

# Caroline County Pilot Watershed Implementation Plan (WIP)

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# Caroline Count Pilot

- Volunteered in Winter 2009/2010
- Pulled out our WRE & Past Watershed Plans
- Gathered key stakeholders
- Initially excluded “interest groups”
- Contractor collected/compiled data

# About Caroline County...

## LAND USE

**Agricultural: 78% (155,000 acres)**

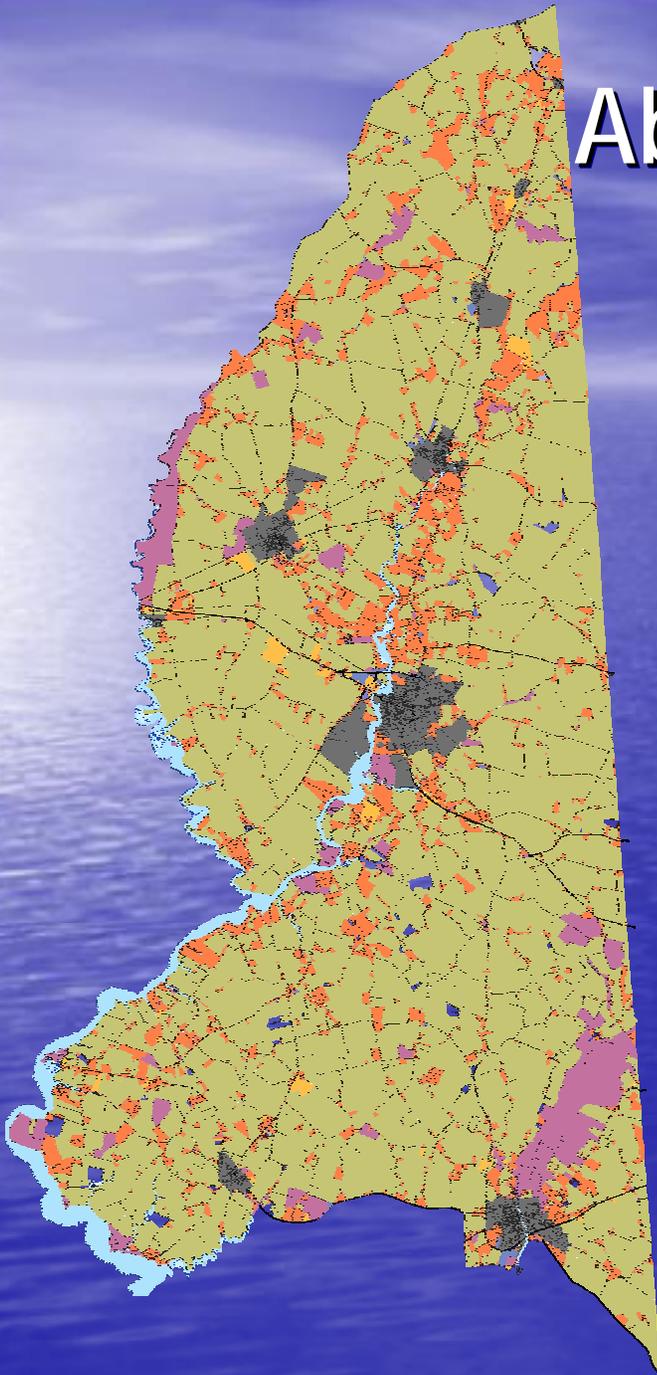
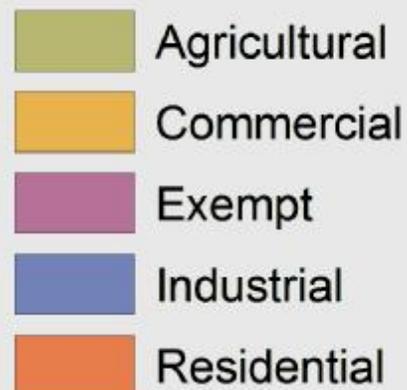
**Residential: 14% (28,000 acres)**

**Public (exempt): 6% (11,200 acres)**

**Commercial: 1% (2,562 acres)**

**Industrial: . 3% (507 acres)**

### Land Use





# Caroline County Phase I Pilot WIP

## Established Target Sectors State-wide

- Major/minor point sources
- Urban & Agricultural Land
- Forests
- Septic Systems
- Atmospheric Deposition



