Voluntary Approach to Stormwater Challenges

NC Dept. of Agriculture & Consumer Services

Division of Soil & Water Conservation

December 2013

Voluntary Approach to Stormwater Challenges

1. Understanding Conservation Districts – Pat Harris
2. Agricultural & Forested Land – David Williams
   - Benefits of open land
   - Water Quality and agricultural runoff
   - Tour of Langdon Farms
3. Community Conservation Assistance Program – Julie Henshaw
   - Overview
   - Only statewide stormwater retrofit program for existing development
   - Highlight practices that increase infiltration
4. Q&A

Dr. Hugh Hammond Bennett
1881 - 1960

The Beginning

Creation of Conservation Districts

- President Roosevelt & Standard State District Act
- General Statute 139
- Brown Creek Conservation District is first in nation
- **Districts bridge gap between federal technicians and local private landowners**

NORTH CAROLINA
SOIL & WATER
CONSERVATION DISTRICTS
Yours for Life

- Independent units of government
- 96 districts cover all counties
- 492 officials (3 elected & 2 appointed)
- 265 local employees
- **Non-regulatory; voluntary**
- Identify local natural resource needs

1. **Serve as a delivery mechanism for Division's technical & financial programs to landowners and citizens**
2. Address a wide range of land use issues – not just agriculture
3. Receive significant financial & administrative support from county government
4. Provide buffer between regulatory programs & landowners
5. Deliver environmental education and outreach

Districts & Supervisors

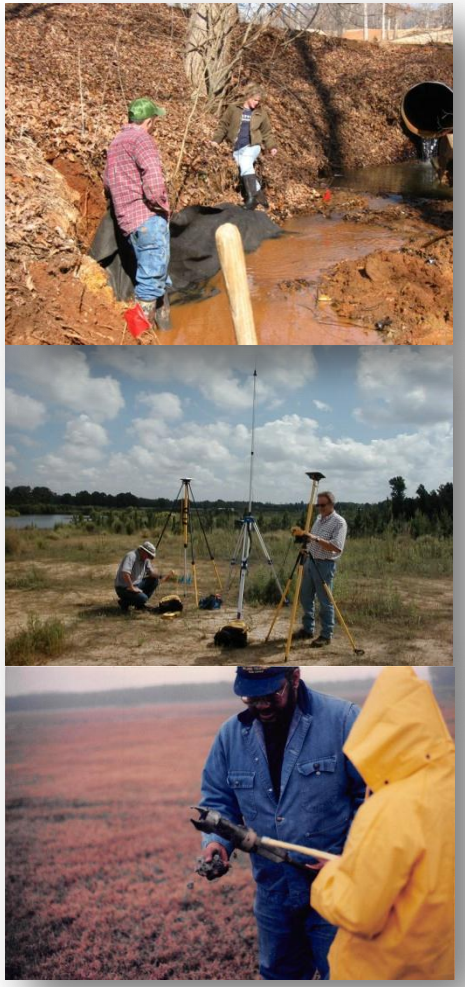
- ✓ Promote program
- ✓ Develop Annual Strategy Plan
- ✓ Rank applications – local water quality priorities
- ✓ Review & approve contracts
- ✓ Certify installations
- ✓ Complete spot checks
- ✓ Report non-compliance

North Carolina Soil & Water Conservation Commission

- ✓ Supervises Cost Share Programs
- ✓ Approves eligible practices
- ✓ Sets policy and costs
- ✓ Allocates funding

