



2012 Annual Water Supply Report

Environmental Review Commission

October 11, 2012

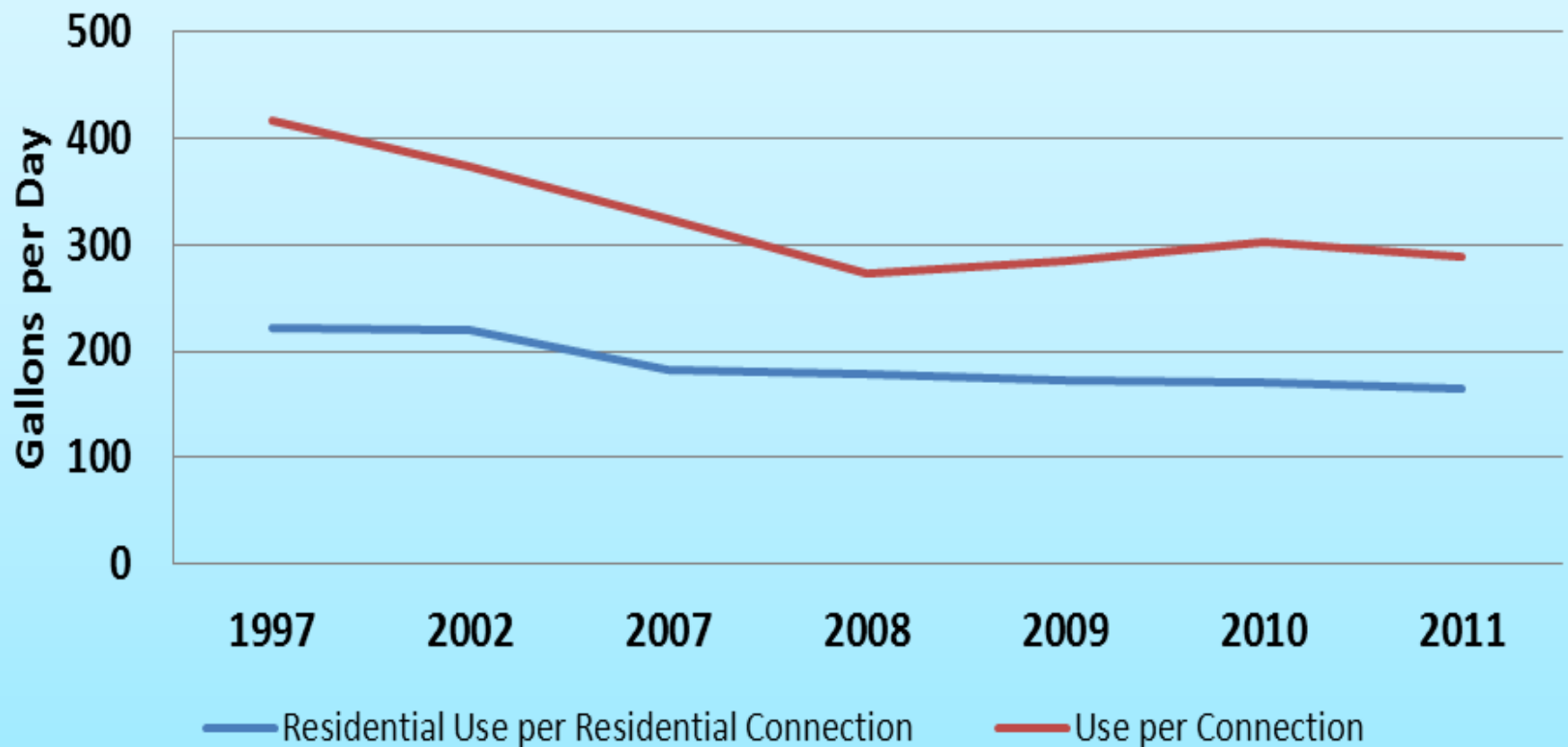
Overview

- Water Efficiency
- Hydrologic Modeling
- Ecological Flows
- Assistance to Local Governments
- Storage Alternatives
- Coastal Plain Aquifers
- Shale Gas & Water Quantity
- Drought Response Preparation
- Pending Interbasin Transfers
- Protecting Drinking Water Sources

NC Water Efficiency BMP Manual

- Development mandated under NC Session Law 2011- 374
- Manual completed
- Incorporating public comment
- Includes info on 14 different water efficiency BMPs
- Technical training for local govts this fall
- Local govts must begin incorporating long-term water reduction plans into Local Water Supply Plans in 2013
- Draft manual may be found at: www.ncwater.org

Ten Largest Public Water Systems Average Daily Water Use per Connection



Water Systems in NC with > 30% Unaccounted for Water*

- 37 systems with 31 – 50% unaccounted for water

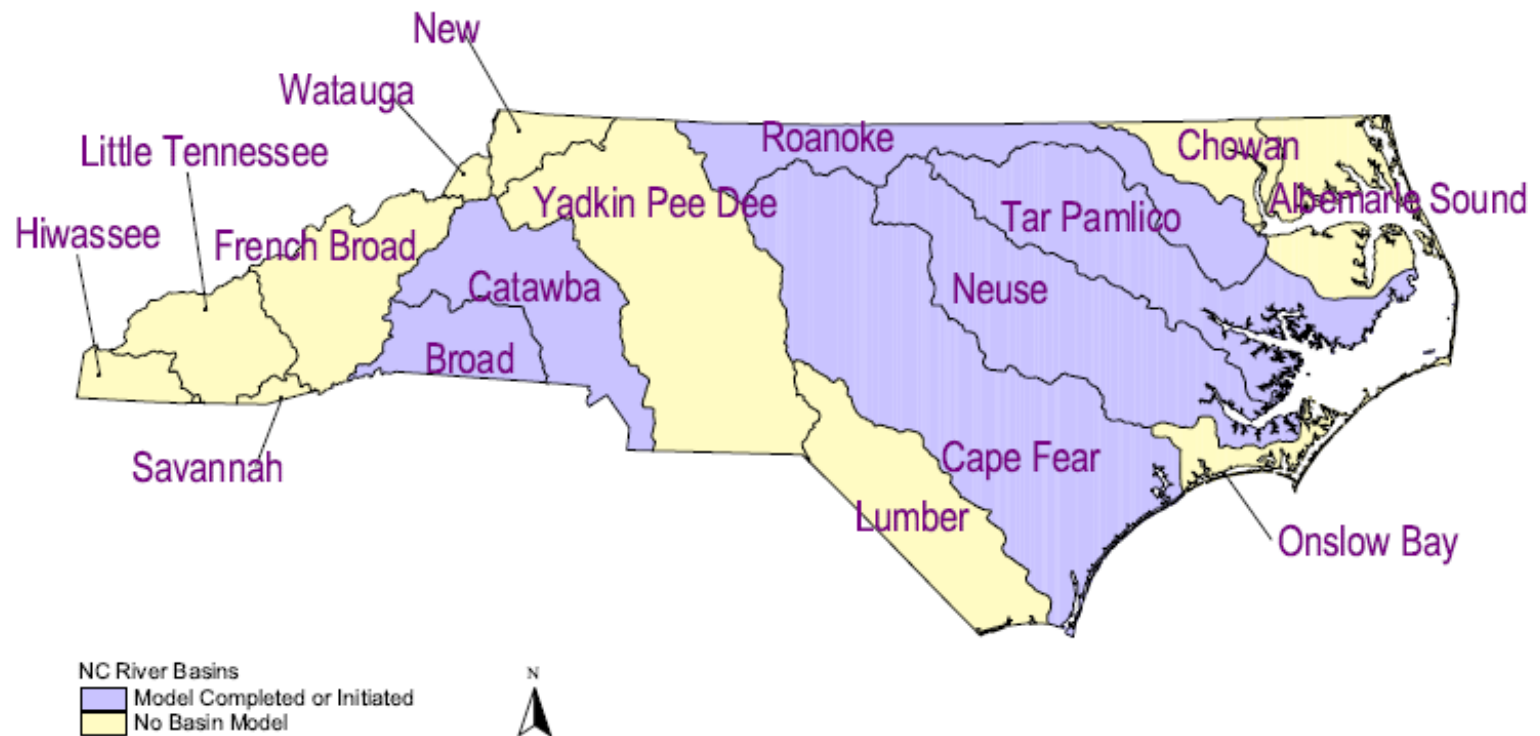
*Based on Local Water Supply Plan data

Hydrologic Model Development Status*

River Basin	Status	Type of Model
Neuse	Completed	OASIS
Cape Fear	Completed	OASIS
Tar-Pamlico	Completed	OASIS
Broad	Completed	OASIS
Roanoke	Underway	OASIS
Catawba	Underway	CHEOPS
Yadkin – Pee Dee	Sched. for 2013	OASIS
Lumber	Sched. for 2013	OASIS
French Broad / Watauga	Sched. For 2014	OASIS
Little Tenn. / Hiwassee	Sched. For 2014	OASIS

