



# Aquatics **in** Brief

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## Water Quality for the Future of Your Pond

By **Kyle Finerfrock, Environmental Scientist**



**The water quality of a pond can differ from year to year, season to season, and even hour by hour.**

**T**oo many times I see ponds that appear to be healthy one year and in the next year seem to be suffering. While the pond just seems to suddenly take a turn for the worse, it is really more likely to be the culmination of years of poor water quality. The water quality of a pond can differ from year to year, season to season, and even hour by hour. So the question is "What is water quality?" Well, a basic definition is the condition of a water body in reference to several parameters that affect the uses of a pond. Water quality standards are set by local, state, and federal agencies and are set based on the use of the pond whether it simply needs to support aquatic life, to be used for recreational purposes or to be used as drinking water. Some basic water quality standards include alkalinity,

conductivity, dissolved oxygen, hardness, pH, phosphorus (total and free reactive), nitrogen and turbidity. A comprehensive water quality analysis is a great tool used to evaluate these parameters.

This analysis incorporates EPA analytical water testing methods to produce a detailed report. This report can help to provide an in depth look at the health of your pond. Using this analysis you will be able to get a baseline assessment of the current state of your pond. From this baseline assessment we can create prescriptions to manage the water quality, algae, and aquatic plant growth for your specific pond. Through continued testing of your pond's water quality, the future of your pond can be much healthier and treatments can be more efficient. ■



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Management Company**



# Cleaning Up the Chesapeake Bay



We will all have to sacrifice....  
and it may not work!

By James McCulley

## The Problem:

Too much Nitrogen and Phosphorus are making their way to the Bay and degrading the water quality through algae growth. Anyone who remembers high school chemistry knows that Nitrogen (N) and Phosphorus (P) are elements and they cannot be created or destroyed, so once they are in the watershed, they are here to stay unless we take them out and any new N and P that comes into the watershed just adds to the problem.

## The REAL Problem:

Nitrogen and Phosphorus are crucial for the growth of plants (crops) and the crops and residue all contain N and P. By using more N and P (and utilizing other practices), farmers are able to grow more food on the same acreage. This means that as the population grows, we don't need to keep adding farmland to feed them. And the population is growing, quickly and that is the REAL problem.

More people need more food and homes and lawns. All of these things contribute N and P to the Bay.

*Let's just look at a simple example:*

Farmer A grows corn on his land and applies N and P to maximize his yields. The ears of corn are harvested and they contain N and P as does the crop residue (the rest of the plant that stays behind).

Farmer A sells his corn to a poultry farmer (Farmer B) who feeds the corn to

his flock. The birds take up some of the N and P in their tissues and the rest comes out in the manure.

Farmer B sells his chicken to you and I who eat the bird and our tissue takes up some of the N and P and the rest comes out and ends up at the Sewage Treatment Plant.

The sewage treatment plan processes the waste and discharges into a waterway which eventually makes it to the Bay.

So you can see that we all have a part in this and the more of us there are, the bigger the problem.

## Mass — Balance:

If the Bay watershed was a closed system it would be one thing, but N and P are flowing into and out of the watershed in a variety of ways. Not all food eaten in the watershed is produced in the watershed and so a lot of N and P is imported in this way. Also some food produced here gets exported out of the watershed and so N and P leave the system.

Most of the chemical fertilizers used by farmers and homeowners are imported.

Many farmers use manure as fertilizer also, this could be from within the watershed or imported.

So if you look at it in simple terms, as long as we export more N and P than we import in the Bay watershed, we should be OK. Easier said than done and no one is really looking at this problem in this way.

## Prescriptive Approaches:

All of the States in the watershed have developed Watershed Implementation Plans (WIPs) that tell how each State will meet the N and P reductions required. But these are very prescriptive, such as:

- 75% of all farms will use cover crops between rotations.
- DOT will sweep 50% of the roads in the watershed every year.
- Farmers will keep cows out of the streams by putting up fences.
- Builders and Developers will build new and improved storm water facilities.
- Homeowners will only fertilize their lawns after having a soil test done and may pay a tax on the fertilizer.
- Septic systems will be replaced with better functioning systems upon failure.

