

# Watershed protects Lake McCarrons



CRWD's underground stormwater treatment system at Parkview Center School, a \$1.42 million project backed by a \$1.76 million targeted watershed Clean Water Fund grant from BWSR, is designed to protect Lake McCarrons' water quality. The system includes five rows of corrugated metal pipes 10 feet in diameter. Estimates show it will treat 12.5 million gallons of polluted runoff a year.

**Photo Credits:** Capitol Region Watershed District

**VIDEO:** [See contractors in action and catch an aerial view of Lake McCarrons.](#)

In Roseville, the Capitol Region Watershed District drew from targeted watershed Clean Water Funds to protect a popular swimming and fishing lake, collaborating with the school district, city and Ramsey County at a land-locked site to construct a stormwater treatment solution under a sledding hill at Parkview Center School



**The \$1.42 million Parkview project matched \$679,150 in Clean Water Funds with \$150,000 from Ramsey County and \$30,000 from the Roseville school district.**

ROSEVILLE — Buried under a sledding hill and nearly invisible except for the manhole covers, Capitol Region Watershed District's (CRWD) massive underground stormwater treatment system at Parkview Center School is meant to be most apparent downstream in Lake McCarrons.

The \$1.42 million project is designed to protect water quality of the 75-acre lake.

"(Lake McCarrons) is a deep-lake system, and it's unimpaired. So there's a few things about it that make it unique for the Twin Cities area," said Nate Zwonitzer, CRWD water resource project manager. "It's a great recreational lake for fishing and swimming. It has really good



**Zwonitzer**

water quality."

An in-lake alum treatment in 2004 plus watershed-focused work helped McCarrons bounce back after the 1990s, when it failed to meet state standards for chlorophyll-a and phosphorus.

Installed in 2019 and connected to the storm sewer in 2020, the Parkview project includes five rows of corrugated metal pipes 10 feet in diameter. Laid out in a 136-by-62-foot area, the pipes can hold about 414,000 gallons of water — the equivalent of an 0.8 inch rainfall in the 46-acre watershed.

**GRANT WORK:** A 2016 Clean Water Fund award, the \$1.76 million targeted watershed grant expires Dec. 31, 2021. Other grant-funded work includes an underground infiltration system at Como Park Senior High School; Como Park Golf Course best management practices featuring an iron-enhanced sand filter at an existing stormwater pond, an expanded bioretention basin and new underground infiltration; 35 rain gardens; and activities promoting clean-streets initiatives.



**Above:** Stormwater from a 46-acre watershed drains to the Ramsey County Road B storm sewer adjacent to Parkview Center School in Roseville. Now cleaned water treated at the site discharges through the storm sewer and runs through wetlands at Villa Park before entering Lake McCarrons. **Below:** Original plans called for siting the project under school athletic fields. But groundwater was too close to the surface there, so it was worked into a hillside.

“Unless there was a sign there, you wouldn’t even know,” said Todd Lieser, Roseville Area Schools supervisor of buildings and grounds, who was involved from design through completion. The temporary signs installed during construction were to be replaced by permanent educational signs.

The watershed drains to the Ramsey County Road B storm sewer adjacent to Parkview Center School. Now, a diversion channels runoff north, through a manhole to a pretreatment sump. Large debris is removed and sediment settles out before it reaches the pipe gallery. Stored water is released within 48 hours by passing through an innovative filtration system: a concrete tank with 53 filter cartridges containing volcanic rock (perlite) modified to chemically remove dissolved phosphorus.

“The cool thing is it’s all



gravity,” Lieser said.

Cleaned water is discharged through the storm sewer system and runs through wetlands at Villa Park before entering Lake McCarrons.

Estimates show the system will treat 12.5 million gallons of polluted runoff a year, keeping more than 45 pounds of phosphorus out of the lake. One pound of phosphorus can produce 500 pounds of algae.

The Parkview project is one element of a \$1.76 million targeted watershed Clean

Water Fund grant from the Minnesota Board of Water and Soil Resources (BWSR) that has resulted in more than \$4.5 million in projects centered on preserving Lake McCarrons and improving nutrient-impaired Como Lake.