## Focus Sectors for Caroline County

- Agricultural land
- Septic Systems
- Minor Point Sources
- Developed Land

# Caroline County TN Targets (Draft July 2010)

Source Sector	Current Load (million lbs)	Initial Target Load (million lbs)	% Reduction
<b>Minor Municipal</b>	0.024	0.014	<b>39%</b>
Urban	0.046	0.037	20%
<b>Agriculture</b>	1.293	1.130	<b>13%</b>
Septic	0.091	0.062	32%
Total	1.63	1.41	13%

# WIP Assessment of Loads and BMPs

- Nonpoint Source Nutrient Load by Land Use
- Nonpoint Source BMPs Implemented to date (urban and ag)
- 2009 Point Source Nutrient Loads (WWTPs)
- Estimated Nitrogen Loads from Septic Systems

**Same basic process used in preparation of WRE**

# What we learned

## About the Agricultural Sector

- MIDA restricts access to BMP data (privacy).
- SCD staff know from experience which programs and farms offer the best potential for reductions.
- SCD has limited staff to install, track, and report BMPs for about 100,000 acres of farmland.
- Data on BMPs is kept in individual farm files.
- Voluntary are not all tracked

# What we learned

## About minor treatment plants

- 3 minor plants
- Relatively high avg daily concentrations of TN & TP
  - One had avg TN concentration of 40 mg/l (2007)
- All three have Inflow & Infiltration (I&I) problems
- One has sewage lagoon overflows during heavy rain
- No BRF funding available for minor plant upgrades

# What we learned

## About septic systems

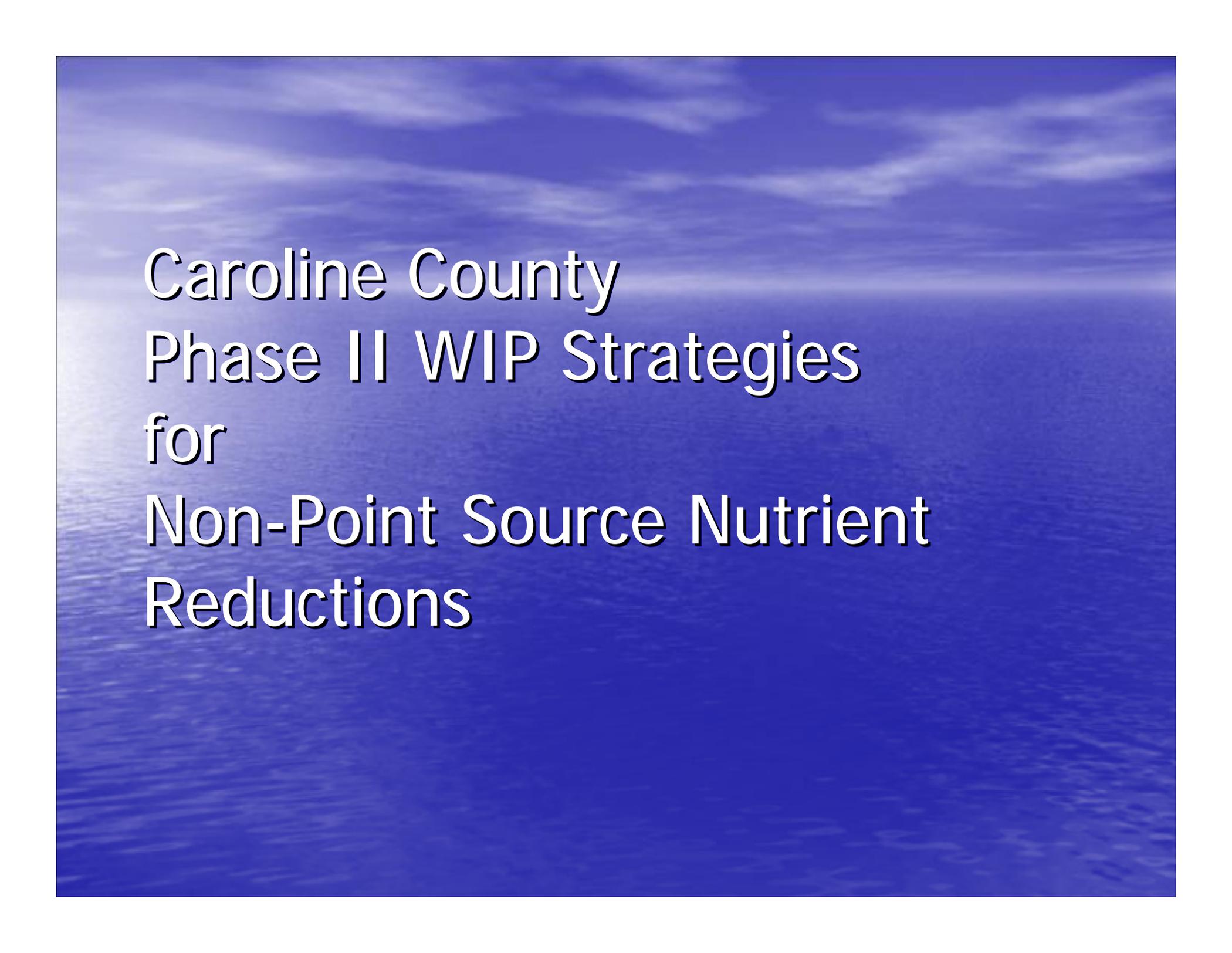
- Approximately 11,100 systems
  - about 1,200 located in Critical Area.
- To date 43 BAT replacement systems have been installed using BRF
- Caroline County's share of BRF for first half of FY2011 (July-Dec 2010) is \$97,000; 6 upgrades.
- Using BRF, it will take 266 years to complete upgrades

