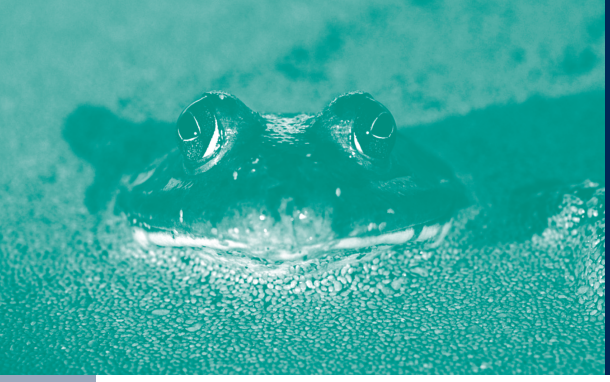


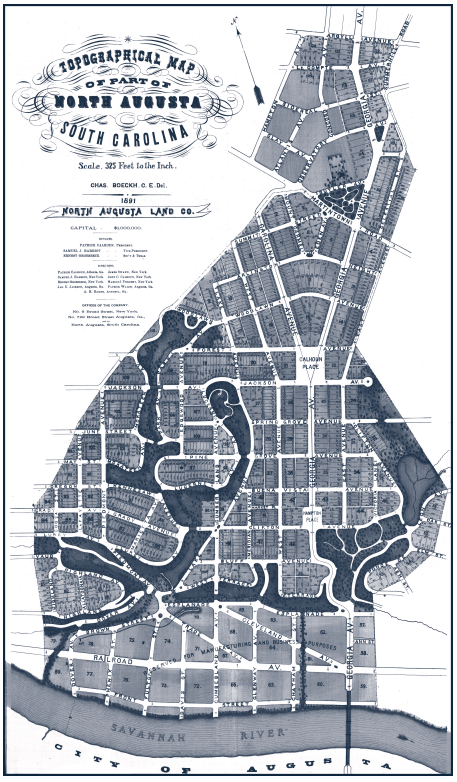
The Resource

A Publication of the City of North Augusta
Stormwater Management Department

North Augusta's Riverfront Stormwater Treatment

Long ago when the vision of North Augusta was still a dream of James U. Jackson, someone was thinking about stormwater runoff and drainage to the Savannah River. If you have ever looked at the Charles Boeckh Plan of 1891 for North Augusta, it is obvious that the engineers had water in mind. There were two main ways for stormwater and creek drainage to meander through North Augusta and find the Savannah River. One of the two still exists today. In terms of its present day location, the first one runs between Hammond's Ferry and Campbell Towne Landing neighborhoods right beyond the Greeneway Trail off of Front St. The other feature is no longer there, but it was a very large ditch that ran through Riverside Village from Brick Pond Park, under the present day SRP Park Stadium, and directly beside our beloved sycamore tree in the middle of the Sharon Jones Amphitheater to the Savannah River. This ditch may have been an easier way to drain the clay borrow pits in the early 1900's. The Charles Boeckh Plan connected many areas we would call wetlands, ponds, and streams to green spaces, parks, and preserved areas for the drainage of the town. Today, as the City's Stormwater Department we are striving to preserve areas like these to retain proper drainage in our community.

Looking back to the early 1900's, there were not many laws restricting what could be thrown into a creek or the Savannah River, if there were any regulations at all. Historically, sewage was dumped into the river without any treatment prior to the CWA. Businesses, residents, and industries would commonly dispose of trash by tossing it over a nearby hillside or in the river to float away. Part of our job as Stormwater Department staff is to regulate runoff activities, prevent pollutants from being released into waterways, and monitor the water for containments. This is part of the Illicit Discharge Detection and Elimination (IDDE) requirement described in further detail in the article on pages 2 & 3.



Regulations and requirements are a lot different in 2021 than they were in 1891. Since 2004, when you develop a piece of property in North Augusta, you are required to permanently treat the first one inch of rainfall leaving the property. This is to remove harmful pollutants like oils, grease, metals, and garbage that get captured with the stormwater. This can be achieved in several ways including, but not limited to the installation of a water quality retention/detention pond, an underground water quality proprietary unit, or a bio-infiltration swale/basin on the property, each device can catch and treat your stormwater runoff. For Riverside Village the water quality is achieved in multiple ways before the stormwater is released into the Savannah River. In the figure to the left, every dot on the riverbank indicates an underground proprietary water quality unit to trap and remove pollutants, even sediments and solids. A common type of water quality unit is a continuous deflective separation (CDS) unit. There is research supporting its removal efficiency is 80% for total suspended solids, up to 92% of oils and greases, and 100% of solid trash (2400 microns or larger) in one year of use. The great news is, there are 11 similar water quality units along North Augusta's riverfront from The Landing to Hammond's Ferry. Each one was installed as part of the regulatory requirement to improve stormwater entering the river.

