS DEFINITION: The MPCA defines an impaired water as one that fails to meet water-quality standards (which define how much of a pollutant can be present before it's no longer considered drinkable, swimmable, fishable or usable in other defined ways) in one or more of seven areas: nutrients that grow algae, sediment that clouds water, bacteria that can make swimming unsafe, unhealthy insect and fish habitat, mercury levels that limit safe fish consumption, PFOS in fish tissue, sulfate that may affect wild rice production.

IMPAIRED WATERS LIST: Updated every other year, the Impaired Waters List includes a tab for delistings.

MEETING STANDARDS: Removal from the impaired waters list requires meeting the standard for phosphorus levels, and either Secchi disk readings, which measure clarity, or Chlorophyll-a levels.

Washington County

BONE LAKE: Stocked with walleye and accessible via public access, 220-acre Bone Lake lies in Scandia, where homes surround about 75% of the lake. A county highway parallels its undeveloped northwestern edge.

Bone Lake was listed as impaired for aquatic recreation in 2004.

Four Clean Water Fund grants totaling nearly $823,500 have supported $1.2 million in the Comfort Lake-Forest Lake Watershed District's (CLFLWD) water-quality improvement work that contributed to Bone Lake's proposed delisting — including projects centered on Moody Lake. One more Moody Lake project, estimated to cost $299,375 and supported by a $239,500 Clean Water Fund grant BWSR awarded in 2022, is underway.

Monitoring data show Bone Lake has met or exceeded the state standard for phosphorus levels each year since 2015. Water clarity has shown improving trends since 2011.

"We focused on the main contributing drainage areas into Bone Lake for a truly targeted approach," said CLFLWD Administrator Mike Kinney.

That, in turn, helped to improve the water quality downstream from Bone Lake, which flows through a series of lakes before it reaches Comfort Lake, and then the Sunrise, St. Croix and Mississippi rivers.

"One of the things to help Bone Lake was to improve the water bodies that were contributing water to Bone Lake," Kinney said. "Our sequential diagnostic monitoring indicated to us, based on real data that was incorporated into the modeling that we did, how important that amount of water coming in from Moody Lake is to the water quality for Bone Lake."

A Moody Lake wetland rehabilitation completed in 2020 contributed to 78% of the phosphorus reduction from the external load. That $561,700 project drew from a $429,280 Clean Water Fund grant awarded to the CLFLWD in 2016. Diagnostic monitoring revealed the problem, which the CLFLWD addressed before tackling Moody Lake's internal phosphorus load with an alum treatment in 2019. A $135,000 Clean Water Fund grant awarded in 2018 supported the alum treatment.

The current work, designed to achieve the 12% phosphorus reduction needed for Moody Lake to meet state water-quality standards, includes a wetland enhancement.