Nutrient Management in Neuse and Tar-Pamlico Watersheds

APNEP Symposium
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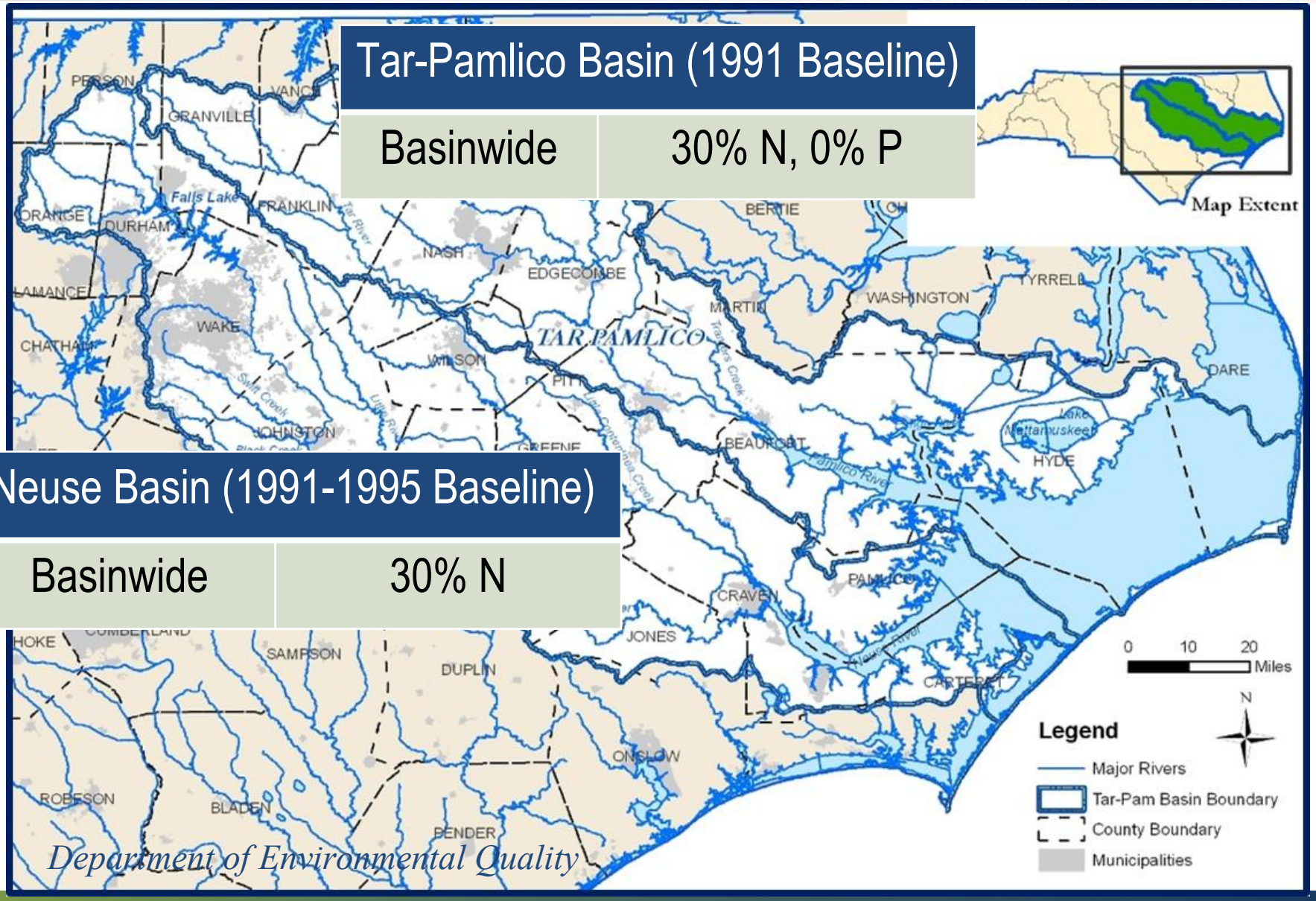
Nonpoint Source Planning
NC Division of Water Resources

Neuse River, Summer 1995

Common Features of Neuse & Tar Nutrient Strategies

- Collaborative development
- Watershed-specific
  - Reduction goals per modeled waterbody needs
  - Major sources regulated
- Minimize inequities
  - "Fair, reasonable, proportionate" reductions
    - All sources - same relative reductions vs. baseline
  - Options, offsets, trading - cost-effectiveness
- Compliance horizons – 5 to 8 years

Neuse & Tar-Pamlico Reduction Goals



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Sources Regulated under Nutrient Strategies

