2021 Coastal Habitat Protection Plan Issue Paper Updates

DEPARTMENT OF ENVIRONMENTAL QUALITY

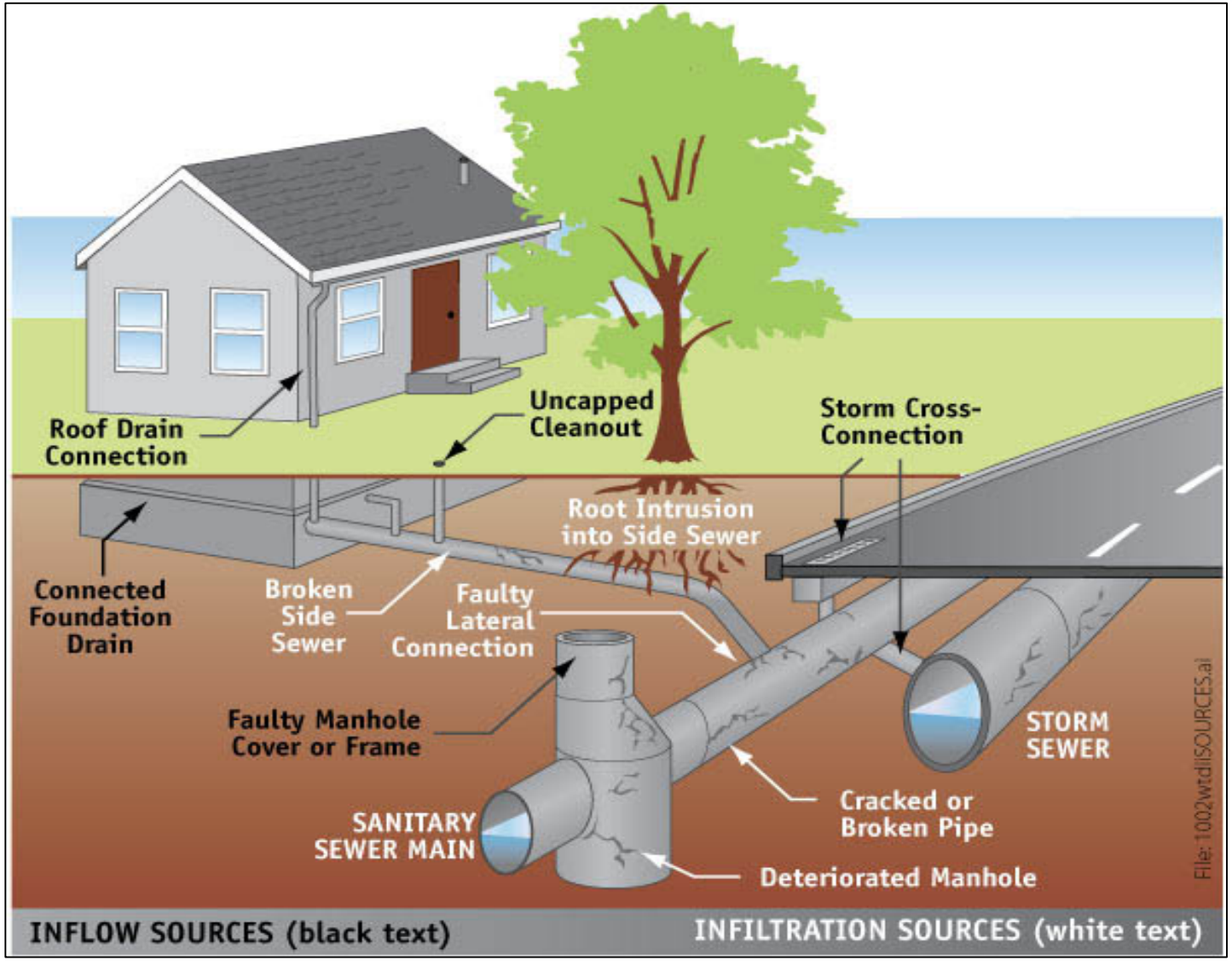
Anne Deaton | CHPP Steering Committee | July 30, 2020

Issue Paper Updates

- Reducing Inflow and Infiltration to Improve Coastal Water Quality
- Wetland Protection and Enhancement, with Focus on Nature-Based Methods
- Habitat Monitoring to Assess Status and Regulatory Effectiveness

Inflow and Infiltration
Causes

- Inflow
- Infiltration
- Collection System
- Sanitary Sewer Overflow (SSO)



