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Acronyms

CE	Control Elevation is the water level just as it starts running out the water control structure
COE	Unites States Army Corp of Engineers
DEP	Florida Department of Environment Protection usually doesn't interact with homeowner association ponds.
FDACS	Florida Department of Agriculture & Consumer Services issues licenses for herbicide applicators.
FWC.....	Florida Fish & Wildlife Commission governs wildlife issues
SHWL.....	Seasonal High Water Level is the lake or wetland water level typical during the summer
SNAP	Statewide? Nuisance Alligator Program allows homeowner associations to take more control of alligator removal
SWFWMD	Southwest Florida Water Management District is the main agency that regulates stormwater ponds & wetlands throughout their 16-county district.
US ACE.....	Unites States Army Corp of Engineers has limited jurisdiction; mostly for communities located on rivers.
WCS.....	Water Control Structure is the concrete box that allows water to flow out of the lake at a specific elevation.

Algae Management

There are 7,000 alga species native to Florida. It is not possible or desirable to eliminate all algae. These tiny plants that add oxygen to the water & provide food for millions of other tiny creatures. These

creatures in turn are food for the next level of animals in the food web. Algae are an important foundation for the rest of the aquatic ecosystem.

Algae management requires a thoughtful combination of prevention & control. Here are some of the ways algae are controlled.

Chemical control

This is the most common approach to algae management. Lake managers use a variety of chemical formulas to kill algae. Algae species are not equally susceptible to these formulas. Some species are far more difficult to kill.

In addition, algae are highly adaptable. Being a simple life form like virus or microbes, algae can develop resistance to repeated use of common algaecides. Change formulas constantly to avoid this problem. Some difficult to kill algae species require a combination of microbes & algaecide to gain control.

Another problem with chemical control is that many beneficial organisms are also susceptible to algaecide. Snails, clams, freshwater mussels, immature insects, frogs & young fish can all die from chemical algaecide applications that are a little too concentrated. The person “treating” your lake for algae must be extremely careful to mix just enough chemical to kill the specific species of algae without killing all the “invisible” beneficial creatures.

Snails & freshwater mussels filter the water & eat the algae. These beneficial creatures keep the lake balanced & clean. Without the tiny animals to eat the algae & keep it in balance, so the algae just returns with a vengeance.

Your lake manager must be thoughtful & careful when using chemicals in your lake. It is also important to educate your neighbors about lake ecology. A lake is not a swimming pool. A little algae is a natural part of Florida lakes. Some neighbors might not like it, but the vicious cycle of chemicals & algae blooms is a harsh cycle.

Harvesting

Harvesting / manual removal is also possible for algae control. This may be more expensive than chemicals, but it has immediate results. Access to the lake with a pickup truck is required. Two benefits are no chemicals entering your lake & some lake nutrients (the algae) are removed.

Removing nutrients from the lake is environmentally friendly & helps reduce future algae growth.

An ounce of prevention

What you do in your yard directly affects the amount of algae in your lake. The most important way to control algae is to implement sustainable landscape designs & practices. Sarasota & other counties have already passed ordinances regarding fertilizer reduction & sustainable landscape practices.

These laws focus on several principles.

- 1 Fertilizer
 - a. Fertilizer is algae food. Keep it far away from any water. Several counties have made 10-15 feet as the minimum. All lake management societies recommend more.
 - b. Keep fertilizer away from any paved surface. The chemicals easily wash down the road directly into your stormwater ponds.
 - c. If you fertilize, follow the guidelines of your county or state. Sometimes, these guidelines are voluntary. People who choose to ignore them are choosing more algae.
 - d. Do not fertilize prior to heavy rains. The faster fertilizer is washed into the lake the less is available to the landscape plants.
- 2 Mowing
 - a. Keep grass clippings out of the lake. The tips of grass blades are high in nitrogen. Algae thrive on nitrogen.

- b. Establish a filter zone around the shore. This significantly reduces the risk of shore erosion as well as keeping some nitrogen out of the lake. A filter zone can be a two-foot-wide area of grass that is six or more inches high.

Shade

Algae thrive on sunlight, particularly in the shallow water near the shore. Any way we can reduce sunlight penetrating to the bottom of the shallow areas helps reduce algae growth.

1. Water lilies are an excellent plant to block sunlight. Their wide leaves act as an aquatic forest leaving open shady areas under the surface. Since lilies grow in shallow water, they provide shade where we need it most.
2. Pond dye is a vegetable oil product that blocks the ultraviolet sunrays. This choice is excellent because it causes no harm to the aquatic ecosystem. There are no chemicals to harm the aquatic wildlife or accumulate in the lake bottom. The only drawback to pond dye is that heavy rains wash it out of the lake.
3. Trees are another source of shade. You may remember natural lakes you have visited. Most lakes throughout the continent are surrounded by mature trees. These trees provide a home for many wildlife species, but also give valuable shade to the water.

