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12/10/2024

Aurora Lake Association
Attn: Joe Kovach
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Whom it May Concern,

With the completion of the "State of Aurora Lake 2024: Water Quality Assessment and Management Plan" I feel as though we have compiled together an extremely informative and dynamic document for the Aurora Lake community. Given the incredible amount of data collected throughout the 2024 season by AQUA DOC and your community members, we have created a hefty piece of literature that should act as the starting point towards positive improvements to ensure Aurora Lake meets its designated purpose as a recreational reservoir. The report consists of seven individual chapters that include a review of currently known water quality information, an assessment of management strategies to reduce algae blooms, and a lake management plan based off the other two points. Given the length of the report, this cover letter was deemed warranted to summarize its findings. I highly encourage reading the report for specifics on ideas mentioned here as it elaborates on these ideas much more deeply and may answer any questions you may have.

Aurora Lake has been experiencing a concerning rise in observable harmful algae blooms (HABs) in recent years. These blooms represent a concerning trend toward reservoir-use impairment as increasing bloom frequency can increase the likelihood of contact recreational exposure to cyanotoxins that can be harmful to human and pet health. This concerning trend has sparked interest within the community to collect information on the reservoir to best categorize its behaviors and help with the development of a lake management plan (LMP). With the compiled data collected during the 2024 lake season, we were able to identify Aurora Lake as a relatively shallow, polymictic, mostly eutrophic reservoir system with potential to become mesotrophic should nutrient concentrations (namely phosphorus) be reduced. This is an elaborate way to say that currently, Aurora Lake mixes vertically multiple times throughout the lake season and has a high amount of "fertilizer" in it for growth. With heightened nutrient concentrations that can be mixed into the upper waters of the lake to support algae growth and little to no aquatic plants to compete with algae, conditions are optimal for algae blooms to flourish. In addition to this, Aurora Lake hosts a substantial population of common carp. These fish are well known to disturb bottom sediments and increase nutrient availability from sediments as well as from their own waste, increasing favorable conditions for algae growth. The combination of shallow water depth, heightened phosphorus concentrations, lack of aquatic plants, and heightened population of common carp work together to produce its current state and occasionally impair it for recreational use.

The findings of this report and relevant compiled information confirm the need for a dynamic management approach for Aurora Lake to reduce HABs. This type of approach necessitates short-term

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direct algae control methods that allow for the contact reservoir to meet its intended use while long-term management techniques are employed to improve the sustainability of the lake. Direct management suggestions from the report are briefly highlighted as follows:

1) Enact short-term, temporary algae control methods at the start of the 2025 season to ensure the lake meets its designated use as a recreational reservoir.
2) Remove common carp (*Cyprinus carpio*) to an estimated abundance of 50 kg/ha. Utilize population specific fishery survey methods to confirm carp abundances preferably before and after technique enactment.
3) If aquatic plant biomass does not naturally increase after carp removal, consider planting native, drawdown resistant macrophytes to the lake within its littoral zone and/or pursue phosphorus (P) inactivation techniques with a water column total P goal of 20 – 30 µg/L.
4) Begin planning for future dredging considerations given the shallow nature of the reservoir and enact best management practices to improve the sustainability of the system (continuous).
5) Continue monitoring Aurora Lake to develop reference conditions and water quality thresholds (continuous).

Chapter VII and the body of the State of the Lake Report go into these items in greater detail. As a component of the long-term sustainability of Aurora Lake, a balance of adequate native and non-nuisance plant growth is important to ensure there is competitive viability against algae growth. This, along with watershed BMPs and a consistent monitoring program should maintain management success and allow for the development of water quality thresholds that pertain specifically to Aurora Lake. These suggestions work together to move Aurora Lake toward a non-impaired status while simultaneously remaining dynamic to future management considerations that may arise.

Keep in mind that the ideas presented here and in the document are only feasible should it be adopted by all notable organizations around Aurora Lake. As such, I feel it is important for all of Aurora Lake's community members to have access to the information within the "State of the Lake Report and Management Plan" and work cohesively to allow for its success. Without support from the community, it is likely no plan would be able to make headway.

Thank you for your interest!

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