

Swansgate HOA
2808 Churchill Ct
Highpoint, NC 27262

An inspection of the stormwater ponds were completed on 9/13/24, and the findings indicate that the all the ponds, while currently functioning, are in need of some maintenance work to ensure they stay in working order. This particular community is in a difficult situation to manage as the ponds are on private property but the HOA still has an obligation to maintain the stormwater ponds. The stormwater regulations in NC were not as detailed when these ponds were likely constructed and they have likely been “grandfathered” in. They don’t necessarily fall under the same scrutiny as new construction. However, municipalities are aware of this and have begun going back to older systems and requiring several updates for functionality.

The water levels are consistent with apparent design, and the inflow and outflow structures are clear of debris and obstructions. Again, due to the age of the ponds, the original designs are not accessible. Vegetation around the perimeter is healthy and managed for the most part, providing adequate erosion control.

The overall condition is relatively stable, and routine maintenance activities, such as vegetation trimming and debris removal, are recommended to maintain optimal functionality. The main concerns deal with inlets and outlets. Several inlets and outlets were noted to have missing or dislodged riprap dissipaters causing some mild erosion. This should be addressed first as the will continue to deteriorate and erosion will worsen over time.

A few maintenance items were noted that should be addresses before conditions worsen. See below map and photos with explanations:

Remove any woody-stem vegetation surrounding pond and maintaining a minimum 10’ buffer around perimeter that is maintained with grass or grass-like vegetation. The woody vegetation noted on Pond 5 is mature trees larger than 8” caliper and should be left standing. Removing mature trees larger than 8” can lead to issues with erosion and unstable banks when dead roots begin to decay. This is the recommended practice by NC-DEQ. However, trees smaller that 8” and underbrush should be removed and cleared out.

Overall, we would highly recommend a monthly management program to keep ponds clear of aquatic weeds and algae as well as a beneficial bacteria/probiotic program to help dissolve organic matter and reduce “muck.”



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Below you will find excerpts from the NCDEQ Stormwater Design Manual that is adopted by the State of NC. Reference this document when making management decisions. The entire manual can be found online at: <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/stormwater-design-manual>



SG1

Pond has some weeds growing around the edges in the water. This indicates some sediment build up that can facilitate weeds. Organic sediment can be broken down with a beneficial bacteria program.

The retaining wall on the inlet side of the pond was noticed to be leaning. It was learned that this is not structural to the integrity of the pond bank and there have been discussions on replacing it prior to our inspection.

Keep inlets and outlets free of weed growth and debris.

Depths do not justify a dredging operation at this time. Recommend cleaning out sediment at the time of retaining wall replacement.

Preliminary Estimate: \$5,500 – Tree removal and brush clearing around pond banks and dam. (Does not include cost to rebuild retaining wall)



Reference: NCDEQ Stormwater Design Manual | Section A-7

Access and Maintenance Easements SCMs on private property should have access and maintenance easements to provide the legal authority for inspections and maintenance activities. The location and configuration of easements should be established during the design phase and be clearly shown on the design drawings. The entire footprint of the SCM system should be included in the access and maintenance easement, plus an additional ten or more feet around the SCM to provide enough room for the equipment and activities necessary to complete maintenance tasks. This SCM system includes components such as the side slopes, forebay, riser structure, SCM device, and basin outlet, dam embankment, outlet, and emergency spillway.