(Continued on Page 2)

Our City's Stormwater Program

North Augusta's stormwater management program began in 2003. The Federal Clean Water Act (CWA) was passed in 1972 to protect our nations' waters from pollution. In the early days of the CWA, the Environmental Protection Agency (EPA) used it to focus on polluted wastewater from industries and communities that was piped into waterways. This is called point source pollution because you can plainly point to the specific location of the pollution.

In the 1980's, non-point source pollution became the focus of the EPA. It was discovered that non-point source pollution was the remaining major source of pollution in our waterways. Unlike point-sources from pipes, stormwater washes pollutants from streets, yards, farms, construction sites, and businesses directly to streams. The stormwater travels over the land or through stormwater systems that empty directly into waterways. This non-point source pollution is called stormwater runoff.

By 2003, there were two new phases of the CWA, that created new programs to provide further protection to water quality. Phase I started in 1991 and included stormwater permitting for large populated cities (large MS4 permits). Large cities are those that have a population of 100,000 or more. In 2003, Phase II established stormwater permitting for smaller cities (small MS4 permits). North Augusta was included in Phase II and our city leaders prepared in advance for the new rules by conducting studies and holding public meetings. They wanted to educate themselves and citizens on how to meet the requirements for the small MS4 permit before it launched. The North Augusta Stormwater Management program began operating when Phase II began, but we were officially issued a small MS4 permit by South Carolina Department of Health and Environmental Control in 2006. As a department, we have six requirements that must be met "to the maximum extent practicable (MEP)" to be in compliance with its small MS4 permit.

1. Public Education and Outreach – to educate citizens about stormwater pollution, how it affects our natural resources, and ways to prevent it
2. Public Participation and Involvement – to involve citizens in the process
3. Illicit Discharge Detection and Elimination – to determine sources of pollution affecting our waterways and eliminate them
4. Construction Site Runoff Control – to insure construction sites do not allow sediment or other pollutants to run off into streams during storms and implementing permanent water quality treatment requirements
5. Post-Construction Runoff Control – to inspect and monitor new and old stormwater controls for maintenance needs or structural problems
6. Pollution Prevention and Good Housekeeping for Municipal Operations – to prevent pollutants from entering our streams from city operations

The Stormwater Management Department has worked diligently since the program was created to make sure that our community continues to meet our MS4 permit requirements. From our data described in the 2021 Water Quality Report the overall city water quality has certainly improved since the program's conception. We hold workshops and tours that average 20 people in attendance each time and the annual events reach an average of 200 participants. So more and more people within the City are aware that water quality is important. All the water we have on the planet today is all the water we will ever have on the planet. We need to protect it with persistence. For more detailed information on what we are doing to prevent pollution and how you can help, or to download the report, please visit our website at www.northaugusta.net.

(North Augusta's Riverfront Stormwater Treatment, Continued)

On top of the treatment received through these water quality units, Brick Pond Park acts as a stormwater treatment facility for over 60 acres of downtown North Augusta and adjacent properties. Water leaving the park is even treated twice since it filters through Brick Pond Park and then makes its way through an underground treatment unit before splashing into the river.

When retention ponds and underground units are installed, they provide permanent water quality for that property. With time, these features need maintenance and care to keep them functioning correctly. Most residential ponds are maintained by the City or a Homeowner's Association and commercial ponds are maintained by their owners. On the riverfront, the water quality units become the responsibility of the City for long-term maintenance. The depth of our units range from 13.5 ft. to over 26 ft. For these deep underground units, a truck with a long vacuum hose has to remove all the sediment, trash, and debris that has settled in the bottom of the unit. This has to be completed at least twice a year and sometimes more often. Maintenance can be less often in areas where the pavement is regularly swept and sandy areas have been well vegetated.

