

Lamprecht Consulting

Pond and Lake Management

August 27, 2016

Lake Francis HOA
C/o Mark Robert Kersey
Charleston, SC 29412

Dear Mark,

I am writing in reference to my 2016 general observations of the health of Lake Francis. This year's inspection occurred in the heat of the Summer during the second week of August.

There are several pertinent items that need to be discussed;

- 1) The spillway barrier replacement
- 2) The downed oak tree in the mouth of the harbor most finger
- 3) Excess water fowl residence time
- 4) Long term aquatic vegetation management
- 5) Shallow cove headwaters
- 6) Oxygen profile

The water level control slot of the spillway has deteriorated and needs to be replaced. This barrier serves to retain grass carp and other large fish that may leave the pond during rain events and high tides. It should be constructed as to minimize surface area to minimize the potential to clog. The ideal barrier should have one inch spacing between bars that are held in place by a minimum of cross tying elements that might increase fouling with vegetation. The old design worked well, but might be improved by using aluminum rather than galvanized steel. However, the galvanized barrier provided more than 10 years of service. The new barrier should be in place before the next grass carp stocking event.

The downed oak tree needs to be removed from the lake at the entrance of the most seaward finger cove. While I don't object to branches left for structure, the tree in question blocks the waterway and is far in excess of desirable structure. From a biological perspective, I would suggest that at least 95% of this tree should be removed.

The increasing use of Lake Francis by resident Canada geese and other ducks is an increasing problem. Their feces will begin to affect water quality over time as it exceeds the pond's ability to assimilate the excess fertility. Every effort to discourage their residence time should be made. The first step should include a prohibition of any feeding as this practice produces unnatural concentrations of birds, similar to barn yard conditions. At this time Lake Francis is by all appearances healthy, but all you need to do is look at the two upstream ponds (across Harbor View) to see what excess fertility produces. Not only does this condition produce increased vegetation management expense, but it also can result in human health risks involving both contact with the water and an increase in mosquito production. This recommendation should not be taken lightly.

While there are a couple of spots where shoreline emergent aquatic growth is a little heavy, I did not see major problems. The last couple of mild winters have helped with alligator weed flea beetle survival. Alligatorweed and Primrose are not controlled by grass carp. They can be manually removed or can be relatively easily controlled with aquatic herbicide. However, any application of herbicide to community ponds must be made by approved aquatic applicators.

Previous stockings of grass carp have about reached their useful life span and the open spillway barrier has likely provided egress to at least some of the remaining fish. It is time to provide a maintenance stocking of grass carp. You don't have immediate problems, but just look upstream or look behind the yellow silt fences at Harbor view to see the potential problems that can be avoided with timely control measures. I can recommend dealing with Hickory Hills Aquaculture in Moncks Corner to arraign for delivery of a quality 12" plus size fish (843 899-5177). Five fish per acre would be my recommendation for a prophylactic stocking rate. The unauthorized herbicide damage to vegetation along the harbor causeway continues to concern me. Such treatments may be serious violations of State and Federal statutes if applied by an uncertified individual.

Oxygen readings in the shallow shaded arms of the lake continue to exhibit morning levels that may be considered a little lower than normal but not a level that should be of concern. The main body of the lake and the deep central arm (townhouses) continues to show a distinct stratification unrelated to the normal temperature stratification. At the time of my visit, the water temperature was fairly uniform from the surface down to 15', but there was no oxygen below 10'. At 1' depth, readings were either 100% saturation or slightly above. This gradually declined below 4' of depth, reaching levels below 15% saturation (<1mg/l) at 10' of depth. This is actually better than I have observed in the past.

The head waters of the small finger coves of the lake are shallow and have been since I started visiting the pond over 15 years ago. It is not evident to me that these arms have changed a whole lot over time. Excavation/dredging is not necessary for the health and function of the over-all pond. I attempted to gauge the depth of the organic layer by trying to insert a paddle into it in several location and was not able to find significant accumulations. Electric aeration devices would not hurt, but I am not confident that they would provide significant benefit.

I continue to be concerned about the deep portion of the lake and its significant volume of un-oxygenated water. However, this condition is not new and has not produced a fish kill since the mid 90's.

I'll remain available for additional clarification and questions via phone or email.

Regards,

Scott Lamprecht
Fisheries Biologist