

Point Source Perspective Progress of Neuse Nutrient Management Strategy

January 12, 2012
EMC Meeting

Presented by:

Lower Neuse Basin Association®
Neuse River Compliance Association®

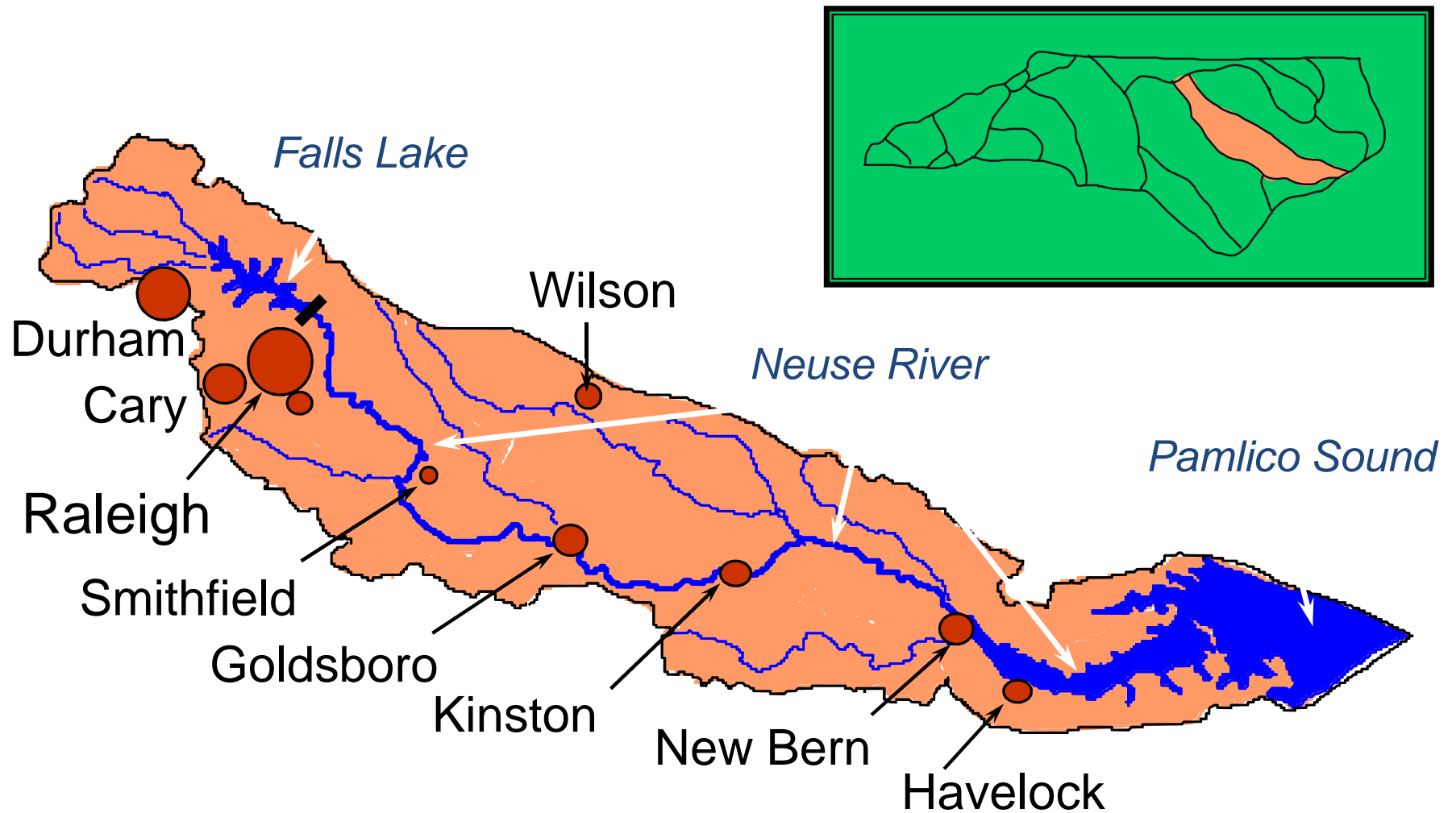
Lower Neuse Basin Association (LNBA)[®]