*Mandated under Session Law 2010-143

North Carolina River Basin Model Development Status



Broad, Cape Fear, Neuse, Tar-Pam, Roanoke:
Systems Unable to Meet **Average Daily Demand** in 2050 by
1 MGD or Greater with Existing Infrastructure and Allocations*

- Raleigh
- South Granville Water & Sewer Authority

*Notes:

1. Models do not yet include ecological flows.
2. Does not include systems that need an approved IBT Certificate to meet 2050 demands.

Ecological Flows

- Science Advisory Board continues to meet
- Report expected sometime in 2013
- DWR will begin incorporating ecological flows into hydrologic models in 2014
- Analysis will help determine possible conflicts between ecological flows / off-stream needs
- Potential policy decisions

DWR Assistance to Water Systems Under SL 2011-374 (HB 609)

Water System	Type of Water Supply Project
Cape Fear Public Utility Authority & Lower Cape Fear Water & Sewer Auth.	Unknown. Additional water needed to meet maximum day demands.
Raleigh	Reallocation of Falls Lake
Greenville Utilities	Surface water intake / modeling
Cleveland County	New reservoir on First Broad
Moore County	Surface water intake/Existing reservoir
Marshall	New groundwater wells

Falls Lake Project Profile

Elevation at Top of Dam is 291.5 Feet, msl —

Spillway Crest at 264.8 Feet, msl - -

Controlled Flood Storage

Elevation 251.5 to 264.8 Feet, msl

221,182 Acre-Feet or 5.4 Inches of Runoff Storage

Normal Operating Level of 251.5 Feet, msl

Conservation Storage

Water Supply Storage

45,000 Acre-Feet or
42.3 % of Conservation Pool

Water Quality Storage

61,322 Acre-Feet or
57.7 % of Conservation Pool

Bottom of Conservation Pool is 236.5 Feet, msl

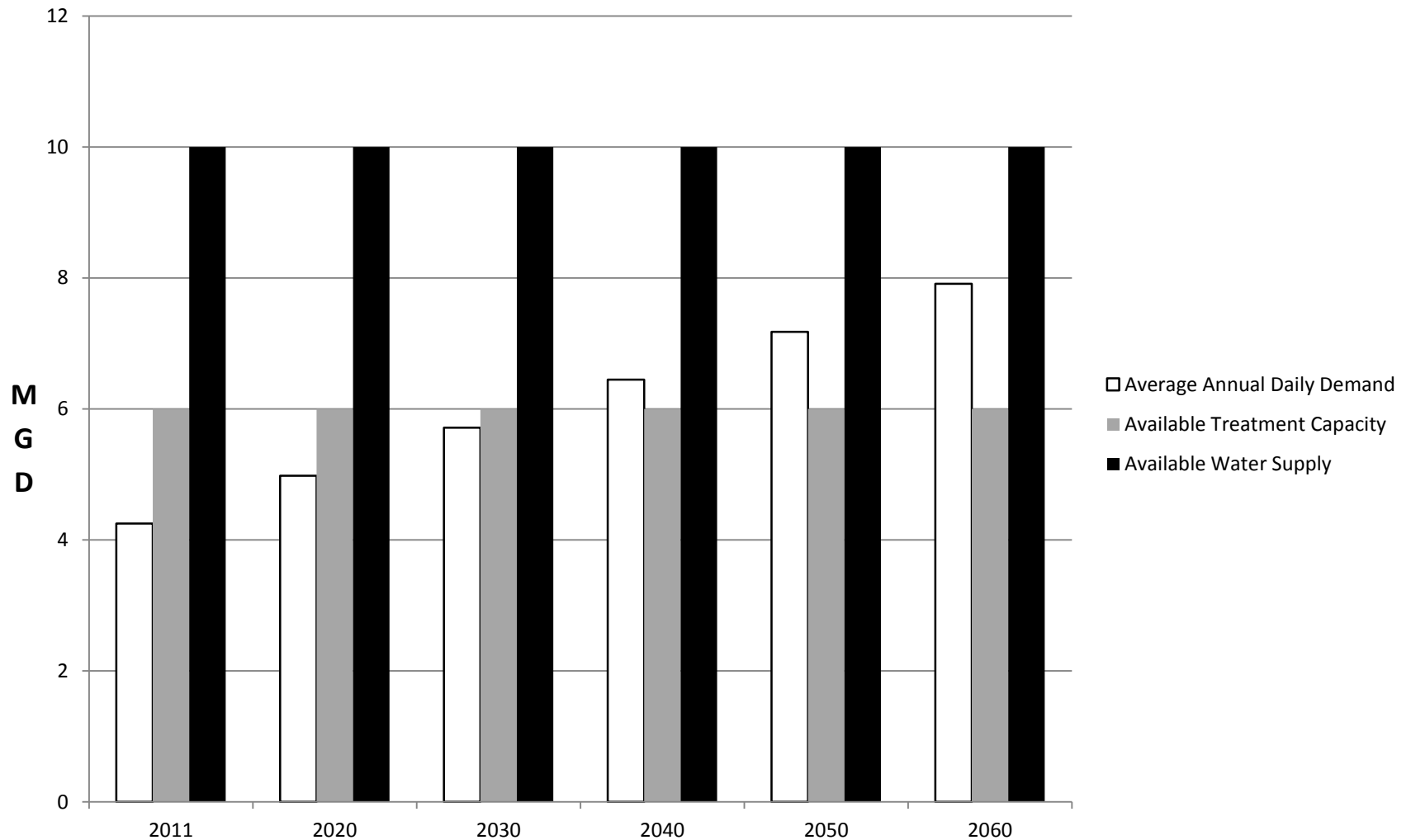
Sedimentation Storage

Elevation 200 to 236.5 Feet, msl or 25,073 Acre-Feet

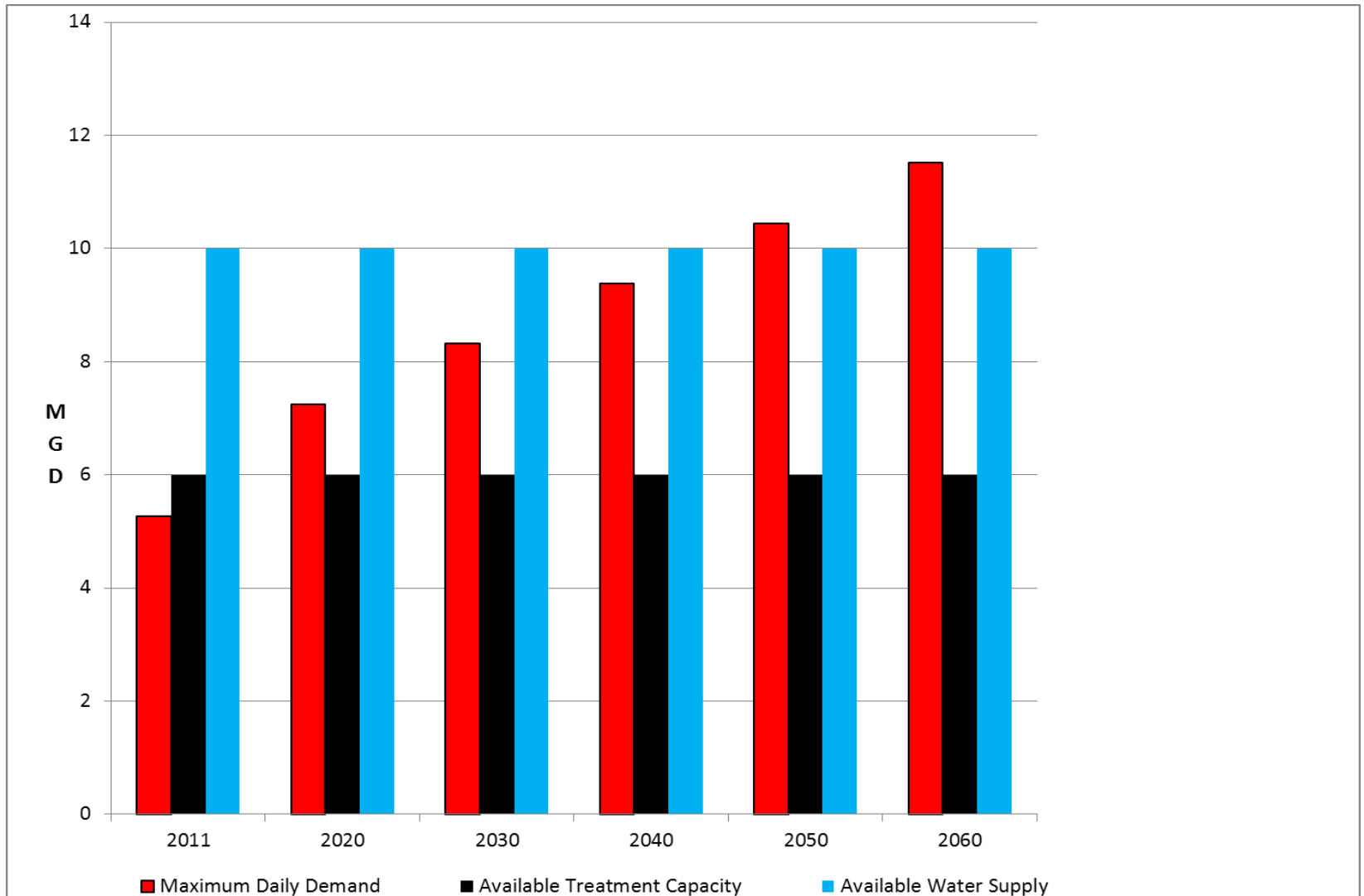
Elevation at Base of Dam is 200 Feet, msl

Increasing Water Supply Storage in North Carolina

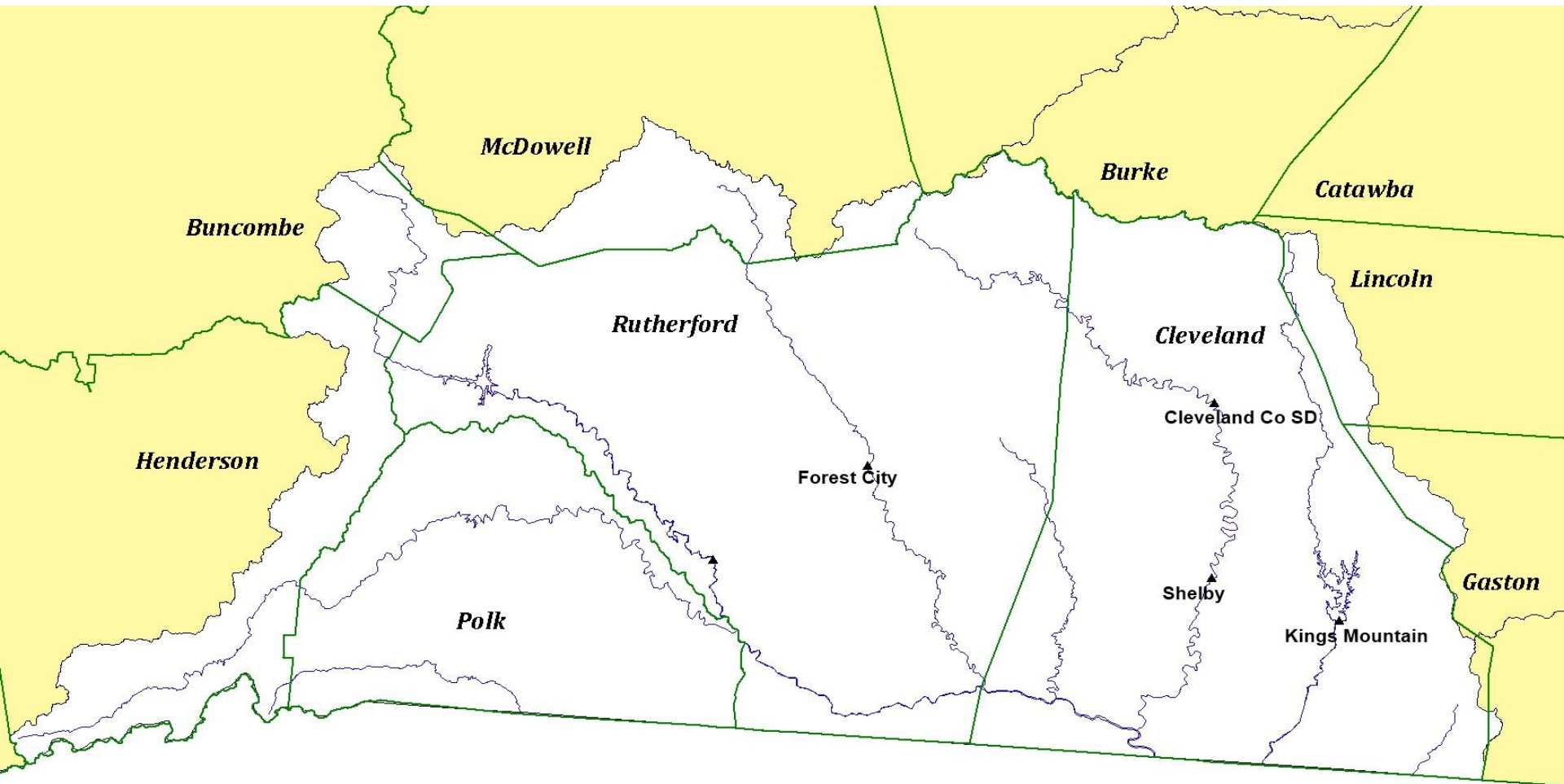
Projected Average Annual Demand for Cleveland County Water (based on most recent local water supply plan data)



Maximum Daily Demands, Current Treatment Capacity and Current Available Water Supply for Cleveland County Water