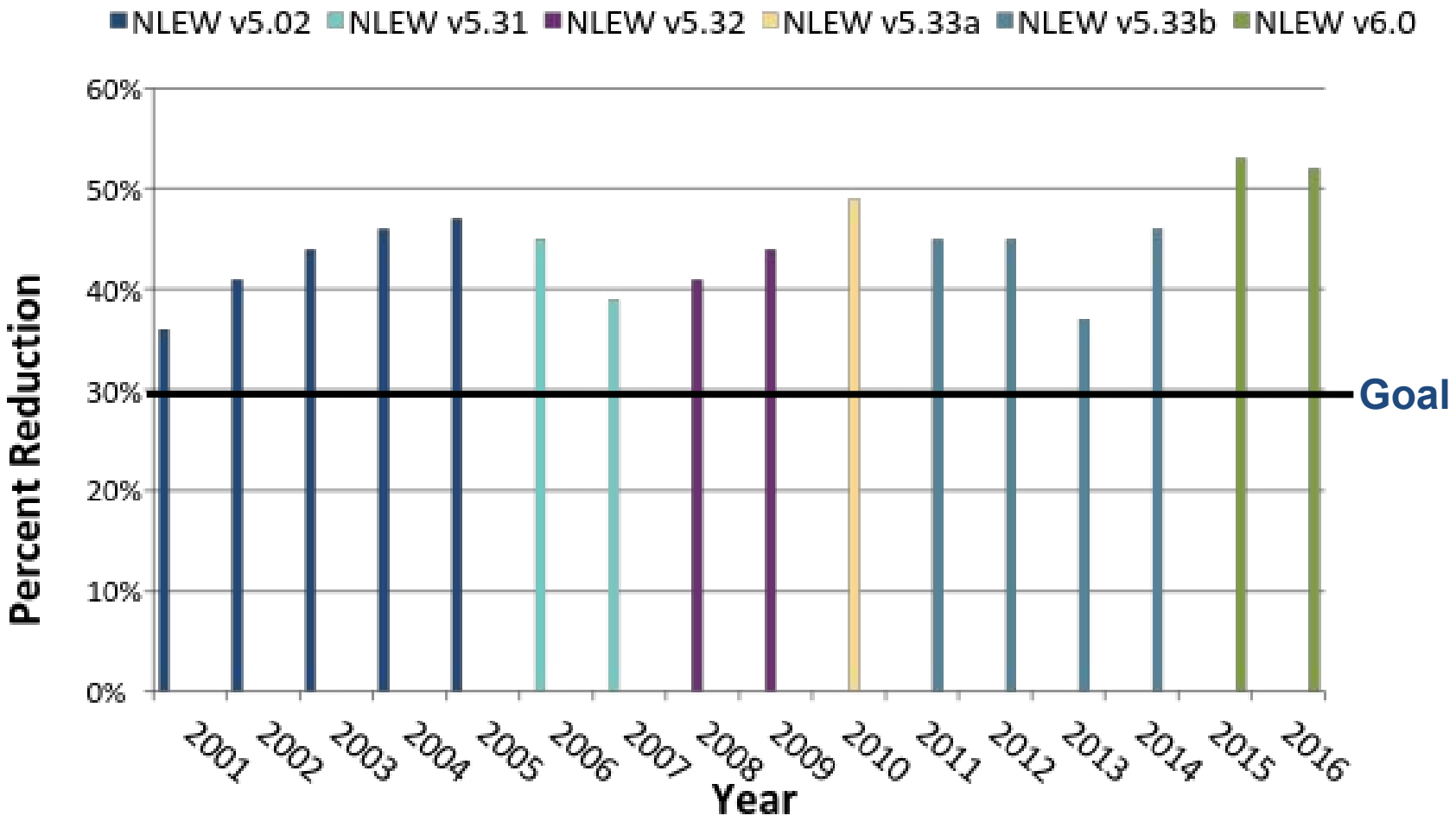
Neuse, Tar rules:

- Wastewater
- Agriculture
- New Development Stormwater –
  - 15 Neuse, 11 Tar local gov'ts
- Riparian Buffer Protection

Falls rules add:

+ All muni's (+5), counties (+3)
+ Existing Development Stormwater
+ State/Fed Stormwater