North Carolina Division of Soil & Water Conservation

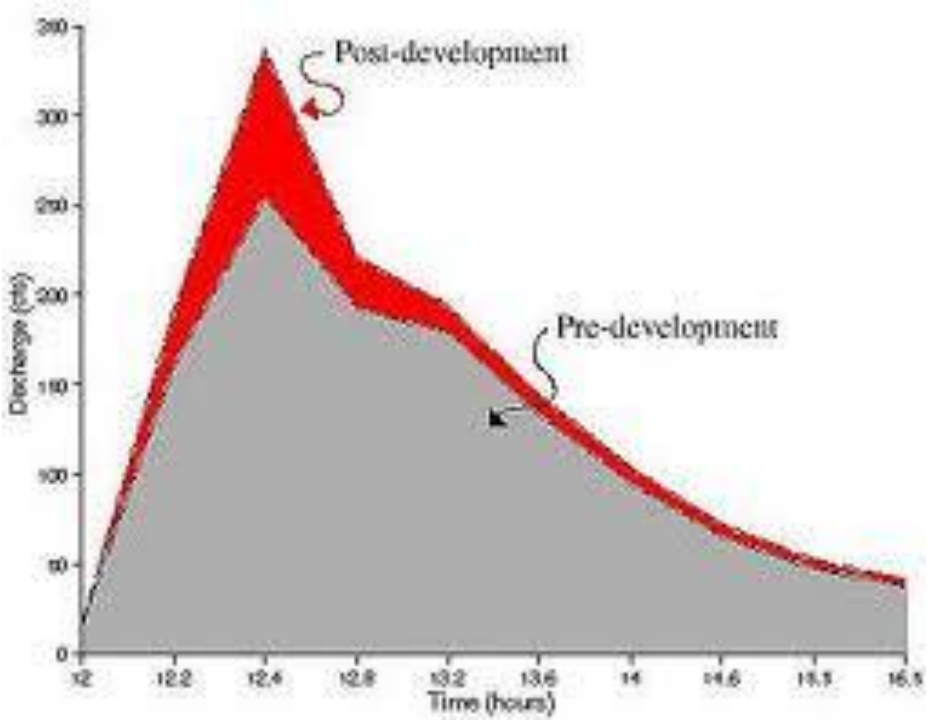
- ✓ Serves as staff to the Commission
- ✓ Approves contracts
- ✓ Updates cost list & policies
- ✓ Coordinates Job Approval Authority
- ✓ Provides technical assistance
- ✓ Delivers outreach tools
- ✓ Provides design tools
- ✓ Coordinates trainings



Infiltration is Key to Addressing Stormwater

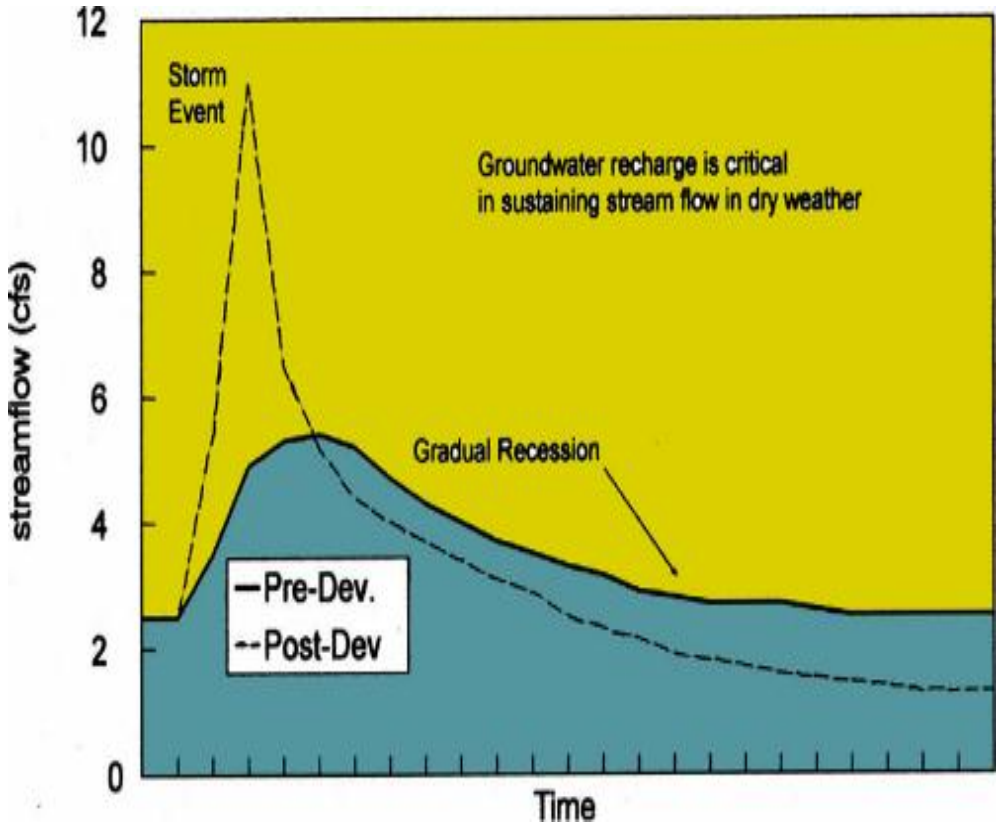
- Reduces peak streamflow and subsequent streambank erosion
- Reduces flash flooding concerns
- Maintains stream baseflow for better drought resilience
- Provides natural “treatment” of stormwater through soil/plant matrix