The problem is that none of these things reduce the N and P in the watershed, they may put it in different places. Groundwater instead of surface water, plant tissue instead of surface water, etc.

The other problem is that we may not be doing the most cost effective reductions, which in light of our fragile economy could be devastating.

## Is there a better solution?:

I believe that there is but it is not easy for regulators to quantify and so may not



gain enough traction.

Why not take a portion of the money that would have been spent on the prescriptive practices and make it available on the free market for proposers of projects that will reduce N and P at the least cost per pound. This would drive innovation and make for more efficient use of the limited clean up funds and hopefully a bigger impact on cleaning the Bay.



Ideas such as the following could be evaluated and selected for funding based on the removal efficiencies, with preference given to projects that actually reduce the amount of N and P in the watershed:

- Algal scrubbers on wastewater outfalls, algal re-use as fertilizer or fuel
- Created wetlands to capture surface water run-off
- Higher density development with green practices
- Export of manure
- Spray Irrigation
- etc.

We need innovative ideas and an incentive for the implementation of these ideas. ■

*Jim McCulley is a Professional Wetland Scientist and owner of Watershed Eco, an environmental consulting firm that works closely with SŌLitude. Jim serves on the National Association of Homebuilders Environmental Issues Committee and Board of Directors and has been heavily involved in the Chesapeake Bay TMDL discussions for the last three years.*

## Another Facet of Pond Maintenance

By **Shannon Junior, Aquatic Ecologist**

The staff members of SŌLitude Lake Management that service your ponds throughout the year under an Annual Lake Management Contract are an educated and experienced group of professional ecologists, biologists, and environmental scientists. We are highly qualified to assess and maintain the aesthetic and ecological integrity of your aquatic resources, including water quality monitoring, fish and wildlife habitat management, nuisance vegetation control, and maintenance of fountains and aeration systems.

But there is another facet of pond maintenance that is not directly covered by a lake management contract, which is the structural and functional maintenance of your water features. This would include inspection and repair of issues such as erosion on the pond banks, clogging or cracking of inlet or outlet structures, dam embankment leakage, sedimentation, etc. In many jurisdictions, an annual structural inspection is performed by the County or other regulating agency – this is particularly true for stormwater management facilities. However, in other areas it is the responsibility of the facility owner to secure an inspection. And for some privately owned and maintained ponds and lakes, there are no formal guidelines that require an annual inspection. Regardless of the situation in your particular locality, it is highly recommended that your facility is thoroughly inspected on an annual basis.

While the SŌLitude staff is very diligent about making observations of structural issues and notifying our clients, this is very different than having a formal annual structural inspection by a qualified professional engineer. The engineer will request the design plans for the facility, and will carefully check all of the important components of the pond to be sure that they are structurally intact and are functioning properly. When issues are identified, the inspection report will also recommend specific actions to remediate the problems.

Structural inspections are an option for all of our clients, and we send out reminders during the year to each of them recommending this service. Annual structural inspections frequently identify maintenance issues that, when repaired early and proactively, can prevent more costly repairs in the future. They can also help to predict when expensive repairs will be required to help with budgeting for the inevitable expenditures. Please feel free to call our office if you have further questions about the necessity and cost for an annual structural inspection of your facility. ■



