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# NORTH CAROLINA'S APPROACH TO NUTRIENT MANAGEMENT



N.C. Division of Water Quality

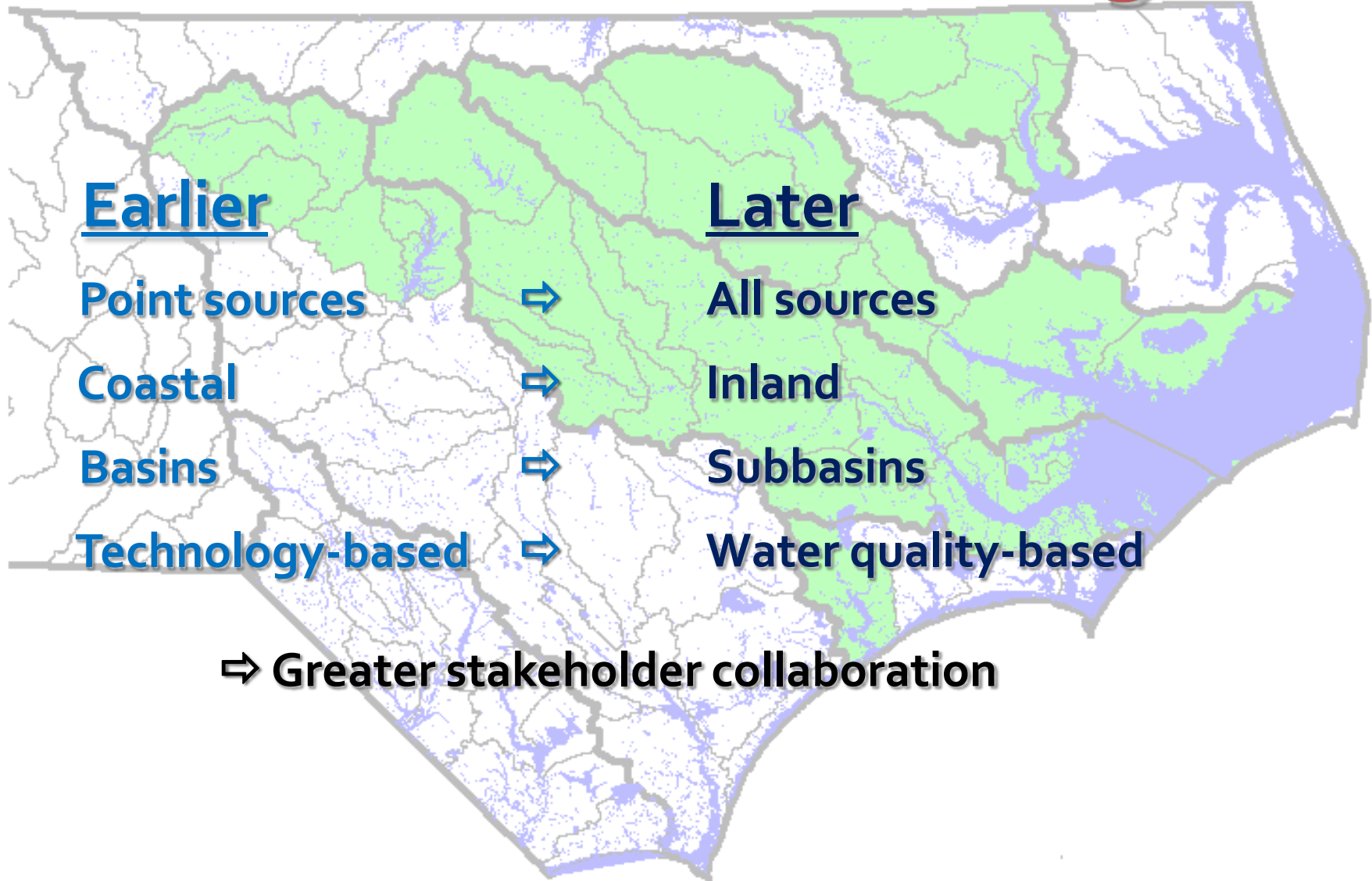
NC Numeric Chlorophyll a Standards Adopted

**1979**

# NC Nutrient Management Strategies (examples)

- ◆ Chowan River 1981
- ◆ Detergent P ban 1988
- ◆ White Oak River 1991
- ◆ Lake Wylie TMDL 1996
- ◆ Neuse River 1997
- ◆ Jordan Lake 2009
- ◆ Falls Lake 2011

# Trends in Nutrient Strategies



# Example: Neuse River Basin



# Neuse River Estuary Modeling

- ◆ Three models' results (reductions) overlapped
  - ◆ 30% N loading reduction within ranges from all models
    - ✓ **30% selected as target**



# Neuse River Estuary 1997

- ◆ Group Compliance Approach for Point Sources
  - ◆ Voluntary participation
  - ◆ Collective effort to reduce nitrogen
  - ◆ Flexible path to reach nutrient target
  - ◆ Neuse River Compliance Association
    - ◆ 21 member facilities

# Neuse River Estuary 1997

- ◆ For nonpoint sources, state regulation adopted to require
  - ◆ Load reductions from agriculture
  - ◆ Extra training for applicators (golf courses, etc.)
  - ◆ Protection & maintenance of existing buffers
  - ◆ Stormwater mgmt. for new development

# Neuse River Estuary

- ◆ Today
  - ◆ Lower chlorophyll, but still exceeds standard
  - ◆ Required source loading reductions achieved (?)
  - ◆ 30% reduction in load to estuary not yet achieved
  - ◆ NC DWQ evaluating adequacy of regulation

# Shared Features of Neuse, Tar-Pamlico, Jordan, Falls

- ◆ Collaborative stakeholder processes
- ◆ Water quality – based performance goals
- ◆ 'All' significant sources
- ◆ Same relative reductions
- ◆ 'Fair, reasonable, proportionate'
- ◆ Options, cost-effectiveness
- ◆ Dual accounting - compliance & instream
- ◆ Adaptive implementation

# Today, Nutrient Strategies Include Requirements for

- ✓ *P & N limits for NPDES wastewater*
- ✓ *Agriculture loading reductions*
- ✓ *Stormwater (existing & new)*
- ✓ *Nutrient applicators (golf courses, e.g.)*
- ✓ *Protection & maintenance of buffers*

# A New Proposal: Threshold Chlorophyll Levels

- ◆ Are **not** water quality standards
- ◆ Exceedances  $\neq$  water quality impairment
- ◆ Exceedances = implementation of proactive nutrient control measures
- ◆ Prevent impairment

# Proposed Threshold Requirements

- ◆ Stormwater – new development
- ◆ Land application
- ◆ Riparian buffer protection
- ◆ Wastewater



# Proposed Chlorophyll a Thresholds

- ◆ Trout waters:  
no more than 10% of data > 10  $\mu\text{g/L}$
- ◆ Mountain and upper Piedmont waters:  
no more than 10% of data > 15  $\mu\text{g/L}$
- ◆ All other surface waters:  
no more than 10% of data > 25  $\mu\text{g/L}$



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# QUESTIONS ??

