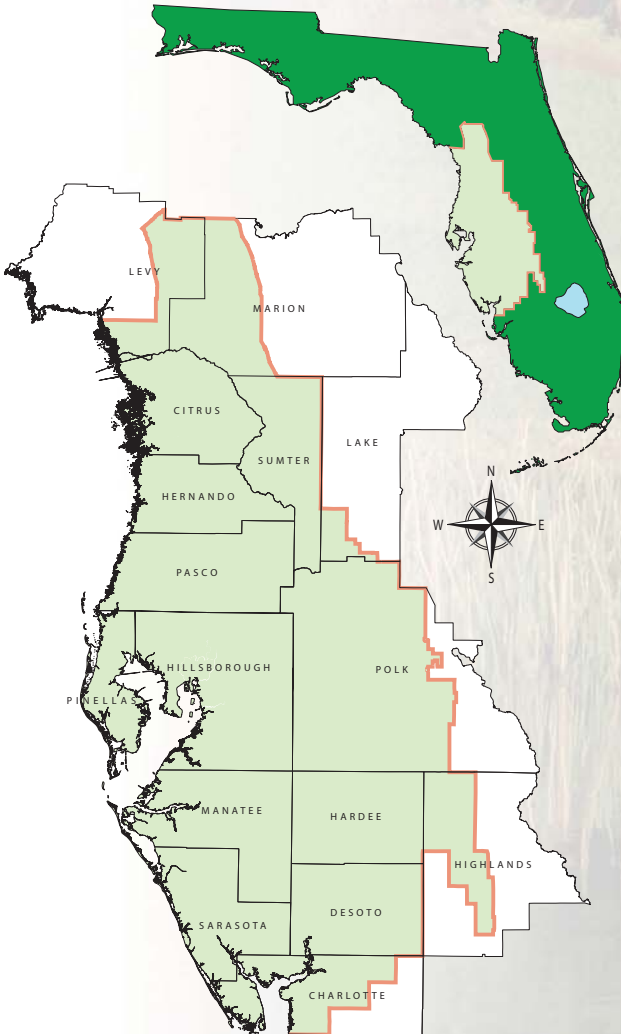


Stormwater Systems *in Your Neighborhood*

*Maintaining,
landscaping and
improving
stormwater ponds*



The Southwest Florida Water Management District (District) is the agency responsible for managing and protecting your water resources. The District's mission is to maintain the balance between the water needs of current and future users, as well as to protect and maintain natural systems.



Southwest Florida Water Management District



Stormwater Systems

Simply put, a stormwater system is a tool for managing the runoff from rainfall. When rainwater lands on rooftops, parking lots, streets, driveways and other surfaces that water cannot go through, the runoff (called stormwater runoff) flows into grates, swales or ditches located around your neighborhood. These send the water into your stormwater pond. A stormwater pond is specifically designed to help prevent flooding and remove pollutants from the water before it can drain into the ground water — our main source of drinking water — or into streams, rivers, lakes, wetlands, estuaries or the gulf. Your stormwater pond might be located in your backyard, down the street or on nearby property.



Without a stormwater system, the stormwater runoff usually flows into the nearest water body without treatment. The runoff carries pollutants such as litter, motor oil, gasoline, fertilizers, pesticides, pet wastes, sediments and anything else that can float, dissolve or be swept away by moving water.

History of Stormwater Systems

Wetlands are Florida's original stormwater systems and once covered more than half the state.

Wetlands are extremely valuable resources because they:

- Control flooding. They do this by soaking up and retaining excess water like a giant sponge. They also slow down water flow, giving floodwaters more time to recede.
- Serve as habitat for a variety of plants and animals. Many endangered plant and animal species depend on wetlands for their survival.
- Improve water quality. Wetlands slow down the flow of water and absorb pollutants, storing them, breaking them down and in some cases even using them as nutrients.

Unfortunately, because people once misunderstood the true value of wetlands, more than one-half of our original wetlands have been drained for agriculture or filled for roads, housing developments and industrial complexes.

As development increased and more paved areas covered the land, stormwater runoff became the primary source of pollution to surface waters in Florida. In the early 1980s, the Florida Legislature passed laws requiring treatment of storm water.