Neuse - Estimated Cropland N Loss Reductions



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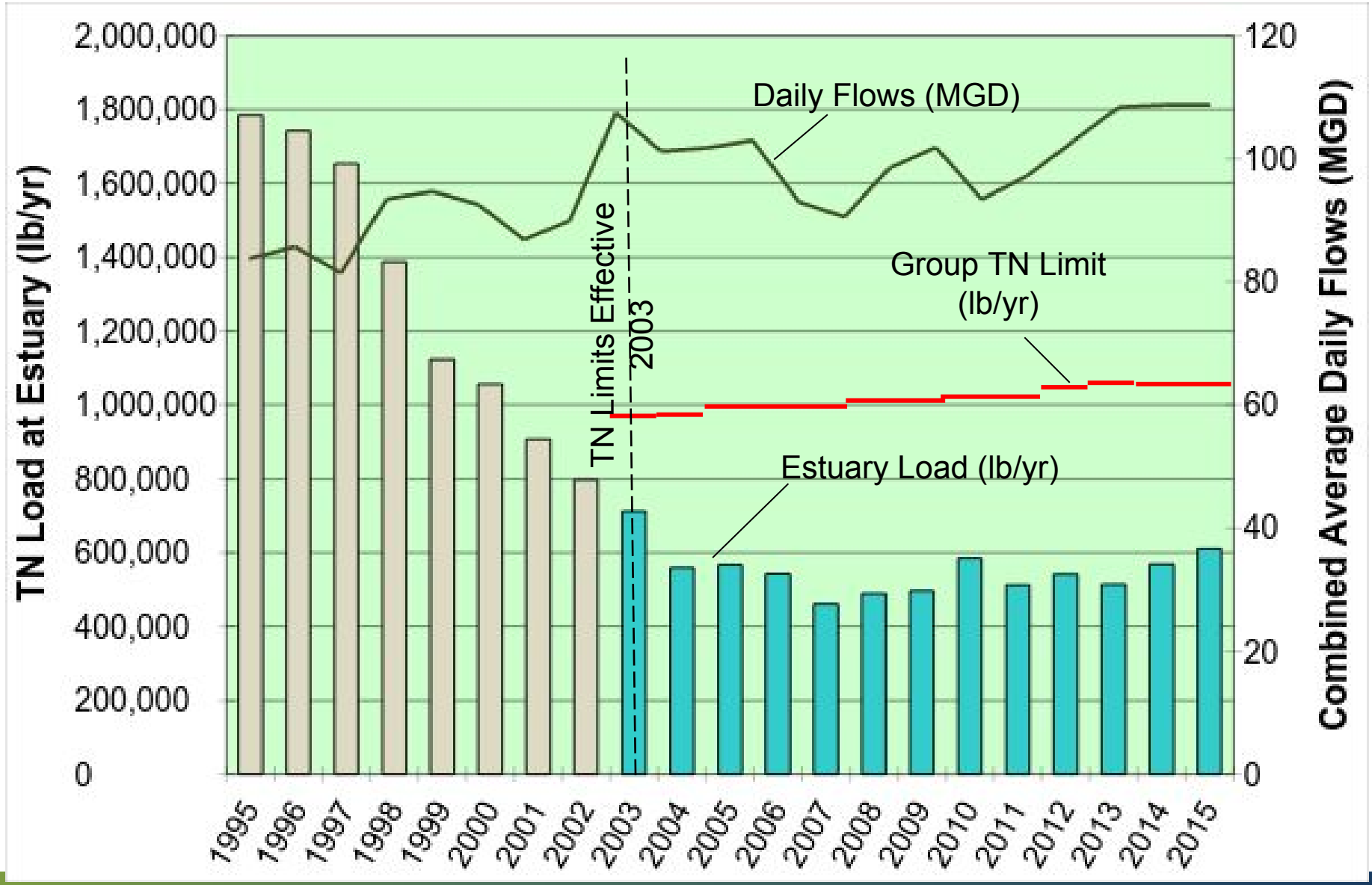
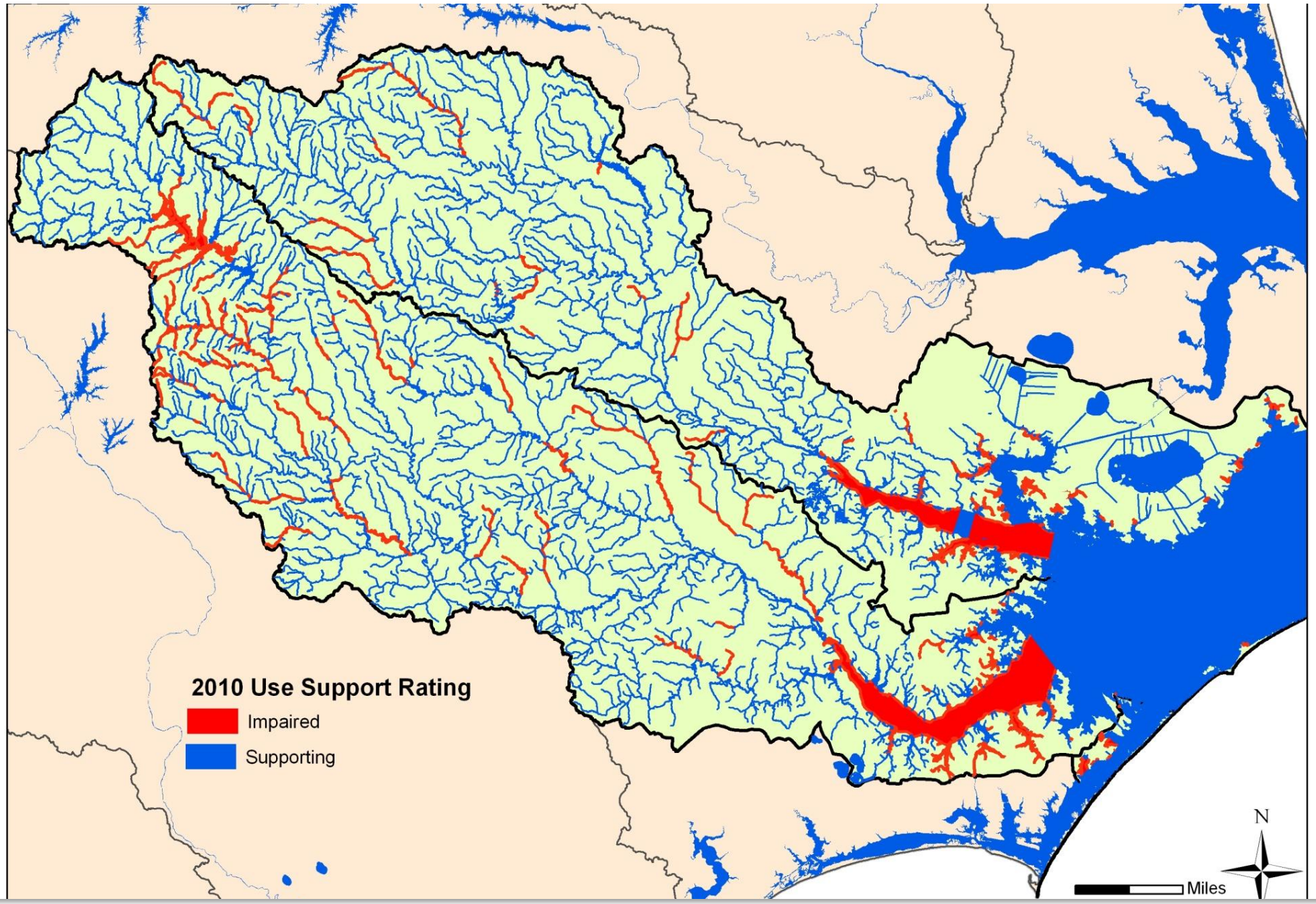
Tar-Pamlico: Phosphorus Loss Tracking

Parameter	Units	Baseline 1991	CY2016	Percent '91-'16 change	CY2015 P Loss Risk +/-
Agricultural land	Acres	807,026	593,530	-26%	-
Cropland conversion (to grass & trees)	Acres	660	47,134	7042%	-
CRP / WRP (cumulative)	Acres	19,241	41,833	117%	-
Conservation tillage	Acres	41,415	62,151	50%	-
Vegetated buffers (cumulative)	Acres	50,836	218,440	330%	-
Water control structures (cumulative)	Acres affected	52,984	92,208	74%	-
Scavenger crop	Acres	13,272	86,109	549%	-
Animal waste P	lb P/ yr	13,597,734	14,805,403	9%	+
Soil test P median	P index	83	84	1%	+

