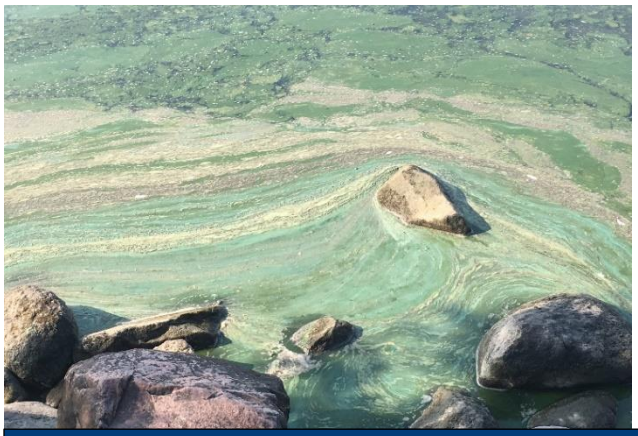
Lake Agnes Alum Treatment

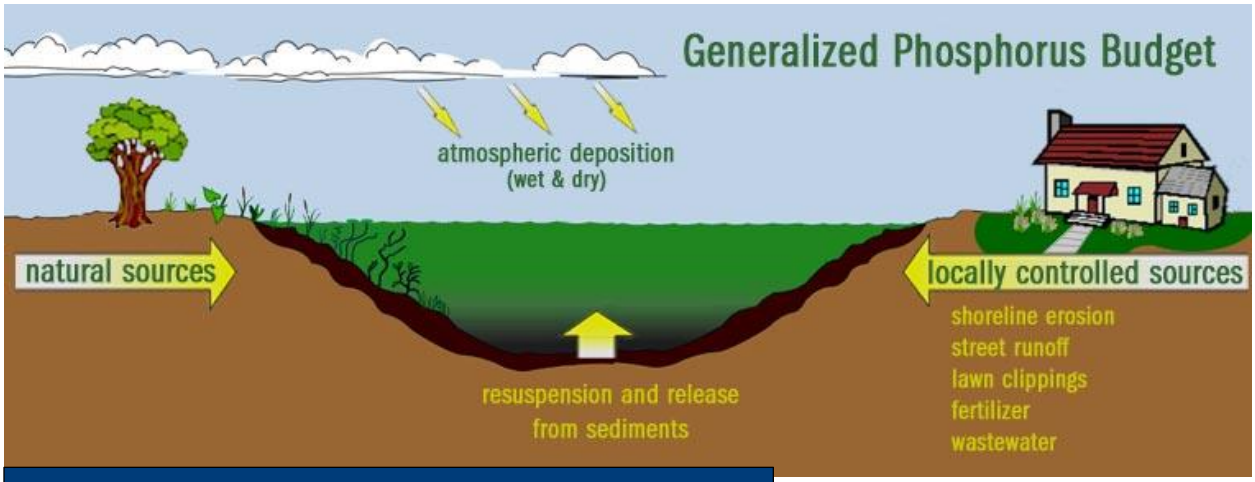
Phosphorus and Water Quality



Phosphorus is a nutrient that, when at high concentration, can cause algae blooms. Algae blooms can be unsightly and lead to various problems such as reduced recreational opportunities, decreased water clarity, and oxygen consumption. Low oxygen levels in lakes can lead to fish kills and less desirable fish species. Certain algae can produce toxins that lead to lake closures due to health concerns to humans, pets, and livestock. Fortunately, these problems can be reversed and prevented by managing and limiting the amount of phosphorus in the lake.

Where Does Phosphorus Come From?

Phosphorus can come from both the land and from the lake sediments themselves. Under certain conditions, lake sediment will release phosphorus into the water column which can drive algae blooms and degrade water quality. This process, which is called internal loading, happens in all lakes, however it tends to occur at higher rates in lakes with a long history of elevated phosphorus inputs from the land (e.g. urban stormwater, agricultural sources, etc.)

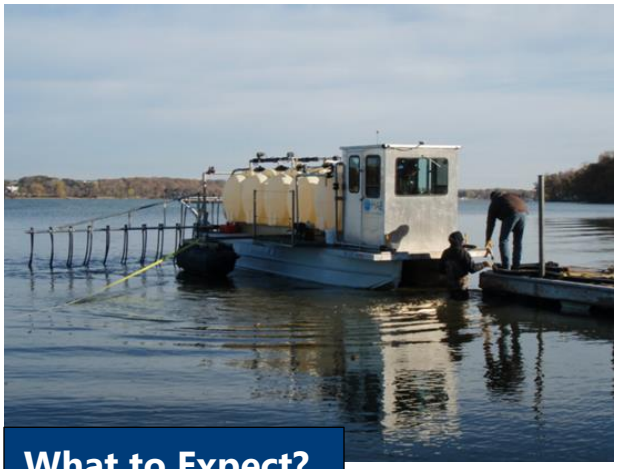


How Can We Manage Internal Loading?

Aluminum sulfate (alum) is the most common method used to control phosphorus release from the lake bottom sediments (internal loading). Alum is applied to lakes using specialized equipment and barges that ensure the precise

placement of the material in the lake. On contact with the water, the liquid alum forms a fluffy aluminum hydroxide precipitate called floc. As the floc settles to the bottom of the lake, phosphorus and other particles are removed from the water column leaving the lake noticeably clearer. The floc eventually settles on the surface of the sediment and forms a thin layer that is able to permanently bind phosphorus in the sediment so that less phosphorus is released to the water column. The result is a reduction in the frequency and intensity of nuisance algal blooms, rather than the total elimination of all algae.

Is Alum Safe?



Alum has been repeatedly shown to be safe for humans. Alum is a common food additive and has also been used for decades to clean our drinking water before. Aluminum is the main ingredient in alum and naturally occurs in lake sediments. Thus, alum use in lakes is safe for fish, and we commonly see large improvements in the fishery due to increased water clarity and habitat. Alum is also harmless to plants. This is a benefit to the lake as the plants create habitat for fish, stabilize the lakebed, reduce shoreline erosion, and help prevent the lake from returning to an algae-dominated state.

What to Expect?

During the application, a barge will apply alum to the lake. The application will take about a week to complete but the lake will be open during the application. Afterward, the water may appear aqua in color as the particles settle to the bottom. The water clarity will improve for up to weeks after application because the Alum has done its job flocculating particles from the water column. In fact, the improved water clarity after an alum application typically results in an increase of aquatic plants in the lake.