October 2023

FAQ BULLETIN

RESTORING LAKE KANASATKA

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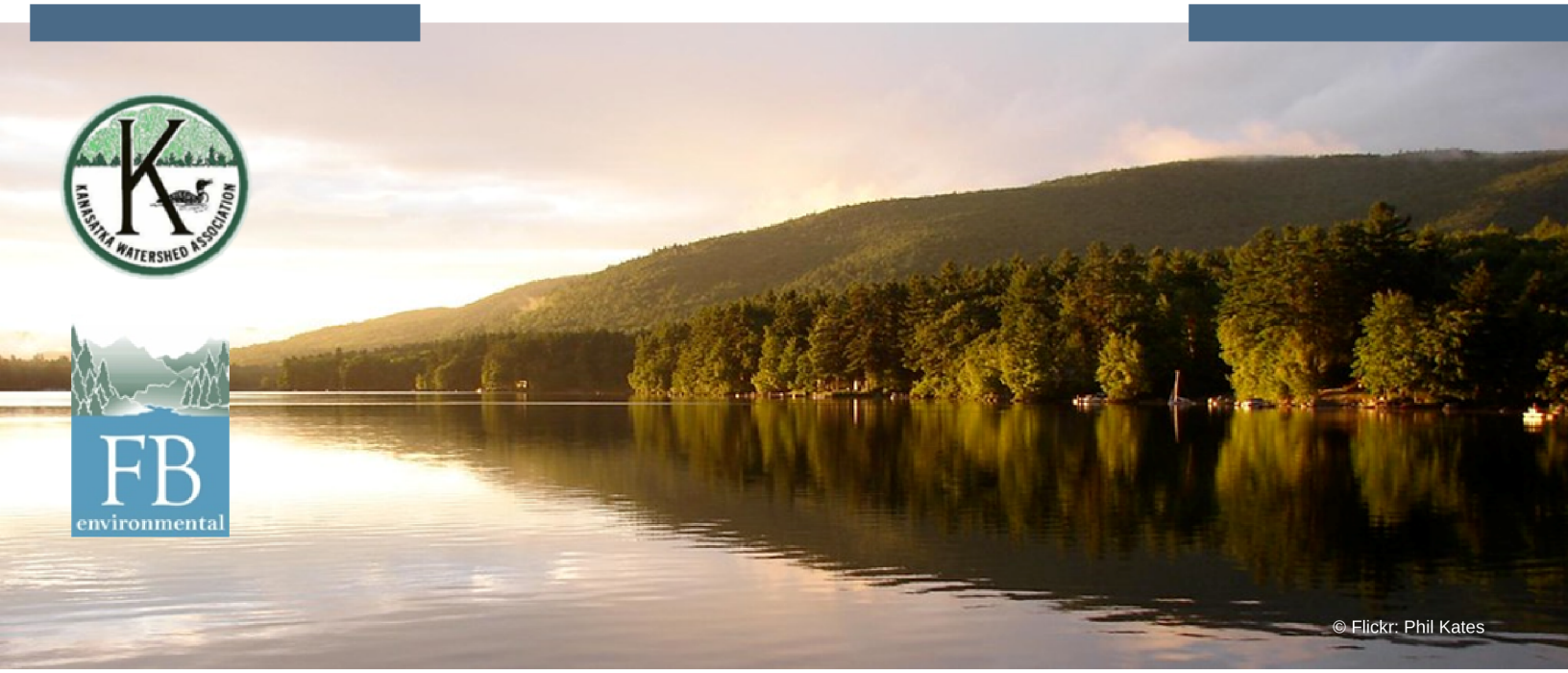
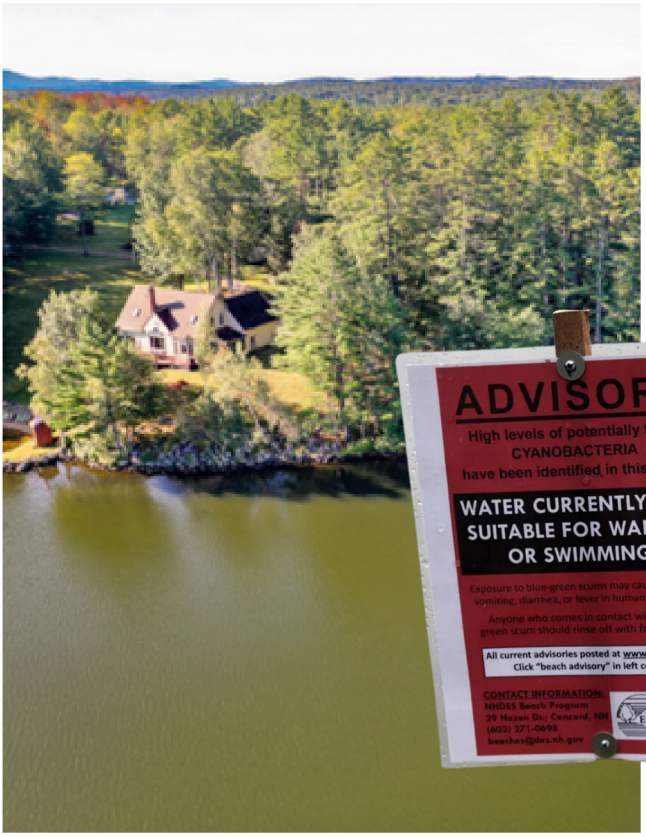
in partnership with the Lake Kanasatka Watershed Association





CYANOBACTERIA

Lake Kanasatka has experienced generally good water quality through the years up until recent persistent whole-lake cyanobacteria blooms that have resulted in NHDES posting multiple advisories for extended periods of time each summer since 2020. These cyanobacteria blooms have contained an unusually diverse mix of potentially toxic species which represent a significant health risk to any person, pet, or wildlife who come into contact with the water. The main driver of these blooms is excessive phosphorus, a limiting nutrient for most plant growth.