Inflow and Infiltration
Contributing Factors

- Sewer pipe deterioration
- Construction materials (pipe type) and methods
- Insufficient maintenance
- Improper customer use (ex. fats, oils, and grease put in drain)
- **Site conditions (shallow water table)**
- **Heavy or prolonged rainfall**

Photo Credit: NC Health News

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Inflow and Infiltration
The Connection with Sewer Overflows

- Excess flows into the sewer lines may cause sewer overflows
- Sewer lines, pump stations, and WWTPs are designed for specific flows and peak flow volumes and rates.
- Permitted by Division of Water Resources (DWR)

Wallace Park, Burnt Mill Creek, Wilmington, 2018

Photo credit: L. Cahoon

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Inflow and Infiltration
Water Quality Impacts of SSOs

- ↑ fecal coliform bacteria = shellfish harvest closures, swimming advisories
- ↓ DO and ↑ nutrients = fish kills
- Toxins (oil, heavy metals, endocrine disrupting chemicals) = aquatic life impacts
- Pollutants accumulate in sediment

Photo credit: NCDMF

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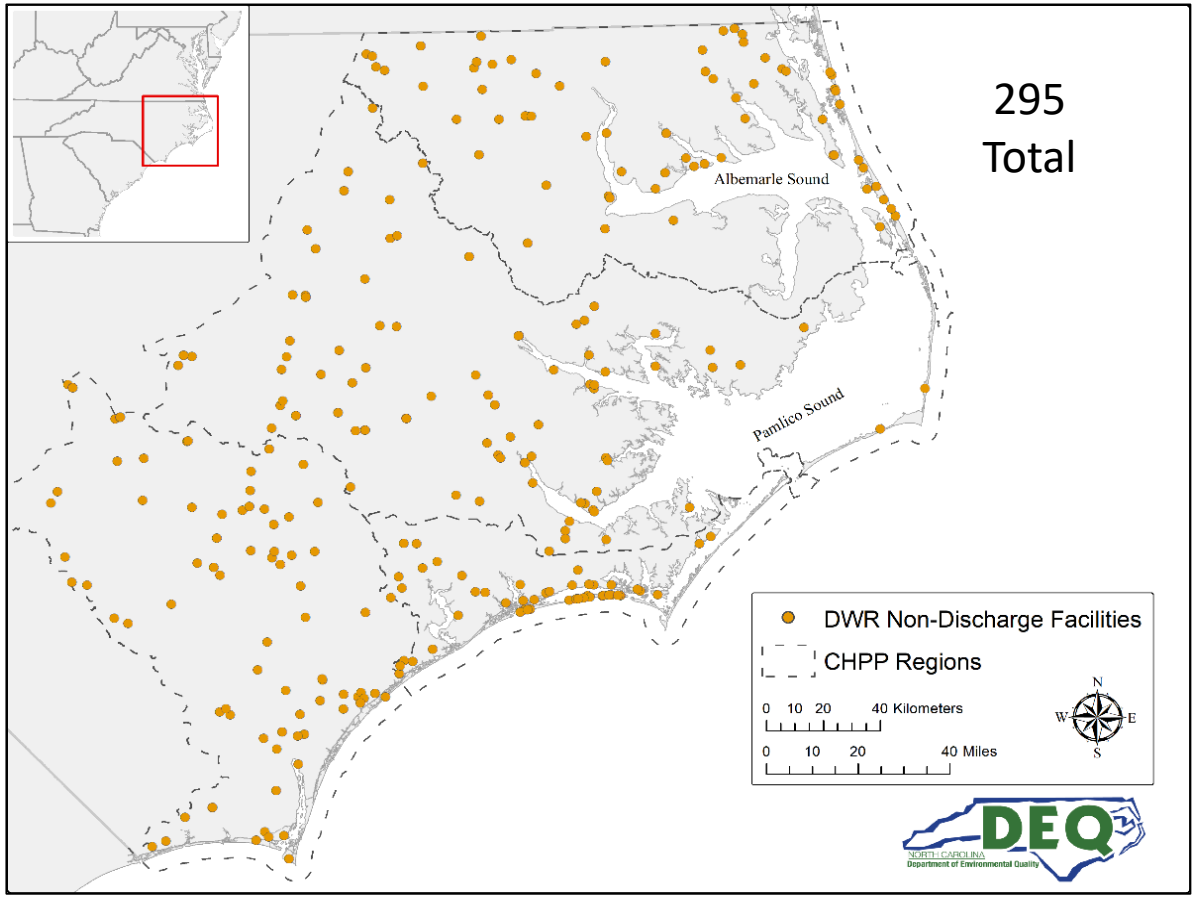
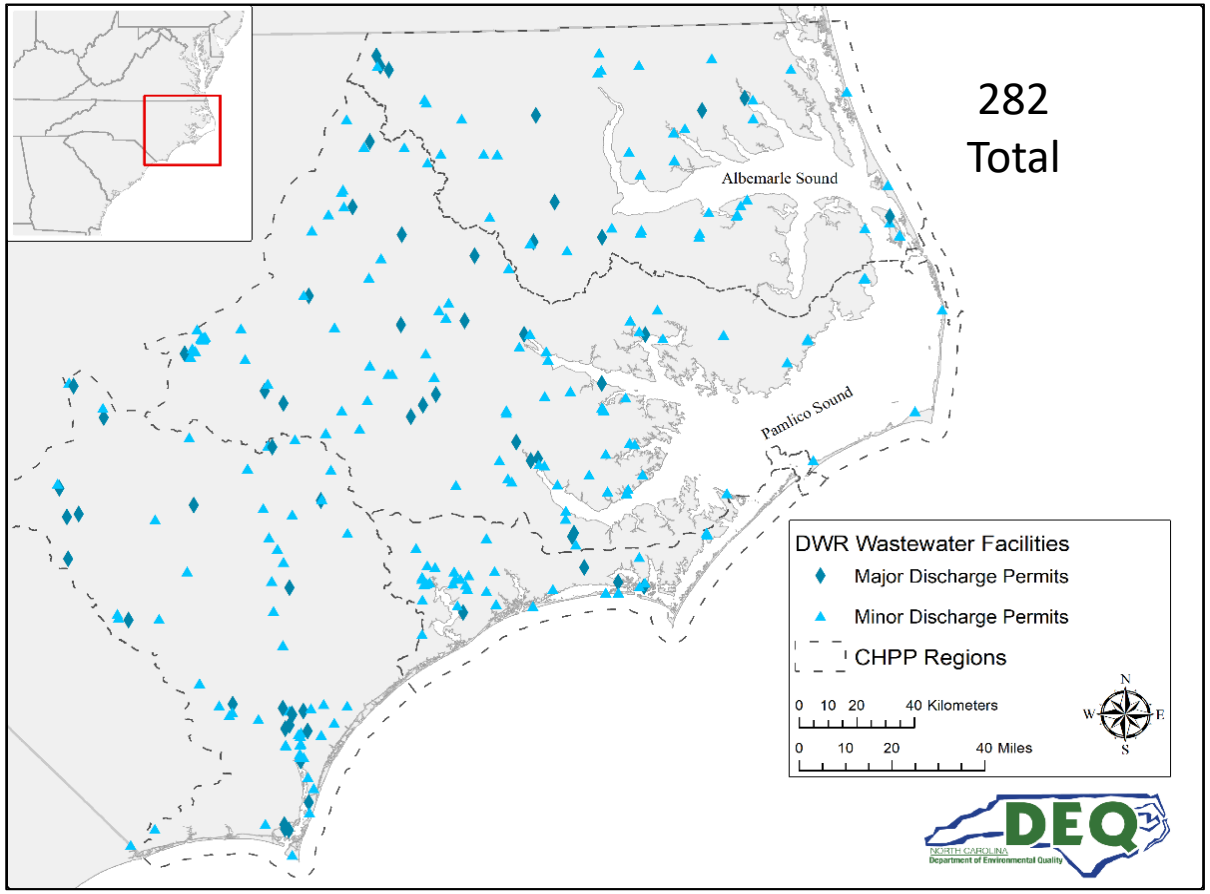
Inflow and Infiltration

