The Resource

A Publication of the City of North Augusta
Stormwater Management Department

Rain Gardens in your Landscape

Springtime is here and maybe you are considering a garden. Why not consider a rain garden? Rain gardens are unique little wetland gardens that help to protect local streams. These gardens can contain the lush plants that you often see in a wetland. A rain garden can collect rainwater from downspouts, driveways, or other drainage features in your yard to provide water to your garden instead of sending it to the stormdrain and creeks in North Augusta. Reducing stormwater runoff is the key feature of a rain garden but an added bonus is attracting butterflies, dragonflies, frogs, hummingbirds, turtles and many birds to your landscape. These visitors can add a delight to your outdoor experience and can be viewed from a nearby window so that you can enjoy them at anytime.

Benefits of creating a rain garden are to:

- Reduce runoff from your property
- Filter pollutants from stormwater
- Recharge local groundwater
- Conserve and use rainwater
- Improve water quality
- Protect rivers and streams
- Remove standing water in your yard
- Reduce mosquito breeding
- Increase beneficial insects that eliminate pest insects
- Reduce potential of home flooding
- Create habitat for birds & butterflies
- Reduce garden maintenance
- Enhance sidewalk appeal
- Increase garden enjoyment
- Reduce runoff of fertilizers

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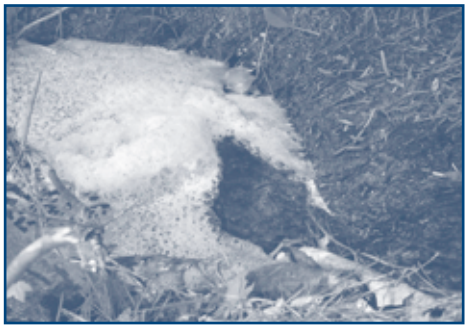
www.biodiversityproject.org

A newly installed residential rain garden.

Foam in the creek, is it pollution?



Natural foam in a North Augusta stream

At certain times of the year, strange looking foam accumulates against logs, rocks, or the banks in the Savannah River and local streams. Sometimes the foam can appear to cover the entire width of the rapids. It can also form large masses against fallen logs or bends in a stream. The appearance of this foam can be quite alarming to see. While it may look like there has been an impact from a pollutant, commonly it is just a natural occurrence.

Foaming occurs due to changes in the water surface tension and the introduction of air. There is a slight tension on the surface of water. On summer days you can actually see this tension by observing the insects in a pond or puddles. Water spiders, mosquitoes and certain water beetles actually use the surface tension to walk or glide on the water surface. Certain molecules can interact with the water to reduce this tension. These molecules are called surface active agents or "surfactants".

Most household cleaning products and soaps contain man-made or "synthetic" surfactants. When mixed with water and air, synthetic surfactants create foamy bubbles like in soap. In addition to these synthetic surfactants, there are also organic or "natural" surfactants that occur in the environment. These surfactants are released from algae and plants when they die and decompose. Like soaps, natural surfactants mixed with air can create a lot of foam, especially after rain storms. The air is introduced to the water from the turbulence created when streams flow over rocks, logs, or down steep jagged slopes.

Naturally created foams have a different texture and odor than those from synthetic surfactant based foams. Synthetic foams have sweet or perfumed smells and generally are only found close to where it has been put into the stream, for example a washing machine drain pipe. Natural foams begin white and then become brownish in color. When touched, the foam dissipates quickly and does not leave a soapy feel on your skin. The smell of the foam is earthy like dirt or could have a faint fishy odor. With further mixing, natural

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from the Rain Garden Network

Steps to Building a Rain Garden

1. Find a location
Place the garden at least 10 feet away from your home in full or partial sun. Try to choose a naturally occurring low spot in your yard. If you don't have a natural low spot, position the garden where your downspouts or drain device can be used to direct flow into it. **Do not locate the garden over or within 25 feet of a septic tank drain field.** Test to see if the area has good soil that drains well by digging a small hole about 8-10 inches deep, fill with water, and see how long it takes to absorb the water. If it takes longer than a day, you can consider building a wetland garden or choose an alternate location.

2. Measure drainage area
If you are capturing water from a roof or other hard surface, you will need to measure the specific drainage area of that surface and multiply by the number associated with the type of soil you have. For sandy soil multiply by 20%, for loam use 30-35% and for clay use 45-60%. These numbers are somewhat inflated but they will ensure the garden holds as much water as possible.

3. Create a design
First plan your garden on paper outlining the size and shape of the garden and the location. This will allow you to create the best appearance possible for your rain garden.

4. Choose your plants
Native plants are best for the rain garden because they are adapted for our weather conditions. Choose plants (flowers and grasses) that will grow well in both wet and dry conditions. Plants that don't like wet weather or those that don't like dry conditions won't work well in a rain garden. If you look at most native plants in our community, they tolerate either and grow fine year after year.