Aeration

Aeration functions exactly like a bubbler in a small aquarium. An air compressor on the shore pumps air to the bottom of the lake through a heavy rubber hose. The air forms small bubbles at an air stone or diffuser. The bubbles float up carrying water from the bottom to the surface. This water current transports the oxygen starved bottom water to the surface where it absorbs oxygen from the air.

This process keeps the bottom of the lake oxygenated. The tiny creatures at the bottom of the lake can now survive because they have oxygen & they can compete with alga for the nutrients in the water.

Biological control

The best control is Mother Nature's way; a balanced ecosystem. Many organisms eat algae or compete with algae for nutrients. These include fish, beneficial bacteria, snails, freshwater muscles & especially aquatic plants. Every lake & community is different, so we cannot offer a specific solution for your lakes without an inspection. But, the general rule is that algae blooms when these other organisms are absent.

Education

Florida lakes, streams & stormwater ponds are warmer & more nutrient rich than lakes "up north". Consequently, we have more algae. The water management district offers free literature to help educate your community. Here is a link to their website. www.WaterMatters.org
With all the new people moving to Florida each year, repeated efforts to educate your community is necessary. Most people will "do the right thing" once they have heard the message a dozen times.

Green lawns, Blue ponds

Green lawns don't have to mean green ponds (but they usually do). Beautiful yards & ponds can go hand in hand. By following a few simple landscaping guidelines designed for our Florida climate you can keep your lawn green & your pond blue.

Here are six practices to keep your pond beautiful & ecologically healthy. The basic fact is that nutrients (fertilizer) make plants grow. Nutrients in the pond almost always cause algae growth. Fertilizer belong on the land, not in the water.

1 Fertilizer is needed only twice a year; fall & spring. Although many lawn services recommend fertilizing more frequently, more frequent fertilizing will usually result in greener lakes.

2 Fertilizer should usually be a slow-release type. This form of fertilizer helps keep most of the product on your lawn, rather than in the pond. Fast release fertilizer products can leach as much as 60% of their nutrient value into your lakes with the first hard rain.

3 Fertilizer is rarely needed within 15 feet of the water. This area stays moister & produces healthy grass & shrubs little or no fertilizer. Following this principle alone can reduce the algae production by 40%.

4 Reduce or eliminate fertilizer within five feet of any impervious surface. Fertilizer applied next to the sidewalk, street or driveway easily washes onto the hard surface, then flows quickly into your pond. Remember that all water from every roof, driveway, lawn & street in your community runs directly into your ponds, with no filtration of any kind.

5 Do not fertilize within 48 hours of a forecast rain. If a landscaper does your fertilizing, specify this in the contract. Choose any forecast & impose a penalty if your fertilizer is applied before a forecast rain.

6 Keep grass clippings out of the lake. The tips of grass blades that are cut during mowing contain high quantity of nitrogen & algae loves nitrogen. High quality lawn crews will always blow grass clippings away from the lake. It's better for your lawn & especially better for your pond. Never blow grass clipping into a storm drain. It's just like throwing fertilizer into the lake.

7 Never allow pet waste to enter the pond. This product is more nutritious than grass clippings. Even pet waste left to decompose within 15 feet of the pond accelerates algae blooms.

These six practices will help keep your lawns greener & ponds clearer. This article is basic information. Some landscape professionals may disagree. For more information check

http://fyn.ifas.ufl.edu/homeowners/nine_principles.htm

Fertilizer Setback Zones



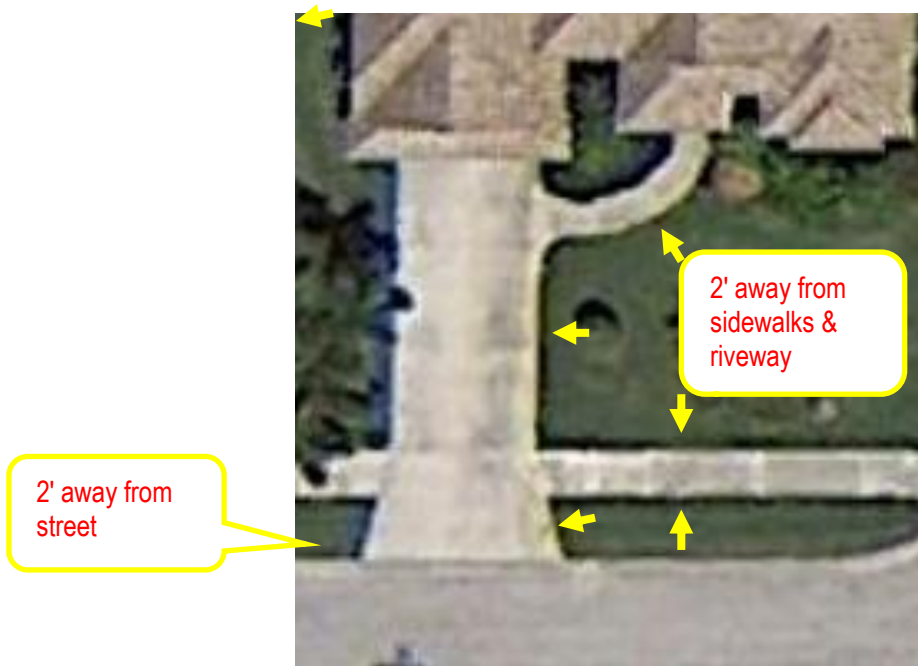
We all know that adding fertilizer to the lake causes algae blooms. Cities all over the country are working to keep our water clean. You can join millions of other to protect our water & keep the lake clean.

