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## MEMO

**TO: Nine Mile Creek Watershed District Board of Managers**

**FROM: Randy Anhorn**

**DATE: August 13, 2019**

**RE: Next Steps, Lake Cornelia and Lake Edina Water Quality Study Projects**

### **Background/Discussion**

As presented at the Board's June 19, 2019 meeting, the Lake Cornelia and Lake Edina water quality study concluded that the primary sources of phosphorus to Lake Cornelia during the summer months are stormwater runoff, internal loading from lake sediments, and mid-season die-off of invasive curly-leaf pondweed. An over-abundance of bottom-feeding fish (e.g., carp, goldfish, and bullhead) also contributes to poor water quality in Lake Cornelia. For Lake Edina, the primary sources of phosphorus are stormwater runoff and inflows from upstream Lake Cornelia.

As part of the water quality study, several potential projects were identified to help improve lake water quality, including the following:

- Stormwater treatment- specifically a spent lime stormwater treatment system as part of a treatment train to remove additional phosphorus from stormwater prior to discharge into Lake Cornelia
- Alum treatment of Lake Cornelia
- Curly-leaf pondweed management in Lake Cornelia & Lake Edina
- Installation of a winter oxygen injection system in Lake Cornelia to minimize winter kill of predator fish and reduce recruitment of bottom-feeding fish
- Further tracking of carp and goldfish to better understand the options for removing/eliminating a portion of the current bottom-feeder fish community

Consequently, the Board directed staff to finalize the draft report and complete a feasibility study on the proposed in-lake alum treatment for Lake Cornelia, both of which were presented and accepted at the Board's July 17, 2019 meeting. As a result, a public hearing was scheduled prior to the August 21, 2019 meeting to receive comments on the in-lake alum treatment and consider ordering the project.

In addition, the Board directed staff to reach out to various state and regional agencies to seek additional ideas that could enhance the water quality of the lakes. An email doing just that was sent on August 5, 2019.

The next steps will be to discuss the remaining projects identified in the study to determine how the Board would like to proceed to implement all, or a subset, of them and to proceed with a feasibility study of the options in consideration. During presentation of the study results at recent board meetings, there were several questions posed by the Board regarding additional or alternative watershed Best Management Practices (BMPs) to treat the stormwater before it reaches Lake Cornelia. Based on these questions, we are

presenting two potential options for your consideration regarding the scope and format of the feasibility study.

***One option*** could be to simply authorize the District engineer to complete a feasibility study on all or a subset of the identified projects (the spent lime/CC17 treatment chamber upstream of Lake Cornelia, the Lake Cornelia direct oxygen injection system to reduce winterkill, Lake Edina curly-leaf pondweed management and further analysis of management options for the bottom-feeding fish).

If the Board feels it would benefit from additional information and discussion regarding various BMP options within the watershed and how/why the study ended up suggesting the spent lime system, staff could provide additional information on the approach used to evaluate watershed BMPs as part of the UAA study before the feasibility study is authorized. For example, discuss the BMP options that were looked at, the criteria we used (e.g., land availability, costs, treatment capacity) and how/why staff landed on spent lime.

A ***second option*** could be to undertake additional analysis of options as part of the feasibility study then get Board buy-in before proceeding into more detailed analysis/preliminary design. With this approach, the feasibility study could be split into phases, with Phase 1- further evaluation of options and reporting back to Board for feedback/buy-in, Phase 2- more detailed analysis on 1-3 preferred options.

## **Request**

Discuss the identified projects for implementation in the Lake Cornelia and Lake Edina water quality study and direct staff as to the preferred feasibility study scope to further evaluate all or a subset of identified projects from the UAA study. Specifically, we will be looking for guidance/confirmation on 1) the management practices to be included in the feasibility study, and 2) the preferred approach regarding further discussion and/or analysis of watershed BMPs.