Typical Runoff Hydrograph



- This graphic reflects a typical pre- and post-development runoff hydrograph
- Post-development has a higher peak rate
- Also has higher overall runoff volume

Effect on Stream Baseflow



- Another hydrograph better shows impact on streamflow
- Again post-development shows much higher peak flow (flash)
- Notice that pre-development hydrograph results in greater sustained baseflow
- This has strong implications for water supplies and ecological flows

Effects of Increased Stormwater Runoff

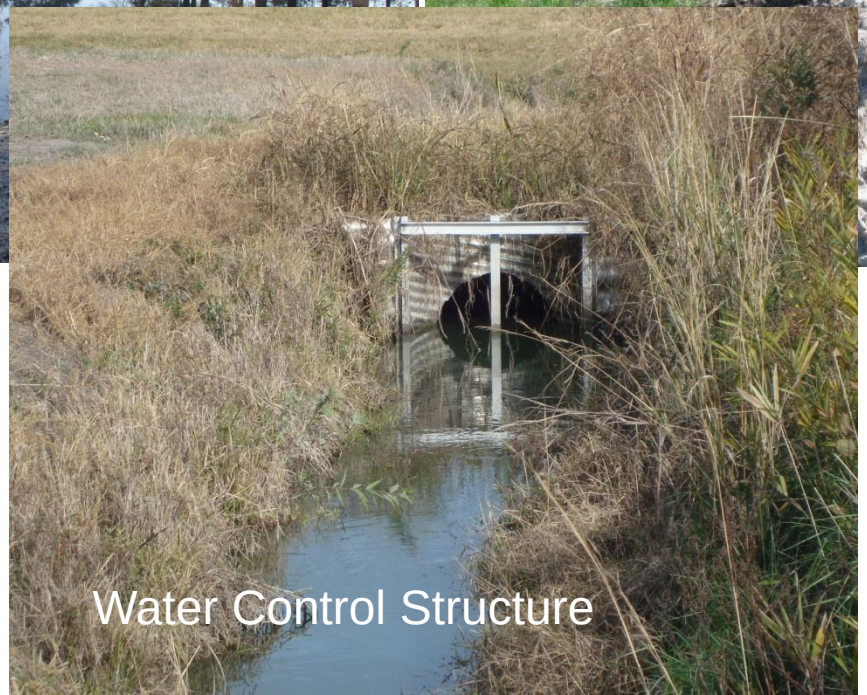
Ag/Forested Landscapes and Stormwater

- Low imperviousness – allows for infiltration
- Implementation of practices to further promote infiltration/reduce runoff