Outflow Obstruction



Damaged Structure



Bank Erosion

# Our SÖLs



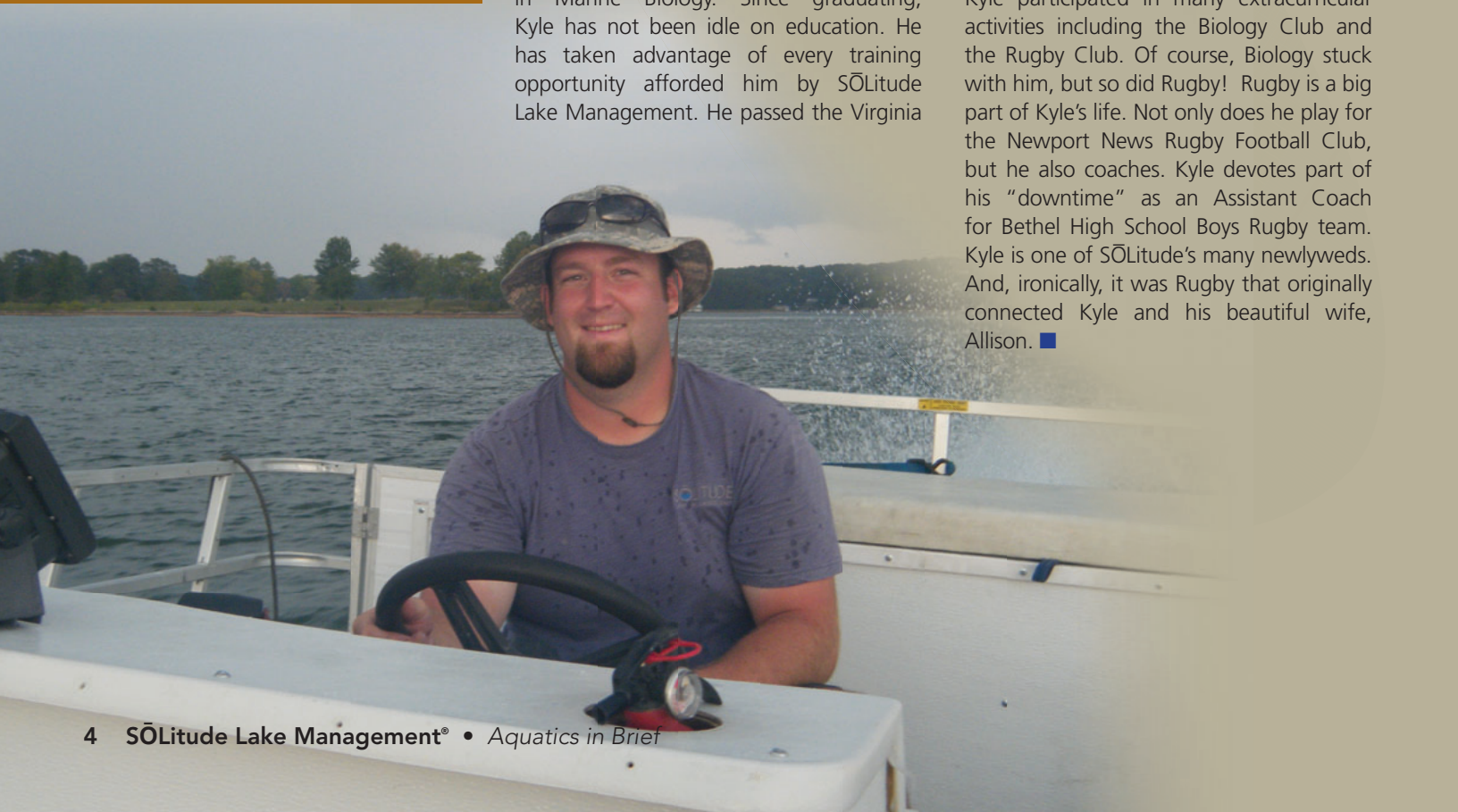
**Kyle Finerfrock**  
*Environmental Scientist*

Spend a week with Kyle Finerfrock and you will touch almost every aspect of SÖLitude Lake Management. Employed as an Environmental Scientist with our company, Kyle has grown with and even moved with SÖLitude, serving the Northern Virginia/DC/Maryland (and North) region from the Fredericksburg office and Southeastern, Central, and Western parts of Virginia from the Newport News office. This has allowed Kyle to get acquainted with a lot of our clients and their ponds. He is an integral part of the SÖLitude staff providing training to new employees and a seasoned perspective for those needing advice.

Kyle was destined to have a career in the great outdoors. Growing up in Warsaw, Virginia, he was always interested in nature and the science of life. Having this passion for nature, Kyle enrolled in Christopher Newport University to study biology where he earned his Bachelor of Science Degree in Environmental Science concentrating in Marine Biology. Since graduating, Kyle has not been idle on education. He has taken advantage of every training opportunity afforded him by SÖLitude Lake Management. He passed the Virginia

Department of Agriculture general pesticide applicator and aquatic pesticide applicator exams which led him to be licensed to apply aquatic herbicides in Virginia, Maryland, North Carolina, Delaware, West Virginia, Pennsylvania, Washington, D.C. and New Jersey. Kyle is also a “wiz” when it comes to fountain and aeration systems. He has been professionally trained by AquaMaster, Aqua Control, Vertex, Otterbine and other top aeration manufacturers. Additionally, Kyle has been trained in bathymetric studies (mapping lakes with integrated GPS and depth sounding equipment) and is the point person on most of the studies provided by SÖLitude Lake Management.