Here is a poster from Seattle. They learned that careless fertilizing caused algae blooms in Puget Sound.

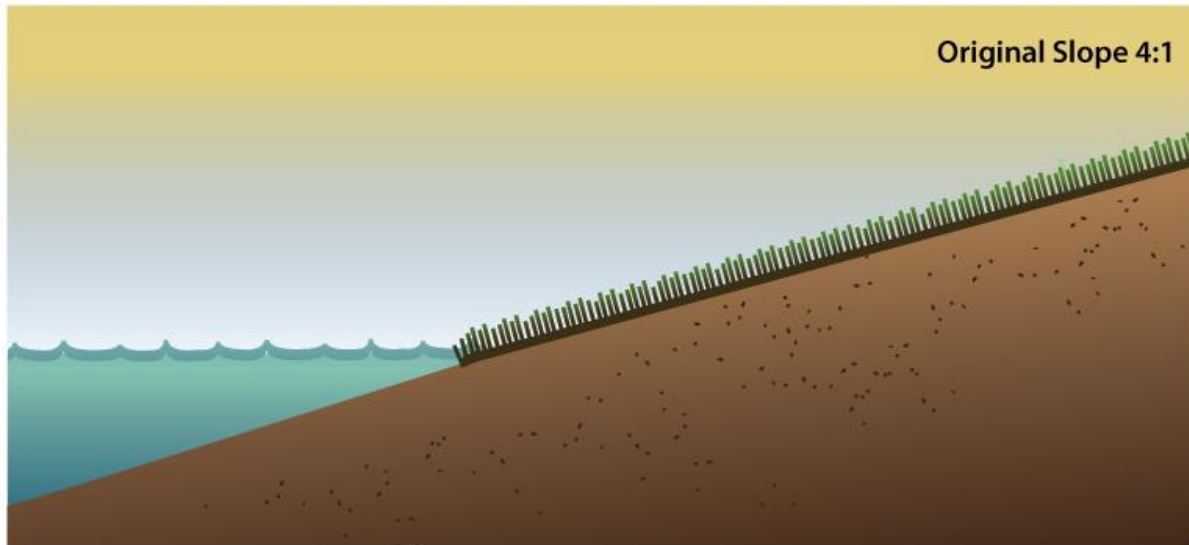
Fertilizer should never be applied to impervious surfaces then blown back onto the turf. Tell your fertilizer company to keep fertilizer off the street. Here's why.

1. Your fertilizer company allows fertilizer granules to land on the street
2. They blow most of it back into the grass
3. This over-fertilizes that turf area near the curb.
4. If it rains hard in the next few weeks this fertilizer (right next to the street) washes into the street & into the drain that goes directly to your lake.