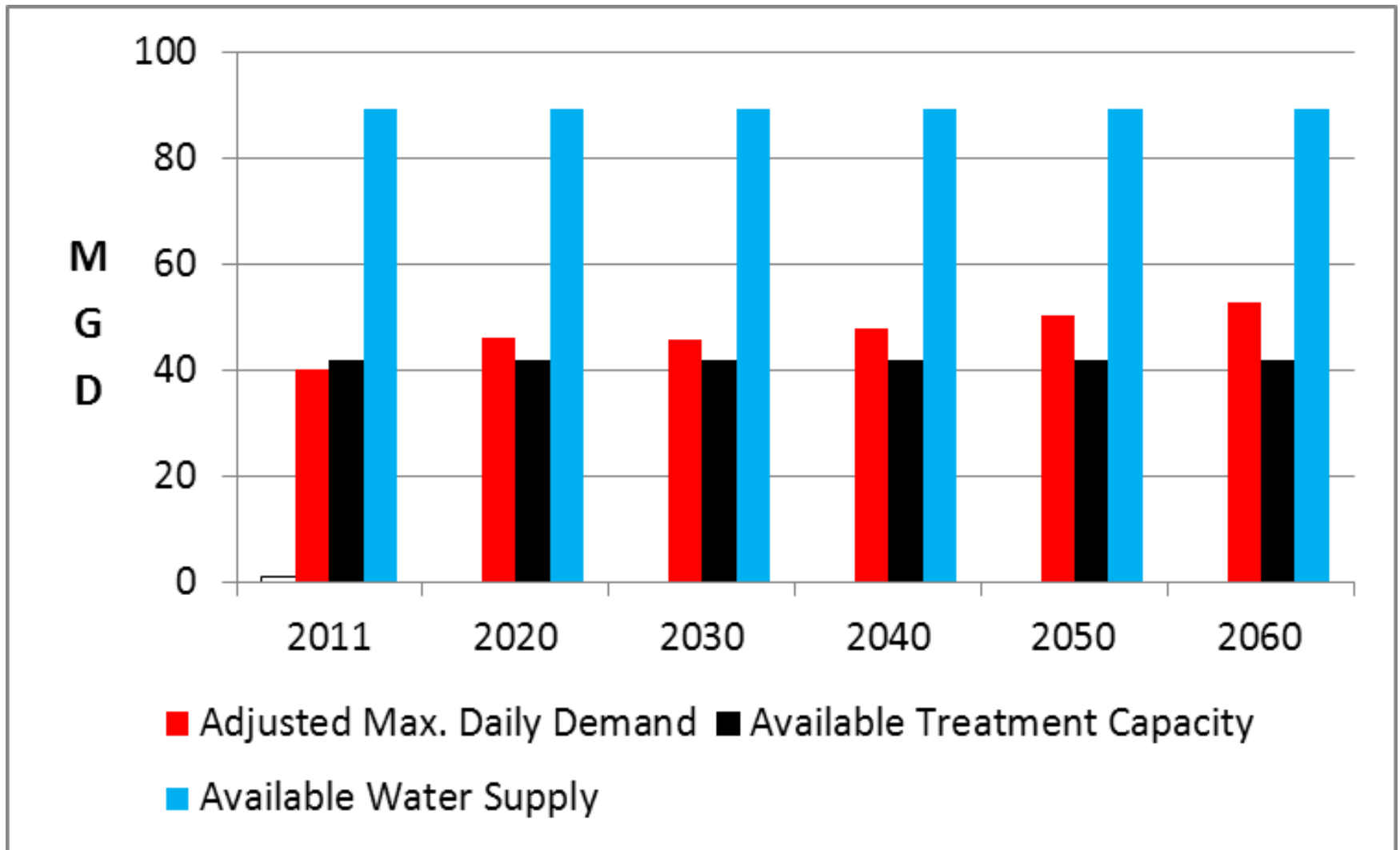


Water Systems in Proximity to Cleveland County in the Broad River Basin



Federal authorities will consider water availability in nearby supplies when making a decision regarding the “need” for a new mainstem reservoir.

Adjusted Maximum Daily Demands through 2060, Current Treatment Capacities and Current Available Water Supplies for the Broad River Water Authority, City of Kings Mountain, City of Shelby, Cleveland County Water, and Town of Forest City



New Water Supply Options

Listed by Difficulty in Permitting

1. Interconnection w/ another system
2. Reallocation of Existing Storage*
Quarry with High Flow Skimming*
3. Surface Water Intake
4. Non-mainstem (Offline) Reservoir*
5. New Mainstem Reservoir*

*These options increase available storage

Southern Pines Reservoir Full, Securing Future Water Needs - Southern Pines Pilot



David McKew, Southern Pines water treatment plant supervisor, checks on the recently filled-up reservoir off Drowning Creek south of Pinebluff. Photo by [Glenn Sides](#).

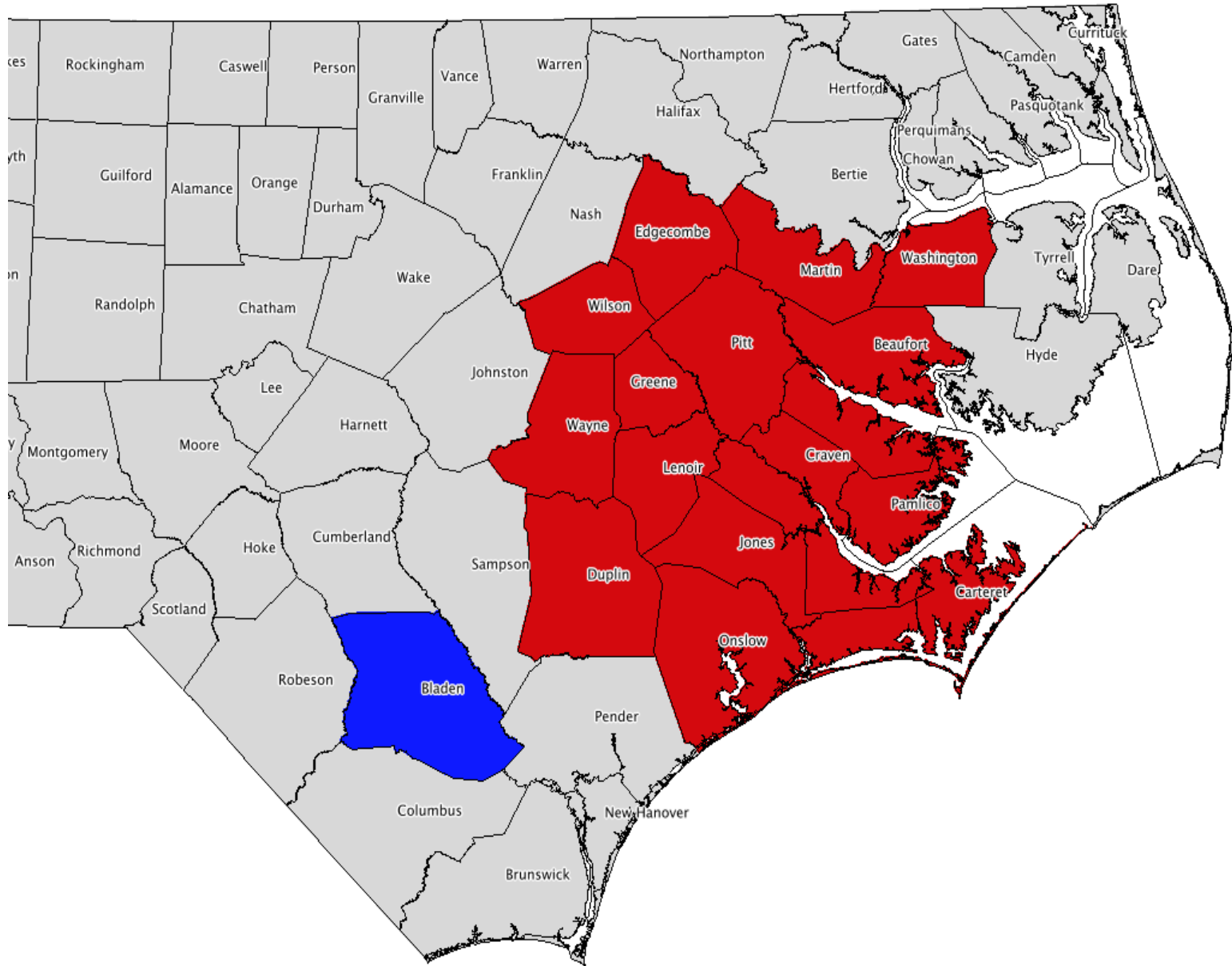
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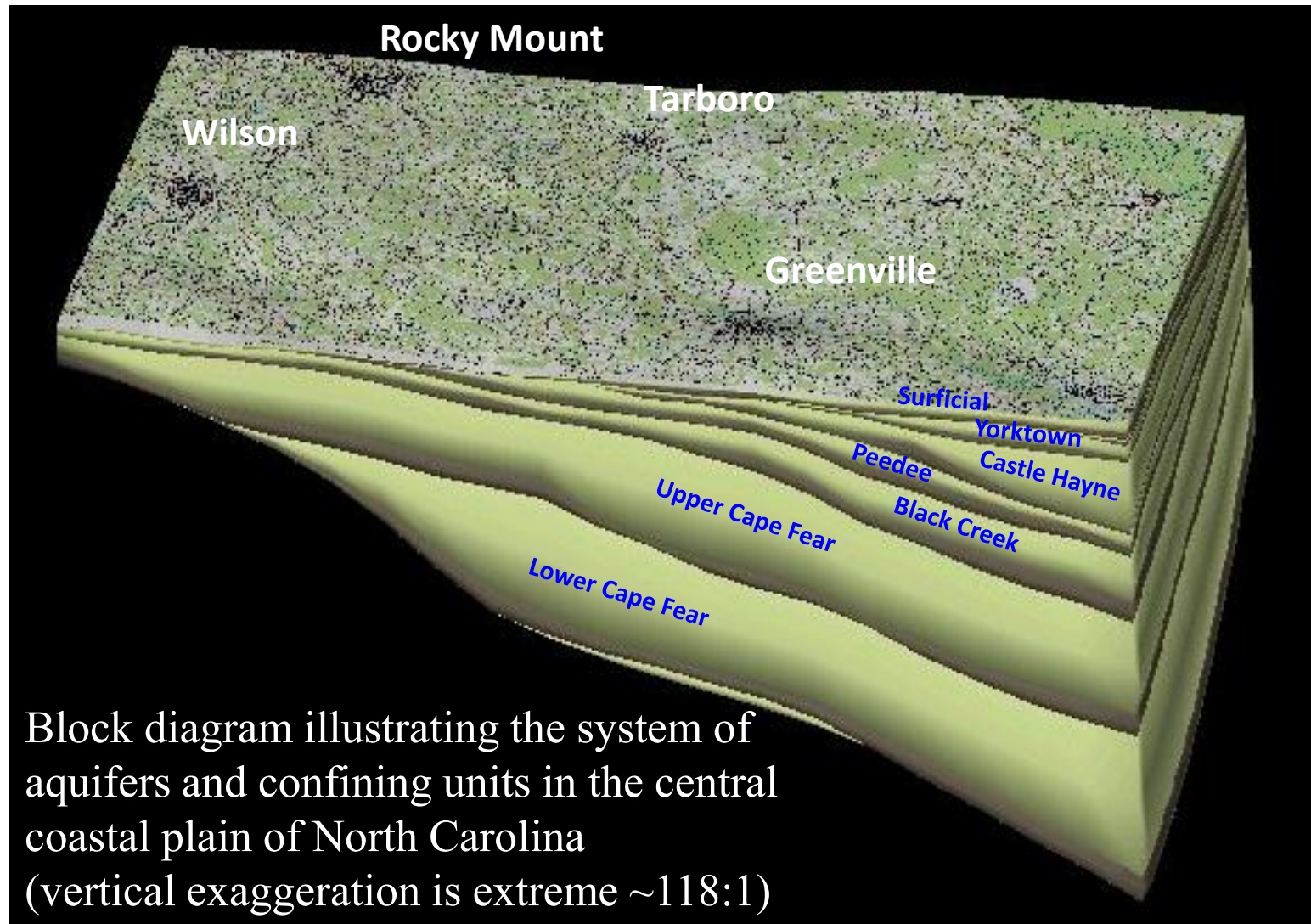
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Coastal Plain Aquifer Update