5. Build the rain garden.
Lay out the shape and boundary of the garden based on your design. Gently dig a shallow channel with a slope toward the garden for rainwater to enter (from the downspouts or a natural drainage area). Remove the turf grass and dig out approximately 4-8 inches of soil. Use the soil to build a berm around the garden edge (opposite side of inflow) so that the water stays within the rain garden and does not flow straight through it. Amend the remaining soil in the garden with 2"-3" of compost. Mix in well.

6. Plant the flowers and grasses
Place your plants in the approximate positions you want. Step back and look at the garden and the design and adjust if needed. Plants should be placed about 1 foot apart from each other. Once you are satisfied you can start planting the flowers and grasses using a hand trowel. Place stones, matting and seed, or sod in the channel leading to the rain garden to prevent erosion.

7. Mulch the garden
Use coarse, fibrous, shredded woodchips that won't float or blow away. Apply the mulch about 2-3 inches deep. This will help to keep the moisture in and the weeds out.

8. Water and arrange downspouts
Arrange your downspouts to flow toward the rain garden by connecting the spout to black plastic pipe. If this pipe is a long distance, bury it at an angle to flow toward the channel to the rain garden. After you've planted the garden, water every other day for 2 weeks until your rain garden plants appear healthy and strong. Good water techniques and maintenance is the key to a quality rain garden.

Rain Gardens

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All over the country residents, civic groups, businesses and gardening clubs are building rain gardens to help be a part of the solution to stormwater pollution and to conserve our precious resource. Recent droughts have brought attention to the need to use rainwater where possible through rain gardens, rain barrels, or other collection devices. These are all great ways to put rainwater to use instead of watching it flow down the nearest drain.

Planning is important to a successful rain garden project. There are many ways to find information on the type of plants, soils, and best locations to put a rain garden. Several good rain garden sites are on the internet and to make them easy to find, we have put links to them on our stormwater webpage at www.northaugusta.net. You will find great information and tools to get started including photographs of rain gardens that are springing up all over the country.

Reminder

Soil Testing for $6.00

Over fertilization is one of the most common mistakes homeowners make that impacts our streams. Tests show that our city streams contain excess amounts of nitrogen and phosphorus (i.e. fertilizer). If you have not done so already, it is a good time to get your soil tested to determine if and how much fertilizer you may need to carry your lawn through the summer months. Soil test kits are available from Clemson Extension in Aiken and only cost $6.00 to run (less than a bag of fertilizer). Call (803) 649-6297 to request a free soil test kit in the mail. Once you have your soil in the bag, drop it and the $6.00 off at Country Boy Farm & Garden at Ascauga Lake Road. Your soil test analysis will be in the mail to you shortly after. **Always have a soil test done if you intend to apply fertilizer! If you have a professional lawn maintenance person, request they have it done or provide them your results if you do it yourself.**

Alternative to Fertilizing your Soil

Did you know that if you leave your lawn clippings in place once cut that you may never have to fertilize it? Research at Clemson University has proven that lawn clippings contain about 4 percent nitrogen, 1/2-1 percent phosphorus, 2-3 percent potassium, and smaller amounts of other essential plant nutrients - basically a 4-1-3 fertilizer. When left on the lawn, these nutrients are eventually returned to the soil. Learn everything you need to know about your lawn at Clemson Home Garden Information Center located on the web at: http://hgic.clemson.edu. In addition to this, proper mowing heights and intervals will not only help to fertilize your lawn but also will reduce the amount of water you will need to keep your lawn healthy.

(Clemson Home & Garden Information Network)

Lawn Type	Mower Setting	Mow at or before
Common Bermuda	1"	1½"
Hybrid Bermuda	1"	1½"
Zoysia	1"	1½"
Carpet Grass	1"	2¼"
Centipede	1"	3¾"
St. Augustine	3"	4½"
Tall Fescue	3"	4½"

Cub Scouts Install Wood Duck Nest Boxes

Early on a cool March morning, cub scout den 8 from pack 7 sponsored by Grace United Methodist church, headed out to Brick Pond Park to install four nest boxes that they built for a conservation project within the wetland. Wood ducks easily adapt to man-made nest boxes. Installing nest boxes is an enjoyable and educational experience for anyone interested in a hands-on waterfowl conservation project. The wood duck is the only member of the "puddle" or surface-feeding ducks to nest in trees. Wood ducks prefer natural hollows in tree trunks or large branches close to or over water if available. The nest boxes are located in the shallow, permanent water of the wetland where they will have a good mix of open water and emergent plant cover for the brood. An adequate amount of wetland vegetation will provide both escape cover and habitat where ducklings will be able to forage for aquatic insects necessary for growth and development.

Cub Scout Den 8 with new Duck Nest Box

The female wood ducks will lay 14 to 16 dull white eggs on wood chips in the nest box. After egg laying has begun, she supplements the nest material with down pulled from her breast. Incubation requires 28 to 31 days. The male accompanies the female to the nesting site each day and waits nearby for her while she lays each egg. Soon after incubation begins, he abandons her. A collar is fitted on each nest box to protect the eggs from predators during the incubation period. About 24 hours after the eggs hatch, the female leaves the nest hole and from the ground or the water beneath the nest, begins to call softly to the ducklings. Within a few minutes, the young climb up to the hole and jump out. Within a few minutes all are out and the female leads them to water or, if the nest hole is over water, swims her brood to brushy cover.