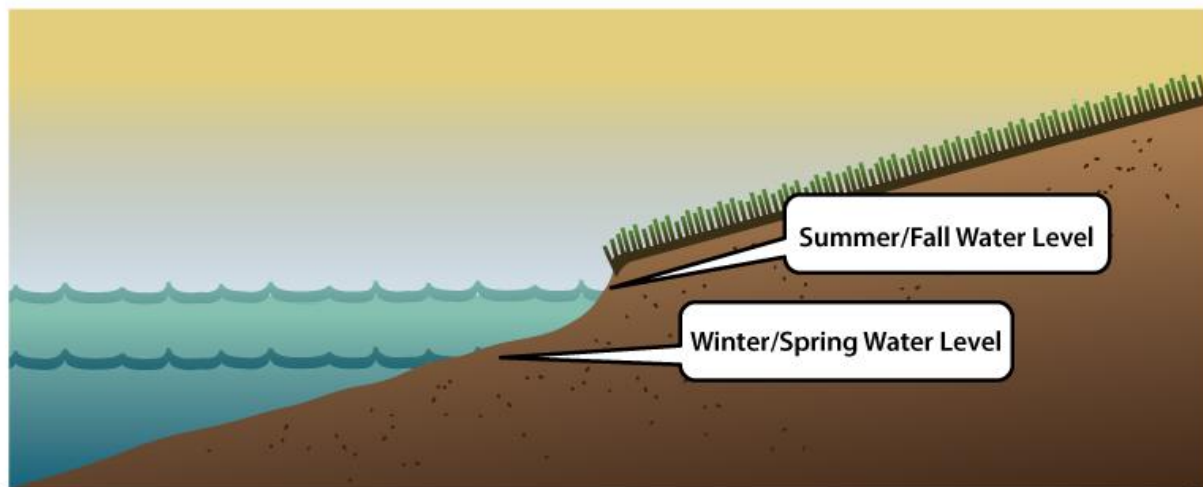




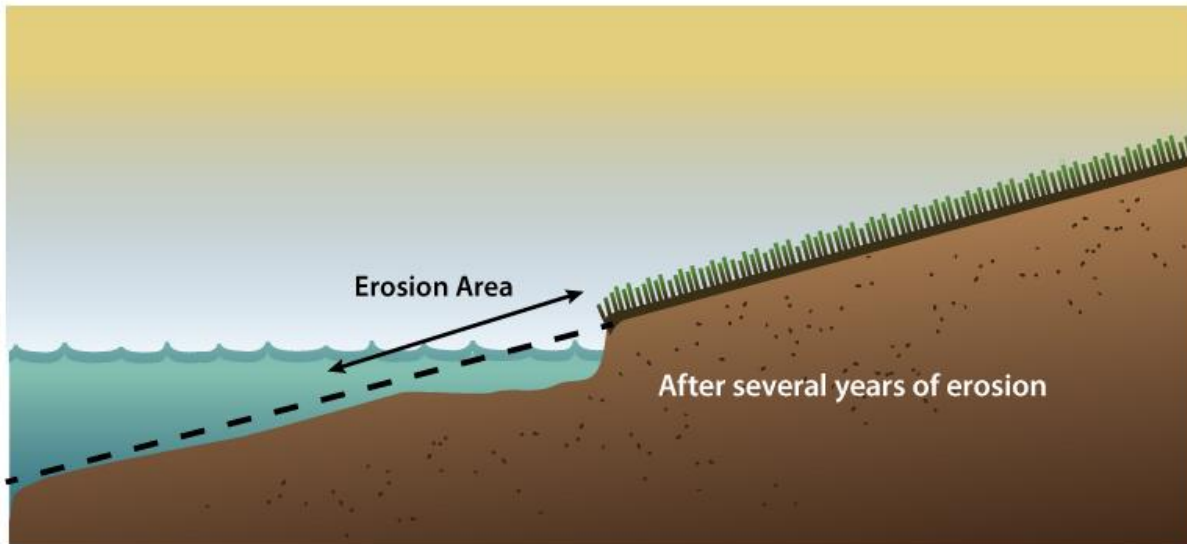
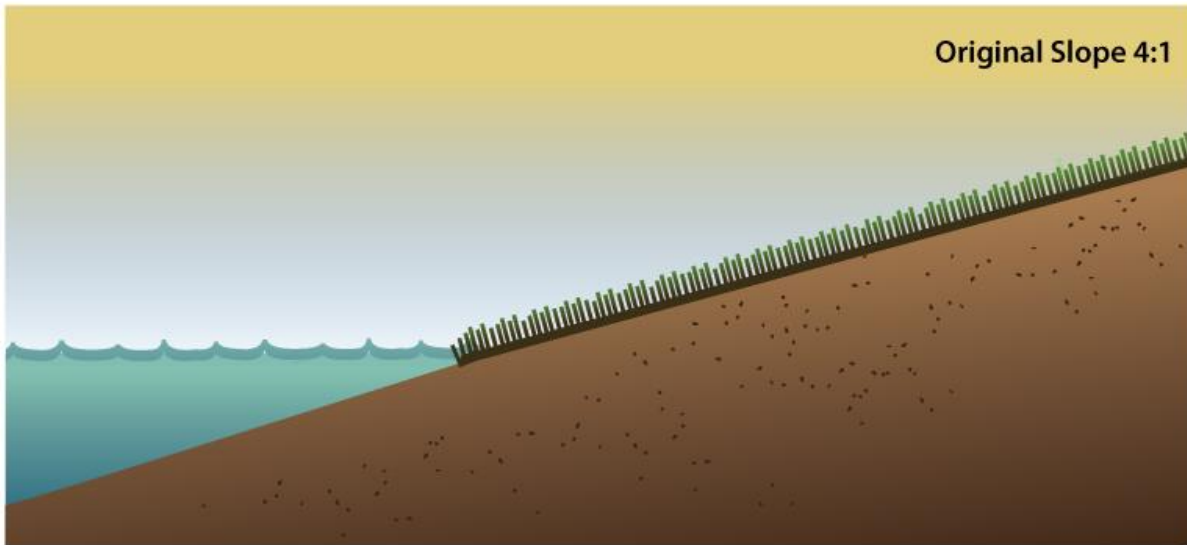
Erosion Fundamentals