How Stormwater Systems Work

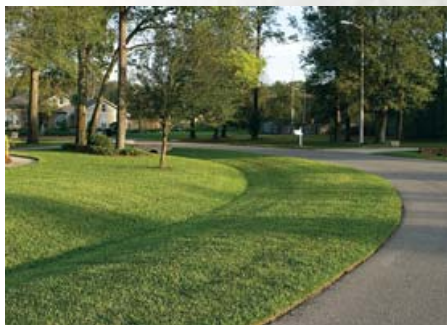
Stormwater systems come in a variety of shapes, sizes and forms, but basically there are two types, retention and detention.



Retention System

Retention System

A retention system is designed to allow water to seep through soil into the shallow groundwater aquifer. A system can be constructed or it can be a natural depression. Grass stabilizes basin slopes and filters sediments. Retention systems are constructed so that storm water percolates into the ground without direct discharge to natural surface water bodies.



Swale

A swale is a linear retention system. It is either a constructed or natural area shaped to allow water to be quickly absorbed into the ground or to allow the water to flow to other waterways. As in a shallow ditch, a swale promotes water absorption through soils. Swales hold water during and immediately after a storm, but they are generally dry.



Detention System

Detention System

Detention systems (ponds) are the most recognizable stormwater system. They are designed to allow material to settle and be absorbed. After a storm, water slowly drains from the pond through a pipe in the “outflow”





structure. Part of the pond, known as the permanent pool, is always below the level of the drain structure. Constructed detention systems (ponds) are required to have aquatic plants around the perimeter to help filter sediment in stormwater runoff. The owner of the pond should refer to the permit for exact specifications.

Because retention and detention systems were designed to imitate natural processes, individuals may have stormwater systems on or near their property without realizing it. What appears to be a natural indentation in the backyard may have been designed as a stormwater swale. What looks like a wild patch of shrubbery may be an important vegetative buffer around a pond.

Responsibility for Stormwater Systems

In Florida, the responsibility for permitting most stormwater systems rests with the water management districts. After developers complete construction of permitted systems in residential areas, the permit and the legal responsibility for maintaining these systems are typically passed on to a homeowners, condominium owners or property owners association.

It is then that the upkeep and maintenance of the system becomes the responsibility of the association, not the developers or the water management district. The association is responsible for labor and expenses for keeping the system functional. This responsibility applies to every homeowner and property owner in the neighborhood, even if they do not live adjacent to a detention or retention system, as everyone's storm water flows into the system.

Copies of your association's operation and maintenance permit, plans and maintenance guidelines were provided at the time of the transfer to your association's representative. For more specific information about your pond, you may call the Southwest Florida Water Management District's stormwater permitting staff. Contact information can be found on page 19 of this booklet.



A Great Egret with long legs and a long neck stands in a pond. The background is filled with green lily pads. The bird's reflection is visible in the water.

Preventing Water Pollution

You can help conserve and improve the quality of water that enters the stormwater ponds and promote a healthy environment within your community by following the advice provided below.

Stormwater System Maintenance

If properly maintained, stormwater ponds help prevent flooding and filter out pollutants before they reach streams, rivers, lakes, wetlands, ground water, estuaries and, ultimately, the gulf. Following are a few basic maintenance guidelines that can help keep your stormwater system functioning properly:

- Clear or clean inflow/outflow structures.
- Remove nuisance and excess vegetation.
- Repair eroded slopes.
- Clean up trash and yard waste in your yard and gutters and around storm drains.

Florida-Friendly Landscaping


- Apply Florida-friendly landscaping principles to your landscape. A Florida-friendly yard can conserve water and reduce pollution of water resources. By knowing your plants' soils and water needs, you can dramatically reduce the amount of water used for irrigation, chemicals used for pest control and fertilizers used for growth. Information on Florida-friendly landscaping can be found on the District's web site, WaterMatters.org, or on the University of Florida's web site, FloridaYards.org.

- Plant trees around the perimeter of a stormwater pond to help shade the area, absorb nutrients and lower the water table.
- Plant a buffer zone (minimum of ten feet) of low-maintenance plants between your lawn and shoreline to absorb nutrients and provide wildlife habitat.

