

# Nippo Lake Aluminum Treatment

## Frequently Asked Questions

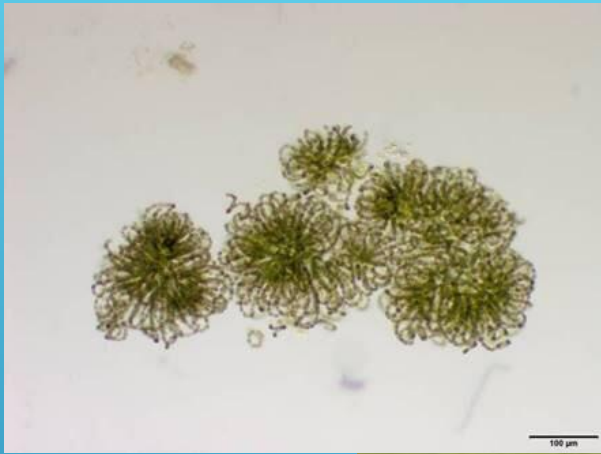
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8/29/2020



# Today's discussion

- Where are we?
- What will the treatment look like? What are the restrictions or concerns?
- Your questions



WE ARE TRYING TO KEEP THIS FROM HAPPENING REPEATEDLY



Watershed  
Management



Phosphorus Inactivation  
with Aluminum

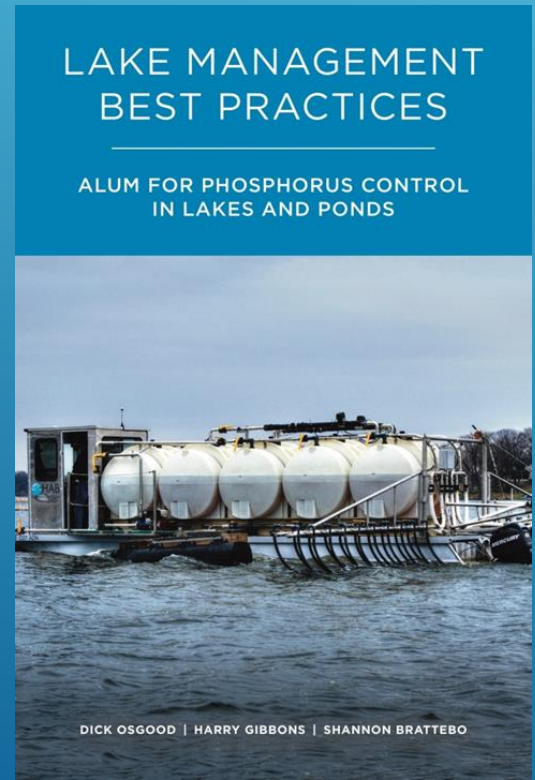


Balanced Aquatic  
Community

THREE ACTIONS RECOMMENDED

# In-lake phosphorus inactivation with alum

- Reduce P release from sediment; will control P in lake sediments (1/3 of total load)
- We are shooting for an 80-90% reduction in internal load.
- Planned to react with upper 4 inches of sediment.
- Will use Aluminum Sulfate + Sodium Aluminate
- Will keep phosphorus in the sediment



# Treatment in progress



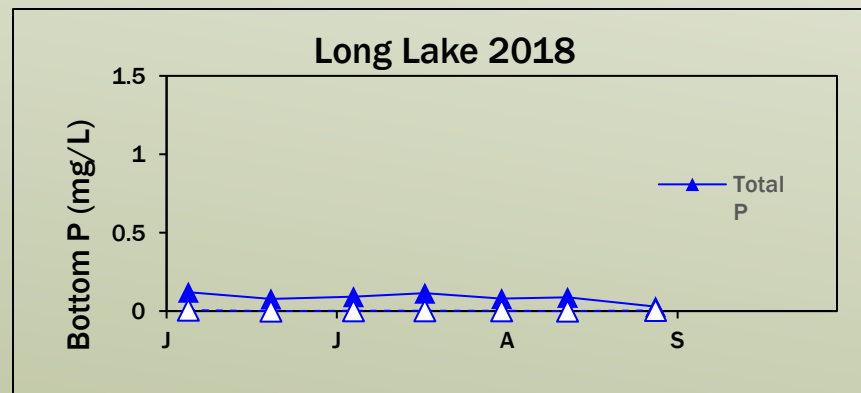
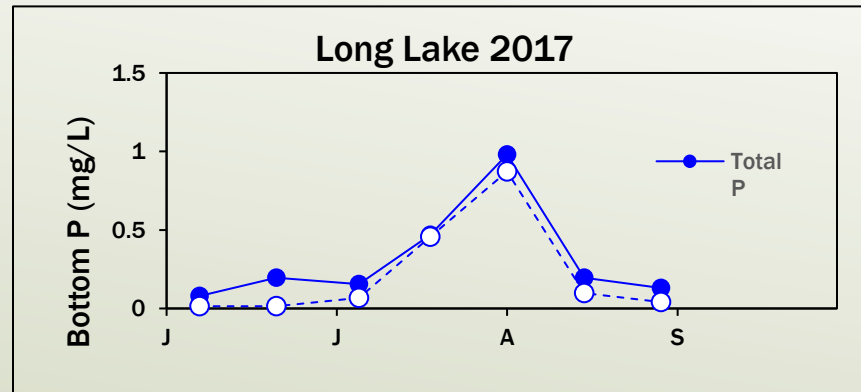
Floc on bottom (5-10 minutes after application)



