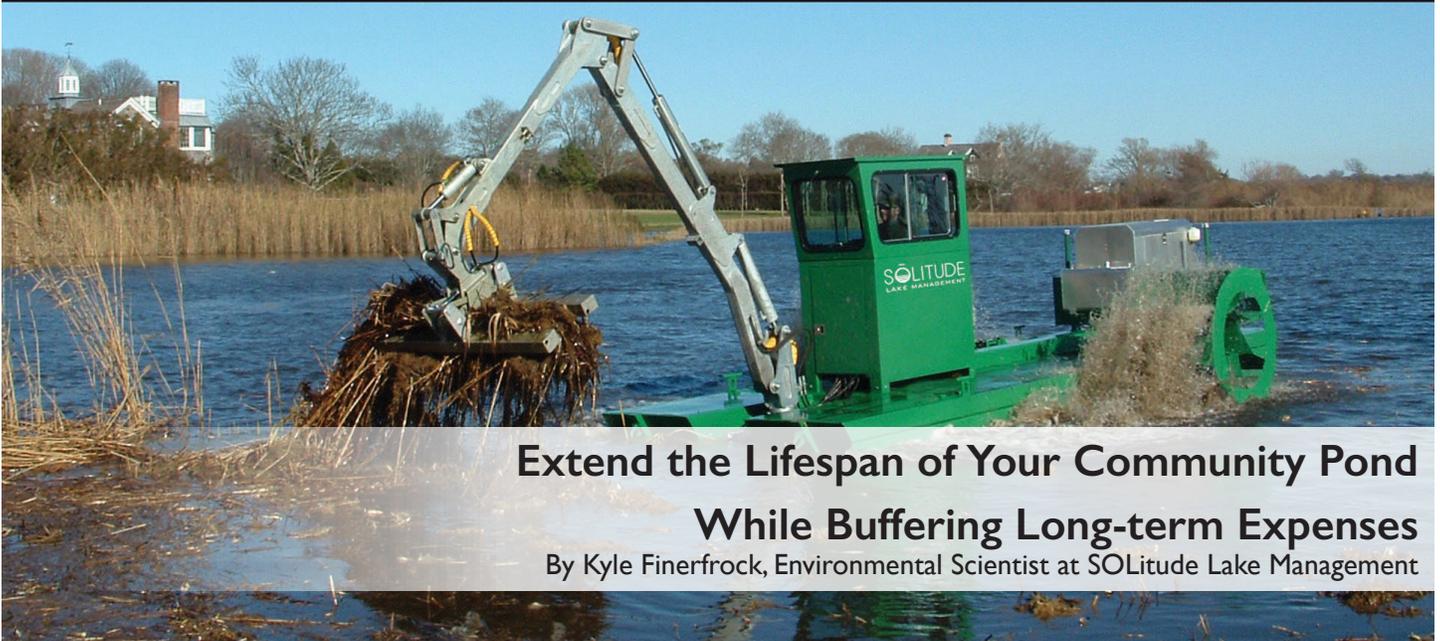


Community Connections



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Extend the Lifespan of Your Community Pond

While Buffering Long-term Expenses

By Kyle Finerfrock, Environmental Scientist at SOLitude Lake Management

When communities begin anticipating and planning for possible future expenses, they will likely discover that the removal of accumulated sediment in stormwater retention ponds has a very large price tag. In fact, dredging is often one of the largest expenses a community will ever face. Luckily, there are things that can be done to help reduce costs and prolong the time span between dredging. By better understanding the purpose of a stormwater pond and employing proper management techniques, a community can rest assured that the best decisions are made for the pond, the surrounding environment and the community's budget.

While a stormwater pond can be a beautiful asset to a community, it also has specific engineered and environmental purposes. First, it is used to slow down and dissipate the energy of the flowing water from rainstorms, which picks up speed and energy as it passes over a community's impervious surfaces such as roofs, streets, driveways and sidewalks. If the water doesn't get slowed down by a stormwater pond, it can create erosion problems or flooding downstream. Second, a stormwater pond is used to collect pollutants and sediments in order to prevent them from being deposited elsewhere. Sediment, grass clippings, leaves, fertilizer, pollutants and other organic matter will all be collected and accumulate in the pond over time. At some point in a

stormwater pond's lifetime, the sediment accumulation will become too great and dredging will be required to remove several feet of sediment and restore the lifespan of the pond.

It can take years for a community to properly budget for a much-needed dredging project. As a result, I'm frequently asked to identify the exact timeframe dredging should take place, but I often struggle to give a short answer. Each community is different and each has its own unique goals and variables to consider. In some cases, the decision to dredge comes in attempt to revive the aesthetics of a stormwater pond. Other times, dredging occurs as a result of municipal

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enforcement. In general, dredging is recommended every 20 years to help ensure a stormwater pond is functioning properly. But with proper proactive pond management techniques, it is possible to prolong the need for dredging to every 30 years or more, providing significantly more time to budget and prepare for the expense.

There are several things a community can do to take control of its stormwater pond and budget, starting with data collection. Inspecting and collecting data about a pond is the best way to anticipate potential problems that can shorten the lifespan of the waterbody. A stormwater inspection will look at the engineered structures within the watershed to check for failures or damages that can cause erosion and accelerated sedimentation in a pond. Problems found during an inspection might include a cracked inlet pipe, woody vegetation along the dam embankment or a clog in the outlet structure. Most failures found within stormwater ponds can be identified early when problems are manageable; this helps to keep repair costs to a minimum and helps extend the working life of the waterbody.

In addition to a stormwater pond inspection, which helps identify problems outside of a pond, a bathymetric study will provide a detailed internal map of the pond. During the bathymetry process, GPS lake mapping technology is used to plot the surface of a lake or pond. Each specific GPS point is associated with a particular water depth. After thousands of surface points with corresponding depth information are collected, the data is compiled to create a three-dimensional map of the pond bottom. This map can be used to identify the total water volume and the amount of accumulated sediment, and can help pinpoint problem areas where accumulated sediment has been deposited.

Mapping a stormwater pond every few years allows a community to track the sedimentation rate and more effectively determines when dredging may eventually need to happen. Oftentimes, bathymetry data can be compared to “as-built” stormwater plans to see how the pond has changed since construction. Sometimes the sedimentation problem is due to organic material, including leaf litter or excessive aquatic plant growth that has accumulated material in the pond. These areas can be physically dug out from the shore and localized to where the problem occurred.

To help prolong the need for dredging, hydro-raking may be an effective solution for removing organic material. A hydro-rake is a floating machine that can rake out organic material down to depths of 8-12 feet. Removing built up organic material can help reduce nutrient sources and add depth to a pond, which can help create an environment less likely to grow unwanted algae and aquatic weeds. While a full-scale dredging operation will require draining a stormwater pond of all the water, disturbing ecology of the organisms living in and around the pond, hydro-raking will give a community the chance to remove material with minimal disturbance to the ecosystem and prolong the time before dredging becomes a necessity.

From the moment a stormwater pond is created it begins to die, but a highly trained lake and pond professional can help identify proactive and individualized management strategies to reduce the waterbody’s rate of aging, including nutrient remediation, aeration, buffer management, water quality monitoring and more. Just as a car requires regular maintenance to ensure it operates effectively, proactive maintenance will go a long way in ensuring a stormwater pond performs as intended. By understanding the functions of a stormwater pond and using data to fix problems when they are small, a community can cut costs, utilize the full potential of its stormwater pond and spend more time budgeting for the future. ♦



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