Neuse Wastewater Association Compliance

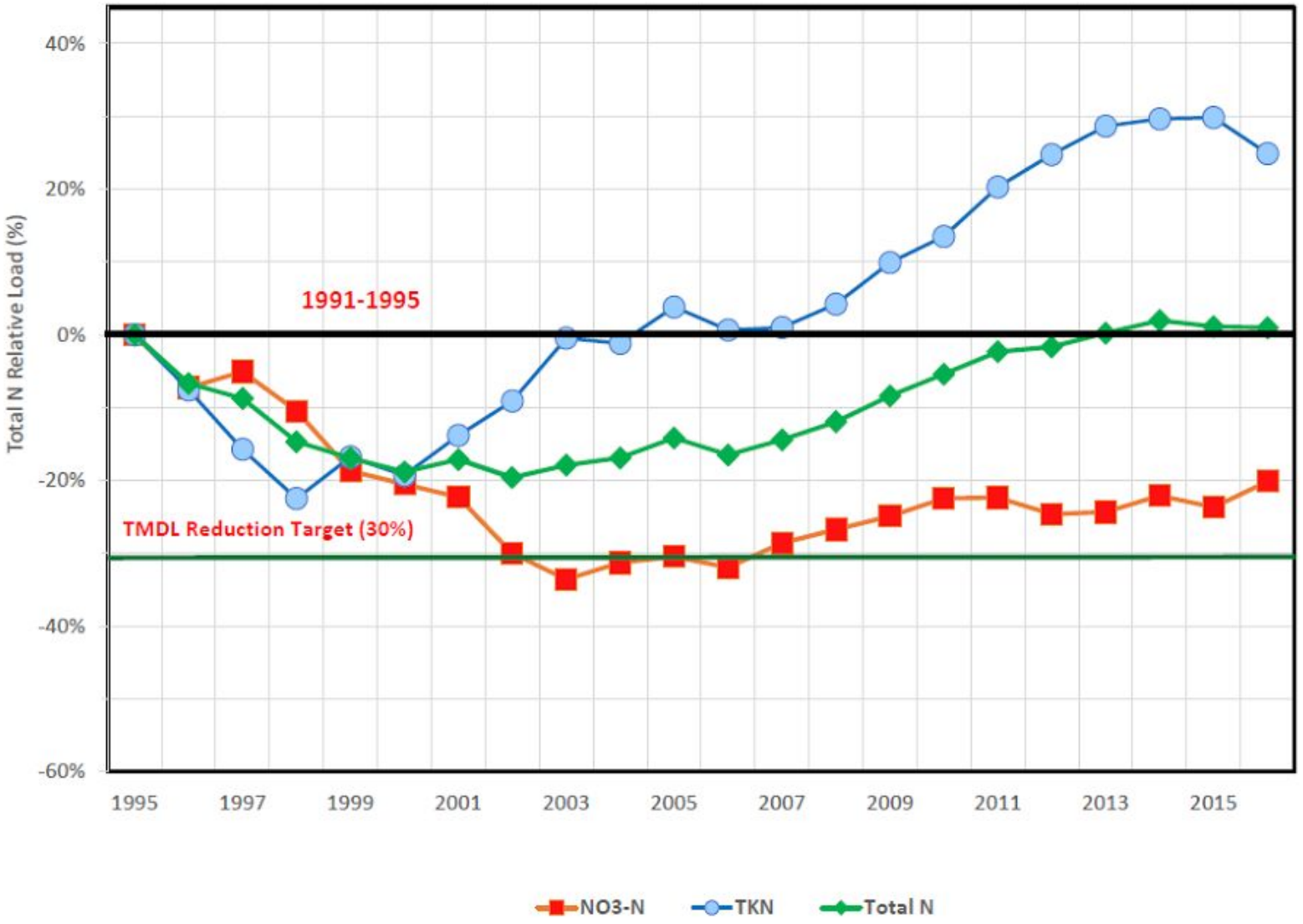


Neuse & Pamlico Estuaries Use Support Status, 2010



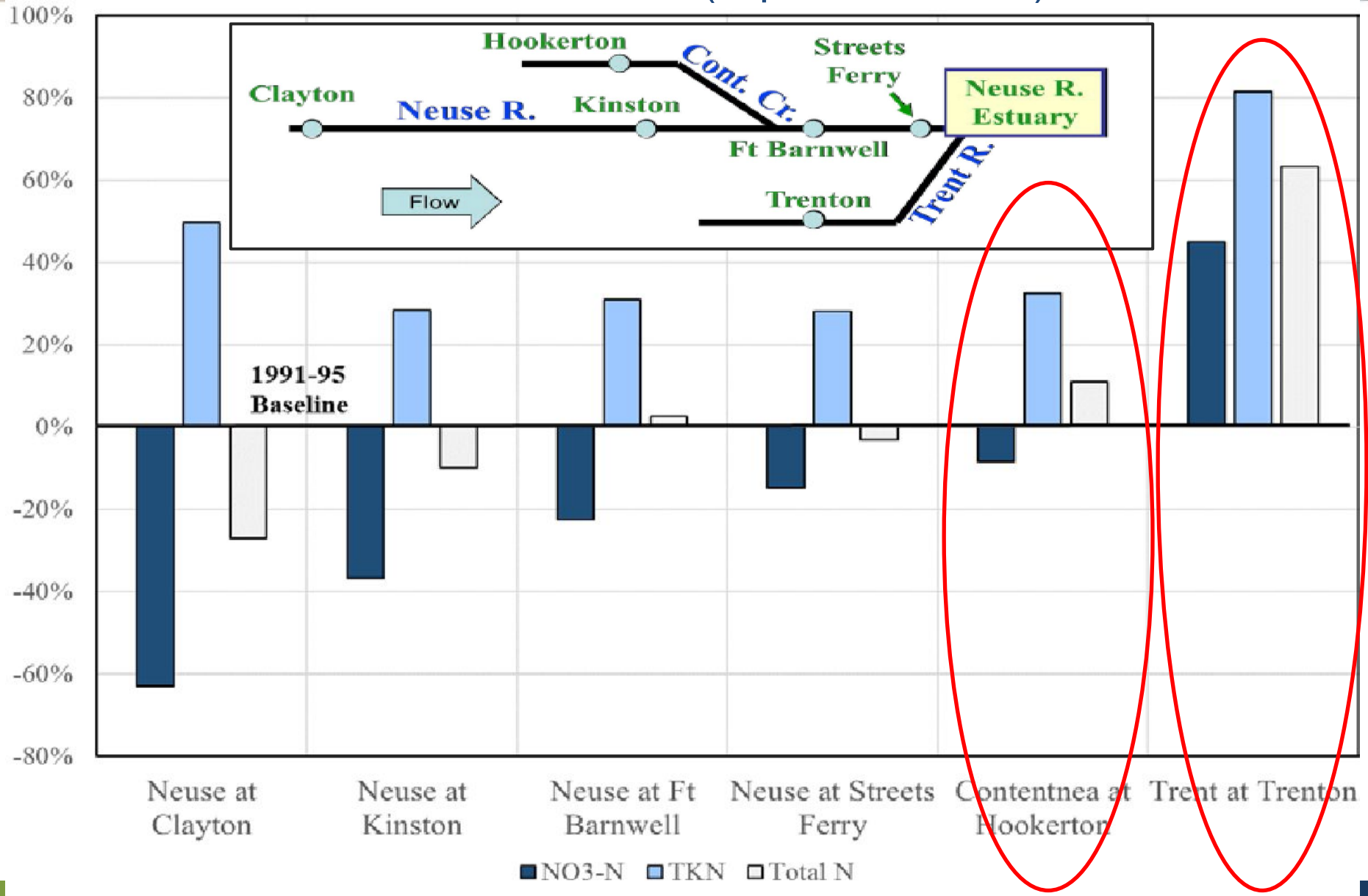
Flow-Normalized Nitrogen Loads (% vs. 1991-1995)