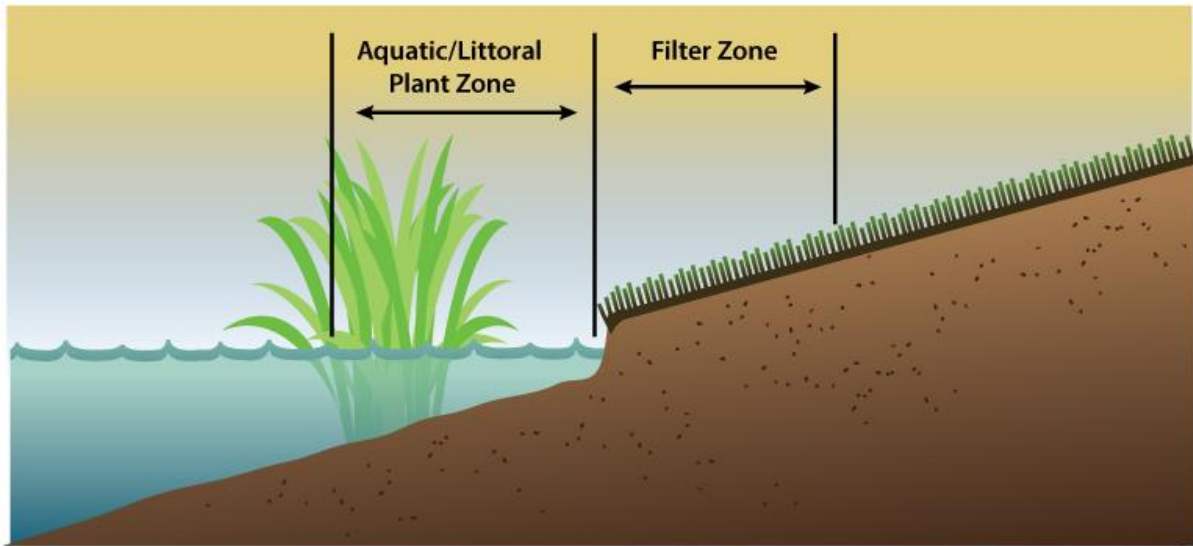
This is how most stormwater ponds were designed & constructed. Often the slope became steeper (3:1) about 5 feet from shore. The purpose of the 4:1 slope is safety for residents & landscape crews.



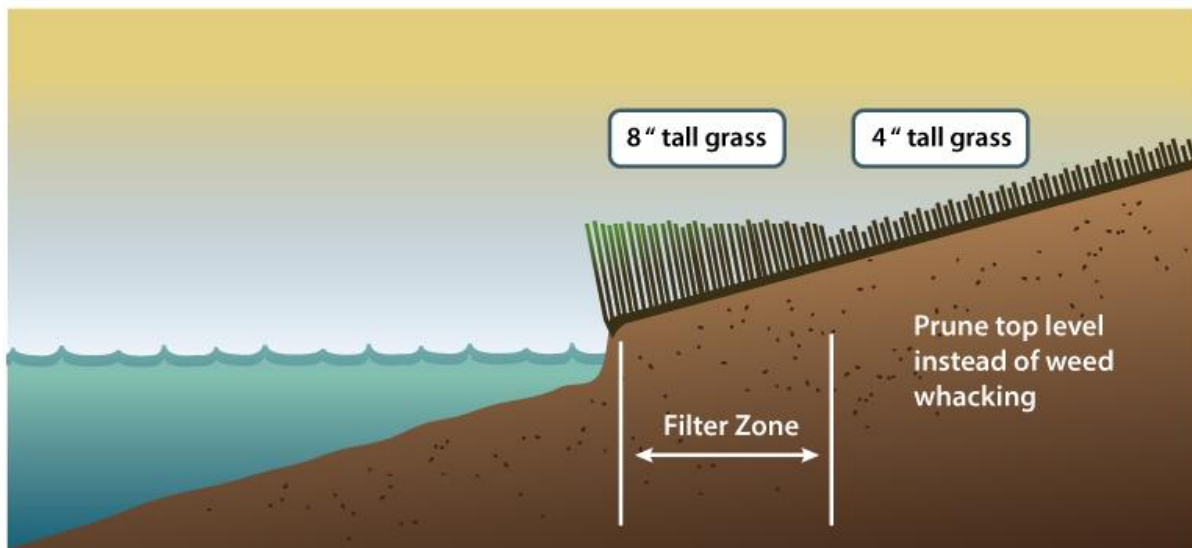
The water level changes between rainy & dry seasons. How much it varies depends on many factors, mostly soil seepage.