On-Farm Water Storage

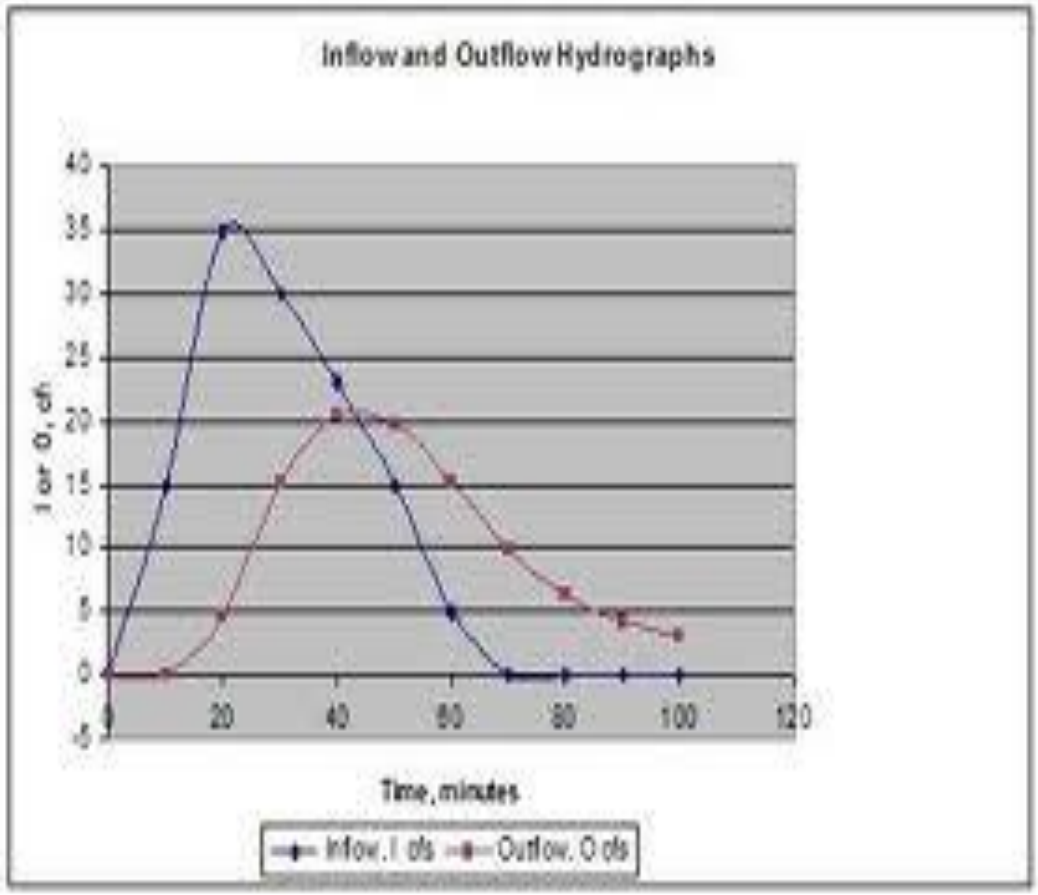
Water Supply Pond

Pond Sediment Removal



Water Control Structure

Benefits of On-Farm Storage



- Reduces competition for water supply
- Delays and reduces peak flow
- Provides flood protection
- Provides sediment and nutrient trapping
- Permits nutrient recycling

Visit to John Langdon Farm
Johnston County - January 13, 2014

Langdon Farm Tour

- See conservation on a working farm
- Discuss challenges
  - Development pressure
  - Livestock production
  - Neuse Basin Nutrient Reduction Rules
  - New erosion issue

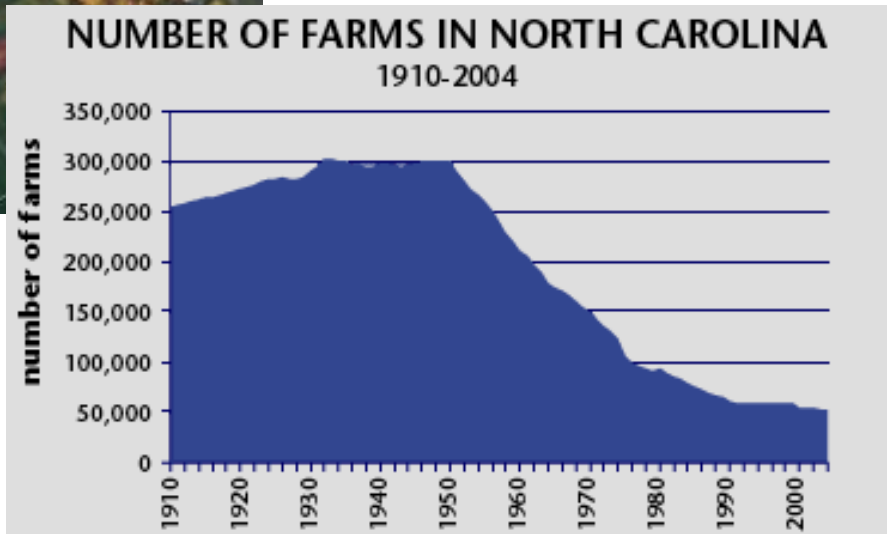
Community Conservation Mission Statement

Soil & Water Conservation Districts providing natural resource management through technical, educational, and financial assistance on urban, suburban, and rural lands for the benefit of all people of North Carolina.

North Carolina's Changing Landscape

6th leading state in urbanization

Changing pollutant sources require a community approach



Water Quality Concerns

- Soil erosion
- Nonpoint source pollution: stormwater runoff
- Eutrophication
- Loss of habitat
- Over 364,000 acres of shellfish harvesting waters closed
- 49% loss of wetlands

Districts and Community Conservation

- Over 60% of districts
- Sediment and erosion control
- Stormwater management
- Urban drainage
- Watershed education
- Land conservation
- Low impact development

Community Conservation Assistance Program (CCAP)

Purpose: To reduce the delivery of nonpoint source (NPS) pollution into the waters of the State by installing best management practices on urban, suburban and rural lands

- Authorized in Session Law 2006-78
- Modeled after NC Agriculture Cost Share Program
- Eligible on non-agricultural lands
- Retrofit only – sites must be developed 3+ years
- Eligible cooperators – homeowners, schools, parks, businesses, municipalities, etc.

