2017 Albemarle-Pamlico Ecosystem Symposium:

North Carolina College Campus Stormwater Project

NOVEMBER 1, 2017

SOUND RIVERS

MATT BUTLER

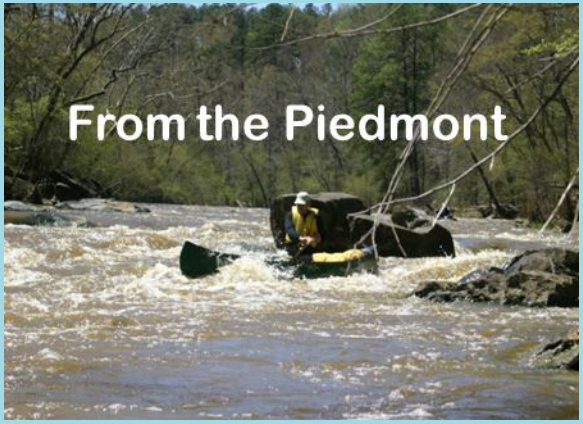
PROGRAM DIRECTOR

SOUND RIVERS
PROTECTING THE NEUSE & TAR-PAMLICO

WATERKEEPER® ALLIANCE

EarthShare North Carolina

Sound Rivers



- The Neuse & Pamlico-Tar River Foundations merged April 1, 2015 to form Sound Rivers
- Restoration focusing onnclean water and productive aquatic habitats through stormwater treatment
  - ↘ Edgecombe Community College
  - ↘ East Carolina University
  - ↘ Grants

- An overabundance of nutrient, sediment, and bacteria pollution has wreaked havoc on the natural ecosystem balance
  - High Nutrient Load
  - Sediment
  - Bacteria
- Sound Rivers mission is to protect, enhance and restore the Neuse and Tar-Pamlico River basins while promoting environmental justice

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RIVERKEEPER®

- A RIVERKEEPER® is part-time investigator, scientist, educator, lobbyist, advocate and public spokesperson.
  - Provides scientific expertise
  - Receives and investigates citizen reports of problems
  - Monitors potential pollution sources
  - Notifies agencies that enforce water quality regulations and monitors the responses to pollution events
  - Educates the public in the watershed about how we can all help protect the river

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Stormwater Initiative

- Identify properties with large impervious surfaces
- Working on retrofit activities
- Treatment of stormwater in areas with no current treatment
- Stakeholder engagement
- Educational opportunities

Pollutants

- Sediment (TSS, Turbidity)
- Nutrients (N, P)
- Metals (Cu, Pb, Hg, As, etc)
- Bacteria
- Thermal Discharge
- Pharmaceuticals, OWC, antibiotics, etc.

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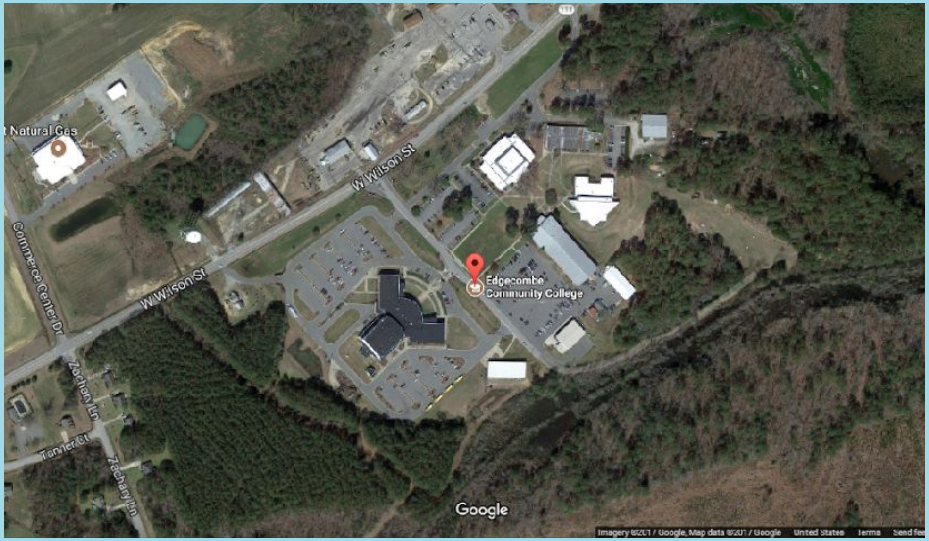
Project Implementation Tasks