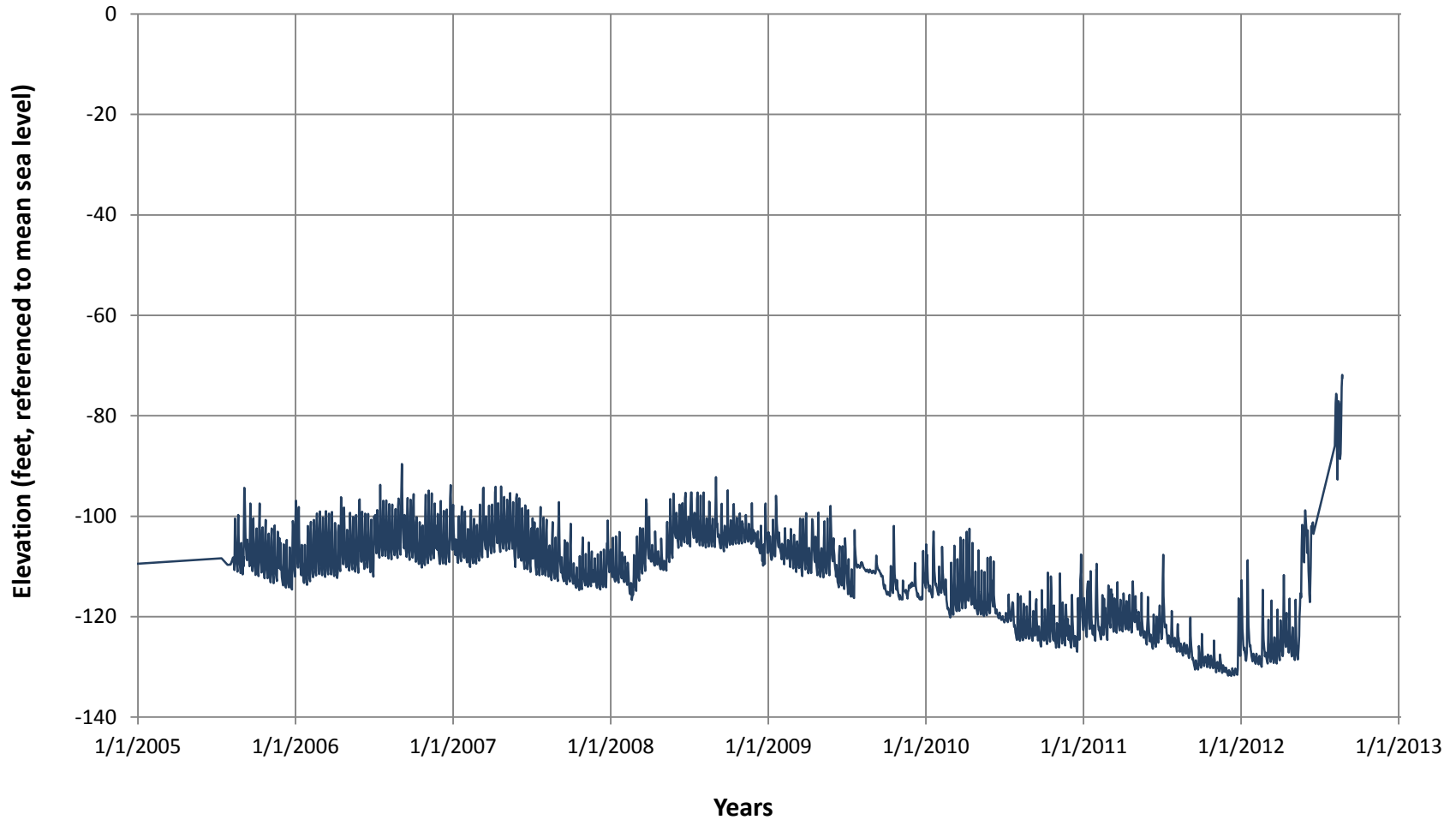
Coastal Plain Hydrogeology



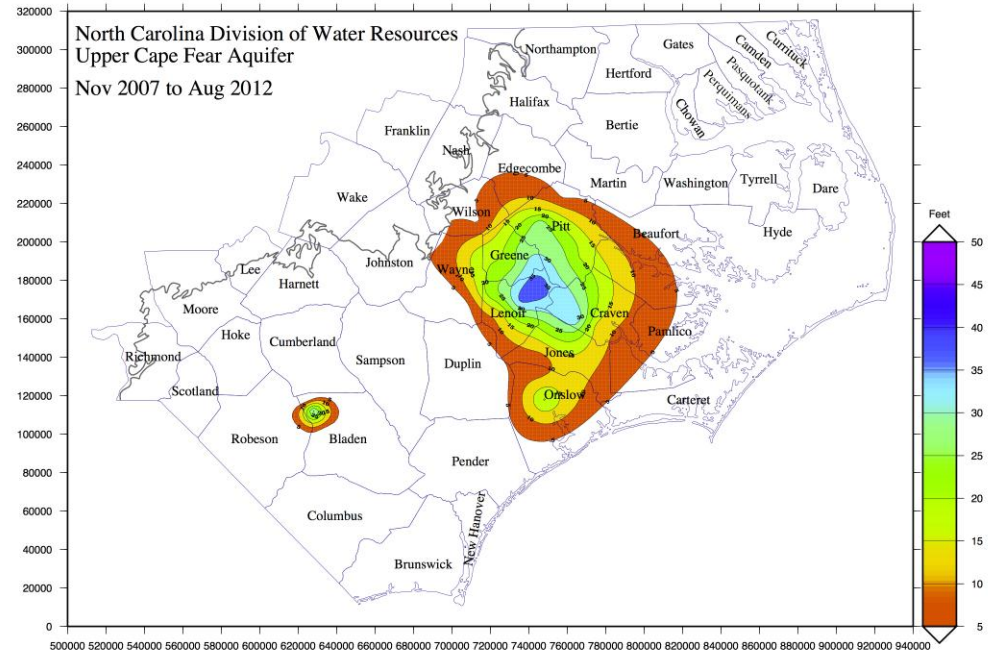
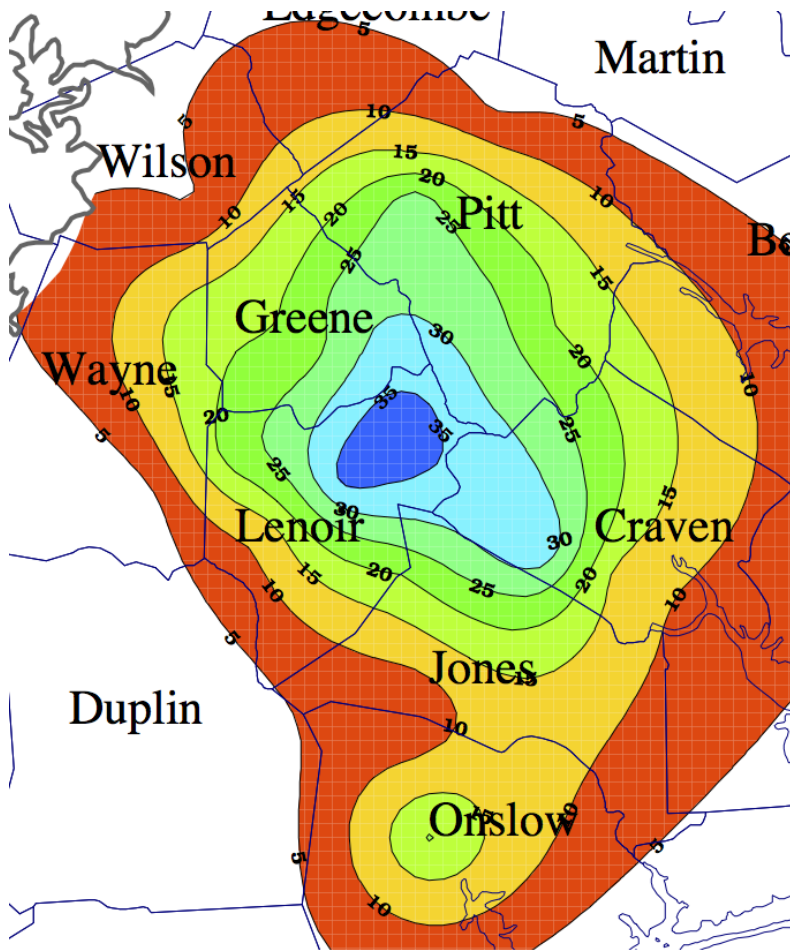
Bladen Bluffs Surface Water Plant

- 2004: DWR report to EMC on ground water in the Upper Cape Fear aquifer in Bladen County
- Dewatering and salt water intrusion problems
- Report initiated cooperative efforts between Lumber River COG, Smithfield Packing Plant in Bladen County, & the Lower Cape Fear WASA