Kyle is definitely a well-rounded lake manager and has devoted a great deal of time to developing his passion. If you meet Kyle on the job, you will find a soft-spoken, easy-going, mild-mannered guy just enjoying what he does. However, Kyle is a man of many talents and passions. You may find it interesting that while attending CNU, Kyle participated in many extracurricular activities including the Biology Club and the Rugby Club. Of course, Biology stuck with him, but so did Rugby! Rugby is a big part of Kyle’s life. Not only does he play for the Newport News Rugby Football Club, but he also coaches. Kyle devotes part of his “downtime” as an Assistant Coach for Bethel High School Boys Rugby team. Kyle is one of SÖLitude’s many newlyweds. And, ironically, it was Rugby that originally connected Kyle and his beautiful wife, Allison. ■





In each issue, staff members from SLM will be highlighted. It is our pleasure to introduce the incredibly talented members of our staff and give you insight into the vast array of knowledge and experience they offer.

As an Aquatic Ecologist and Regional Manager for SŌLitude Lake Management, Shannon Junior “wears many hats.” You rarely ever see her without a smile on her face, which makes her a pleasure to be around both in the office and in the field. A bundle of knowledge, Shannon’s extensive education and experience make her a “go to” person for colleagues and clients alike. If it has to do with the Lake and Pond Management industry, Shannon either knows the answer, has the solution or has a connection to someone who does.

Shannon attended George Mason University where she earned her B.S. in Biology in 1995. She returned to GMU in 1998 for graduate studies in Environmental Science and Public Policy and performed her thesis research on the ecological effects of an open water dredge material deposition site in the Potomac River under a grant from the U.S. Army Corps of Engineers. She also participated as a research assistant in projects involving pyrite mine reclamation, nutrient enrichment of the Potomac River and its tributaries, coral reef diseases, and wood turtle ecology.

Applying her education, Shannon has worked in the Lake and Pond Management Industry since 2000. She has been a Virginia Certified Pesticide applicator since 2001 and is also currently certified in West Virginia, North Carolina, Maryland, Pennsylvania, Delaware, and New Jersey having extensive experience with integrated pest management strategies for nuisance vegetation control. Shannon has managed projects involving all facets of lake management, including ecological assessment, fisheries enhancement, aeration, aquatic landscaping, structural inspection/repairs, and dredging. She has passed the Virginia Class A Contractor exam, and is experienced with feasibility studies, design, regulatory permitting, and construction of new ponds. In addition to her extensive qualifications, Shannon also maintains her

AquaMaster service certification and SePRO Preferred Applicator status.

Shannon is also an avid volunteer. She is an active CAI (Community Associations Institute) member in the Washington Metro Chapter (WMCCAI) and the Central Virginia Chapter (CVC-CAI) serving on the WMCCAI’s Quorum Editorial Committee and the CVC-CAI’s Social Committee. In 2010, Shannon joined the Virginia Leadership Retreat Committee representing the Washington Metro Chapter. Shannon has also been a contributing author for many CAI and other professional organization publications.

Shannon’s volunteer “bug” doesn’t stop as it relates to her professional career. She also has a huge heart and demonstrates it in the many hours she devotes to the Madison County Animal Shelter. She organizes fundraisers and publicity for the shelter, and coordinates with rescue organizations to help find homes for animals who have lost their families. She also helps to bathe and train the dogs to make them more adoptable. You will frequently see her passing flyers around in person or electronically trying to match people with pets. It’s a true passion for her, and has earned her the nickname “The Dog-Pusher”.