Neuse River at Fort Barnwell



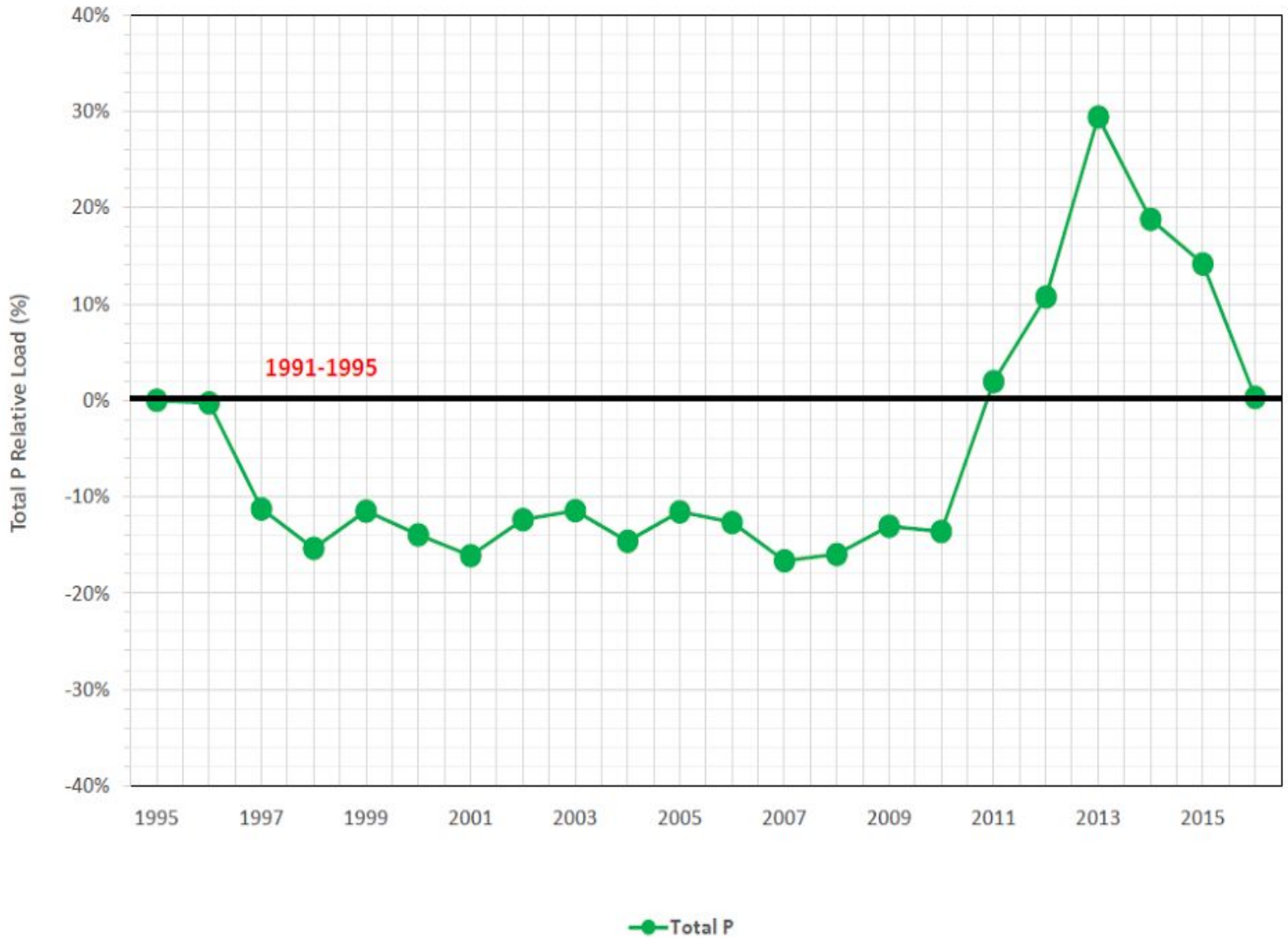
2011-2015 TN % Difference vs. Baseline

Neuse River and Tributaries (AquAeTer, 2016)