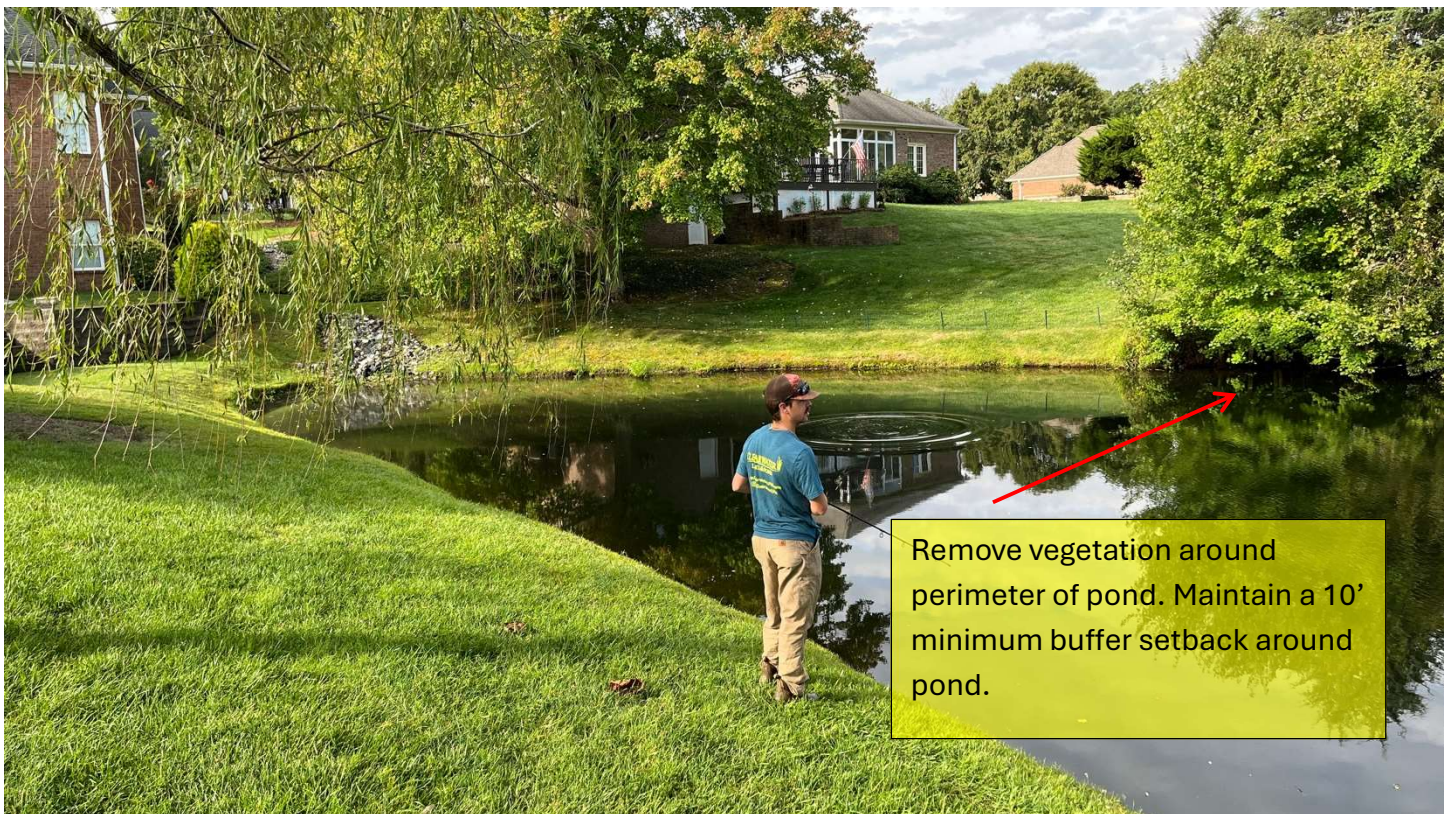
SG2

Suggest removing any woody-stem vegetation along dam.

Inlet swale needs reshaped and additional riprap stone placed to slow water velocity down prior to entering pond.

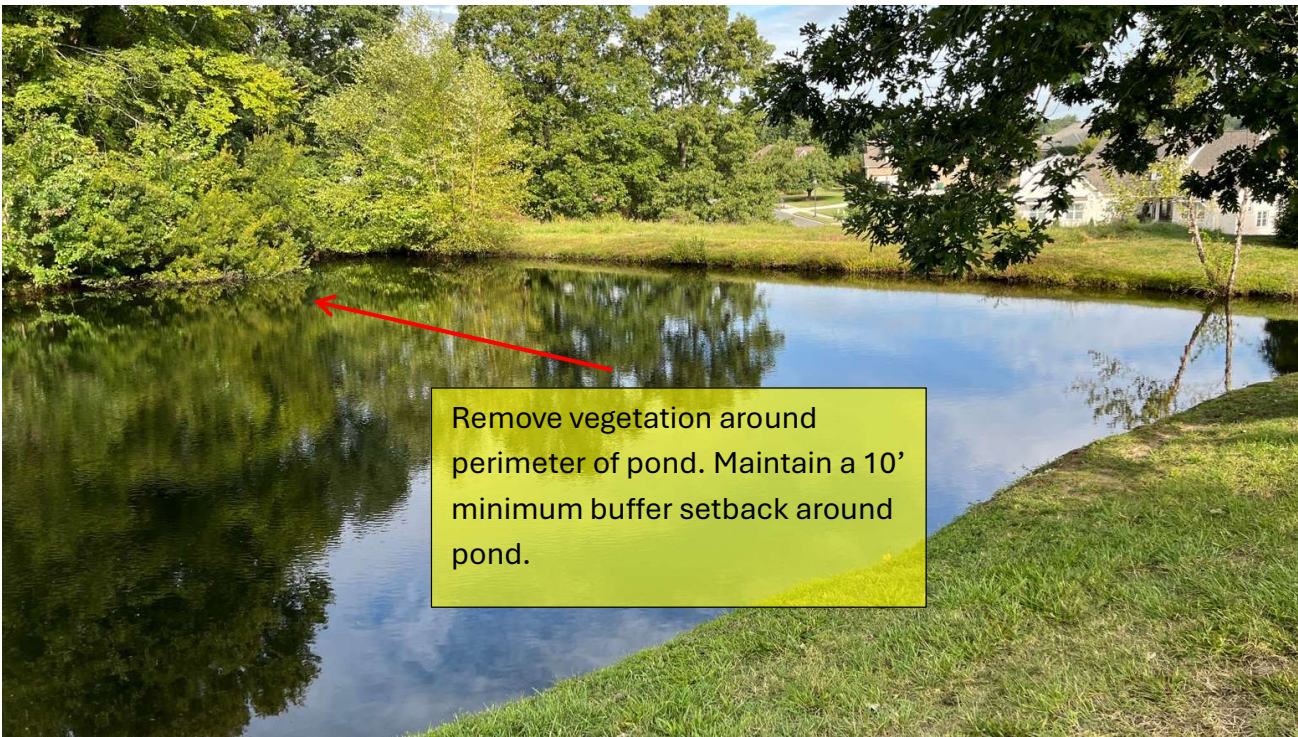
Weed growth in current riprap indicates sediment build up over time.

