The Shell Rock River Watershed District’s mission is to implement reasonable and necessary improvements to the water-related and other natural resources of the District.
White Lake Results

The water quality in White Lake has been improving over the past 10 years, and 2018 was one of the best years on record. The lake had record low phosphorus levels (summer average of 61 μg/L), easily meeting the state standard for shallow lakes in southern Minnesota (<90 μg/L), and also met state standards for water clarity and chlorophyll-a concentrations (indicator of algal conditions). In fact, it was the only lake in the Shell Rock River Watershed District (SRRWD) to meet state standards for all three of these parameters.

White Lake is a 168-acre lake with about 2.5 miles of shoreline in a primarily residential area on the west side of Fountain Lake. One unique feature of the lake is its good waterfowl habitat. American white pelicans (pictured at right) frequently visit during migration and there is a cormorant rookery on the east side of the lake. While the lake is not stocked with fish, it is home to black bullheads, green sunfish, hybrid sunfish, yellow perch, fathead minnows, and goldfish.

In 2018, pelican feeding was limited on White Lake, which offers one clue to the lake’s good year. Smaller numbers of pelicans can indicate smaller numbers of black bullheads. This suggests the lake was subject to a severe winterkill, which can have a positive effect on water quality (see story below).

Winter—It Can Be Good for Water Quality

A harsh winter, with lots of snow and cold can bring water quality benefits in the spring. These conditions frequently cause winterkill, a loss of fish that occurs particularly in shallow waterbodies like White Lake. Under winter ice and snow, vegetation that produces oxygen through photosynthesis receives less sunlight. This creates oxygen-starved conditions that can cause fish to suffocate. In lakes with high numbers of rough fish (like carp or bullheads) that can be a plus for water quality. These fish increase phosphorus levels in lakes by rooting up phosphorus-laden sediment when foraging for food.

Thick ice and late ice-out can also slow the growth of troublesome algae. In 2018, ice-out was late on many area lakes, including Albert Lea Lake, which had its latest ice-out on record. A range of ice-out dates for Albert Lea and Fountain Lake are shown in the table below.

<table>
<thead>
<tr>
<th>LAKE</th>
<th>ICE-OUT DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median</td>
</tr>
<tr>
<td>Albert Lea Lake</td>
<td>March 31</td>
</tr>
<tr>
<td>Period of Record: 1991–2017</td>
<td></td>
</tr>
<tr>
<td>Fountain Lake</td>
<td>April 8</td>
</tr>
<tr>
<td>Period of Record: 1912–2018</td>
<td></td>
</tr>
</tbody>
</table>

What Makes Good Water Quality?

Pages 4–5 of this report summarize 2018 water quality in area lakes. When we measure water quality, we generally look at three parameters:

- **Phosphorus**: In general, low levels of phosphorus are an indicator of good water quality. Although phosphorus is essential for plant life, excessive levels degrade water quality. Common sources in lakes are fertilizers and organic wastes from runoff, soil erosion, and lake sediment.

- **Chlorophyll-a**: This is a measurement of how much algae is in a lake. Too much algae reduces clarity and causes green scums and odors.

- **Clarity**: Lake clarity (or transparency) is measured by lowering a “Secchi disk” into the water until it is no longer visible from the surface. The greater the “Secchi depth,” the more transparent the water.
Phosphorus Near Record Low

2018 was a good year for water quality in Fountain Lake, with the summer-average phosphorus levels near the record low and water clarity near the state standard. The improved water quality was in part due to a very wet growing season (see graph below), which increases flows to Fountain Lake and reduces the amount of time water sits stagnant in the lake accumulating phosphorus from internal loading (released from lake bottom sediments).

