October 23, 2019

City of White Bear Lake
Mayor and Councilmembers

From VLAWMO Staff and VLAWMO Board of Directors

VLAWMO would like to correct a couple of statements that were made during the Council meeting on October 23, 2019, and clarify points that may not have been clear during the presentation.

* Harmful algal blooms were mentioned as spreading unnecessary fear and stated as not occurring on East Goose since 2013.

This is not the case. The Chlorophyll a levels on East Goose Lake show a lake that is dominated by algae. Algae has gotten worse since the TMDL (Total Maximum Daily Load) was published. At the time, there were still some plants present on East Goose Lake. The algae have completely shaded out the plants so that the lake is now devoid of plants, as documented in the plant survey this summer by the Ramsey County Soil and Water Conservation Division (RCSWCD). Algae includes blue-green algae as was also documented on the vegetation survey. Blue-green algae can produce toxins that are harmful to humans, pets, livestock, and wildlife.

Ongoing monitoring is not done for harmful algal blooms because the algae can be present and not produce toxins, and they can produce toxins when they are not especially thick nor apparent to observers of a lake. Harmful algal blooms are a very real health concern. A harmful algal bloom was documented on Pleasant Lake in the Vadnais Lake Area Watershed during summer 2019. A dog became sick, and the algae bloom was reported to the Minnesota Pollution Control Agency (MPCA). Both the MPCA and Minnesota Department of Health have increased their efforts to document, alert, and educate about the threat of toxic algal blooms. The Centers for Disease Control has a short information page that cover the most important points. They recommend not going into water that looks like it is full of algae, “When in Doubt, Keep Out”:

<https://www.cdc.gov/habs/be-aware-habs.html>
* The connection between TMDL load reductions and MS4 waste load allocations seemed to be new information to some councilmembers.

The TMDL (Total Maximum Daily Load) is a document and an agreement among affected parties to improve impaired lakes. As part of the TMDL, which is attached to MS4 permit requirements, the City of White Bear Lake has agreed to phosphorus reductions of 64.7 lb/yr in East Goose Lake and 7.3 lb/yr in West Goose Lake. That is a total reduction of 72 lb/yr in the Goose Lake subwatershed.

If the City chooses to pursue the 3 next-best, non-alum treatment options to improve stormwater treatment in the subwatershed, that would come at a cost of $500,000 and only provide a 60-pound reduction. That would not meet the agreed upon target.

If the City chooses to pursue an alum treatment on East Goose Lake, that would treat 800 lb/yr of phosphorus and allow the City to exceed the target by 728 lb/yr at a cost of $170,000.

An additional social cost is that of removing boat activity of 4 boats for 3 years, which could likely be reduced to 2 full growing seasons, or 2 affected boating seasons.
* Half Moon Lake was presented as a case study of a similar lake that did not work.

The Barr report cited by residents was from the 1990s. That lake has been under intense management efforts since that time and has a set of different goals. The alum treatment was effective, and the council, park board, and others passed an ordinance and did remove boats to protect the alum treatment. There was also considerable study done to directly measure the effects of boats at ski jump sites and at other sites around the lake prior to the decision to remove boats.

Stormwater practices around Half Moon have not been effective and feature a number of overloaded swales. Those swales are not doing the job of pre-treatment. Managers are also working to keep the lake below 30 µg/L, which is well below the shallow lake standard (60 µg/L). They are using a more frequent regimen for alum treatment to keep the lake below 30 µg/L.

There was a published recommendation for Half Moon Lake to continue to treat on a 3-5 year cycle. That was incorrectly understood as pertaining to East Goose Lake, which it does not. We have published papers and unpublished reports covering a wide span of time on Half Moon if councilmembers would like to review more about this lake.
* There was an incorrect statement that VLAWMO stated earlier in the process that the East Goose Lake treatment would last 4-5 years. This was a misunderstanding from the Half Moon Lake discussion.

The East Goose Lake alum treatment, calibrated to lake sediments, the specific P load in those sediments, and lake morphometry characteristics is projected to last 10-15 years using best practices of appropriate dosing and protecting the bottom from disturbance during the floc settling phase. Shallow lakes analyzed in the literature including early treatments that did not perform well show have an average lifespan of 5.7 years. When lakes with improved conditions (best practices) are reviewed, they last an average of 15 years.
* A councilmember asked if not treating East Goose would make the nutrient situation worse downstream. That was later interpreted to mean that there would be no downstream effects.

Downstream effects are already apparent. There are high nutrient loads in Lambert Creek and associated wetlands. These areas are also the target of VLAWMO projects, including a remeander of the ditch at Lambert Lake to remove nutrients and bacteria. High nutrient loads flowing from East Goose Lake do affect waterbodies downstream. However, there is a lot of filtration along the way from East Goose Lake to East Vadnais Lake. We do not see high nutrient levels in East Vadnais at this time.
* A persistent issue that has been mentioned and would likely remain a problem if the alum treatment were to go forward is the view of optimal lake condition.

Shallow lakes in our area have two alternate stable states: clear water with plants or murky water with algae. An alum treatment would make the water clear and allow plants to grow again. Residents on the lake view these as weeds and a nuisance in need of control. VLAWMO and other state agencies view them as the optimal, healthy condition, providing habitat for fish and other wildlife. We can’t manage fish without plants for habitat. We can’t keep the water clear without plants to take up the nutrients. If plants don’t use the nutrients, algae will. Algae provide poor nutrition and predator fish often don’t survive. We have a lake with a lot of stunted (food-limited) Black bullhead and sunfish that is also full of algae.

VLAWMO would not seek to control native plant species on the lake. We would actively work to control invasive species that are likely to move in once water-quality conditions improve. Curly-leaf pondweed is an invasive species that is present on West Goose and is often spread by boat activity.