



Nine Mile Creek Discovery Point

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Arrowhead/Indianhead Lakes Q&A

In-lake Aluminum and Iron Treatments *(Answers by NMCWD)*

Phosphorus is being bound in the water column. Does phosphorus in the sediment get bound too?

Yes, both phosphorus in the water and phosphorus in the sediments will chemically bind to the aluminum and iron. As long as there are adequate oxygen levels in the lake, the phosphorus will stay bound.

How long will the aluminum and iron treatment last?

We estimate that the proposed treatment will last for 10 to 15 years. Aluminum treatments are an effective and proven method for binding phosphorus. However, this is the first time the watershed district has added iron to a treatment to enhance the effectiveness. The watershed will undertake frequent monitoring to assess the success and longevity of the treatment, and the need for follow-up treatments.

Is yard fertilizing a big source of phosphorus to the lake?

Fertilizers and other organic materials from the watershed contribute to the unhealthy nutrient levels in these lakes. However, studies undertaken by the watershed district show more phosphorus is released from the lake sediments than is coming from the area draining into these lakes. This means the watershed district's projects are focused on managing lake sediment phosphorus. However, everyone can do their part to help improve the health of these lakes. The watershed district will offer a free soil testing program to encourage residents to undertake proper fertilization practices to reduce nutrients entering our lakes. Watch for details in the spring of 2024!

How is an aluminum and iron treatment different than the herbicide and algicide treatments that the lake association has been doing to control algae?

Previous herbicide and algicide treatments addressed algal blooms, but not the cause of the algal blooms. The watershed district is treating the cause of the algal blooms—too much phosphorus in the lake—with an aluminum and iron treatment. This is a more strategic approach to improving water quality and should lead to longer-term water quality improvements. The watershed district anticipates that following the aluminum and iron treatments, and over time, algicide treatments will not be necessary.

Why are the aluminum and iron treatments for each lake dosed differently?

The dosing is based on the lake's water and sediment characteristics. This is necessary so proper pH in the lake is maintained following treatment and to minimize any residual aluminum and iron in the water. Additionally, in Arrowhead Lake, the proposed application is split into two treatments to minimize the expected temporary increase in in-lake chloride concentrations from the iron application and to prevent concentrations from exceeding the state water quality standard.

Lake Aeration *(Answers by The City of Edina and NMCWD)*

Will more aerators create thin ice conditions across the entire lake?

When operated in winter, aerators can result in thin ice conditions around the aerator. The proposed aeration system will be designed to accommodate winter aeration, with flexibility to adjust operation of the aeration system to certain areas of the lake, as desired. The Minnesota Department of Natural Resources issues permits to operate aeration systems in winter. This includes thin ice signage requirements, where appropriate, as a condition of permit issuance.

Why is the city paying for aeration now? The association used to pay for those costs.

The previous aeration systems were installed to support fisheries in the lake. Since the new, proposed aeration systems are important for the success of the aluminum and iron treatments in the lake, the purpose of the new aerators is to improve water quality. Clean water is a core service of the city's stormwater utility. The change in the aeration's purpose—from fisheries support to water quality support prompted the city to take on the costs of running and maintaining the system. Aeration will continue to promote a balanced fisheries population in addition to better water quality.

Is there redundancy in the aeration system to ensure the system continues to work?

Yes, if one aerator head becomes clogged or isn't functioning, the other heads will continue to function. The preliminary design of the systems also includes two compressors, so if one compressor fails or needs to be turned off for maintenance, the other compressor will be able to feed air to the lakes.

How many aerators heads will be in each lake?

The preliminary design includes eight aerator heads for each lake. The aeration system will be designed with flexibility to turn off the aeration in certain areas of the lake, as desired, for winter operation.

Are the current aerators going to be salvaged?

No. The current aerators will be removed from the lakes.

Will aerators increase the lily pad growth on the lake?

Aeration alone isn't expected to increase lily pad growth. However, with anticipated improvements in water clarity from the combination of aluminum and iron sediment treatments and aeration, there may be an increase in lily pad growth.

Lake Level Management *(Answers by the City of Edina)*

How are lake levels in Arrowhead and Indianhead Lakes measured?

Lake levels at Arrowhead and Indianhead Lakes are measured monthly by the Nine Mile Creek Watershed District using survey equipment. You can check out the lake level monitoring [HERE](#).

Where does the water pumped from Arrowhead Lake and Indianhead Lake go?

During temporary pumping in 2019, water pumped from Arrowhead Lake flowed to the catch basins at the intersection of Indian Hills Road and McCauley Trail South, then was conveyed via storm sewer and ditch south to Braemar Branch of Nine Mile Creek. In the future, water pumped from the lake would likely be directed in a similar manner.

During temporary pumping in 2019, water pumped from Indianhead Lake at/near the intersection of Valley View Road and Dakota Trail flowed south to the catch basins on Valley View Road, then was conveyed south via existing storm sewer to a wetland just north of Braemar Golf Course. In the future, water pumped from the lake would likely be directed in a similar manner.

Why hasn't the city installed a permanent outlet to these lakes?

The city strives to reduce the risk of flooding throughout the community. Transferring risk from landlocked basins to downstream homes and infrastructure doesn't align with city policy.

Further, initial study of these lakes suggests that there are periods when mobilizing temporary pumping operations may not be necessary to protect homes from flood exposure so temporary operations may be the more cost-effective approach.

Other *(Answers by the City of Edina and NMCWD)***What is enhanced street sweeping and has the city started doing it?**

Enhanced street sweeping is street sweeping beyond routine sweeping. Collecting organic material from streets before it enters the storm drains that lead to our lakes reduces the amount of phosphorous and other pollutants entering the lakes. The city has started enhanced street sweeping in both the Arrowhead and Indianhead sub-watersheds.

Will the city or watershed district help with cattail removal in Arrowhead and Indianhead Lakes?

No. However, associations or individuals may pursue this on their own with proper permits from the Minnesota Department of Natural Resources (MDNR). All cattail removal work requires a permit from the MDNR. Find out more at: www.dnr.state.mn.us/shorelandmgmt/apg/regulations.html