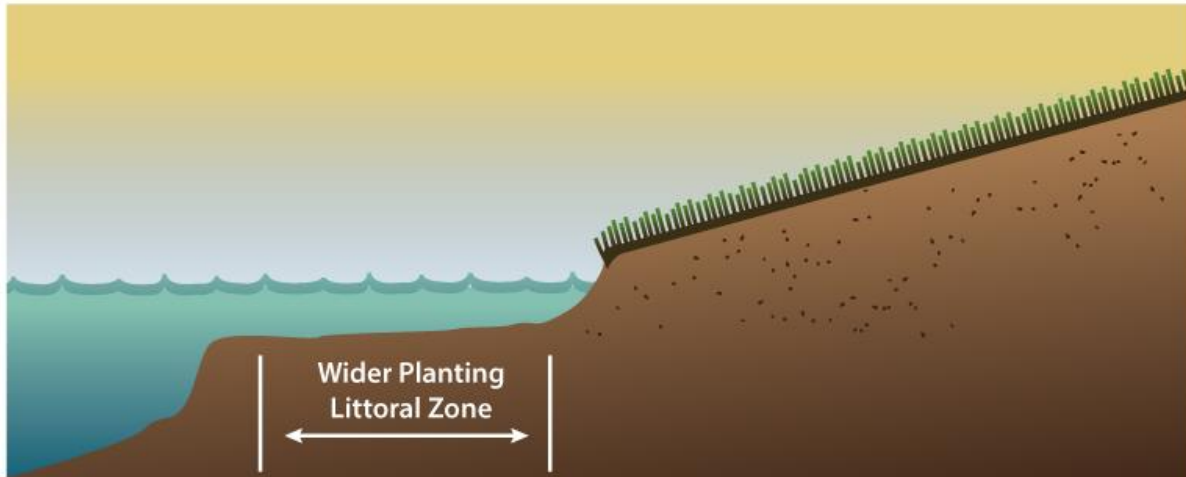
This is how erosion starts on most stormwater ponds. There are several mechanisms or processes that cause this erosion. The sandy soil easily washes away.



These are the two key planting areas that usually prevent future erosion. The aquatic planting zone stops most of the wave action that washes sandy soil from the bank. The filter zone prevents erosion by improving plant root systems & eliminating the destructive vibrations of the heavy riding lawn mowers.

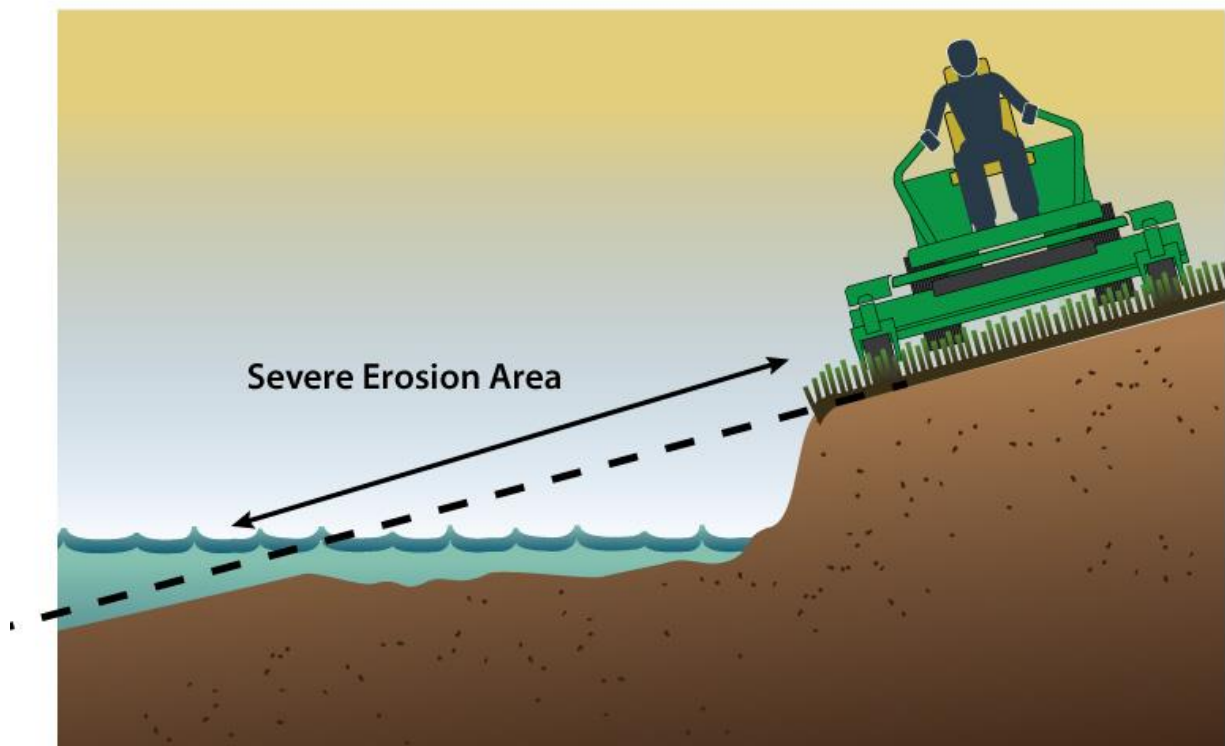


The filter zone can be pruned as above to maintain a "cared for" look while keeping the mowers away from the edge. This option should not increase price. Landscapers exchange "pruning" the top of the filter zone level (about 18 times a year) for weed whacking (40 times a year).