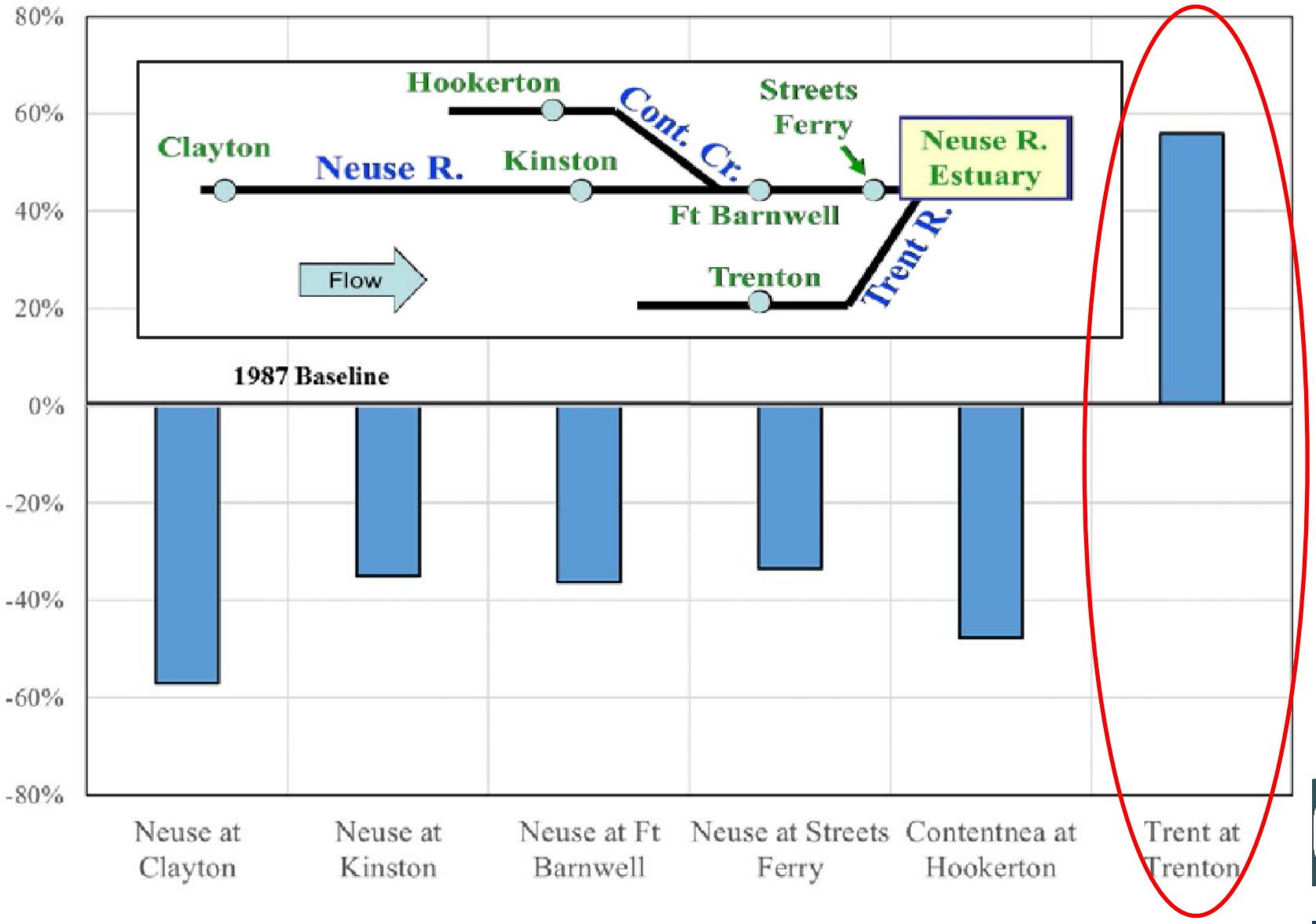
Flow-Normalized Total Phosphorus Load (% vs. 1991-95)

Tar River near Grimesland



2011-2015 TP % Difference vs. Baseline

Neuse River and Tributaries (AquAeTer, 2016)



Changes in Basin Poultry Inventories

River Basin	Poultry Inventory				Percent Inventory Change (Δ %)		
	1992	2000	2006	2014[1]	1992-2014	2000-2014	2006-2014
Yadkin-PeeDee	52,364,000	64,744,000	73,372,000	60,793,600	16	-6	-17
Cape Fear	52,975,000	54,445,000	56,208,000	57,906,600	9	6	3
Catawba	7,458,000	8,028,000	8,040,000	14,283,800	92	78	78
Lumber	2,604,000	4,540,000	6,628,000	12,829,700	393	183	94
Neuse	10,146,400	11,485,000	11,974,700	9,631,500	-5	-16	-20
Roanoke	5,180,000	5,000,000	6,225,000	7,465,000	44	49	20
Tar-Pamlico	9,375,400	8,240,000	7,536,000	6,601,301	-30	-20	-12
Chowan	4,540,000	5,460,000	5,680,000	6,020,000	33	10	6
Broad	1,270,000	1,850,000	2,340,000	5,475,400	331	196	134
Pasquotank	2,380,000	2,280,000	1,680,000	2,100,000	-12	-8	25
White Oak	1,122,000	1,060,000	1,064,000	1,681,300	50	59	58
Other	2,677,000	1,607,000	2,633,300	6,587,600	146	310	150

[1] 2014 data does not include rooster inventory.

Some Adaptive Evaluation Questions

Source(s) of increasing N, P to estuary?

- Type(s)/nature
  - Character of driving activity
  - Nutrient release magnitudes, dynamics
- Basin distribution

Released nutrients

- Forms, pathways, transformations
- Timing & bioavailability of estuary inputs

Proposed Neuse/Tar Rule Revisions

- New Development Stormwater
  - Adding 16 Neuse, 3 Tar communities
  - Exempt individual SFR lot projects < 5% BUA or on lot > 5 ac
  - Offsite thresholds → Min. onsite treatment - 1º SCM if > 24% BUA
  - Improved load accounting tool
- Wastewater
  - Extend TN limits to 0.1-0.5 MGD facilities

Neuse/Tar Rules Readoption Process

- Mandate (2014 150B revisions): all state rules, 10-yr cycle
- Prelim's
  - 2015 - Informal drafts, stakeholder session, 30-day comment
  - 2016 – Departmental review
  - 2017 - Revised drafts, more stakeholders
- Formal process
  - **Jan 2018 – WQC – request to initiate rulemaking**
  - ~4-6 mo. - fiscal analysis, OSBM approval
  - Sum-Fall 2018 – 60-day comment/hearings, Hearing Officers
  - Early 2019 – EMC adoption, RRC approval
  - 2020 – Legislative review if >10 objections

Questions?