CCAP Best Management Practices (BMPs)

- Bioretention area
- Backyard rain garden
- Backyard or stormwater wetland
- Structural stormwater conveyance
- Impervious surface conversion
- Permeable pavement
- Abandoned well closure
- Cistern
- Critical area planting
- Diversion
- Grassed swale
- Pet waste receptacle
- Riparian buffer
- Stream restoration
- Streambank protection
- Marsh sills

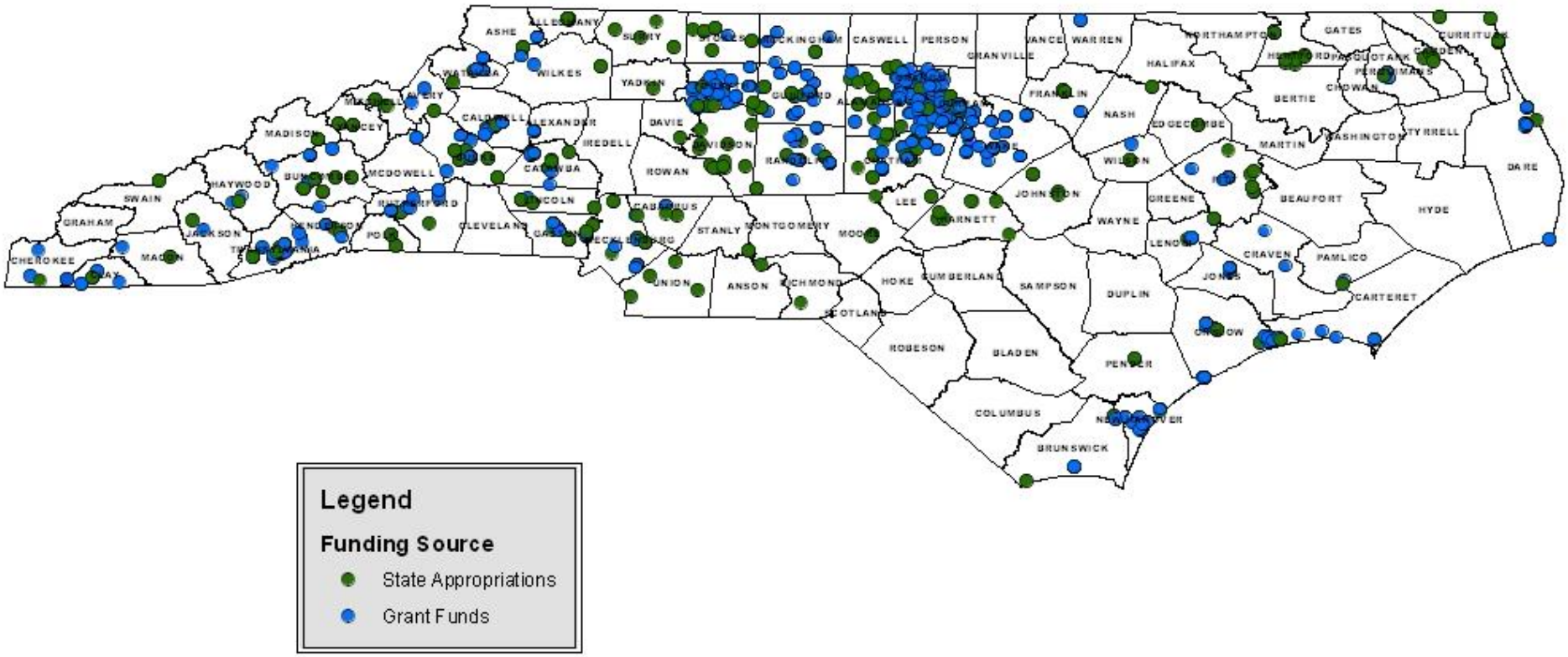
CCAP Technical Assistance and Job Approval Authority

Community Conservation Assistance Program (CCAP) BMP Funding

Program Year	State Appropriation
2011	$136,937
2012	$136,937
2013	$136,937

$1.48M in additional funds through CCAP grant awards from Section 319 Clean Water Act Program, Clean Water Management Trust Fund and the Environmental Enhancement Grants Program

CCAP Projects Completed FY2008 - FY2013
All funding sources



Cumulative Benefits: 2008-2013

Water Quality Benefit	Value
Impervious Area affected	27M sq ft (620 acres)
Building treated	7,835 buildings
People affected	1.2 Million people
Nitrogen reduced	13,385 lbs
Phosphorus reduced	676 lbs
Sediment reduced	16,682 lbs (TSS) 29,682 Tons