Location of Wastewater Facilities in CHPP Regions

Non-Discharge Facilities

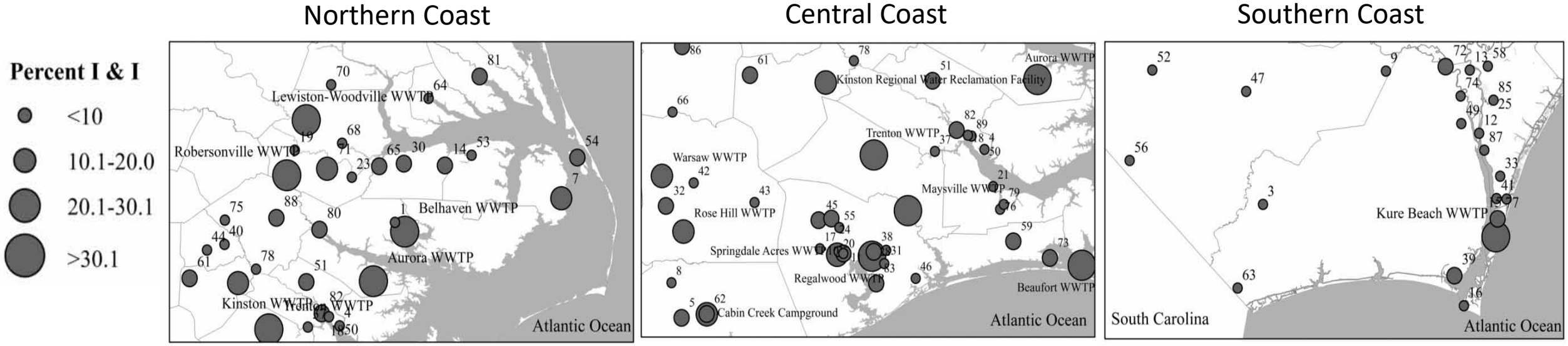


NPDES Discharge Facilities



Inflow and Infiltration
Documented I&I Problems

- Effects of rain on municipal WWTPs (2010-2011)
- 92% of 93 WWTPs had statistically significant effect of rainfall on WWTP flow
- Infiltration impacted twice as many systems as inflow



Source: Cahoon and Hanke (2017)

Inflow and Infiltration
Coastal Conditions Intensify Issue

Excessive I&I - common in low-lying coastal areas

- High water table – leaky pipes sit in groundwater → more infiltration
- Saline water in pipes from groundwater → reduces effectiveness of waste treatment
- High rainfall and more high rain events on coast → more inflow and infiltration
- Rural municipalities with low tax base – less maintenance → more infiltration
- **Climate change will compound these factors**

Photo credit: L. Cahoon

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Inflow and Infiltration
Addressing Wastewater Issues

American Society of Civil Engineers (2013)

- NC grade of "C" because 50% WWTP flows > plant capacit heavy rain

State Water Infrastructure Authority and Division of Water Infrastructure est. 2013

NC Statewide Water and Wastewater Infrastructure Master Plan

- 2017-2027 – $7-11 billion needed for wastewater infrastructure
- Must prioritize most critical infrastructure needs

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Inflow and Infiltration
Summary

- I&I in coastal counties - widespread problem, contributes to water quality degradation
- SSOs due to I&I will ↑ due to climate change (heavier rains, more intense hurricanes, and sea level rise)
- Maintaining wastewater infrastructure cost $$$
- New waste treatment technology needs to be considered, especially on the coast

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Wetland Protection and Restoration, with a Focus on Nature-Based Methods

- Expanding on 2016 CHPP priority to encourage living shorelines
- Additional means of protection and restoration of coastal wetlands
- Three technical workshops in August:
  - Mapping and monitoring
  - Threats and conservation
  - Restoration and living shorelines


Salt marsh


Riverine Swamp Forest Photo credit: R. Trone

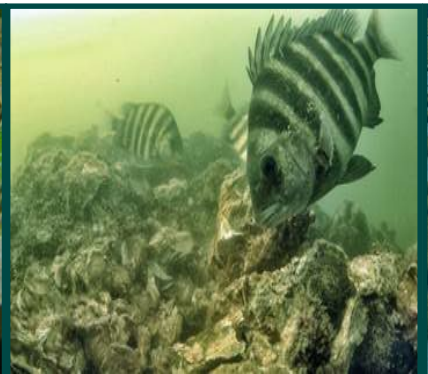
Habitat Monitoring to Assess Status and Regulatory Effectiveness

- Status, trends, and monitoring needs for all six coastal habitats
- Will reference issue papers:
  - Submerged Aquatic Vegetation Protection and Restoration, with Focus on Water Quality Improvements
  - Wetland Protection and Enhancement, with Focus on Nature-Based Methods
- Fill information gaps and habitats not covered

Water Column

Submerged Aquatic Vegetation

Shell Bottom



Wetlands

Hard Bottom

Soft Bottom

Questions?

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