The United States Fish and Wildlife Service and various state game departments have initiated nest-box programs that have demonstrated that wood duck numbers can be increased through the erection of properly constructed boxes. The city appreciates Cub Scout den 8's participation and conservation within Brick Pond Park. Thanks to those people who generously donated supplies and or services for this project: International Paper, Silver Sheet Metal, Dennis Villemain, Dr. John Smith, Roy Kibler and David Caddell. Special thanks to each of the members and parents of Cub Scout den 8. Pictured at one of the recently placed duck boxes are Jack Harris, Briggs Smith, Sam Baker, Andrew Smith, Sam Villemain, Mark Meyer, Alex Madsen, William Squires, Jimmy Wilson, and Andrew May. The duck nest boxes will provide a safe place for wood ducks for years to come in our new city park.

Augusta-Aiken Audubon Society Assists in Bird Identification

During the construction phase of the new North Augusta Brick Pond Park near the riverfront, the Augusta-Aiken Chapter of the Audubon Society have been conducting bird walks to identify what species are visiting the ponds. Since the beginning of the project and their site visits, 87 species of birds have been seen at the wetland park. To learn more about the species identified in the wetland, visit our Brick Pond Park Bird List on the web at www.northaugusta.net. We would like to express our appreciation to the Augusta-Aiken Audubon Chapter for their participation within the park. If you are interested in joining them on a bird walk please email us at stormwater@northaugusta.net or call (803) 441-4246 to find out how.

Park Construction Update

The North Augusta Brick Pond park is under construction on the riverfront just below the new North Augusta Municipal Center. Much of the work to construct the treatment cells in the wetland is complete. Currently crews are working to develop the trails and walkways in the park that will connect it to the North Augusta Greeneway Trail. Once the park is complete, it will be a wonderful place for city residents that enjoy basking turtles, wetland birds and insects, and lush wetland plants. Stay posted for the grand opening of the park in early 2009. To learn more about the park, visit our stormwater website at www.northaugusta.net.

Species Profile:
Great Egret
Ardea alba

The Great Egret, *Ardea alba* is a large graceful bird commonly seen near ponds throughout North Augusta and across much of the world. The Great Egret is a tall extremely slender bird with a long neck which stands about three feet tall and has a wingspan of about five feet. The yellow bill and eyes along with its long black legs help to distinguish this species from other white wading birds. If seen in flight, the neck is pulled back in an s-curve. Male and female Great Egrets look alike and young birds look very similar to the adults.

During breeding season, the bird transforms itself with long white delicate plume feathers that it will display proudly to its potential mate. The area below the bird's eyes to its bill is called lores (tiny feathers) and is yellow in non-breeding times. The lores turn from yellow to green during breeding season, changing its appearance dramatically. Plume hunters in the late 1800s and early 1900s reduced North American populations of the Great Egret by more than 95 percent. The populations recovered after the birds were protected by law. No population is considered threatened, but the species is vulnerable to the loss of wetlands.

Great Egrets feed alone in the early morning or evening in a variety of wetlands, including marshes, swamps, streams, rivers, ponds, lakes, tide flats, canals, and flooded fields. The bird walks slowly through the shallow edges and when it spots food, it stands with its neck straight up and then stabs its prey with quick lunge of its bill. These birds routinely eat fish, bugs, frogs, snakes, and small mammals.

The Great Egret nests in colonies with other species including other herons and ibis. They nest in shrubs and trees over water or on islands. The male Great Egret chooses a site and builds a platform nest of twigs and limbs before he chooses a mate. Once a mate is chosen, three to five pale blue eggs are laid within the nest. The male and female both participate in raising the young egret chicks. The Great Egret parents will aggressively defend their nesting territory. The longevity record for a wild Great Egret is nearly 23 years.

Interestingly, the Great Egret is the symbol of the National Audubon Society, one of the oldest environmental organizations in North America. Audubon was founded to protect birds from being killed for their feathers. Great Egrets in North Augusta are frequently seen in the wetlands along the riverfront or in local ponds and streams nearby. To learn more about Great Egrets, log onto www.northaugusta.net and visit the North Augusta Stormwater Department webpage links to All About Birds, Cornell University.

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Great Egret in full breeding plumage

Foam

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foam does not tend to create more foam, but stays about the same or becomes less foamy.

The most common time to see this natural foam effect in streams is during the late fall, winter or early spring after heavy rainfalls. Stormwater transports decaying vegetation from the banks of the stream through the channel creating foam. If you notice a lot of foam on the river or in the streams in North Augusta, take a closer look. You may be able to quickly determine if it is a natural foam or if it is an illegal discharge of pollutants into the watershed. If you aren't sure, contact us at (803) 441-4246 and we can take a look.

For additional information contact:

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North Augusta
South Carolina's Riverfront