The grant runs through Dec. 31, 2021.

“What it allowed us to do,” Zwonitzer said, “was expedite some projects that were on our list. And it helped us to leverage funding from our partners because we were able to bring additional

## Leveraged Funds

CRWD parlayed the \$1.76 million targeted watershed grant into more than \$4.5 million in projects completed with its partners from 2016 through 2021, including:

- \$1.85 million:** Como Regional Park best management practices
- \$1.42 million:** Parkview Center School stormwater treatment project
- \$850,000:** Como Park Senior High School stormwater treatment project
- \$380,000:** Boulevard rain gardens
- \$10,000:** Promotion and program support

**RAIN GARDENS:** In the Lake McCarrons subwatershed, 14 grant-funded, curb-cut rain gardens were built in 2018 and 2019. Three more benefiting Lake McCarrons and 18 benefiting Como Lake were built in 2021. Combined, they’ll treat an estimated 2.2 million gallons of water and reduce phosphorus by 14 pounds a year.



Water stored in the underground pipes is released within 48 hours by passing through an innovative filtration system: a concrete tank with 53 filter cartridges containing volcanic rock modified to chemically remove dissolved phosphorus.

## Lake Como Work

In addition to Clean Water Fund-backed targeted watershed work, recent alum treatments and aggressive curly leaf pondweed management are paying off, CRWD water resource project manager Nate Zwonitzer said. “The significant improvements that we’re seeing in Lake Como are without a doubt the result of the activities that we’ve been doing over the past few years,” he said, adding that the water quality is better than any time since CRWD has been monitoring it. Details: [CRWD article](#).

Lake Como projects spawned two other firsts:

The underground stormwater treatment project at Como Park Senior High School was the first time Saint Paul storm sewers were diverted for treatment on property the city didn’t own. Zwonitzer said the right combination of projects, funding and incentives made it possible. “This was like a case study for us, and we had the funding to help us try something new. It kind of laid the groundwork for future projects. It allowed us to demonstrate to the city that this can be done,” he said. With the targeted grant, CRWC could say, “We have funds to help with design and construction, and we can create incentives that help all of the partners to meet their goals individually but also support this larger effort to improve Como Lake.”

The Adopt-A-Drain program — originally focused on the Como Lake watershed, now used across the metro, in other parts of Minnesota and in other states — grew from a partnership among CRWD, Hamline University and community members.

money to the table. It allowed us to do projects that may have taken years of budgeting.”

CRWD will own the Parkview stormwater treatment system, coordinate maintenance, and cover 50% of annual maintenance costs. The city and Ramsey County will split the balance.

Initial plans would have buried the project under the school athletic fields, but groundwater was too close to the surface for the filtration system to work there.

“We almost abandoned the project completely until this concept came up,” Lieser said.

The completed project is situated in the 30-foot slope between the school’s parking lot and the athletic fields below. It allowed land-locked Roseville to treat stormwater on school property, and, by raising the grade to bury the system, it gave the school district an affordable option to one day expand parking at a congested site. With

**“(I)t helped us to leverage funding from our partners because we were able to bring additional money to the table. It allowed us to do projects that may have taken years of budgeting.”**

— Nate Zwonitzer,  
Capitol Region Watershed District

modification, the water could be stored longer, and then used to irrigate the athletic fields. That need does not currently exist.

Another challenge: Sampling showed existing soils weren’t sufficient to bear the weight of the system without sinking. That solution lay 1.5 miles away at a Roseville High School construction site.

Hauling soil from the high school property saved the school district about \$29,000 in disposal costs. It saved CRWD about \$380,000 — money it would have spent to import soil. To ensure sufficient compaction, that additional soil settled at the Parkview site for one year

before it was removed to install the project, and then reused in 2019 to bury it.

“By coordinating closely with the school district, we were able to take waste from their high school project and turn it into a resource for the project at Parkview,” Zwonitzer said.

Lieser said the CRWD collaboration not only saved money but also produced educational benefits. CRWD staff has worked closely with the school to explain how filters remove phosphates from the water. A final piece of the project involved installing permanent educational signs that explain the project in four languages.