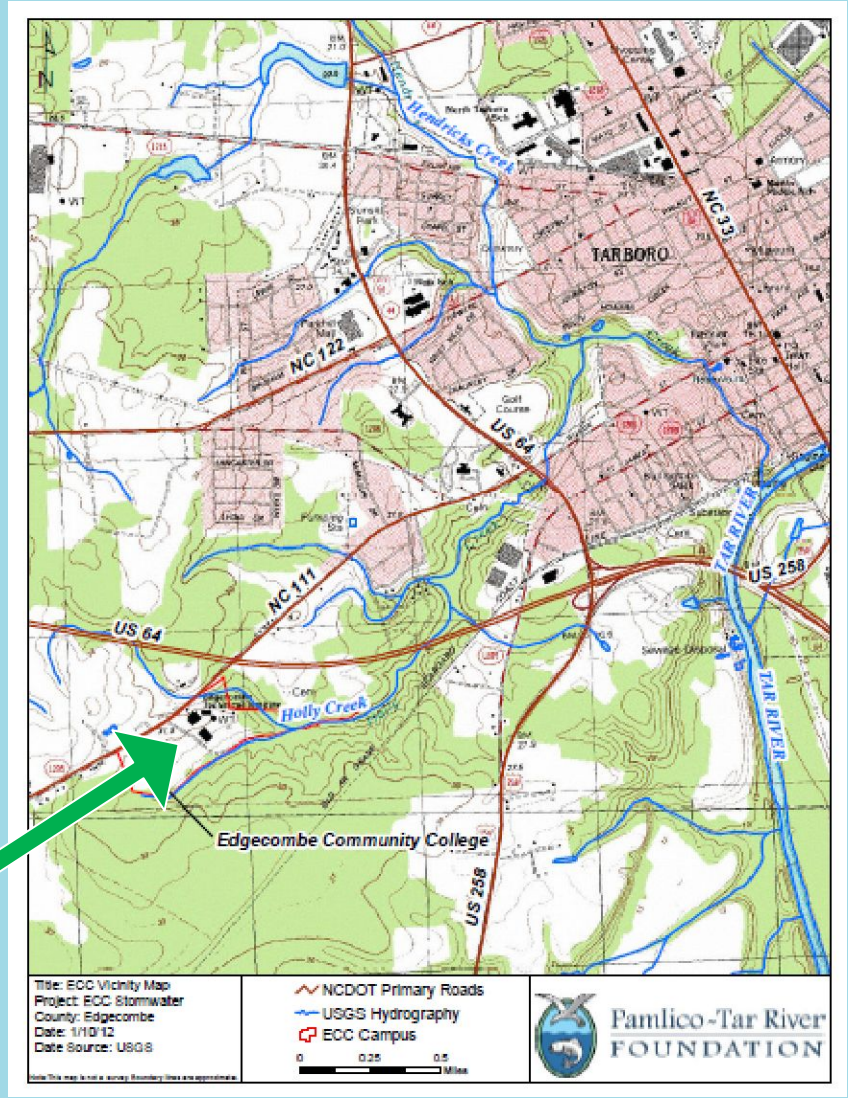
- Site Inventory and Topographic Survey
- Vegetation Inventory
- Detail Hydrologic Assessment and Analysis
- Develop Concept Plans and Alternatives
- Team Review and Discussion of Objectives
- Prepare Construction Plans and Bid Documents
- Competitively Select Experienced Contractor
- Construction Administration and Oversight
- Prepare for Post-Implementation Monitoring