Chemical Use on Landscape

- Use nontoxic chemical alternatives whenever possible and pull weeds by hand.
- Avoid overuse of fertilizers, especially near the water's edge. Rain and lawn watering can wash excess fertilizer into water bodies where excess nutrients cause algal blooms (green pond scum) and undesirable weed growth. The University of Florida's Institute of Food and Agricultural Sciences recommends using fertilizers with a high percentage of slow-release nitrogen. The higher percentage of slow-release, the less chance of leaching into Florida's waterways. Proper fertilizer application can result in less mowing, less thatch buildup, less irrigation, fewer nutrients washing into ponds and waterways, and fewer insect and disease problems.
- Use only herbicides labeled for aquatic use when maintaining stormwater ponds. Herbicides not labeled for aquatic use may harm fish and other aquatic life, and their application to aquatic sites is prohibited by state and federal law.
- Wait until grass is actively growing to apply fertilizer. Fertilizer applied when grass is not growing wastes your money and time and can contaminate your water.



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- If fertilizer is spilled on the lawn or on the sidewalk or pavement, sweep it up as thoroughly as possible and put it back in the bag.

Additional Tips for Preventing Water Pollution

- Never dump oils and other chemicals from your home directly into stormwater drains, which are direct conduits to your stormwater pond or natural waterway. Contact your local government's waste management department for a list of disposal facilities.
- Keep vehicles tuned up and in good operating condition. Check for drips and repair leaks immediately to keep nuisance oils off pavement.
- Buy low- or no-phosphate cleaners and detergents. Phosphates act as a fertilizer and increase algae and aquatic weeds in stormwater ponds. When these plants die, they rob the water of oxygen and fish may die.
- Wash your vehicles, bicycles and home equipment on the lawn, where soapy water can't quickly run toward the nearest storm drain, picking up other pollutants as it goes. Wash your car with nontoxic, low-phosphate soap and use water sparingly.
- Sweep walks and driveways instead of hosing them down.
- Clean up pet wastes from which nutrients and bacteria can enter the stormwater drains and contaminate the water system.
- Avoid cutting your lawn too short, which reduces its effectiveness in capturing runoff. Leaving it taller will help it to survive dry periods.

- Never deposit lawn clippings in water bodies and storm drains as this can increase oxygen demand in the water, which can significantly harm fish populations. Use lawn clippings for mulch or compost.
- Do not fill stormwater ponds, swales and retention systems because this can cause flooding and endanger waterways. Stormwater systems are designed and constructed to an appropriate size. Any reduction in treatment volume will interfere with the pond's ability to hold stormwater runoff.
- Changing the elevation of large pieces of property can have drastic impacts on where storm water flows. Consult the stipulations of your neighborhood's permit before any construction.



Aquascaping Your Stormwater Pond

Aquascaping is simply landscaping the shoreline of ponds with aquatic and wetland plants. Aquascaped ponds and lakes have fewer problems than those without aquascaping. Desirable vegetation will filter polluted runoff, trap sediments, control the growth of nuisance vegetation and help make the pond visually pleasing. Aquatic plants pump oxygen into the water and create habitats by providing cover and nurseries for fish and other organisms. More importantly, vegetated shorelines help improve water quality.

Choose desirable, low-maintenance plants to aquascape your stormwater pond. Not all plants are good for aquascaping, and the removal of prohibited or unwanted plants can be difficult. Associations are advised to contact a reputable pond management company for most vegetation management programs.

The next few pages contain a brief overview of some desirable, high-maintenance and prohibited aquatic plants.



Plants Desirable for Aquascaping

Aquascaping is landscaping in and around your pond. These plants are preferred for your “aquatic garden” as they grow slowly and require little maintenance.

American white waterlily... *Nymphaea odorata*

Arrowhead..... *Sagittaria latifolia*

Blue flag iris or Dixie iris ... *Iris hexagona*

Bog buttons *Lachnocaulon* spp.

Bur-marigold..... *Bidens laevis*

Duck potato..... *Sagittaria lancifolia*

Giant bulrush *Scirpus californicus*

Golden canna *Canna flaccida*

Gulf Coast spikerush..... *Eleocharis cellulosa*

Lemon bacopa..... *Bacopa caroliniana*

Lizard’s tail..... *Saururus cernuus*



Bur-marigold
Bidens laevis

Photo: Vic Ramey
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Pickerelweed
Pontederia cordata

Photo: A. Murray
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Maidencane	<i>Panicum hemitomon</i>
Pickernelweed	<i>Pontederia cordata</i>
Pipewort	<i>Eriocaulon</i> spp.
Soft rush	<i>Juncus effusus</i>
Softstem bulrush	<i>Scirpus</i> <i>tabernaemontani</i>
Spikerush	<i>Eleocharis</i> sp.
St. John's wort.....	<i>Hypericum brachy</i> <i>phylum</i>
Swamp lily	<i>Crinum americanum</i>
Tapegrass or eelgrass	<i>Vallisneria americana</i>
Threadleaf arrowhead.....	<i>Sagittaria filiformis</i>



Golden canna
Canna flaccida

Photo: A. Murray
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Spikerush
Eleocharis sp.