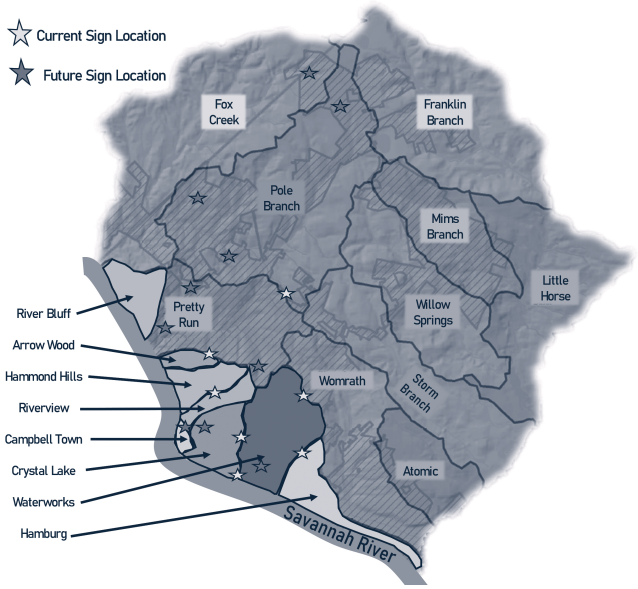
Units like these allow for good water quality practices in the middle of high density developments. They offer an underground option and do not take up as much space. The maintenance is relatively simple and the results are great. You may be seeing more and more water quality units in North Augusta, but you will have to look closely. Underground units are really good at hiding in plain sight.

Watershed Management: Pole Branch Basin

What is a watershed? A watershed, is an area of land where rainfall, snow, and water runoff drain to a common low point in the land. The water runoff collects in a creek, stream, lake, wetland, river, or the ocean. Watersheds come in all shapes and sizes and cross local, state, or national boundaries. No matter where you are, you're in a watershed. The City of North Augusta is broken into 18 smaller watersheds that we call basins. Some watersheds within the City are monitored more closely than others because of residential populations, their land size, and potential effects on our water quality. We have graded them from Priority 1 to Priority 3, with Priority 1's having the most potential to affect water quality and houses the most people. Some watersheds are monitored because they are known to have water quality problems already. Basins located within the City's source water protection area (SWPA) are critical areas in North Augusta. This means the basin is located above the drinking water intake for the City's drinking water supply. Impacts to SWPA basins could mean impacts to drinking water or the treatment process. These basins are managed with that in mind. The better we protect the basins that are in the City's SWPA, the better we are protecting our drinking water and the environment.

Pole Branch Basin is unique because it is in the SWPA and is highly developed with residential, commercial, and industrial areas. It is one of the City's largest basins that includes over 4,500 acres of drainage area. An estimated 76% of the basin has been developed to date and includes a lot of residential subdivisions, parking lots, businesses, water/sewer infrastructure and roadways. Because of the importance of this basin and its potential for impacting our drinking water, it is rated as Priority 1. We focus on Pole Branch specifically for stormwater infrastructure maintenance, and study it closely for water quality. In addition to water quality, we look at the streams or drainage ways for problems and erosion. The soils in the upper portion of the basin are not good at handling high velocity flows of stormwater. The high velocities cause banks to scour and collapse easily. To resolve this issue, the Stormwater Department is working with other City Departments to reinforce the banks of the main drainage way to prevent erosion and scouring. Additionally, during the development review process, the Stormwater Department helps ensure that the best stormwater retention and water quality features are utilized for new developments in the basin.

This August, the Stormwater Department received a grant from U. S. Department of Agriculture Natural Resources Conservation Service. It is an Emergency Watershed Protection grant to repair and strengthen the integrity of upper Pole Branch, especially, the areas damaged by severe rain events in late 2020. This grant will fund a project to fortify the main drainage channel and lower creek bed, protect water quality throughout the basin, and continue to provide proper drainage to the communities within the watershed. For more information regarding water quality in Pole Branch, visit the Stormwater page on our website and download our 2021 Water Quality Report to learn about all the basins in the City.



Fall Leaves and Grass Clippings

In the fall, leaves cover the ground, the roads, and every surface under the trees. It is super fun to jump and run through the leaves as they pile up in the yard. The unfortunate thing about leaves is the time to rake them up and get rid of them. Public Services offers yard waste picked up weekly from your yard either in a neat pile or bagged behind the curb.

They also have a yard waste cart option. It is preferred that no trash or yard waste be left on the street unless it is in a bin. If it is not in a bin, place it behind the curb, away from obstructions like power poles, vehicles, fences, and mailboxes.