# Other things we figured out

- The County has no direct regulatory authority over our three major pollutant sectors
- No county-wide system in place to track, monitor and report activities across sectors
- Most of our 10 towns will need assistance with planning, implementing, maintaining and reporting BMPs.

# Where does that leave us?

- County does has input in all three sectors
- County is a logical hub for tracking, monitoring and reporting data for WIP
- County logical facilitator of cooperative planning effort between sectors and agencies.



Caroline County  
Phase II WIP Strategies  
for  
Non-Point Source Nutrient  
Reductions

# Caroline County WIP Strategies

## \*DRAFT\*

- § Establish a County-based BMP monitoring, tracking and reporting program with partners.
- § Use data to drive accountability
- § Assess where regulatory changes may be needed if milestones are not achieved.

# Caroline County WIP Strategies

## \* DRAFT \*

### Non-Point Source Agricultural Strategies:

§ Assess watershed agricultural loads and identify priority farms in each shed.

§ Conduct on-site assessments to identify opportunities for new or additional BMPs.

§ Coordinate water control structure installations in PDAs with BMPs for roadside ditches.

§ Establish erosion and drainage control standards for all ditches.

# Caroline County WIP Strategies

## \*DRAFT\*

### Non-Point Source Developed Land Strategies:

§ Incorporate standards for environmental site design in County/municipal codes.

§ Retrofit stormwater systems on County and municipal properties.

§ Expand TDR Program to reduce new development on septic systems

§ Establish Drainage Ditch District with controls similar to Critical Area.