Project Partners

- APNEP
- Mid-East Commission
- Community Colleges
- Private Colleges
- NC State Bio & Ag Engineering Department
  - Dr. Barbara Doll, Dr. Bill Hunt, Jonathan Page – Stormwater Engineers
- East Carolina University
  - Dr. Charles Humphrey – Water quality expert

Edgecombe Community College





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AVENS BUILDING

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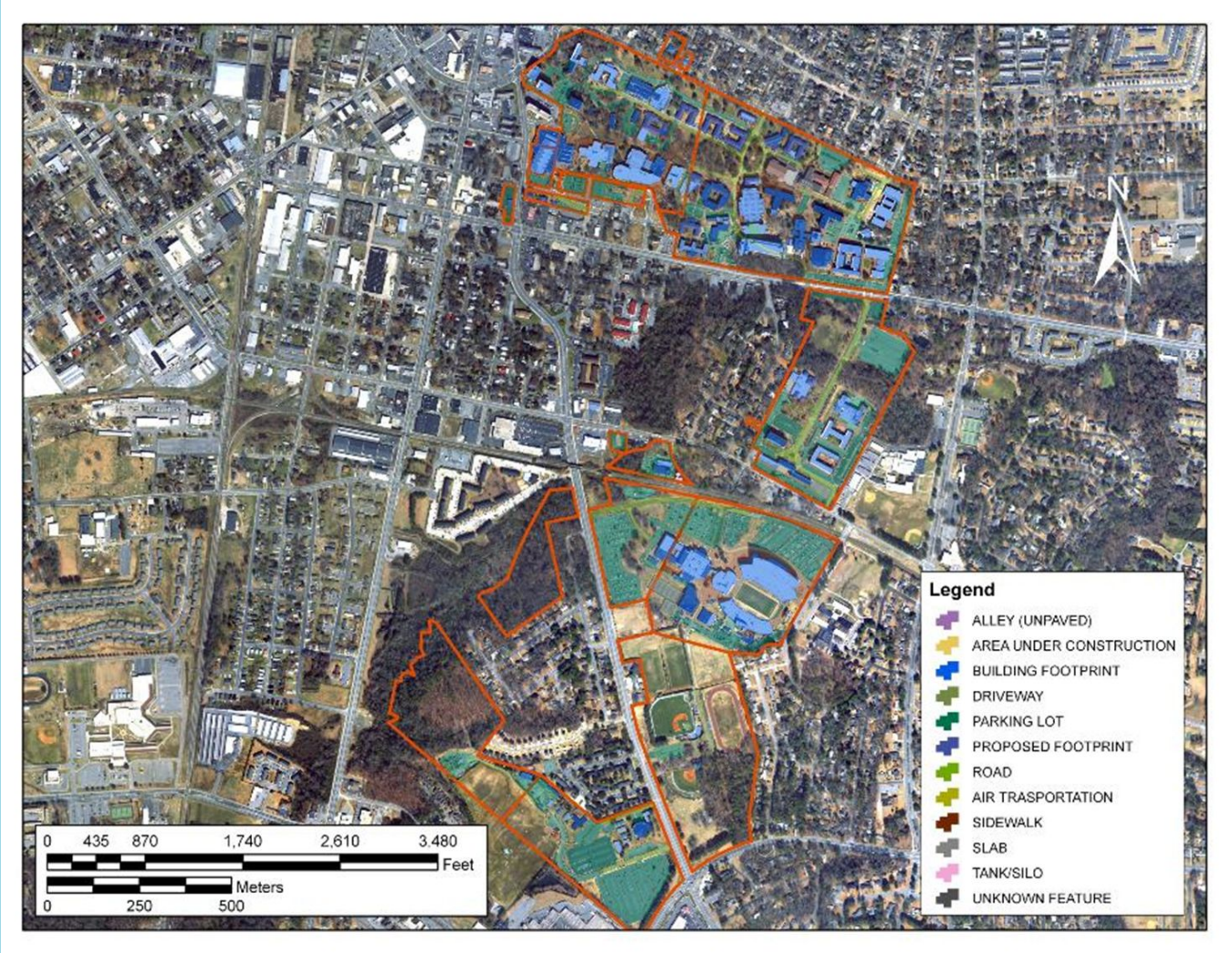
East Carolina University