While Fountain Lake water quality and algae conditions were better than average in 2018, the lake was not immune to algal blooms. In August of 2018, a blue-green algal bloom occurred along the north side of Edgewater Bay. Blue-green algae is a form of toxic algae called Cyanobacteria that tend to bloom when the lake has high phosphorus concentrations, high temperatures, and stagnant waters. These type of algal blooms are more commonly referred to as harmful algal blooms (HABs). HABs diminish recreational value, as they can be toxic to both humans and animals if water is ingested. Reducing nutrient loading to waterbodies can reduce the risk of HABs and keep lakes usable in the warm summer months.

Dredging Project Update

2018 was a big year for Fountain Lake. After over 10 years of planning and fundraising, dredging was conducted to address the long-term sediment build-up and water quality issues that caused this important resource to land on the MPCA’s list of impaired waters in 2008. Starting in the south portion of Edgewater Bay, about 250,000 cubic yards of material were removed by a hydraulic dredge. This material was transported by pipeline to a Confined Disposal Facility (CDF) about 1 mile north of Fountain Lake’s Bancroft Bay. Sediment in dredge slurry settles to the bottom of the CDF and clarified lake water is conveyed back to the lake.

Weather permitting, dredging in Edgewater Bay will resume in mid-April and continue into October. This activity is anticipated to improve water quality and habitat and improve the fishery. 2018 monitoring did not detect any negative impacts on water clarity in waters downstream of the dredging activity.
2018 Across the Watershed: Lake Water Quality

Value of Water Monitoring

The SRRWD regularly monitors its lakes for several water quality parameters, including water transparency. Average summer values are compared to state standards, and the Institute of Water Resources monitors for water clarity and phosphorus concentrations observed in SRRWD lakes. The results are used to evaluate the water quality and inform future conservation efforts.

### Fountain Lake

While Fountain Lake failed to meet the MPCA shallow lake phosphorus and water clarity standards, phosphorus levels were near record lows. Both phosphorus concentration and water clarity were also better than long-term average values. The SRRWD will continue its efforts to improve water quality, including the dredging project, to improve water quality.

### White Lake

2018 was also a record year for White Lake in terms of low phosphorus levels. The summer average of 61 μg/L met the state standard (<90 μg/L) and was well below the lake's 12-year average (161 μg/L). Water clarity in the lake (2.4 feet) also met the state standard after missing it in 2017.

### Pickerel Lake

Pickerel Lake had mixed water quality results in 2018. Phosphorus increased slightly over 2017 levels, failing to meet the state standard, but water clarity (3.7 feet) increased by over 1 foot and met the standard. Both phosphorus levels and water clarity were better than long-term averages as the District continues to work on reducing phosphorus and sediment inputs from the surrounding area.

### Albert Lea Lake

Phosphorus levels in Albert Lea Lake decreased year-over-year and were better than the long-term average, but still failed to meet state standards. Water clarity failed to meet state standards and continued to decline year-over-year—measured at 2.8 feet in 2016, 1.1 feet in 2017, and 0.9 feet in 2018.
water quality indicators, including phosphorus, chlorophyll-a, and
plutonium based on measurements from June through September. The
levels in SRRWD lakes during the summer of 2018 are summarized on
and the Minnesota Pollution Control Agency (MPCA) standard for
these in this region of the state. These comparisons provide valuable
information on, allowing the SRRWD to track the impact of previous projects,
and identify waterbodies that need attention.

Meets or exceeds
the standards

Does not meet the
standards

Miles

0 1 2 3 4 5

Upper Twin Lake

Clarity and phosphorus
levels on Upper Twin Lake
were similar to 2016 and
2017, failing to meet MPCA
shallow lake standards.
Phosphorus levels were
better than the long-term
summer average while clarity
was worse.

Lower Twin lake

As in 2017, Lower Twin Lake
failed to meet state
standards for summer-
average clarity and
phosphorus concentrations.
Similar to Upper Twin Lake, phosphorus levels
were better than the long-term
summer average while clarity
was worse.