Neuse and Tar Strategies

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https://deq.nc.gov/nps

DWR NPS Program

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Proposed Communities - Neuse/Tar New Development

Neuse

Current	Adding
Orange County	
Durham County Durham	
Wake County Cary Garner Raleigh	Morrisville Holly Springs Fuquay, Knightdale Wendell, Rolesville, Wake Forest
Johnston County Smithfield	Clayton
	Nash County
Wayne County Goldsboro	**Greene County**
Wilson	**Wilson County**
Kinston	**Pitt County** Greenville, Winterville
New Bern	**Craven County**
Havelock	

Tar-Pamlico

Current	Adding
Oxford	**Granville County**
Henderson	**Vance County**
Franklin County	
Nash County Rocky Mount	
	Wilson County
Edgecombe County Tarboro	
Pitt County Greenville	
Beaufort County Washington	

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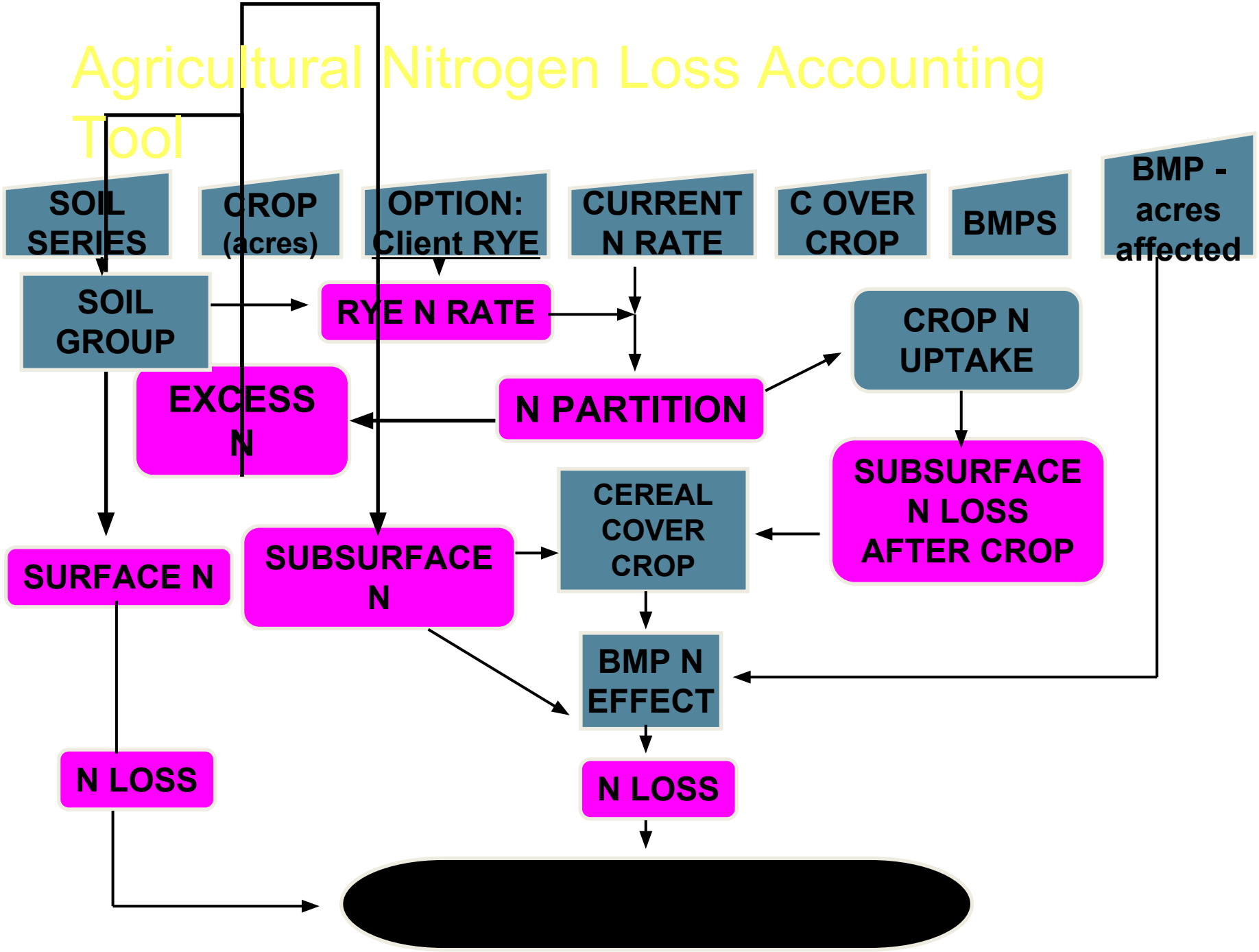
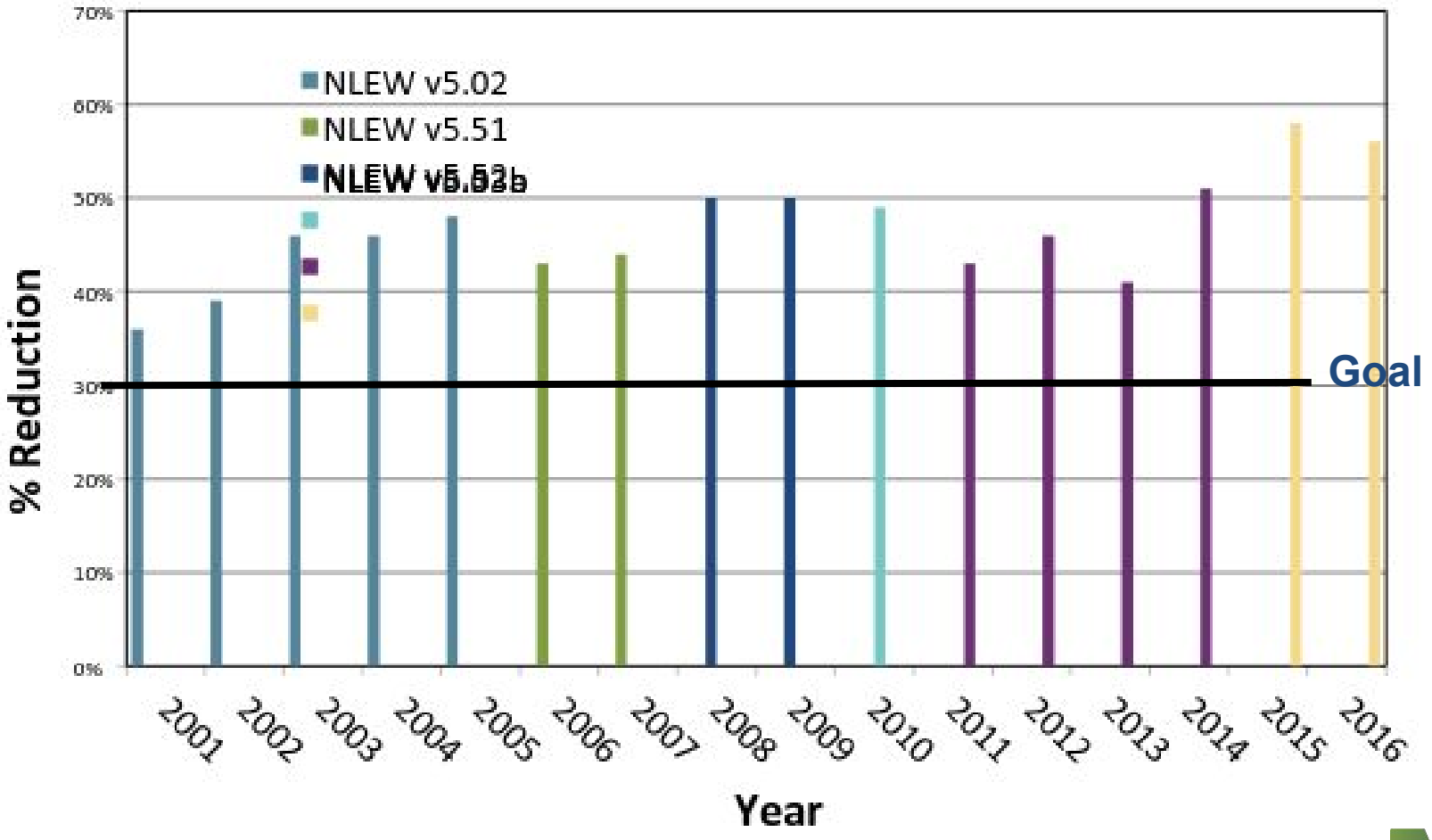
Agricultural Nitrogen Loss Accounting Tool