* Please note water quality results are not documented for all BMPs or all program years

Program Accomplishments: 2008 - 2013

Cisterns	111
Pet Waste Receptacles	199
Abandoned Well Closures	186
Backyard Rain Gardens	15,167 sq ft
Bioretention Areas	4.22 acres
Critical Area Plantings	21.51 acres
Riparian Buffers	4.69 acres
Stormwater Wetlands	5.52 acre
Stream Protection/Restoration	12,401 feet
Imp. Conversion – Perm. Pavement	2.1 acres

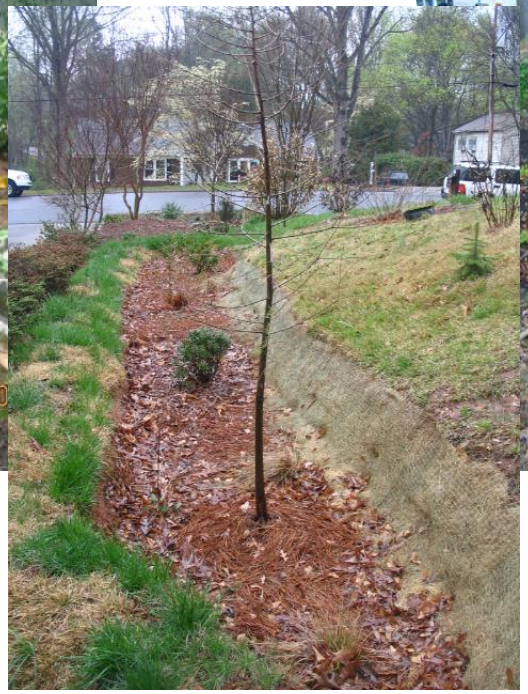
CCAP BMP: Bioretention areas

Guilford County

Dare County

CCAP BMP: Backyard rain gardens

New Hanover County



Gaston County

Durham County

CCAP BMP: Stormwater and backyard wetlands

Gaston County

New Hanover County

CCAP BMP: Impervious surface conversion

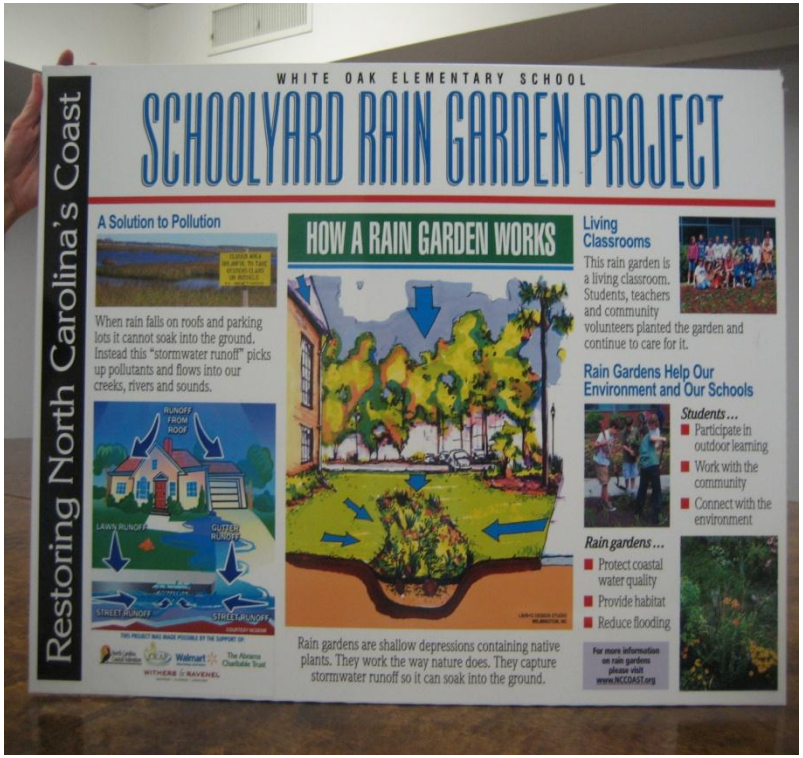
Randolph County

CCAP BMP: Permeable pavement

Onslow County

Jones County

Education and Outreach



Installation and Education Project
White Oak Elementary School, Chowan County

Wake County

"Put every acre to its best use and treat every acre according to its needs"