Halls Lake

In 2018, Halls Lake failed
to meet state standards
for phosphorus levels and
water clarity a year after
meeting both. In addition,
measurements for both of
these parameters were
worse than long-term
summer averages.

School Section Lake

Although phosphorus levels
decreased significantly
(266 μg/L in 2018 vs.
393 μg/L in 2017) and water
quality improved slightly,
School Section Lake failed
to meet state standards and
continues to suffer from poor
water quality. A reclamation
project on this lake has been
funded and will begin in the
near future.
Carp Management Update

Mike Mertins, a commercial fisherman, has been fishing for carp his whole life: it’s his job to rid area lakes of these invasive fish that degrade water quality. Their foraging behavior, rooting in the lake bottom to search for food, releases large quantities of nutrients from the sediment. This, in turn, spurs algae growth and destroys habitat for waterfowl and other fish.

Mike set about thinning the “above-average” Albert Lea Lake carp population in 2018. Using fish-finding equipment, he and his father, Jim, located large groups of fish and dropped their long seine nets (vertical nets) to harvest them. Smaller fish pass through the holes of the net and larger game fish, like northern pike and walleye, are immediately released. Carp, however, are keepers, and in 2017 there were 97,000 pounds of keepers. What do they do with the fish? Well, as is often the case, one man’s trash can be another man’s treasure. These unwanted carp are sold for about 20 cents per pound to customers in New York and Nebraska for human consumption.

In recent years, the District has been using PIT (passive integrated transponder) tags to track carp movements throughout its lakes. This monitoring can help guide Mike to locations where carp aggregate during the winter so that harvesting is more successful. Analyzing carp movements gives the District a better overall understanding of carp behavioral patterns. The goal is better carp management and, subsequently, better water quality.

Fish barriers and aeration also help manage carp. A fish barrier at Fountain Lake prevents the carp from reaching shallow waters outside of the lake to spawn, which makes carp eggs and larvae more susceptible to predation by fish like bluegill sunfish. The aeration system helps the bluegill survive winterkill, increasing their availability as carp predators. A recent study by researchers at the University of Minnesota looked at using bluegill sunfish as a control method for carp and found that they can help control juvenile stage carp effectively, but that other factors affect end-of-season carp populations.

A tracking device is installed in carp from Fountain Lake to track the carp’s movements.

An aerator is installed in Edgewater Bay, Fountain Lake in November 2018 to help maintain oxygen levels and prevent winterkill of desirable fish species.
Clearer Waters in Pickerel Lake
Pickerel Lake has maintained relatively good water quality since the 2009 restoration project when carp were removed and a fish barrier was installed. Following the restoration project, conducted in partnership with the Minnesota DNR, the water clarity in the lake improved dramatically, meeting the state standard in 7 of the last 9 years, including 2018.

Pickerel Lake still struggles to meet the state standard for phosphorus, meeting the standard in only 3 of the 9 years since the reclamation project.

A Healthy Fishery
As part of the 2009 restoration project, thousands of desirable game fish were brought in to help maintain a healthy ecosystem. The success of these efforts was evident with results from a 2018 Department of Natural Resources fish survey. The survey indicates that yellow perch are abundant and northern pike, while low-to-medium in population density, are good sized (most caught will be over the new 24-inch slot limit, ranging up to 40 inches). Other fish noted were walleye and black crappie.

In the fall of 2017, the Pickerel Lake dam was completed, including the installation of a fish ladder to encourage and ease fish passage to the shallower Mud Lake for spawning. The fish then return to Pickerel Lake in the summer for better dissolved oxygen conditions. Fish ladders, characterized by a series of shallow, stepped pools constructed at a gradual slope, are commonly installed at dams located along primary spawning and migration routes to allow for easy passage. The installation of the ladder at the Pickerel Lake dam has improved the northern pike and yellow perch recruitment potential in the lake, indicated by the recent DNR fish survey showing good age classes of these two species.