- 18 NPDES Permit members.
- MOA with DWQ, monitors water quality at 48 sites (\$87,000).
- Provides funds and other assistance to:
 - ModMon estuary monitoring program (\$70,000)
 - FerryMon monitoring program
 - FluorMod research program (“cutting edge” technology to potentially identify organic nitrogen by its source).
- Provides technical resources:
 - annual operator training
 - waste water plant optimization

Neuse River Compliance Association (NRCA)[®]

- A TN (total nitrogen) compliance association authorized by the Neuse Rules.
- Membership includes most members of the LNBA.
- NRCA's estuary TN allocation = sum of members' allocations.
- NRCA primary vehicle for point source achievement of the Neuse TMDL.
- 2011 NRCA TN allocation: 1,182,062 lbs (72.1% of total).

Neuse River Basin



Neuse River Basin Statistics

- 6,200 square miles.
- 3,500 miles of fresh water streams.
- 200 miles long, Roxboro to the Pamlico Sound.
- 371,000 estuarine/saltwater acres in a broad, shallow estuary with an average depth of 15 feet.

1997 Neuse Rules

- Overall goal – 30% reduction in TN loading of the estuary from mean 1991-1995 baseline.
- Goal established without a model to allocate TN among all sources.
- Point sources:
 - Total point source TN allocation (Neuse Rules): 1,640,000 lbs.
 - Budget allocated among existing NPDES permit discharges.
 - Small point sources (permit flows <0.5 mgd) have no TN limits.
 - DMRs measure compliance.
- Non-point sources:
 - No allocation or budget by source.
 - BMPs, buffers, and MS4 programs in some, but not all locales.
 - Reductions in TN are not measured.
- No trading allowed between point and non-point sources.

NRCA's Role Under The Neuse Rules

- Holder of NPDES permit NCC000001 (1st issued 1/01/2003) which consolidates TN allocation of all 20 members.
- NRCA members allowed to make annual transfers of TN within the total TN limit allocated in Permit NCC000001.
- Members exempted from compliance with their individual TN allocation if NRCA complies with its allocation.
- Permit violations for both the NRCA and any member exceeding its allocation, if NRCA allocation is exceeded.

NRCA's Operational Procedures

- Members assessed penalty if their individual TN allocation is exceeded.
- Up to 80% of penalty eligible for refund if timely correction of reason for exceedence.
- Members able to lease or sell nitrogen allocation to other members without NRCA approval.
- Members cannot lease or sell nitrogen outside of the NRCA.
- Members' investment to reduce TN exceeds \$300,000,000.