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ECU Selected Sites

- 5 Sites
  - Bioretention Cells
  - Constructed Wetland
  - Tree Box/Permeable Pavement

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ECU Bioretention Cells

ECU Constructed Wetland

205j Funding

- Partnering with Mid-East Commission and NC State BAE
- Pitt Community College
- Beaufort Community College
- Washington High Scool
- PS Jones Middle School

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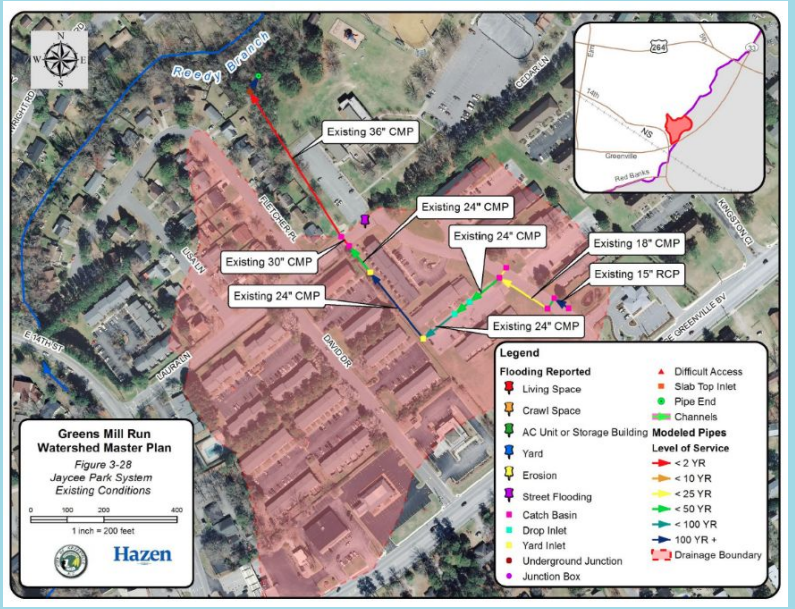
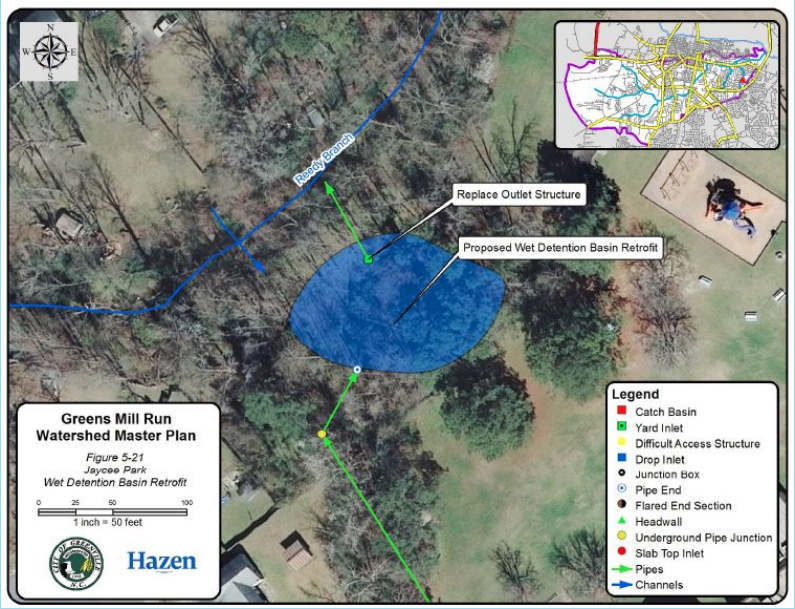
Jaycee Park Project