In the Stormwater Department, yard waste placement relates to water quality protection. If leaves are piled in the street gutter, even a light rain will carry the leaves down the street into the nearest drain. Vegetation can easily carry pollutants such as fertilizers or insecticides. Over time the vegetation can build up to block storm pipes causing street flooding, and property or road damage. This can make a rain storm dangerous for drivers and residents.

If you use a leaf blower, please be sure to blow your clippings away from storm drains. Be aware, and clear the road after you are done mowing, edging, or weed eating by

(Continued on Back)

Species Profile: **Southeastern Myotis *(Myotis austroriparius)***

Photo: ©Michael Durham/Minden Pictures Bat Conservation International (www.batcon.org)

South Carolina is home to 14 different bat species and 7 of those species are of conservation concern according to South Carolina Department of Natural Resources and the State Wildlife Action Plan. The Southeastern Bat, also called Southeastern myotis, is a colonial bat with wooly fur that is typically gray in color. Their fur color can change with the season, so be careful when trying to identify them. They may look more red-orange in summer months and more of a murky gray color in winter months. They are smaller bats that only weigh 5 to 8 grams. That is approximately the same weight as 3 US pennies. No matter how small, these little bats are important to the ecosystem. Southeastern bats are cavity dwellers which means they roost in caves, bat boxes, culverts, abandoned buildings, rock crevices, hollow trees, and under bridges. This bat prefers to be near the water and sometimes they roost over the water. Ranging from north Florida through the coastal plains of the Carolinas, their habitat extends into Georgia west to Mississippi and north to the west side of Tennessee to southern Indiana following the Mississippi and Ohio Rivers. These are areas you may find forested swampy lands, Carolina bays, or even in floodplains. North Augusta has many acres of swampy forests near bodies of water and several river miles located within the Savannah River floodplain. It is likely you could see Southeastern bats in North Augusta, and maybe even in Brick Pond Park.

One issue that comes with the bat's watery habitats is flooding of their preferred roosting sites. In the floodplain of the Savannah, the water level will rise and fall over time. If the bats are roosting under a low bridge and the water level rises, their home may get destroyed. On the other hand, their home in the swamp in combination with their diet of insects, makes them good for pest control, specifically mosquitoes. All bats in South Carolina eat insects, are active at night, and use ultrasonic echolocation to locate prey. The sounds of echolocation are not usually audible to human ears. One characteristic that make Southeastern bats unique from other myotis bat species, is the Southeastern is the only one to give birth to more than one pup at a time. They usually have two pups at a time.

Bats across the southeast are declining. Across their habitat range the decline of Southeastern bats is recorded from 10-50% depending on the state according to data compiled by NatureServe Conservation. Exact population decline is unknown in South Carolina. Loss of habitat and deforestation are two of the main causes of population decline. A newer challenge for hibernating bats is a disease called white-nose syndrome (WNS). The effects of WNS on Southeastern bats is mostly unknown. There is hope for these bats as more people learn about them and their role in the ecosystem. More public lands are being managed or persevered for wildlife, specifically bats, including Four Holes Swamp and Congaree National Park. Next time you are out at dusk, look for these little bats flying through the air. They will likely be dancing in the sky chasing mosquitoes and other insects. (Formation from SC SWAP by SC DNR and NatureServe Conservation Explorer)

(Fall Leaves and Grass Clippings, Continued)

blowing the excess debris back above the curb for pick up. Street gutters, concrete ditches, clay-lined ditches, and other drainage areas in your yard lead to a waterway nearby and this water eventually drains into the Savannah River.

There are many benefits to leaving the grass clippings and leaves in your yard. The term grass-cycling is used to talk about leaving grass clippings in the yard to decompose on the lawn. You can do the same thing with leaves. Leaving the debris intermixed in the yard can provide nitrogen for the soil and protection for root systems. This fall, consider leaving your leaves on your yard to regenerate the soils, or use them to add some organic matter to your garden. The more we do to keep excess vegetation out of the storm drain, the better our water quality will be in North Augusta.

DATES TO REMEMBER

North Augusta City Tree Lighting Ceremony	**Nov. 30, 2021**
North Augusta Lions Club Christmas Parade	**Dec. 5, 2021**
Christmas for the Birds, Living History Park	**Dec. 6, 2021**
Third Thursday	**Dec. 16, 2021**
Earth Day*	**April 2022** ***dates TBD**
Household Hazardous Waste Day	**May 21, 2022**

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