This is new generation stormwater pond design. Once the planting zone is planted, this design prevents most erosion & significantly improves water quality. This is the standard design in Lee County but not Charlotte County.

Planting our existing narrow aquatic planting zones will gradually "repair" past erosion, but that is a very slow (decades) process.



Heavy, bouncing impact from mowers, vibrates the sandy soil, causing it to fall away from shallow grass roots. The filter zone keeps the heavy mower away from the edge, thus reducing future erosion.

3 Types of Erosion (Soil Loss Along Lake Banks)

There are three types of soil loss that occur along lake banks. Any lake may experience one or more types of erosion depending on site conditions.

Bank erosion

The first type of soil loss along lake banks is known as bank erosion. Bank erosion occurs when water flowing down the banks of a lake removes (erodes) soil from the banks. The erosion usually produces gullies where the flow of water down the banks becomes concentrated. Usually, if gullies are not present, erosion is not occurring & the loss of soil is due to one of the other two types of soil loss. However, water flowing perpendicular to the lake shore can flow under newly planted sod / turf.



Example of Bank Erosion

The most common remedy for bank erosion involves stabilizing the lake banks with sod or some other type of ground cover. Erosion is common in areas where concentrated flow from swales or gutter downspouts is directed at lake banks. Here are several workable solutions to erosion.

1. Install 4 – 8-inch diameter flexible pipe underground. Make sure the end extends at least six feet out into the lake.
2. As the yard grade becomes slightly steeper near the lake, water velocity increases causing more erosive force. Re-grade the lake slope so the water flow is spread out over a wider area near the lake shore.
3. Plants with robust root systems will hold the soil better than typical turf. Planting strong plants in strategic locations reduces erosion potential.
4. In extreme cases, installing rip rap (large stones) over a layer of geotextile fabric may be required.

Beach Scour

The second type of soil loss along lake banks is known as bank or beach scour. Beach scour is the result of wave action & generally can occur only on lakes that are sufficiently long enough for wind to produce waves of significant height & duration. Because winds tend to originate from the same general direction most of the time, bank scour will usually be present only along the particular portion of the shoreline where waves are commonly produced. Given our fine, sandy soil, two-inch-tall waves can cause beach scour.



An Example of Bank Scour – This photograph was taken when the lake water level was relatively low. During the summer months, the plants in the beach area are underwater. Installing the right aquatic plants in the shallow (littoral) area is an excellent way to significantly reduce beach scour.

In severe situations installing rip rap over a geotextile fabric or construction of a seawall (retaining wall) may be required to prevent bank scour. This is usually required in larger lakes that have large waves. Nearly all shorelines are regulated by government agencies. Check with your local authorities before starting any projects.

In smaller lakes, such as stormwater ponds, the wave energy or action may be absorbed by aquatic plants. Aquatic plant stems act to dampen or dissipate the wave action so the wave doesn't scour the shore. In addition, the plants help keep the water calmer near the shore. Suspended sediment, such as fine sand, drifts into this calm water & falls to the bottom, accumulating between the stems.

Bank Settlement

(S⁵ Super-saturated, sandy soil settlement)

The third type of soil loss is also the most common & is known as bank settlement. This type of soil loss is often incorrectly identified as either bank erosion or beach scour. Bank settlement is due to the long-term settlement of super-saturated sandy soils that form the banks of the stormwater ponds.



An Example of Bank Settlement

Super-saturation occurs when soil is submerged for an extended time. Once the sandy soil of a lake bank becomes super-saturated, the soil becomes quick (as in “quicksand”) & literally flows like a thick liquid to the lower area in the middle of the lake. The rate of settlement is directly related to the types of soils that form the banks. Soils with high clay content have good cohesion & will settle at much slower rate than soils with low clay content. Because the banks of large lakes may be formed of soils with both high & low clay content, the rate of settlement can vary around the shoreline of the lake.