- New Bladen Bluffs surface water treatment plant is operational in 2012 using Cape Fear river water
- Upper Cape Fear aquifer water levels are recovering

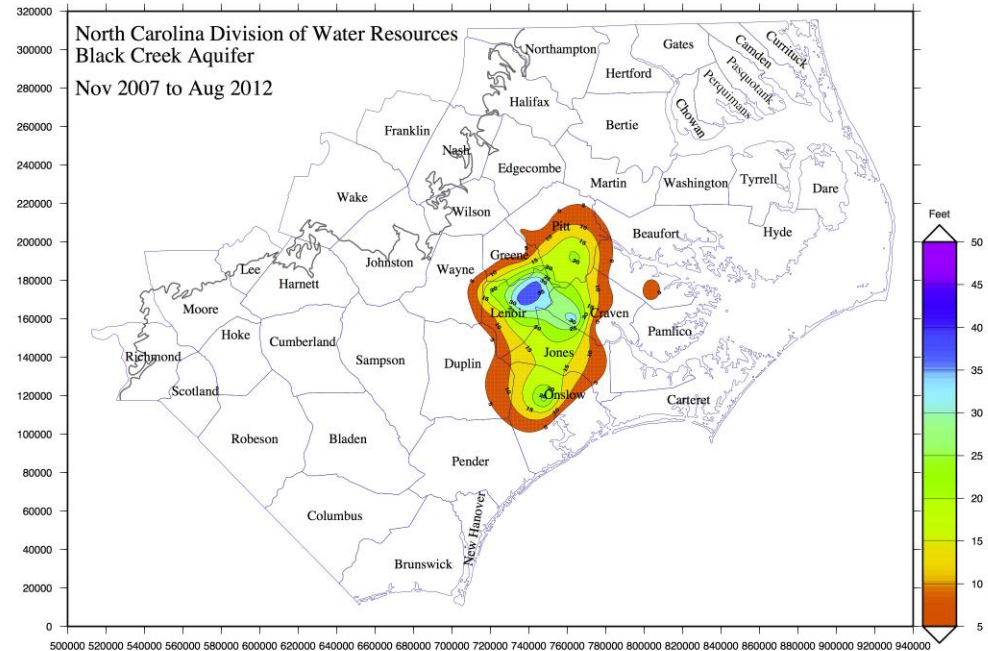
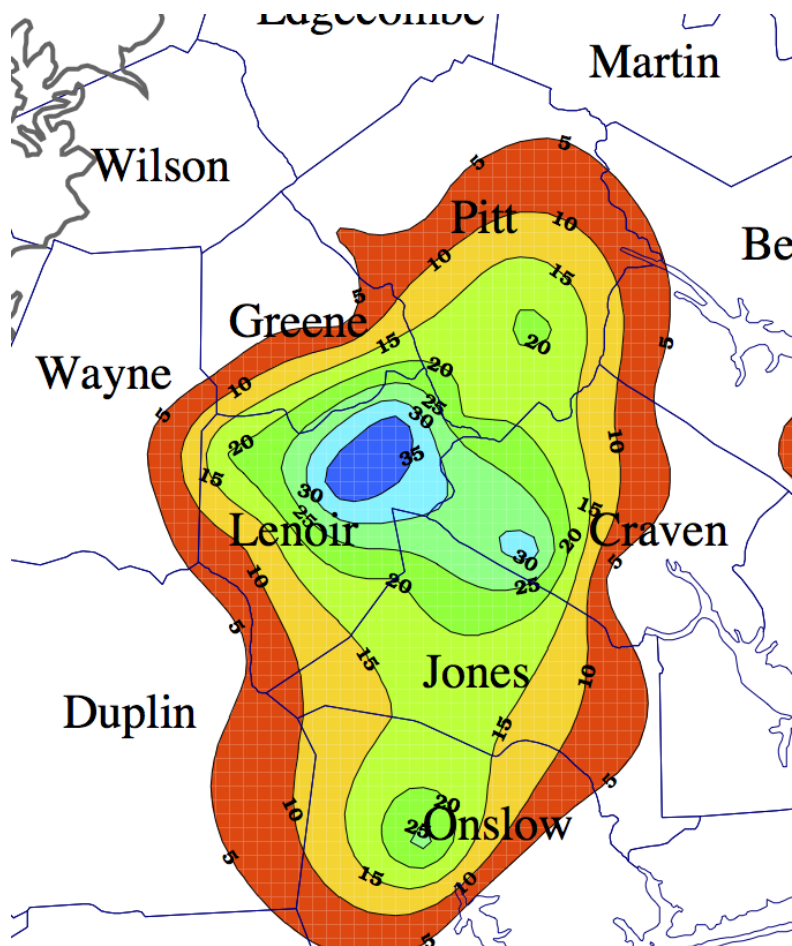
Upper Cape Fear Aquifer Water Levels near Tar Heel, North Carolina at the Smithfield-McNair House (W41X2)



