

## GROW WITH EXTENSION

*Water, water, what to do ...?*

A rain garden can be beautifully landscaped to allow stormwater to pool and soak in. [CONTRIBUTED PHOTO]



**Amy Mead**

**S**low it down and let it sink in. Our region is experiencing record rainfall and flooding. With increased development and impermeable surfaces in the area, stormwater runoff is a growing threat to the water quality of our fragile surface waters. At the North Carolina Cooperative Extension New Hanover County center at the Arboretum, we showcase five educational models for critical urban sustainability in management of water quality and quantity in a one-stop shop setting. These include rain gardens, infiltration zone, cistern, permeable pavement, and constructed bog.

Watersheds within New Hanover County are polluted with high levels of fecal bacteria and other contaminants. The primary cause of these impairments to our watershed is stormwater runoff from impervious surfaces like parking lots, rooftops, and walkways. During rain events, stormwater can quickly run over these surfaces picking up contaminants on its way into our creeks and watersheds.

The centerpiece of our water management models is a Stormwater Infiltration Zone. Stormwater from the facility rooftops and parking lot is diverted to a sandy location with box weirs and

an 18" pipe. Previously, runoff flowed directly into nearby Bradley Creek and is now directed into the area to slowly seep into the ground. Engineered to handle 4.6" of rainfall in 24 hours, the infiltration zone managed over 10" of the day's rainfall without breaching the weir during Hurricane Dorian, avoiding any additional flow to the overburdened Bradley Creek watershed.

A rain garden is a depression in the landscape into which stormwater is channeled so that it may slowly seep back into the ground. Planted with vegetation that are adapted to a wet environment, plantings assist in the retention and filtration of water as well as preventing erosion. We have two rain gardens on the property to capture the rain from downspouts on our Education Building, providing an excellent example of a small-scale rain garden design that can be replicated both on commercial or residential property.

A cistern or rain barrel is a drum that is used to collect rainwater from roof tops. We have a large cistern capturing rainwater from the visitor center rooftop diverted through downspouts. This system is designed to handle 2" of rain over a 24-hour period. The water collected is then slowly drained off and is allowed to infiltrate into the ground into a sandy depression thus eliminating erosion and runoff into the nearby watershed, or can be used to irrigate plantings. Residential size rain barrels are available

through the local Soil and Water Conservation District <https://soilwater.nhcgov.com/programs/rain-barrels/>.

Permeable pavement is a method of paving vehicle and pedestrian pathways that enables the infiltration of stormwater. The permeable surface captures water through voids in the pavement surface and filters water through an underlying aggregate reservoir. The purpose is to control the quality and quantity of stormwater runoff while accommodating pedestrians, parking and traffic. You may view an example of permeable concrete in our parking lot.

The Arboretum also has a constructed bog area and floating plant mats in the koi pond to further illustrate stormwater management techniques. During intense rainfall events, significant flooding can occur when the ground reaches saturation or there is inadequate permeable space for the rainfall to absorb into the ground. Our center provides models of ways to manage our runoff, protect the health of Bradley Creek watershed, and prevent flooding of neighboring properties. Visit to see for yourself!

*Amy Mead is the volunteer coordinator for the N.C. Cooperative Extension Center for New Hanover County, located at the Arboretum, 6206 Oleander Drive. Reach her at [amead@nhcgov.com](mailto:amead@nhcgov.com) or 910-798-7660. The Arboretum is free and open 8 a.m. - 5 p.m. every day.*