

Pond Inspections and Bathymetric Studies

By **Brad Harris, Forest Biologist and Aquatic Specialist**

Stormwater pond inspection and maintenance requirements vary from state to state and municipality to municipality. When a pond was constructed may also play a role in which stormwater regulations apply. The objective of these inspections, maintenance, and regulatory requirements are to ensure that stormwater ponds are functioning as designed, which is to collect pollutants, such as sediment, nutrients, debris, and trash, among others. These stormwater BMP (Best Management Practice) ponds are constructed to capture these pollutants and prevent them from being released into downstream water resources (streams, rivers, lakes and oceans).

The inspection and maintenance items required by many municipalities can be applied to any pond or lake, regardless if it was designed as a stormwater BMP or subject to regulation. An annual inspection of the structural components of a pond can save a pond owner thousands of dollars. Whether the pond is owned by a private landowner, business, municipality, golf course, or an HOA, a thorough pond inspection should be a part of any annual budget. Having a professional inspect the structural make up of a pond can prepare a pond owner for unexpected expenses prior to there being a need. Structural repairs of a pond are generally very expensive and having inspections annually will help the owner or community understand the current status of their pond and budget accordingly. A pond inspection is essentially a budgeting tool and without it, an owner is increasing their financial risk.

We recently performed an inspection for a community that owns over 65 ponds that are currently not under any regulation requiring maintenance or inspections. The ponds are located in an upscale mixed development community with the oldest ponds being around 25 years old and the most recently completed ponds being only several months old. The Property Owners Association Board of Directors wanted a comprehensive report of their pond structures including all embankments and dams (erosion, undesirable vegetation, and animal activity), influent and effluent structures, dissipators and spillways, nuisance aquatic vegetation, aeration equipment (fountains and submersed aerators), and a bathymetric study (pond or lake depths) to determine if sedimentation was an issue and if sediment removal or dredging would be required for any of their ponds.

The ponds located in the community are susceptible to high sedimentation rates as community ponds are typically designed to capture stormwater runoff during development and post construction phases. Knowing how much sediment is entering a community's system of stormwater ponds is extremely difficult, if not impossible, without a baseline. Being able to accurately measure pond and lake depths can provide a baseline for a community's ponds, and also confirm what the existing depths are and if further sediment analysis is required to see how it is affecting the health and function of a pond.

We had presumed the older ponds were going to be the most problematic with nuisance aquatic vegetation and high sediment



loads due to their age. We also speculated that we were going to notice a direct correlation between age and problematic ponds. The ponds were numbered chronologically and we began with the older tier. As expected, the sediment issues were apparent. We were convinced after mapping and inspecting the first several ponds that there were going to be many shallow readings as the project progressed. As we continued to the middle-aged ponds, the majority of them had adequate depths and sediment removal was only going to be recommended for a few ponds.

We did notice the correlation between the age of the ponds and sediment accumulation, but it was minimal, a lot less than what we had originally envisioned. However, we found that the condition of structural components was improving as the age of the ponds decreased. Surprisingly, we saw a lot of erosion issues and, in turn, sedimentation occurring around the newest ponds. This was happening because the newer ponds did not have acceptable stabilization on the embankments and dam areas after pond construction. Whether it was minimal to no turfgrass or inadequate and improperly installed riprap, the newly constructed ponds were potentially going to prove costly if the community didn't address these issues.

The inspection we carried out for this community was above what some of the strictest municipalities require of their stormwater ponds annually. The report findings led to a few areas of urgent concern, but overall it identified problematic areas and trends that can be repaired and reversed over many years. The association can now formulate a timeline to repair and maintain the ponds to fit their budget. The association will now also understand the issues they have with their ponds and will be able to minimize the chances of having extremely expensive dredging projects or repairs sneak up on them. Yes, it will take some reallocation of funds and possibly an assessment in the future, but the inspection and bathymetric data collected will allow for those allocations to be accurate and sustainable. If you haven't considered an inspection and bathymetric study for your pond(s), then we highly recommend contacting your lake and pond management professional to discuss how the results may be able to help your community, business, golf course, municipality, or private pond, formulate a budget to protect your assets. ■