Upper Cape Fear Aquifer Recovery



Black Creek Aquifer Recovery



Onslow County Area Issue

- Major water suppliers: Camp Lejeune, ONWASA, and Jacksonville
- CCPCUA rules reqd ONWASA and Jax to use new well fields in same aquifer that USMC uses – the Castle Hayne
- DWR is carefully tracking water withdrawals and monitoring water levels
- Capacity of the Castle Hayne aquifer is being tested and permits may need to be altered to protect the aquifer's viability

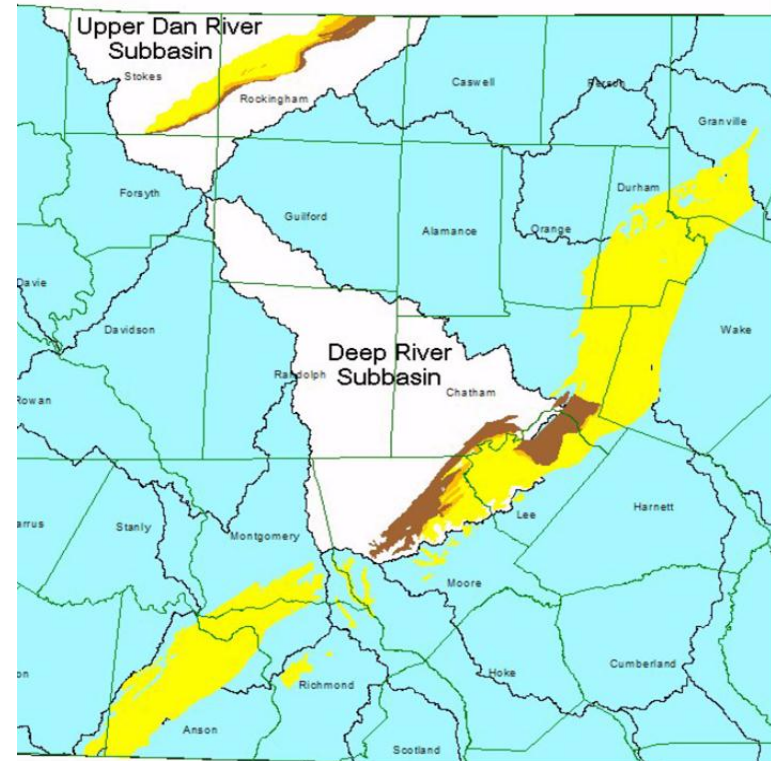
Shale Gas & Water Quantity

Key Points:

- 3-5 MGD per gas well (accumulated over several days or weeks)
- Water needed for limited times
- Unused capacity currently exists
- With limitations adequate water is available
- 20% of 7Q10 Flow
- 7Q10 of Deep River at Moncure: 13.3 mgd
- 20% of 7Q10: 2.7 mgd

To protect water resources and other users:

- Water Management Plan
 - Withdrawal Source
 - Withdrawal Magnitude
 - Withdrawal Timing
 - Wastewater return locations
- Limit cumulative surface water withdrawals to 20% of 7Q10 flow
- Prohibit SW withdrawals during droughts & low flows
- Encourage use of reclaimed water
- Explore unused capacity of existing intakes

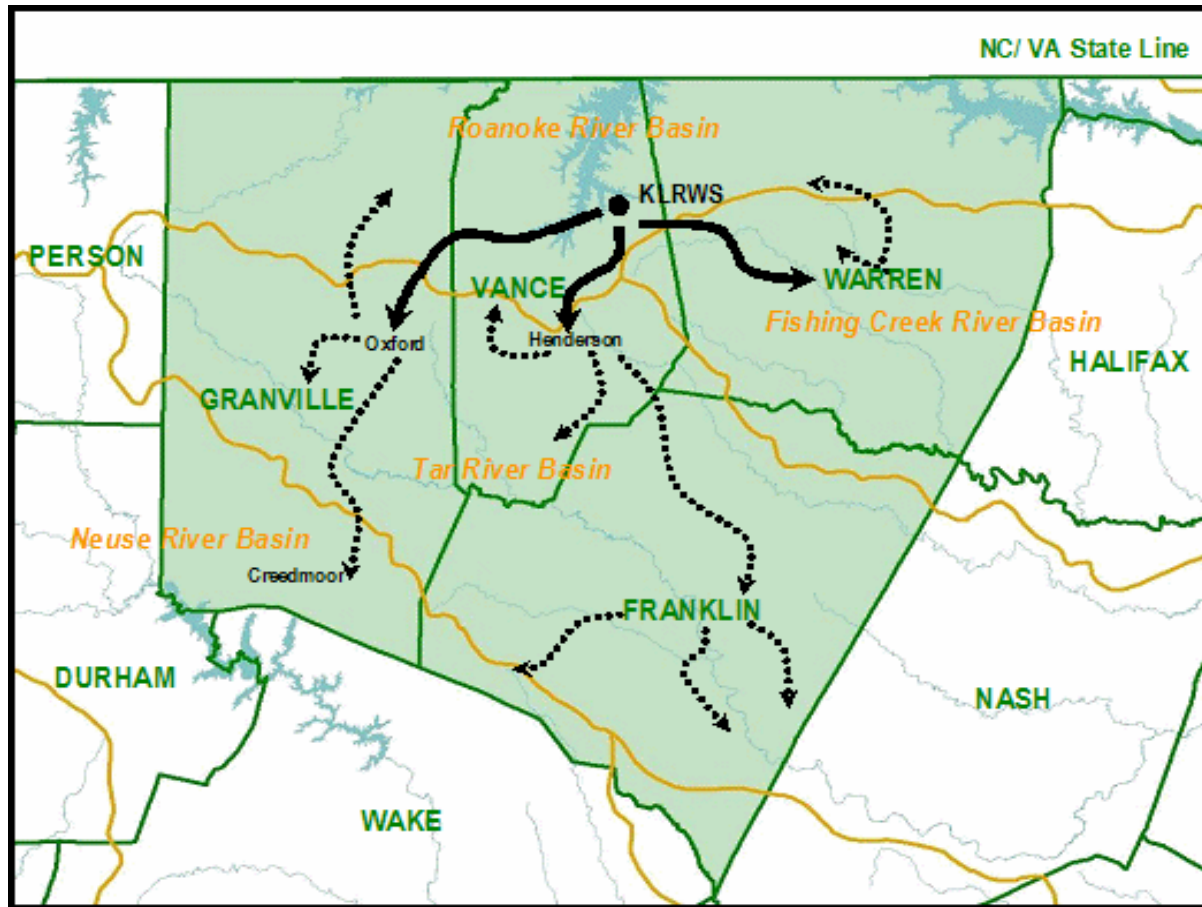


Drought Preparedness

- Minimal impacts from drought in 2012
- 540 out of 551 Water Shortage Response Plans completed and in place
- Working with 11 remaining systems