THE FIX: CONTROL PHOSPHORUS

(1) DIVERTING & INFILTRATING RUNOFF

Excessive phosphorus inputs enter the lake in stormwater runoff from developed areas, especially from areas with minimal vegetative buffer, large areas of exposed, easily erodible soil, or poorly maintained roads. The best way to protect the lake is to divert runoff away from the lake to an area where the water can infiltrate into the soil. Local volunteers have done tremendous work already this year to help divert and infiltrate runoff and reduce the amount of phosphorus reaching the lake. In addition, LKWA submitted a $100,000 grant request to NHDES to continue runoff improvements throughout the watershed. LKWA encourages all watershed residents to examine their own properties for possible runoff issues and become LakeSmart certified through the NH Lakes. Every small action to control runoff and other sources of phosphorus to the lake will help!

(2) BINDING LAKE SEDIMENT PHOSPHORUS

Phosphorus that enters the lake from watershed runoff can settle on the lake bottom and be released from sediment under low oxygen conditions in late summer, which is a critical time of year when cyanobacteria can capitalize on the warm, sunny conditions and the available nutrients. Because this phosphorus has already built up in the sediment, no amount of watershed runoff improvements in the near term will reduce the amount of legacy phosphorus in the lake from re-entering the water column and becoming available to cyanobacteria. Legacy phosphorus is especially a problem in Lake Kanasata, with 20% of all the phosphorus coming from this sediment-bound phosphorus. Thus, an alum treatment of Lake Kanasatka's sediment-bound phosphorus is needed to restore the lake. However, the watershed runoff improvements are still critical to the restoration process for many reasons, including extending the effective lifespan of an alum treatment.

LKWA is currently partnering with Camp Quinebarge, FB Environmental Associates, and NHDES to complete the planning, permitting, and fundraising needed for an alum treatment for Lake Kanasatka.

ALUM TREATMENT

To treat a lake with alum, a qualified contractor adds alum into the lake to temporarily raise aluminum levels above the natural background. Alum comes in the form of a diluted mixture of aluminum sulfate and sodium aluminate, at low, safe levels. On a specialized 30-foot barge, the contractor uses a hose and tanks to inject the alum mixture, passing over the deeper areas of the lake once, twice, or more to achieve the needed dose. The alum then binds to dissolved phosphorus floating in the water column, creating a heavier solid called a "floc" – a fluffy, harmless substance made of aluminum hydroxide (the active ingredient in some over-the-counter antacids) that then drops down to the lake bottom and "locks" phosphorus so that it stays in the sediment even under low oxygen conditions.

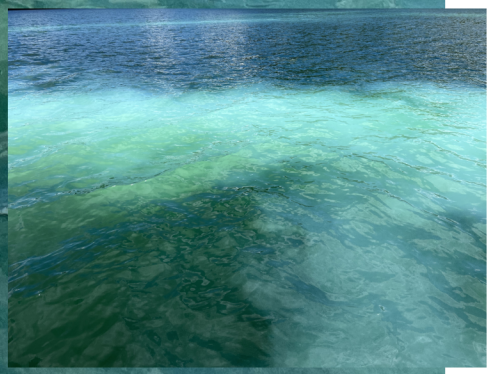
FREQUENTLY ASKED QUESTIONS

ARE ALUM TREATMENTS SAFE?

Alum treatment is commonly used as a safe, effective, and cost-efficient option to treat internal legacy phosphorus in lakes and restore lake water quality. Qualified scientists analyze data to determine the correct dosing rate and area and work with a qualified contractor to apply the dosage in an environmentally safe manner. Water quality is also carefully monitored before, during, and after the treatment to ensure minimal impacts to aquatic biota. Several successful alum treatments have been completed in recent years, including Nippo Lake in Barrington, NH; Long Pond in Parsonsfield, ME; Georges Pond in Franklin, ME; and East Pond in Smithfield/Oakland, ME.

HOW LONG WILL THE ALUM TREATMENT BE EFFECTIVE?

Alum treatments can have effective lifespans ranging from 10 to 30 or more years, depending on how fast new sources of phosphorus-laden sediment build up in the lake. Addressing watershed runoff and other sources of phosphorus such as septic systems will help extend the life of the alum treatment before another treatment may be needed in the future. Annual water quality monitoring will track the efficacy of the alum treatment over time.



WILL LAKE ACCESS BE RESTRICTED?

Lake access will not be restricted at any time, even during the alum treatment. People can still swim, fish, and boat as normal and even pull water from the lake for household use as normal. However, for boating safety, the treatment barge should be given a wide berth of 300 ft or more while the operators complete their work.

WHAT IS THE TREATMENT PROCESS TIMELINE?

The contractor will arrive several days prior to the scheduled treatment (possibly as soon as mid-May 2024) to set up the staging area. The alum liquids are stored in large, shore-based tanks that require a flat, roughly 15 ft by 50 ft “staging area” that is close enough to the shore (within 200 ft) that a hose can fill the tanks on the treatment barge. The barge operator follows pre-programmed, GPS-mapped dosage areas to apply the alum at the appropriate rate until the tank empties. The barge operator returns to shore to refill and uses the GPS system to navigate to where they left off. This process is repeated until the treatment is complete. Because the dosing area for Lake Kanasatka is large, the treatment will likely take one or more weeks to complete.