- Clean Water Management Trust Fund
- 319
- Jaycee Park in Greenville, NC
- Forested Stormwater Wetland





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Bosch Project

- New Bern High School
- West Craven High School
- Epiphany School

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APNEP Project

- Vance-Granville Community College
  - Franklin County Campus
  - Main Campus
  - South Campus
  - Warren County Campus
- Nash Community College
- NC Wesleyan

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Educational Opportunities

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LANDSCAPING FOR WATER QUALITY
BACKYARD RAIN GARDENS

When rain falls in a natural setting, almost all stormwater infiltrates the soils and groundwater or is taken up by vegetation. But when land is developed, the impervious cover (roads, rooftops, driveways, parking lots) increases the volume of stormwater that is not absorbed by the land and accelerates the transport of stormwater across the surface of the land. As impervious cover increases, so does the volume and velocity of contaminated surface runoff into streams, lakes and sounds. Polluted stormwater runoff is the number one reason for poor water quality in North Carolina, and more specifically, the Tar-Pamlico River Basin.

What You Can Do!

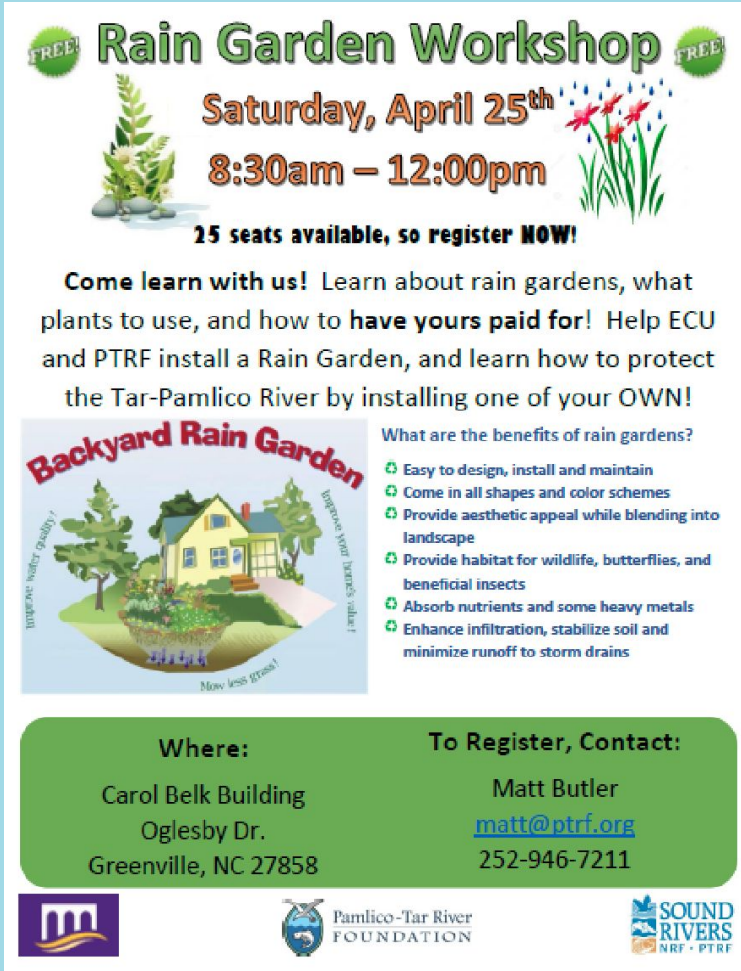
You can build a rain garden at your home! Rain gardens are landscaped depressions that receive stormwater runoff and allow the runoff to slowly infiltrate to the ground-water table. As well as intercepting stormwater runoff that could have added to potential flooding problems, the rain garden allows nature to play a role, removing some of the pollutants that would have otherwise affected downstream water quality. During infiltration, plants use excess nutrients for growth, sediment is trapped in the garden and biological and physical processes remove pollution. Rain gardens also create important habitat for bees, butterflies, birds and other wildlife.