# Caroline County WIP Strategies

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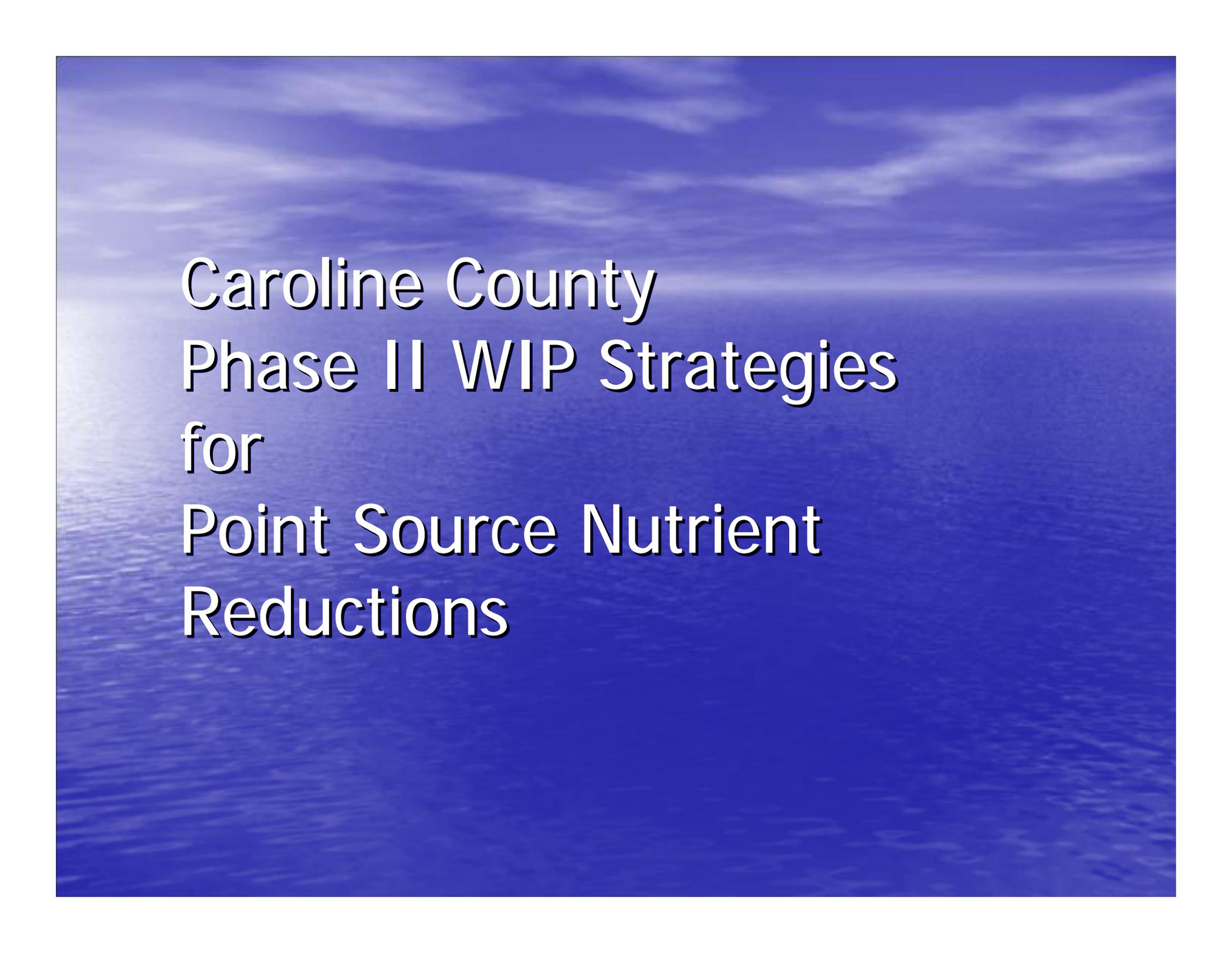
### Septic Strategies:

§ Target priority septics in Critical Area for BRF upgrades to insure biggest bang for the buck.

§ Establish septic districts with regular inspection and pump-out cycles

§ Assess septic failure areas for potential for establishment of small or innovative community systems

§ Assess feasibility of connecting rural subdivisions to public systems (denied access policy).



Caroline County  
Phase II WIP Strategies  
for  
Point Source Nutrient  
Reductions

# Caroline County WIP Strategies

## \*DRAFT\*

### Point Source Strategies:

- New regional ENR treatment plant for the northern portion of the County
  - Will reduce nitrogen load from 17,000 lbs/yr to 5,000 lbs/yr
- Concentrated Animal Feedlot Operations (CAFO) permits now required for medium to large operations
  - approximately 89 in County

# Caroline County WIP Strategies

**\*DRAFT\***

Upper Choptank Watershed (164,000 acres) 8 Segmentsheds (13 total)		
SECTOR	Reduction	
	Nitrogen (lbs)	Phosphorus (lbs)
Total Agricultural Reductions	741,049	54,520
Total Urban Reductions	51,509	10,669
Total Septic Reductions	32,886	N/A
<b>TOTAL</b>	<b>825,444</b>	<b>65,189</b>
% Reductions Non Point Sources	46%	53%

Caroline County 13 Segment Sheds		
SECTOR	Reduction	
	Nitrogen (lbs)	Phosphorus (lbs)
Total Agricultural Reductions	189,412	20,110
Total Urban Reductions	51,509	10,669
Total Septic Reductions	17,935	N/A
<b>TOTAL</b>	<b>258,856</b>	<b>30,779</b>

# Estimated Costs of Nutrient Reductions

Non Point Source	Cost (\$)	TN Reduced (lbs)	TP Reduced (lbs)	TN Cost/lb	TP Cost/lb
Agricultural	\$11,482,679	189,412	20,110	\$61	\$571
Urban	\$34,735,000	51,509	10,669	\$674	\$3,256
Septic	\$16,640,000	17,935	0	\$928	n/a
Point Source	Cost (\$)	TN Reduced (lbs)	TP Reduced (lbs)	TN Cost/lb	TP Cost/lb
NCWS WWTP	\$25,000,000	9,342	784	\$2,676	\$31,885
<b>TOTAL</b>	<b>\$87,857,679</b>	<b>268,197</b>	<b>31,563</b>		

# Commissioner Response

Consequences

Unfunded State Mandate

Concern over targeting specific property  
owners

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