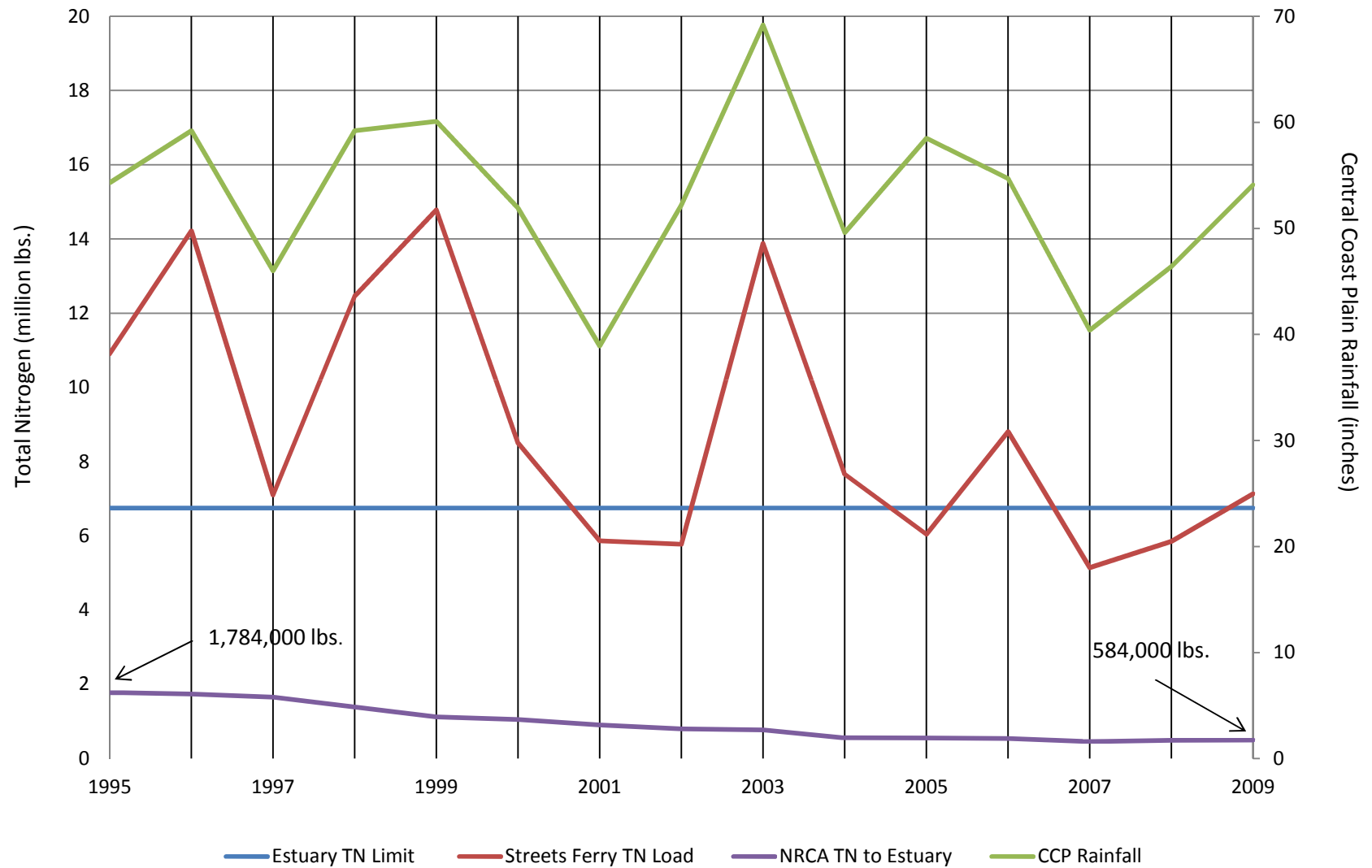
Associations' Nitrogen Reduction History

Year	Estuary TN Delivery (Lbs.)	Average Daily Flow (gallons/day)	Average Estuary TN Delivery Conc. (mg/L)	Neuse Basin Population
1995	1,784,000	80,000,000	7.3	~ 1,100,000
2000	1,055,000	83,000,000	4.2	1,320,790
2010	584,000	102,000,000	1.9	1,687,463