For more information, visit: soundrivers.org/landscaping-for-clean-water/

A rain garden is nature's way of cleaning up polluted runoff

Common Plants for your Rain Garden

- Blue Flag Iris
- Swamp Milkweed
- Cardinal Flower
- Juncus
- Rush
- Lilies
- Sedges



FREE! **Rain Garden Workshop** FREE!

Saturday, April 25th

8:30am – 12:00pm

25 seats available, so register NOW!

Come learn with us! Learn about rain gardens, what plants to use, and how to **have yours paid for**! Help ECU and PTRF install a Rain Garden, and learn how to protect the Tar-Pamlico River by installing one of your OWN!

What are the benefits of rain gardens?

- Easy to design, install and maintain
- Come in all shapes and color schemes
- Provide aesthetic appeal while blending into landscape
- Provide habitat for wildlife, butterflies, and beneficial insects
- Absorb nutrients and some heavy metals
- Enhance infiltration, stabilize soil and minimize runoff to storm drains

Where:
Carol Belk Building
Oglesby Dr.
Greenville, NC 27858

To Register, Contact:
Matt Butler
matt@ptrf.org
252-946-7211

Pamlico-Tar River FOUNDATION

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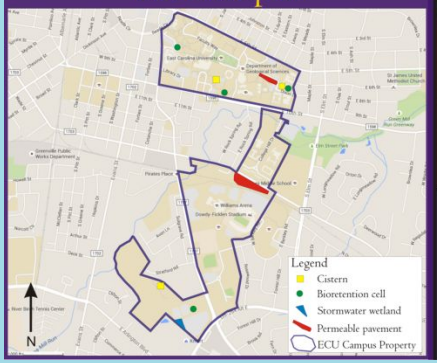
Landscaping for Water Quality

Green infrastructure is the use of manmade structures designed to reduce stormwater runoff generated from impervious surfaces, such as roofs and parking lots. These technologies utilize plants, soils, and natural processes to manage and create healthier urban environments. Examples of these on East Carolina University's campuses are rain gardens, stormwater wetlands, cisterns, and permeable pavement.

Stormwater Management on Campus



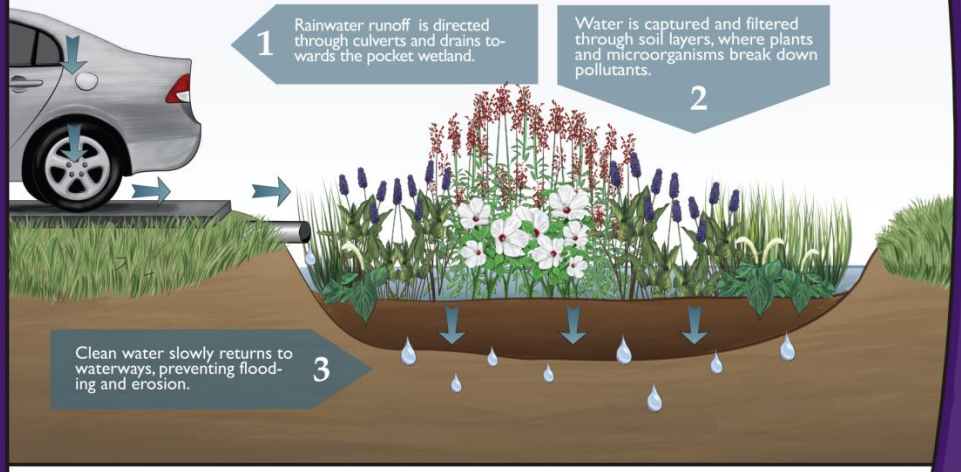
Why should we manage stormwater?

Rainwater picks up pollutants as it travels across roofs, roads and parking lots. This polluted water eventually flows into our rivers, lakes, and streams, threatening the wildlife and humans that rely on these waterways for survival.

Additionally, the high volume of fast-flowing water emitted from downspouts, gutters and pipes after a storm can lead to soil erosion and flooding if not properly managed.