If you have had the privilege of meeting Shannon, you know that she is a wildlife enthusiast and loves all animals. She is thrilled that her job provides frequent opportunities to view many species of birds, reptiles, amphibians and other animals. Shannon has a deep appreciation for aquatic habitats and has spent much of her life in and around the water. She has spent several summers on a live-aboard sailboat in the Bahamas, SCUBA diving on a different reef every day. She has lived out West and enjoyed extended rafting and kayaking trips on dozens of whitewater and desert rivers. Shannon is one of SŌLitude’s many newlyweds. She lives in a log cabin with her husband and five dogs and she spends her spare time hiking, gardening, cooking and touring wineries. ■



**Shannon Junior,**  
*Aquatic Ecologist*



## The Latest and Greatest from SePro: Phoslock

By **Lee Abernathy, Environmental Scientist**



**E**ver wonder why your pond seems to have algae so frequently? It could be because it has an excess of phosphorus. Excess phosphorus in ponds can cause many of the problems that we find in ponds today. One single pound of phosphorus can support up to 500 pounds of algae. The accumulation and internal recycling of phosphorus in water bodies has significant and lasting impacts on the aquatic ecosystem, drinking water supplies, recreation and sustaining water quality standards. Too much phosphorus can cause beneficial algae populations to turn into nuisance algae and toxic cyanobacteria.

SePro now offers the solution to excess nutrients in ponds. Phoslock can help to eliminate your algae problems. Phoslock binds and removes the available phosphorus, restoring water quality and reducing the overall amount of algae in your pond. It can effectively reset the aging process and help you enjoy your pond for many more years. Once Phoslock binds to free reactive phosphorus, it is no longer available for uptake. Phoslock is an environmentally compatible and effective solution in a wide range of water chemistries in ponds, lakes and reservoirs. We can test your water and provide the exact prescription needed to remove phosphorus from your pond. Partnering Phoslock with your current management plan can help reset the clock and improve water quality, preventing long-term issues. Give us a call today to see if Phoslock is the answer for your pond! ■

## Winterization Preparation

By **David Ellison, Aquatic Biologist**

**W**ith fall and winter approaching many pond and lake owners look forward to relaxing days and evenings on their docks and decks enjoying nice reflective views from the fall foliage. There are many winter preparation tips that are beneficial to any pond owner and are often forgotten. Acting on these winterization tips will provide year long benefits if they are addressed routinely.

Buffer zones that are not regularly maintained can easily grow to excessive heights and create difficult access to the water. Excessive buffer vegetation growth should be trimmed back to a reasonable height and width. Large trees located within the buffer zone and on the pond bank should be removed as well. Cutting during this time of year is less likely to create any algae blooms due to low water temperatures. Buffer vegetation will quickly begin to grow again as the weather starts to warm.

Fountains that are in ponds that regularly freeze during the winter can often experience more problems during this time of year. Pulling and storing fountains during the winter months is highly recommended for those ponds that regularly freeze. If storage is not desired then it is recommended to run the fountain for 24 hours a day to prevent any damage due to ice. When fountains are out for storage, an oil and seal service is usually suggested on most fountain motors. This preventive maintenance will go a long way in extending the life of the power unit.

**Buffer zones that are not regularly maintained can easily grow to excessive heights and create difficult access to the water. Excessive buffer vegetation growth should be trimmed back to a reasonable height and width.**

During the winter months, submerged air diffused aeration systems should receive compressor maintenance service. They should run constantly as they have during previous seasons even if the pond freezes.

Preventive maintenance is probably one of the most important things a pond owner can think about during this time of year. Buffer zone cutting to keep it under control and fountain and aerator service and storage are some of the preventive maintenance that should be done during the fall and winter months to provide long term benefits. ■



# Innovative Product alert:



AquaMaster, provider of the finest quality fountain and aeration products, is always making advances in the industry and they have done it again. They have now introduced LED lighting systems to their product line. LED's are a low energy form of lighting. LED's will lower power consumption due to low wattages and practically eliminate service calls for light bulb outages. With "living green" being on everyone's minds lately, lowering power consumption is always a good idea. They are found in a variety of wattages from 12 watt (90w equivalent) to 21 watt (350w equivalent). The LED lights are rated for 45,000 plus hours and have a three year warranty on lamps. LED's can easily be fitted to any fountain or replace existing light systems. Contact our office today for information!