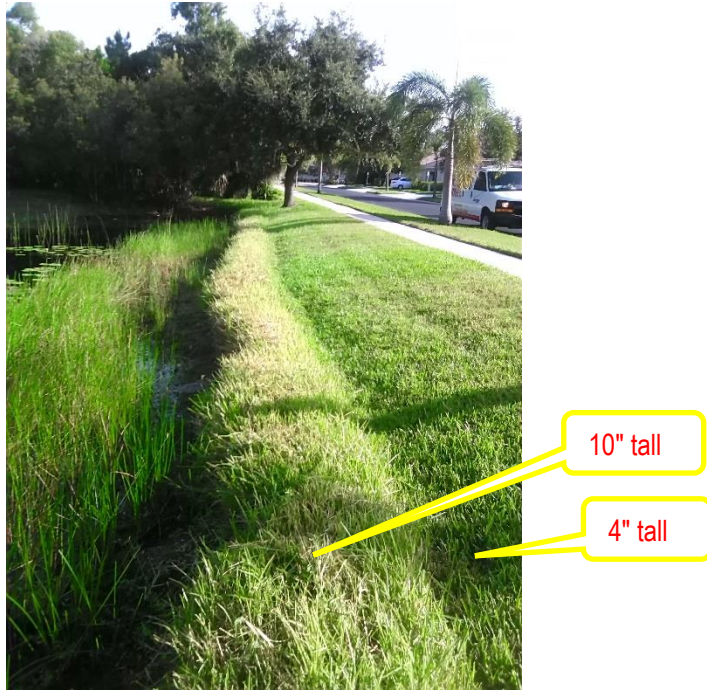
To help prevent (or at least slow down) the loss of soil due to bank settlement, it is recommended that a strip of grass 2 to 5 feet wide be left unmowed along the waterline around the lakes, forming a “Filter Zone.” The taller grass will develop deeper roots & a denser root mat which will help hold the soil in place & prevent the super-saturated soil from flowing out into the middle of the lake.

The unmowed Filter Zone can be trimmed to a height of 12 to 18 inches if desired. Also, planting certain types of plants with deep root systems in the Filter Zone will help hold the soil in place. It is recommended that the vegetation along the banks *never* be sprayed with herbicides for a “manicured” look.



An Example of a “Filter Zone”

The filter zone pictured above & below is St. Augustine grass that has been “hedged” into a boxy shape. Other grasses such as Bahia do not grow as tall as St. Augustine & form a softer, lower edge. In addition, wildflowers can be planted in the filter zone to add color. A filter zone does not need to be as tall as pictured here. Gama grass or Cordgrass are also excellent choices for deep-rooted plants. These native grasses typically send roots 2 – 3 feet in all directions, forming natural erosion protection.



This is a Filter Zone that has recently been pruned along the top to establish a uniform height. The grass on the right side is about six inches tall. The grass on the left (lake) side is about 10 inches tall because the bank slopes down, but the grass is pruned flat.

Alligator Management with FWC SNAP

The following is communication from the FWC SNAP program supervisor dated January 2018. The Florida Fish & Wildlife Conservation Commission’s Statewide Nuisance Alligator Program (SNAP) has quite a bit of flexibility built into the Program & since there is a need to have greater control over how nuisance alligators are handled for managed properties. The best fit is a proactive solution we refer to as Targeted Harvest Areas (THA).

We will need the following information if you wish to consider designating the managed property as a Targeted Harvest Area:

- A written request may be e-mailed (snap@myfwc.com) or mailed to the South Florida Field Station (8122 Hwy 441 SE, Okeechobee, FL 34974) from the property owner or managing authority, including the contact information of the owner or manager.
- The request must state that you seek properties designated as a Targeted Harvest Area for dealing with nuisance alligators only; giving reason why the alligators are a nuisance.
- The request must also state that the owner or manager has the authority to control access to the specific areas where the nuisance alligators are located.

- The request must identify who the complainant or point(s) of contact will be listed on the permit with contact information (i.e. phone numbers & e-mail).
- Any specific instructions or limitations regarding the proposed Targeted Harvest Area (such as size or quantity limits, boundary limits, or specific personnel who may request alligator removal).
- A standard letter-size map showing the general location of the property or areas to be designated (in relation to the nearest city or town, major highways, or other landmarks), the specific property boundaries & the proposed Targeted Harvest Area boundaries (if different from the property boundaries). GIS maps are sometimes available on County Property Appraiser websites; those would be acceptable as well as DOT maps of your area. Additional maps may be requested by SNAP as needed.

The owner or manager may specify restrictions on the size or quantity of alligators that may be removed, as well as restrictions on the areas from which alligators may be removed or how the trapper is to access the property.

For each Targeted Harvest Area established, SNAP will issue a permit to the local Nuisance Alligator Trapper(s) to remove nuisance alligators from the designated property. This will allow the owner or manager (or his/ her designees) to contact the trapper directly to initiate & control the removal of nuisance alligators.

Please be aware that alligators within the Targeted Harvest Area may still generate complaints to the Statewide Nuisance Alligator Hotline. In such circumstances, if the owner or manager denies the removal of an alligator that meets the state's nuisance alligator criteria this will be documented in writing to the owner or manager should any issue arise about the alligator in the future. However, nothing prevents the owner or manager from allowing the trapper unlimited access to remove nuisance alligators from the designated property.

We look forward to working closely with you regarding nuisance alligator management. Please do not hesitate to contact me at [\(863\) 462-0023](tel:8634620023) or kimberly.lippman@myfwc.com if you have any questions or need additional information.

Sincerely,

Kimberly D. Lippman

Statewide Nuisance Alligator Program (SNAP)

To report a nuisance alligator: [866-FWC-GATOR](tel:866FWCGATOR) ([1-866-392-4286](tel:18663924286))

Visit our website: www.MyFWC.com/alligator