Photo: Photographer not listed
© date not listed Univ. Florida

High-Maintenance Aquatic Plants

These plants may or may not be native, but they grow quickly and may become weedy. The list below is **not recommended**.

Bladderwort..... *Utricularia* spp.

Cattail *Typha* sp.

Coontail..... *Ceratophyllum
demersum*

Duckweed..... *Spirodela polyrhiza*

Mosquito fern..... *Azolla* sp.

Paragrass..... *Urochloa mutica*

Pennywort..... *Hydrocotyle* sp.

Sedge..... *Cyperus* sp.



Cattail
Typha sp.

Photo: Kerry Dressler
1996

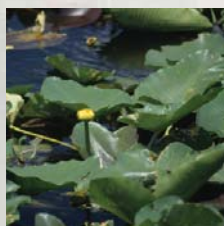


Duckweed
Spirodela polyrhiza

Photo: Vic Ramey
© 2000 Univ. Florida



- Smartweed *Polygonum* spp.
- Southern naiad *Najas guadalupensis*
- Spatterdock *Nuphar advena*
- Torpedograss *Panicum repens*
- Water fern *Salvinia minima*
- Wild taro *Colocasia esculenta*



Spatterdock
Nuphar advena

Photo: Vic Ramey
© 2005 Univ. Florida



Wild taro
Colocasia esculenta

Photo: Vic Ramey
© 2005 Univ. Florida

Prohibited Aquatic Plants

Prohibited plants are aggressive weeds that are restricted by state or federal law. These invasive plants may not be possessed, transported, cultivated or imported without a special permit.

Alligatorweed *Alternanthera philoxeroides*

Aquarium watermoss..... *Salvinia molesta*

Eurasian watermilfoil..... *Myriophyllum spicatum*

Hydrilla..... *Hydrilla verticillata*

Water spinach..... *Ipomoea aquatica*

Waterhyacinth *Eichhornia crassipes*

Waterlettuce..... *Pistia stratiotes*



Hydrilla
Hydrilla verticillata

Photo: Vic Ramey
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Waterhyacinth
Eichhornia crassipes

Photo: A. Murray
© 2002 Univ. Florida



Contact Information

Your stormwater pond has been designed and constructed to meet specific criteria to ensure that it functions properly. For more information about stormwater treatment systems, call your closest Southwest Florida Water Management District office.

Brooksville Headquarters

2379 Broad Street

Brooksville, FL 34604-6899

(352) 796-7211 • 1-800-423-1476 (FL only)

This office handles permits for Hernando, Pasco, Citrus, Lake, Levy, Marion and Sumter counties.

Bartow Service Office

170 Century Boulevard

Bartow, FL 33830-7700

(863) 534-1448 • 1-800-492-7862 (FL only)

This office handles permits for Polk, Highlands and Hardee counties.

Sarasota Service Office

6750 Fruitville Road

Sarasota, FL 34240-9711

(941) 377-3722 • 1-800-320-3503 (FL only)

This office handles permits for Sarasota, Manatee, Charlotte and DeSoto counties.

Tampa Service Office

7601 Highway 301 North

Tampa, FL 33637-6759

(813) 985-7481 • 1-800-836-0797 (FL only)

This office handles permits for Hillsborough and Pinellas counties.

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This information will be made available in accessible formats upon request.
Please contact the Communications Department at (352) 796-7211 or
1-800-423-1476 (FL only), ext. 4757; TDD only at 1-800-231-6103 (FL only).

BALANCING WATER NEEDS ... PROTECTING WATER RESOURCES

Southwest Florida
Water Management District



WATERMATTERS.ORG • 1-800-423-1476

For more information, please contact:
Southwest Florida Water Management District
2379 Broad Street
Brooksville, FL 34604-6899
(352) 796-7211
1-800-423-1476 (FL only)

*Some text excerpted from the
Neighborhood Guide to Stormwater Systems.
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