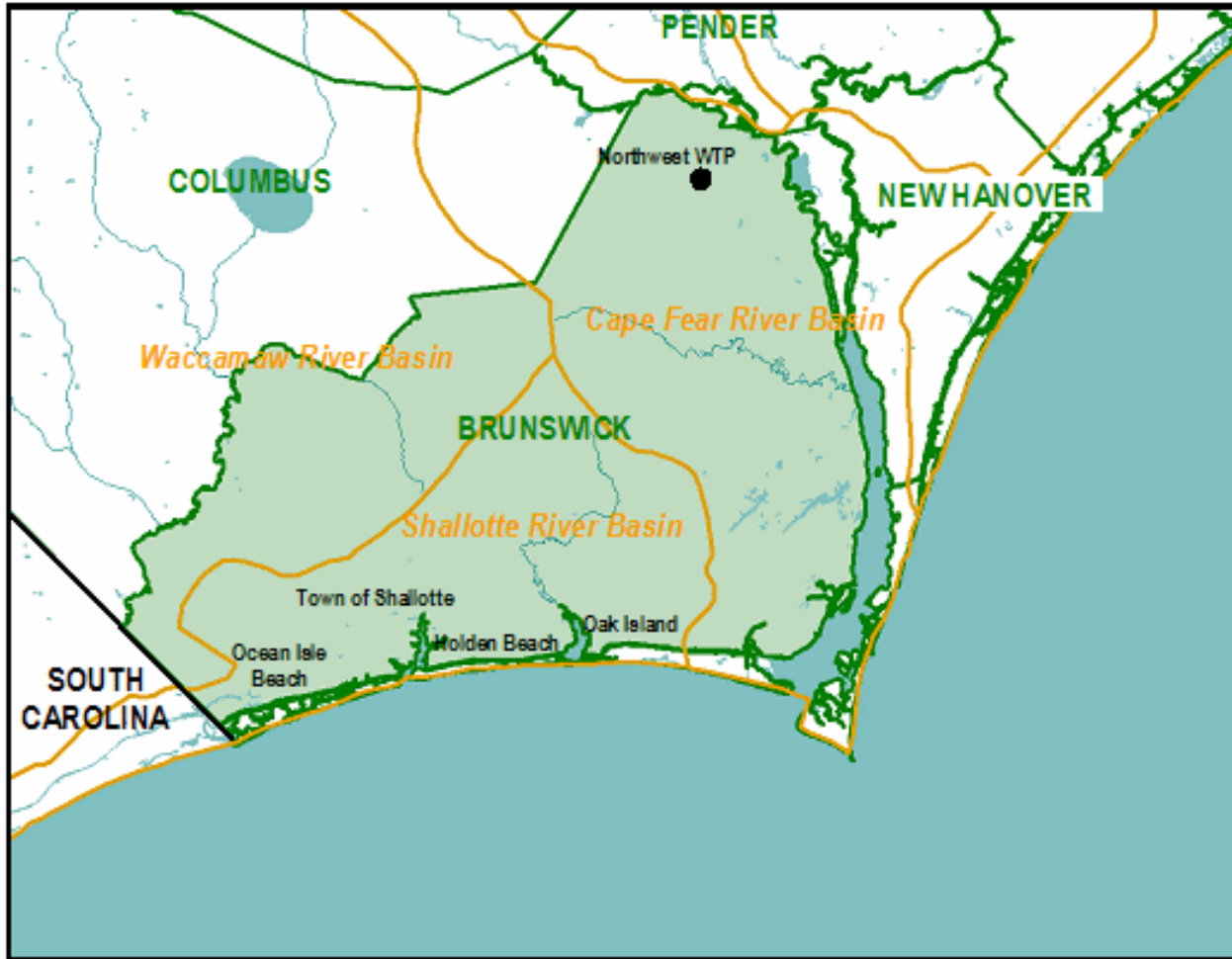
Pending Interbasin Transfers (IBTs)

Proposed Kerr Lake Regional Water System IBT



Request to transfer approximately 26 million gallons/day out of Roanoke Basin

Proposed Brunswick County IBT



Request to transfer approx. 18 million gallons/day from Cape Fear to Shallotte & transfer approx. 1 million gallon/day from Cape Fear to Waccamaw River Basin

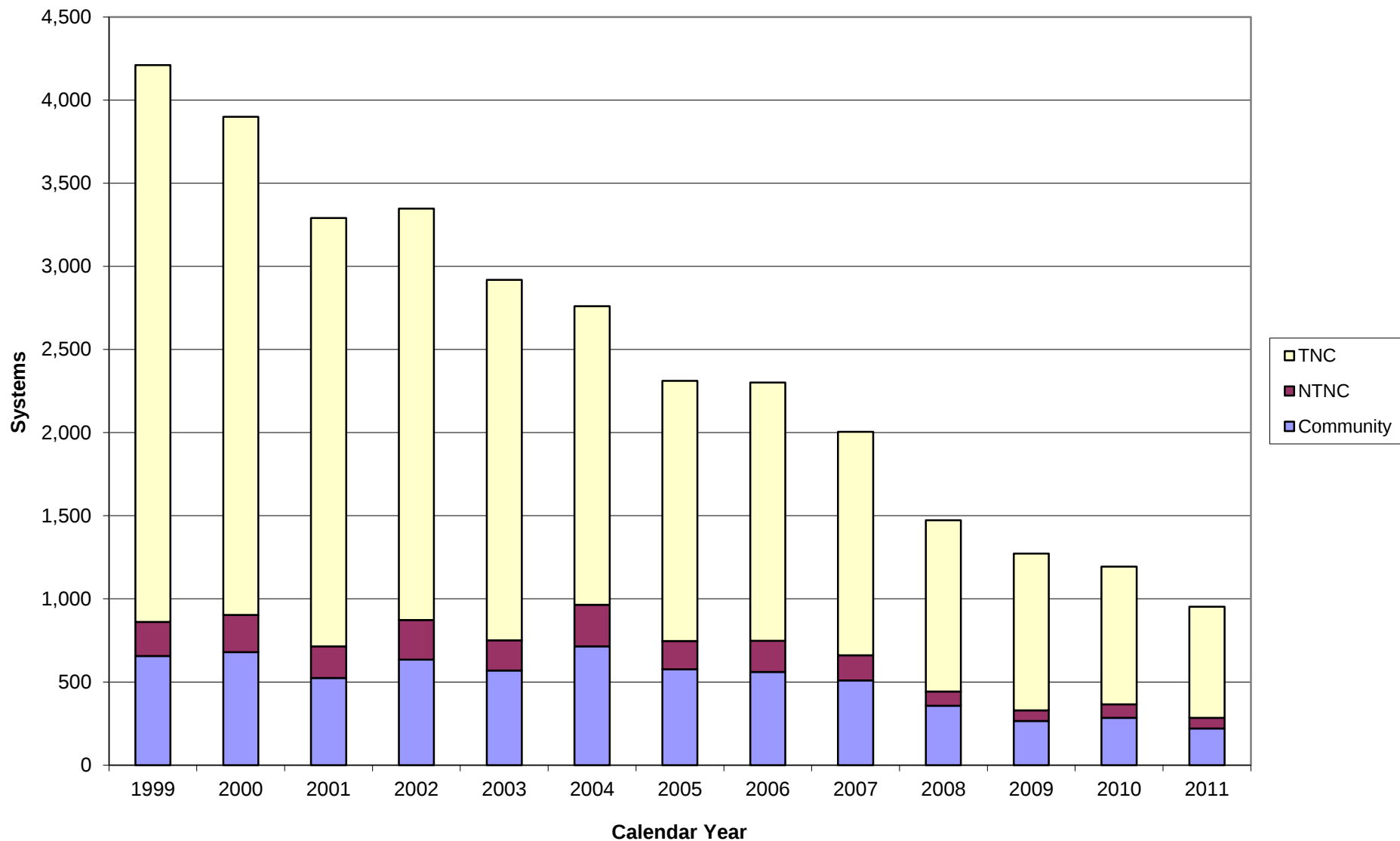


NC Source Water Protection Program

NC's only statewide program focused solely on the protection of public drinking water

- Non-regulatory approach
- Technical assessments for 9000+ sources
- Interagency partnerships to prioritize funding
- Incentives to encourage proactive action
- Outreach and assistance to local communities

The Number of Water Systems with Monitoring/Reporting Violations: 1999 to 2011



Contact Information

Tom Reeder

Director, NC Division of Water Resources

919-707-9027

tom.reeder@ncdenr.gov