## Turtle Jacking

By **Ethan Chappell, Aquatic Specialist**



How many times have you driven up on someone that is trying to move a turtle off the roadway? Typically in the spring and early summer months, turtles take to the road, quite literally in some cases. Bound by ancient forces far too simple for us to understand, these predecessors to the dinosaurs pack up and go. Sometimes we put things in their way. They don't care. Risking everything for the sake of reproduction is "do or die" for our reptilian neighbors. As if on a compass bearing they will march straight to their destination or their destruction whichever comes first. That's where we come in.

I drove into a very dangerous situation just the other day that sparks the age old debate of nature or nurture. A motorist with good intentions had pulled over in order to save a turtle crossing the road. At the base of a blind hill and on a curve, she was standing in the road poking a large snapping turtle with her purple umbrella. Risking her vehicle, her purple umbrella, and her life attempting to save a very unappreciative amphibian with a less than charming disposition, she had created a seriously stressful situation for all parties involved.

Reptiles are cold blooded and while they can be incredibly strong for short periods of time that strength requires a huge expenditure of energy and a long period of recovery afterwards. Their muscles don't bounce back as quickly as warm blooded animals. After periods of over exertion these animals can be at their most vulnerable to predation and attacks on their immune system. (Exertion such as that brought on by staving off assaults from menacing purple umbrellas.) The old adage about snapping turtles holding on until the full moon would only hold true if you were bitten during a full moon.

My motorist had chosen to nurture nature. Nature didn't like it. She was frustrated and so was the turtle. She couldn't move him and at that point he could no longer walk from exhaustion. "I am just trying to save the stupid thing," she cried out. I wondered if the irony of those words was clear to her as I quickly ferried the turtle across the road and adjacent fence line to relative safety and left him in peace. With any luck he recovered and made his way to his destination. If not, well that's nature. I can't recommend that anyone pick up a snapping turtle. If you do not know how to grab them they can really injure digits and flesh. Not to mention that a turtle of any species can carry diseases like salmonella that can be transmitted to humans.

If you should decide to save a wild animal make sure that you go about doing so in a safe manner. You also want to minimize contact with and stress on the animal. It would defeat the purpose if the stress brought on by your rescue ultimately caused the animal's demise. When stressful contact is unavoidable it should be done gently, quickly and calmly. Limiting the time the animal is exposed to people and the stress of contact will allow for the best possible chance that the event will have a positive outcome. ■

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## "Pond"er These Thoughts

**S**olitude Lake Management® wants you to be prepared for the Autumn season and all of the wonderful cool weather it brings. With this in mind, we recommend you consider the following tips as you enjoy the fall months on your lake or pond:

- Fall is budget and planning season in most communities and households! Along with your contract for annual maintenance, be certain to contact our office about scheduling a bathymetric study of your pond. This will allow for proper planning for future sediment removal and dredging needs.
- Scheduling a Stormwater/BMP Inspection is a great idea during this season. This type of inspection is performed by a Professional Engineer and provides an in-depth look at the infrastructure of your pond alerting you to any structural or functional issues, maintenance requirements and repairs needed. This inspection will alert you to any structural or functional issues with your pond and allow you to properly budget for any needed repairs.
- Fall is a good time to think about repairing and maintaining the areas around your pond. Be sure to trim the buffer zone and make certain that it is free of any woody vegetation. Repair any

eroded areas around your pond before they become major issues. Erosion repair can easily be done in the fall months when you can overseed and apply an erosion blanket to allow for soil stabilization until the new seed germinates.

- If your pond has a fountain, fall is the perfect time to schedule an Oil and Seals change service which should be performed every three years. Call today to schedule!
- While sprucing up lawns in the fall, it may be tempting to over-fertilize. However, it is best to limit the amount of fall fertilization in all communities with stormwater ponds. Make sure fertilizer stays off of roads, sidewalks, driveways and other impervious surfaces that would ultimately lead to it being washed into the pond.
- If you live on a lake, leaves and other yard debris may end up in the water. Try to keep leaves, clippings and other debris out of the water and storm drains/gutters as this adds nutrients to the pond which could lead to the growth of algae and other unwanted vegetation.
- For those of you who live in the colder climates, you may desire removal and winter storage for your fountain. If so, this should be completed by early December. ■



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