Preliminary Estimate: \$4,000 – Reshape inlet and redo dissipator pad with riprap and separation fabric. Includes minor brush removal around pond banks (not much noted within buffer zone).



Reference: NCDEQ Stormwater Design Manual | Section A-7

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SG3

Outlet has vegetation growing around it. Need to keep this cut back to prevent matting and clogging of the outlet.

Inlet riprap needs reshaping however, the plants in the shallow marsh area are a benefit to this pond. The type of plants act as a natural filter that traps sediment and excess nutrients.

Keep an eye on bank erosion and any rodent activity with routine maintenance.

Preliminary Estimate: \$1,200 – reshaping of inlet riprap, reusing as much as possible. Removing any invasive plant species from inlet marsh area (cattails, blackwillows). Clearing vegetation from outlet.





Monitor vegetation growth around outlets. Keep cut back with regular maintenance to prevent blocking outlet.



SG4

Large pond has weed growth around the emergency overflow that should be removed to prevent clogging. This should be removed and kept with original bare stone wing-wall.

Inlet in cove has significant sediment build up. Riprap is in need of reshaping/replacing. Erosion around the outside of the concrete FES (Flared End Section) indicates the joint inside the pipe is leaking and/or failed. This causes water to seep out that joint. Appears there was some type of concrete structure there originally that has dislodged and is out in the pond. These should be removed at the time of riprap replacement/sediment removal at outlet.

Backside of dam – the outlet discharge behind dam needs several trees removed and the drainage swale armored with riprap stone to prevent downstream erosion. The addition of a riprap dissipator pad will prevent downstream erosion and scouring of the adjacent landscape. The swale discharges into the downstream creek located on Rock Bridge Rd.

Preliminary Estimate: \$9,300 – Repairing existing FES in SW cove. Reseal FES joint inside pipe. Current FES is likely not damaged, only leaking at the joint. Remove sediment build up at FES. Remove and replace riprap dissipator pad with new stone and separation fabric.





Reference: NCDEQ Stormwater Design Manual | Section C-0

GENERAL MDC 4: EROSION PROTECTION.

The inlets SCMs shall be designed to protect the SCM from erosion resulting from stormwater discharges. The outlets of SCMs shall be designed so that they do not cause erosion immediately downslope of the discharge point during the peak flow from the 10-year storm event as shown by engineering calculations. Guidance on inlet and outlet protection can be found in Chapter 6, Section V. Outlet Protection & VI Inlet Protection of the NC Erosion and Sediment Control Planning and Design Manual:

<http://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-permitguidance/erosion-sediment-control-planning-design-manual>

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SG5

Inlet is tilted upward which caused water to pool inside pipe. This has the potential to create a breeding ground for mosquitos.

Consider repairing and adding riprap splash pool to slow water velocity coming in. Some minor sedimentation accumulating in pond at inlet.

Woody vegetation on western bank – as noted above, the trees 8” caliper and above should remain in place. Trees < 8” should be removed along with underbush.

Preliminary Estimate: \$5,800 | Removing all underbrush and trees under 6” caliper along northern pond bank.

Preliminary Estimate: \$4,200 | Inlet restoration – correct fix to be determined based on inspection of pipe interior.





FOR ALL PONDS:

Reference: NCDEQ Stormwater Design Manual | Section A-7

“As stated in the section above, maintenance is usually the responsibility of the owner, which in most cases is a private individual, corporation, or home owner’s association. Simple maintenance items such as minor landscaping tasks, litter removal, and mowing can be done by the owner, or can be incorporated in conventional grounds maintenance contracts for the overall property. Although a non-professional can undertake many maintenance tasks effectively, a professional should be consulted periodically to ensure that all needs of the SCM facility are met. Some elements that would benefit from professional judgment include structures, outlets, embankments, and dams by a professional engineer, as well as plant system health by an appropriate plant professional. Some developing problems may not be obvious to the untrained eye.”