One Watershed, One Plan
In 2018, the SRRWD, Freeborn County, Freeborn County Soil and Water Conservation District, and the City of Albert Lea began development of a comprehensive water management plan. This plan, referred to as One Watershed, One Plan (1W1P), is funded by the Minnesota Board of Water and Soil Resources. The vision for 1W1P is to align local water planning based on major watershed boundaries rather than political boundaries.

The plan is expected to take two years to complete and will include strategies to prioritize and target water quality implementation actions. A key focus of the plan will be establishing measurable goals for water quality improvements. The SRRWD’s monitoring program will play a vital role in establishing and tracking progress toward these goals.
2019 Fishing Opener

Since 1948, the Minnesota Governor’s Fishing Opener has marked the beginning of the fishing season. This year’s opener should spur some local excitement, with Governor Tim Walz casting his line in Fountain Lake on May 11.

The opener will give the community a great opportunity to showcase area lakes. While most of the weekend’s events will be open only to invited guests (primarily media representatives), a community picnic will also be held. This event is open to the public and will include a dinner, family fun activities, and a program.

Another way to get involved is to act as a “boat host” on one of the area lakes. The position is open to outdoor and fishing enthusiasts who are willing to host guests registered for Saturday’s fishing challenge. Fishing expertise is not required—just a functioning, licensed boat and willingness to share your knowledge of the area. For more information, go to http://www.mngovernorsopener.com/boat-host-info.

Fun Fish Facts

• Species of fish found in Minnesota: 162
• Approximate number of anglers in Minnesota: 1.4 million
• Approximate number of anglers expected to participate in the fishing opener: 500,000
• Number of fishing lakes in Minnesota: about 5,400
• Miles of fishable rivers and streams in Minnesota: 18,000
• Coldest fishing opener: 24 degrees in International Falls (1996 and 2004)
• Warmest fishing opener: 92 degrees in Saint Cloud (1987)
• The last time a governor was unable to attend an official opener: 1975, Wendell Anderson

About the Shell Rock River Watershed District

The mission of the Shell Rock River Watershed District is to implement reasonable and necessary improvements to the water-related and other natural resources of the District.

Board of Managers
Gary Pistorious, Chair
Mick Delger, Vice Chair
Alan Bakken, Treasurer
Dan DeBoer, Secretary
Brad Kramer, Manager
Mike Hanson, Manager
Joe Pacovsky, Manager

Staff
Andy Henschel, Administrator
Carmen Christensen, Financial Clerk
Scott Christenson, Conservation Technician
Courtney Phillips, Resource Technician
Leah Stadheim, Administrative Assistant

For more information: www.shellrock.org

Last 10 Opener Sites

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<thead>
<tr>
<th>Year</th>
<th>Site</th>
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<tbody>
<tr>
<td>2018</td>
<td>Willmar Lakes Area</td>
</tr>
<tr>
<td>2017</td>
<td>Greater St. Cloud Area</td>
</tr>
<tr>
<td>2016</td>
<td>Big Sandy Lake, McGregor</td>
</tr>
<tr>
<td>2015</td>
<td>Lake Vermilion Area</td>
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<tr>
<td>2014</td>
<td>Brainerd Lakes Area</td>
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</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Park Rapids</td>
</tr>
<tr>
<td>2012</td>
<td>Waconia</td>
</tr>
<tr>
<td>2011</td>
<td>Grand Rapids</td>
</tr>
<tr>
<td>2010</td>
<td>Lake Kabetogama</td>
</tr>
<tr>
<td>2009</td>
<td>White Bear Lake</td>
</tr>
</tbody>
</table>

Lakes in the SRRWD:
Pickerel and Mud
White (Chapeau)
Fountain
Albert Lea
Goose
School Section
Upper and Lower Twin
Halls
Sugar
Church
Eberhart

Cities/Towns in the SRRWD:
Albert Lea
Hayward
Glenville
Twin Lakes
Manchester
Clarks Grove (partial)