Pocket wetlands and rain gardens act as a "sponge" for stormwater. Rainwater running off of roofs and parking lots is captured in these bioretention areas and slowly percolates down through the ground, allowing plants and other organisms to filter out pollutants.

As a result, the water that eventually returns to streams and rivers is cleaner and safer for both humans and wildlife.



East Carolina University

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NEUSE RIVER & PAMLICO-TAR RIVER FOUNDATIONS

NC EARTHWORKS

Can you identify all of the plants?


Swamp Milkweed
Asclepias incarnate


Hop Sedge
Carex lupulina


Spotted Joe Pye Weed
Eutrochium maculatum


Blue Flag Iris
Iris versicolor


Cardinal Flower
Lobelia cardinalis


Big Blue Lobelia
Lobelia siphilitica


Pickerel Weed
Pontederia cordata

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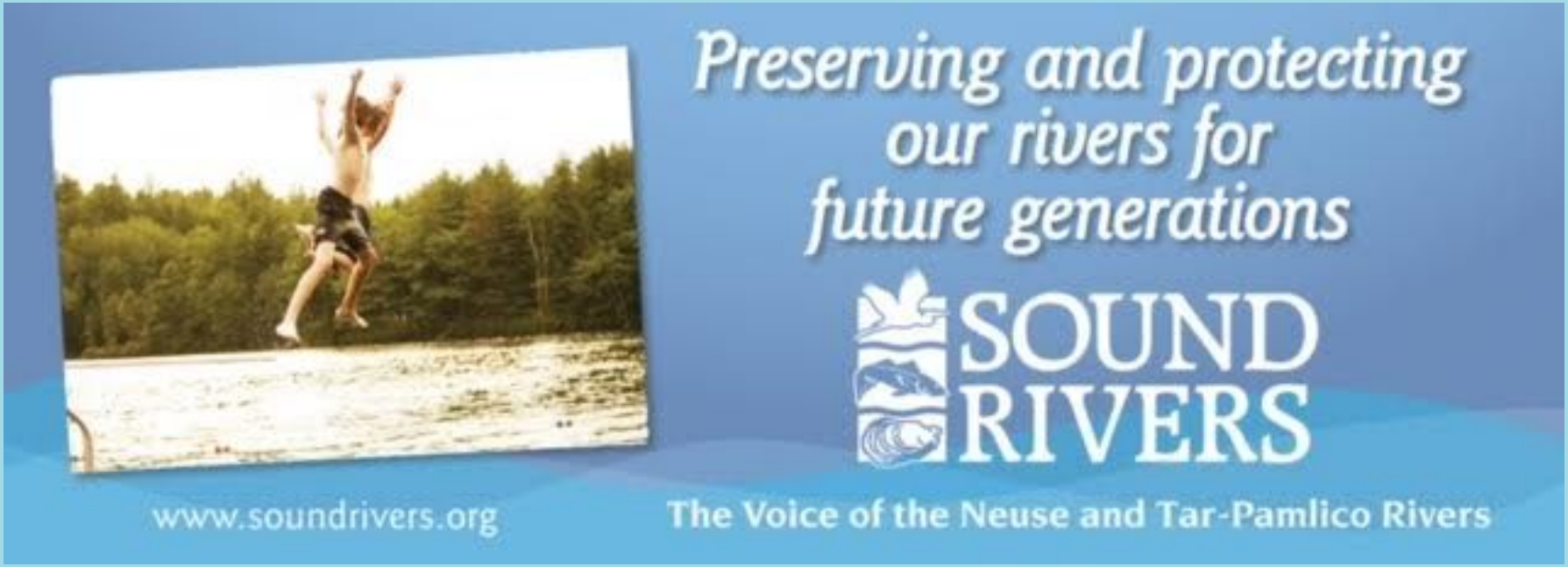
"We do not inherit the earth from our ancestors, we borrow it from our children"



Thank You!

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