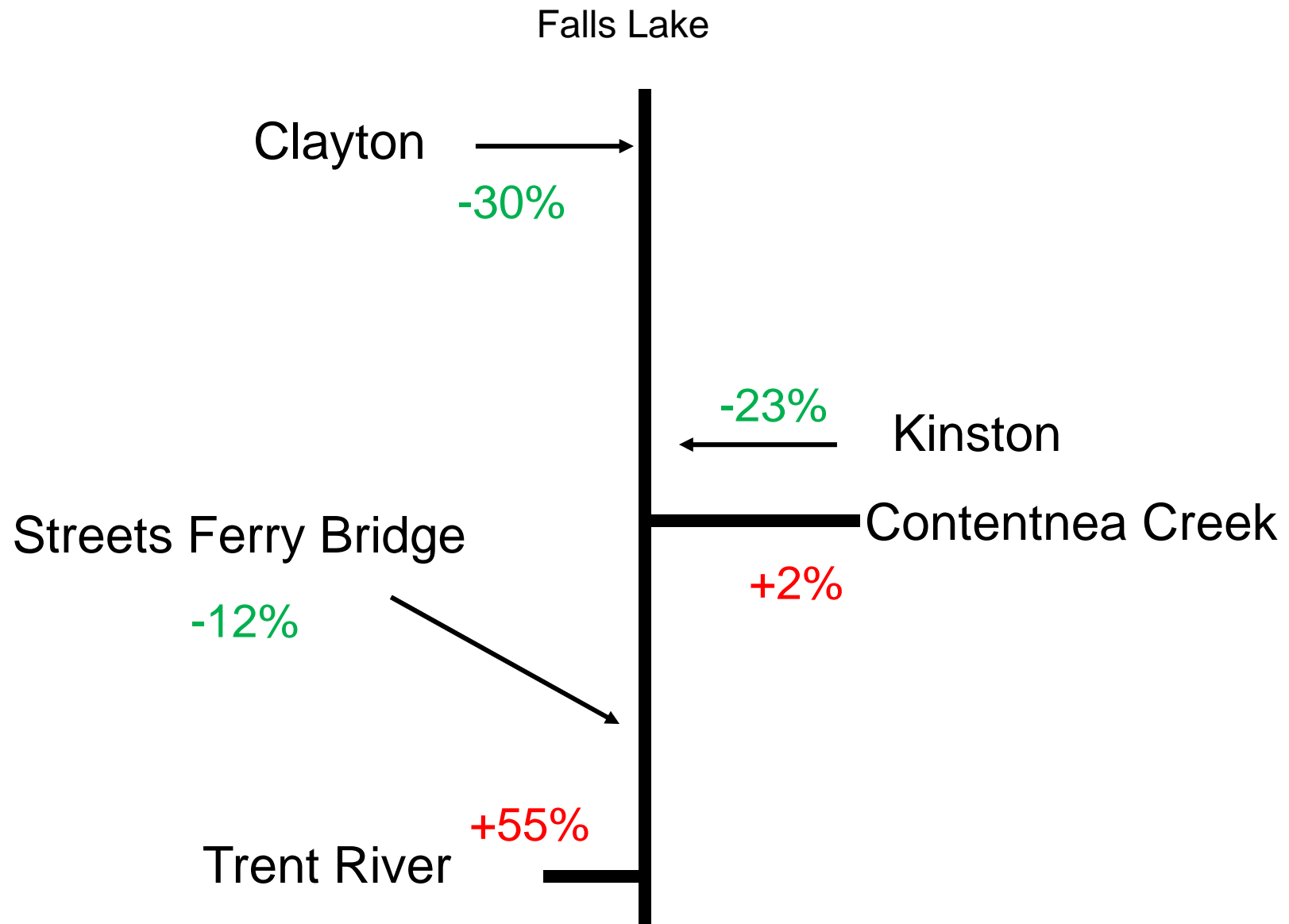
NRCA Member Reuse Programs (2010)

Member	Volume (gals)
Johnston County	90,000,000
Town of Cary	217,300,000
Town of Clayton	17,850,000
City of Raleigh	69,628,000
City of Goldsboro	883,000
Town of Benson	942,000
Town of Farmville	2,200,000
City of Kinston	8,007,000
City of Wilson	89,462,000
City of New Bern	15,647,000
MCAS Cherry Point	<u>2,669,000</u>
Total	<u>514,588,000</u>

Total Nitrogen Loading at Streets Ferry



Watershed TN Pattern – Compared to 1991-95



Research Indicates Little Progress has been Achieved

- After ten years of implementation of the Neuse Rules, there has been no overall reduction of TN delivered to the estuary, although there has been an “in stream” TN reduction from Falls Lake Dam to the middle portion of the basin.
- Organic nitrogen has increased in the lower portions of the Neuse Basin although major point sources have reduced total nitrogen discharged by approximately 70%.
- Cite: Lebo et al. 2011 (Environmental Management DOI 10.1007/s00267-011-9774-5).

Neuse Basin Opportunities and Needs

- Adopt enforceable TN allocations for:
 - Non point TN sources.
 - Small point sources.
- Focus monitoring programs on:
 - Identifying categories of sources not meeting the 30% reduction goal.
 - Accurately determining reductions from non-point source BMPs.
- Extend Falls rules new development stormwater program to the lower Neuse basin.
- Allow use of highly treated reclaimed water, without legal status as wastewater, as part of TN strategy in the basin.
- Authorize TN trading program between point and non-point sources as in Jordan and Falls Lakes.

Questions/Comments

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