# Shore staging area



# HYPOLIMNETIC TOTAL P



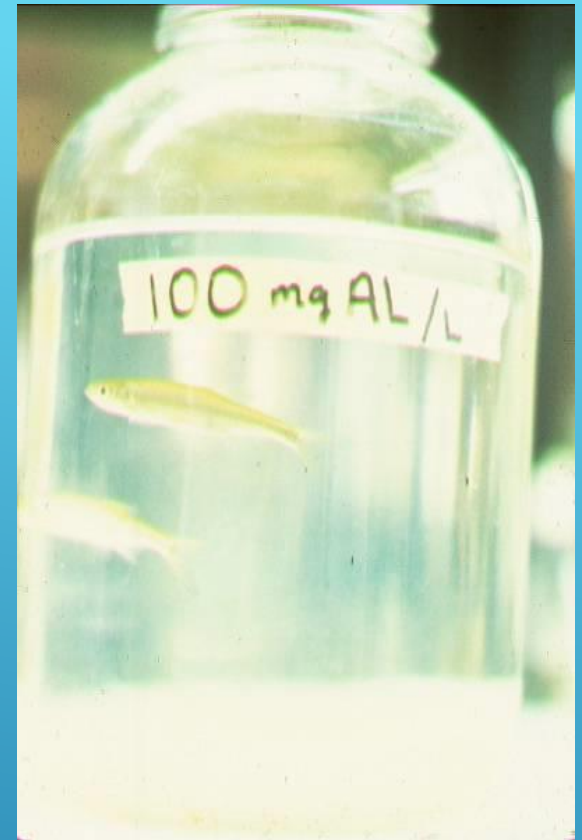
# JAR TESTS WILL ANSWER REMAINING QUESTIONS

- ▶ How long will it take to apply aluminum.
  - ▶ Jar tests scheduled for September.
  - ▶ Likely 2 or more applications over a 1-2 week period in order to keep concentrations in lake down



# Avoiding toxicity to aquatic life

- Aluminum concentration in lake will be below toxic levels and below state standards
  - Jar testing to guide treatment plan
- Treat defined areas of the lake in a pattern that minimizes contiguous area treated at once (patchwork with adjacent blocks not treated sequentially)
- One treatment split in two or multiple applications
- Maintain pH between 6 to 8 . Buffer alum with aluminate.
- Monitor pH throughout application.



## To Avoid Conflicts With Humans

- Aluminum quickly settles to bottom (areas deeper than 15 feet) so there is little if any human contact once applied.
- Form of aluminum is important. Will be as aluminum hydroxide shortly after application (main ingredient in many over the counter antacids)
- Aluminum is used in water treatment plants throughout the state (Claremont, Concord, Durham, Laconia, Lebanon, Lincoln, Manchester, Meredith, Pittsfield, Portsmouth, Rochester, Somersworth, Salem, Wolfeboro).
- No contact the day of the treatment



# TREATMENT HIGHLIGHTS

- ▶ Lake will clear in a matter of days
- ▶ Sediment binding will occur shortly after treatment
- ▶ In a spring treatment, the next summer, phosphorus should largely stay in the sediments
- ▶ Much reduced incidence of cyanobacteria blooms, blooms later in the year or no blooms at all
- ▶ Goal for treatment is to get 15-20 years of benefit
- ▶ The more other sources are controlled, the longer it will last.

▶ What will this cost

▶ Depends on how long it takes to apply

▶ All reasonable scenarios are within the overall budget

## What if we don't deal with the internal load?

- Will still be enough phosphorus to support blooms. The internal load will not diminish any time soon and may get worse in a warming climate.

## What are next steps?

- Finish Fundraising
- Complete Jar Tests (September 2020)
- Apply for Water Quality Certification from NHDES (October 2020)
- Hire contractor through bidding process
- Treat lake in spring 2021
- Monitor

# Questions

