Phosphorus is not the only stormwater pollutant in our regional drainage canals. Think about how many people live here and the household habits that may contribute pollution to the region's stormwater. What do you think rainwater picks up as it rolls across parking lots, lawns and pastures before draining into stormwater systems like a swale, pond or canals? Just imagine chemicals leaking from vehicles on roadways; inappropriately applied fertilizers and pesticides on urban landscaping; or, mismanaged pet and livestock waste. It all adds up…

LIVING CLOSE TO THE EVERGLADES REQUIRES EVERYONE TO BE A WISE RESOURCE MANAGER

The primary goal of equine "Best Management Practices," or "BMPs," is to eliminate or limit excess phosphorus, nitrogen and other pollutants produced by horses and livestock from entering canals and waterways through inappropriate pasture and stable practices. Besides ensuring better water quality for you, your livestock, neighbors and the Everglades – these equestrian BMPs will also help you maintain better pastures, improve livestock health and increase property values. Additionally, adopting BMPs will help protect you from related code enforcement problems.

Horse owners, equestrian facility managers, the South Florida Trail Riders Association, and Florida Farm Bureau have worked together with the South Florida Water Management District, the Florida Department of Agriculture & Consumer Services and the University of Florida Institute of Food and Agricultural Sciences (IFAS) to develop these recommended practices.

YOU CAN LEAD A HORSE TO WATER

sfwmd.gov

Fresh Florida

Florida Farm Bureau

South Florida Trail Riders Association

University of Florida IFAS

GOOD HORSE SENSE

PROTECTING WATER RESOURCES

Equine Best Management Practices (BMPs) for Southeast Florida

SOUTH FLORIDA'S WATER QUALITY CHALLENGE

Our regional system of drainage canals provides flood control and allows us to live in areas that were once part of the Everglades. Stormwater from the 50 to 60 inches of rain we receive annually drains across our property collecting pollutants before it is discharged into drainage canals. Depending on where you live, stormwater in nearby drainage systems is either discharged to the Atlantic or the Everglades.

Any number of pollutants can be found in stormwater, but in southeast Florida where urban drainage canals discharge into the Everglades, the stormwater pollutant of concern is primarily phosphorus – a nutrient most commonly found in fertilizers. Stormwater discharges into the Everglades with phosphorus concentrations higher than 10 parts per billion (ppb) can upset the natural balance of the Everglades system.

Achieving the restoration of the Everglades will require a significant reduction in the amount of phosphorus in stormwater. Improving the water quality of stormwater runoff is the responsibility of everyone that contributes pollutants.

IMAGINE 10 BLACK MARBLES IN A POOL OF A BILLION WHITE MARBLES—THAT'S WHAT 10 PARTS PER BILLION LOOKS LIKE. AND ALTHOUGH IT IS OK FOR DRINKING WATER TO HAVE HIGHER CONCENTRATIONS OF PHOSPHORUS, THE EVERGLADES IS NATURALLY A "NUTRIENT-POOR" NATURAL SYSTEM. EVEN SMALL AMOUNTS OF UNNATURAL NUTRIENTS CAN UPSET THE NATIVE PLANTS AND ANIMALS THAT DEPEND ON THE HISTORIC RIVER OF GRASS.

APPROPRIATE FENCING

To reduce erosion and avoid water quality degradation, strategic location of your fences needs to be considered before installation.

- Ideally, install fencing to allow for rotation and resting of pastures
- Fence off areas that receive periodic standing water where possible
- Fence to prevent access of horses to canals or bodies of water connected to canals. And, provide alternative sources, like a water trough
- Fence along a canal or other surface water so that a buffer strip of vegetation will be created naturally to filter run off and prevent soil erosion
- Regular inspection and ongoing maintenance of fences should be part of the farm management plan
- The location and construction of all fences and its materials should comply with local, state and federal laws

PREVENTING SOIL EROSION

Exposed soil – meaning areas without vegetative cover – is susceptible to soil erosion. Besides being detrimental to property values, soil erosion allows soil sediments to drain into nearby surface waters. Eroded sediment can have high levels of phosphorus. Erosion and sediment control practices will prevent surface water quality problems and retain the property's valuable topsoil.

- Maintain a vegetative buffer strip between paddocks or pastures and canals and roadways
- Construct berms where appropriate
- Use pasture management practices

PASTURE MANAGEMENT

- Where appropriate, consider subdividing large pastures into smaller ones and develop a rotational grazing system
- Maintain grass on pastures by rotating grazing areas, and make sure there is a [livestock drinking] water source for each pasture
- Overgrazing occurs when 50% or more of the plant has been removed all at once. This causes a stoppage of root growth and reduces grass production
- Confine animals for a portion of the day to prevent overgrazing
- Allow rest periods and use a high-intensity, short duration grazing technique to rejuvenate poor pasture
- Mow regularly to encourage grass and reduce weeds (1 year's seed is 7 year's weeds)
- Allow pasture grass to reach 6 inches in height before grazing and remove animals when 3 inches height remains
- Mow pastures to a uniform 3 inches height after grazing to stimulate equal growth of all plants

Fertilize Pastures according to Broward Turf & Landscaping BMPs:

- If you are not an experienced landscape professional, use a "slow release" form of fertilizer. Because it has been manufactured to release nutrients gradually, slow-release fertilizers will significantly reduce the potential for runoff and leaching. Most commercial fertilizers are a blend of slow release and quick release nutrients. Fertilizer having a high percentage of slow release nutrients has a reduced potential for environmental impact and damage to pastures.
- Use fertilizer with appropriate amounts of nitrogen, phosphorus and potassium
- Before using a fertilizer containing more than 2% phosphorus, do a "soil test" to determine if it justifies adding phosphorus
- Read the fertilizer label completely and conscientiously – and do not over apply
- Apply fertilizer on appropriate schedules of three small applications yearly rather than one single application, and reduce application rates in the summer wet season whenever possible
- Watch the weather before fertilizing. Whenever possible, postpone fertilizing when a precipitation of greater than 1 inch of rain is expected to reduce fertilizer loss and stormwater pollution

WEED MANAGEMENT

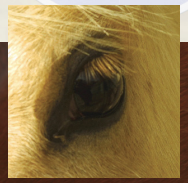
Weeds spread rapidly. Regular inspection of your property is critical and involves immediate action using one or more weed control practices:

- Search for individual weeds and promptly remove, especially near water bodies or wetlands
- Avoid moving livestock from a weedy area to a weed-free area for at least 24 hours
- Mow weeds regularly before they go to seed
- Drag as needed to aerate the pasture manure with soil to encourage pasture growth, and use manure management practices

GOOD HORSE SENSE

To begin the BMP process, examine your property or where your livestock is boarded. Make a sketch showing property boundaries, fences and confinement areas, buildings, wells, septic system and drain field, wetlands and ponds, bare ground, and weeds and Non-native and invasive plants and vegetation. Also consider areas that are landscaped or pastured, neighboring land uses, ground contours and soil type.

Studying the property sketch, think about possible pollution sources. Is there a possibility that animal waste from the property might be entering canals and waterways? Could soil erosion on the property be making its way to neighboring properties or nearby surface waters? Is the pasture pond connected to a nearby canal, lake or wetland? Is the correct fertilizer being used for South Florida soils and semi-tropical environment – and what about pesticide usage, and the current system of waste management?



MANURE MANAGEMENT

Remove manure from stalls daily. Do not allow excess manure to accumulate in paddocks, corrals or pens.

- Spread manure on pastures at allowable rates using a spreader designed for the purpose
- Drag as needed to aerate the manure with soil to encourage pasture growth
  - Do not over-apply. Contact the local County Extension Agent to determine allowable agronomic rates.
  - Do not use manure spreader within 10 feet of canals or roadways
- Maintain a good deworming program for livestock to prevent parasites and worm eggs in manure that will be reapplied to pastures
- Compost manure to create topsoil/fertilizer
- Create two manure piles: one active, one dormant
- Position manure piles away from canals/roads/neighboring residence's plot lines
- Utilize composted manure on lawns, gardens or pastures as fertilizer
- Create compost piles or containment areas away from canals, roads and neighboring residences
- Compost piles should be enclosed by a border at least 8 inches high and covered with an impervious surface to prevent leaching (such as a sheet of plastic)
- Arrange a manure pick-up service. Or arrange times for neighbors, gardeners, and nurseries to collect composted manure

MUD CONTROL

Mud is a slick, unsafe footing and harbors insects and bacteria, which cause illness and disease in livestock. A muddy farm is unsightly for the neighborhood and causes an increase in odors and flies. Mud can also be damaging to the environment by contaminating surface water with sediment runoff. The idea behind mud-control BMPs is to prevent mud from making its way into nearby surface water.

- Install gutters and downspouts on all buildings and divert away from confinement areas
- Maintain a grass strip – as wide as possible – around corrals, stalls or other confinement areas to serve as a filter for mud runoff
- Use suitable footing material in high-traffic areas

DISCONNECTING WATER BODIES

Where appropriate, keep pasture ponds separate from surface waters. Remove any existing drainage ditches or pipes that allow water from ponds or lakes on the land to enter canals or roadways. In other words, do not create drainage links between pasture ponds and nearby canals and other waterways, as well as to roadway swales or paved areas. But before disconnecting water bodies, contact your local drainage district or regulatory agency to determine that disconnecting the water body will not conflict with specifications or requirements from local regulations, permits or easements.

STORMWATER MANAGEMENT

A healthy wetland area reduces erosion and provides a good habitat for fish and wildlife as well as reducing pollution by filtering out unwanted nutrients and chemicals. Grazing in areas adjacent to canals, ponds and wetlands can destroy natural vegetation. Some suggested alternatives for maintaining healthy buffers are:

- Where feasible, construct berms on your property to retain stormwater and prevent runoff
- Create buffer strips of vegetation along canals and roadways on your property to filter run off and prevent soil erosion
- Maintain your property's existing slopes away from canals and roadways
- When managing your farm or landscaping your property, remember that you should never change the grading of slopes that drain into canals, waterways or lakes. The grading is based on state and local minimum requirements and was designed by a State of Florida Registered Professional Engineer to meet water quantity and quality criteria
- Properly maintain water retention areas on your property:
  - Check your permit and or easement and follow specifications
  - Leave a "ring of responsibility" around pasture ponds [retention areas] by not fertilizing close to the water. This untreated area will serve as a natural buffer zone
  - Remove exotic and invasive vegetation from retention areas
  - These species can produce dense growth and decaying matter that threaten water quality
- Create drainage ditches to channel water from any catchment areas away from canals and roadways and to a water retention area