Tar-Pamlico - Estimated Cropland N Loss Reductions



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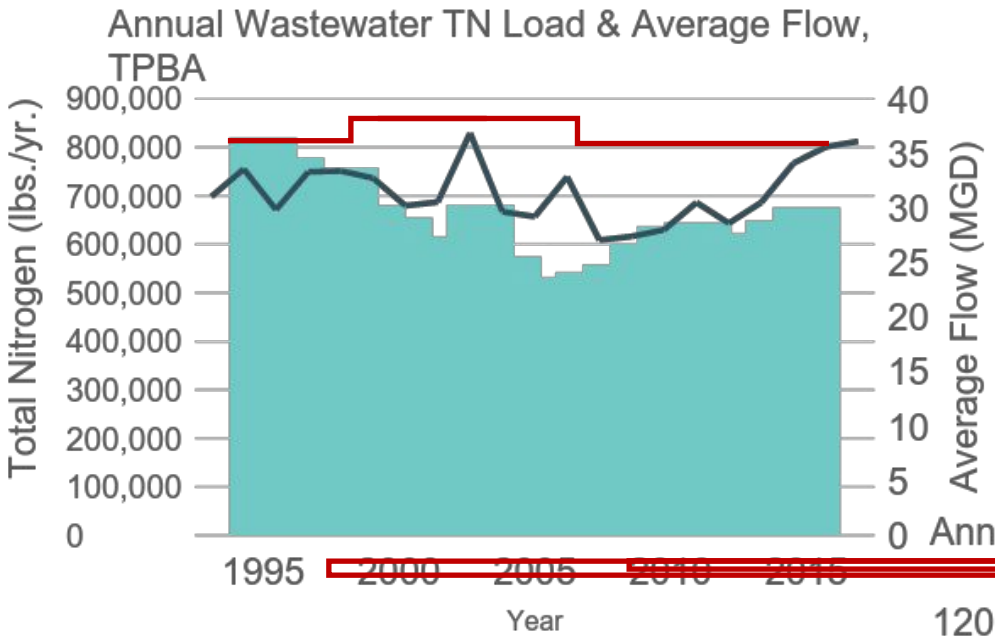
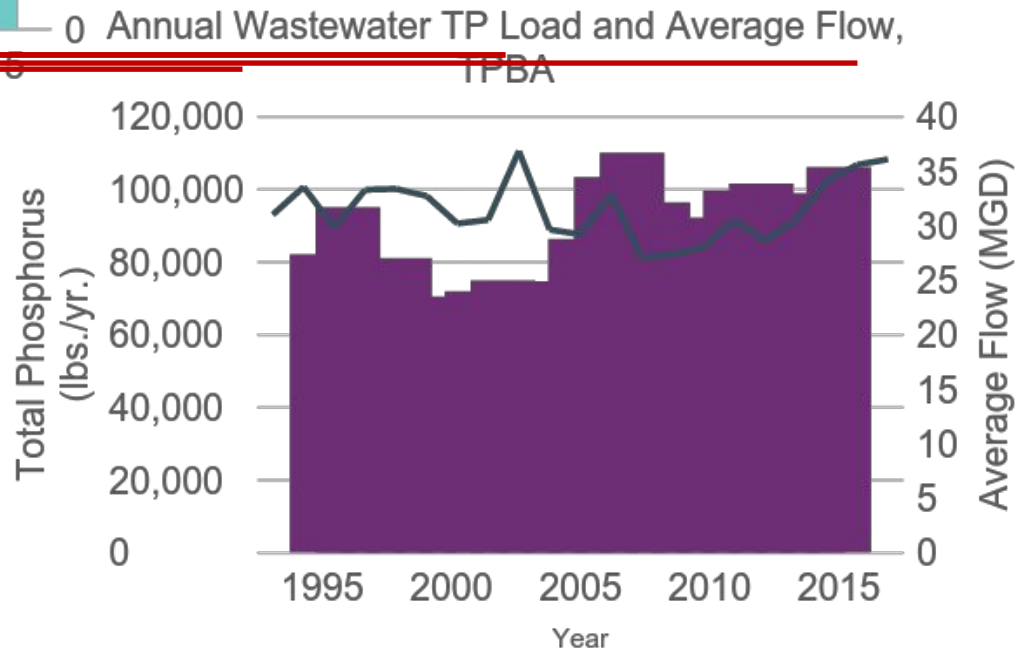
Tar-Pamlico Wastewater Compliance, Phases II-IV





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