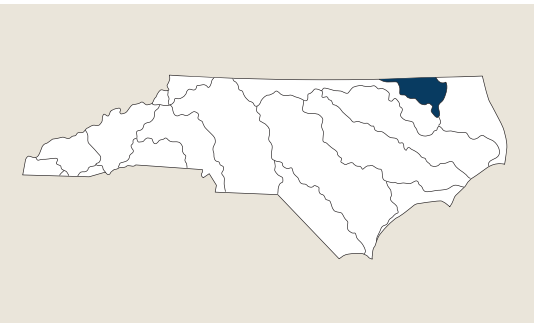

CHOWAN RIVER BASINWIDE WATER RESOURCES PLAN 2020

Quick Facts

- Located in the northeast corner of the state, waters in the Chowan River basin begin in Virginia and flow into North Carolina. 3,600 mi^2 (75%) lies in Virginia. 1,300 mi^2 (25%) lies in North Carolina.
- 2016 land use in the North Carolina portion of basin consists of 36% forest, 29% agriculture and 20% wetlands.
- All or portions of Bertie, Chowan, Gates, Hertford, and Northampton counties and 16 municipalities are in the North Carolina portion of the basin.
- Chowan River proper originates where the Blackwater and Nottaway rivers meet. Major tributaries include Potecasi Creek, Wiccacon River, and Ahoskie Creek.
- 23 miles of the Wiccacon River (Hoggard Swamp) and 8 miles of Cricket Swamp are identified as impaired (exceeding water quality standards) (2018).

More information about water quality and quantity issues in the basin can be found here: **https://deq.nc.gov/chowan2020**

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Water Resources

Basinwide planning is a watershed-based approach to identify areas that need additional protection, restoration, or preservation to ensure waters of the state are meeting their designated use. Basinwide water resources plans (basin plans) are prepared by North Carolina's Department of Environmental Quality (DEQ) Division of Water Resources (DWR). Implementation of recommendations, however, entail the coordinated efforts of state and local agencies, community leaders, and stakeholders in the basin.

Nutrient Management

The Chowan River was the first coastal river in North Carolina to be recognized for water quality issues related to excess nutrients. In 1972 and 1978, major nuisance algal blooms were reported in the lower portion of the river. Nuisance algal blooms are the growth of microscopic or macroscopic vegetation due to an excess amount of nutrients in a river system. The nutrient sources in the Chowan River were identified as wastewater from municipal and industrial dischargers, overland flow, and drainage from agricultural and urban areas.

In May 1979, the Environmental Management Commission (EMC) established the Nutrient Sensitive Water (NSW) supplemental classification. This supplemental classification provided a legal basis for controlling the discharge of nutrients (nitrogen and phosphorus) into surface waters. This enabled nutrient limits to be included in National Pollutant Discharge Elimination System (NPDES) wastewater permits discharging to the surface waters of the Chowan River basin (3 mg/L total nitrogen and 1 mg/L total phosphorus as a 30-day average).

In 1982, the then North Carolina Department of Natural Resources and Community Development developed the Chowan/Albemarle Action Plan and the Chowan River Water Quality Management Plan. The plans identified specific management goals to reduce nutrients in the Chowan River. These included reducing nitrogen inputs by 15% to 25% and phosphorus inputs by 30% to 40%. Reducing both nutrients would result in a reduction in chlorophyll a. Chlorophyll *a* is an algal pigment used to measure biological productivity in aquatic ecosystems. The plans also dictated that peak levels of chlorophyll a were not to exceed 40 µg/L. During summer months, chlorophyll a concentrations were not to exceed 25 to 30 µg/L.

Implementation measures were put into place throughout the 1980s and 1990s and included converting (where possible) point source discharge to land application and the installation of best management practices (BMPs) to control nonpoint source pollution from agricultural lands. Information presented in the 2002 and 2007 Chowan River basin plans indicated the management strategies were working and nutrients were being reduced. This led to a steady decline in the frequency and intensity of algal blooms, and the majority of chlorophyll *a* measurements were below thethe state's water quality standard of 40 µg/L.

Permitted and Registered Activities in the Basin

- **7** NPDES **Wastewater**
- **25** NPDES **Stormwater**
- **17** NPDES **Non-Discharge**
- **40** Animal Feeding Operations
- **22** Public Water Supply (PWS) Systems
- **23** Registrants reporting to the *Water Withdrawal and Transfer Registration* (WWATR) Program

Over the last several years, however, there has been a resurgence of algal blooms. Some have been identified as potentially harmful algal blooms (pHAB). A pHAB can produce toxins that can impact aquatic and terrestrial life as well as human health. Part of the basin planning process is to evaluate what changes have occurred over time and how those changes may be affecting the resurgence of algal blooms and pHABs.

Next Steps

The 2020 Chowan River Basinwide Water Resources Plan is available for public review and comment. The basin plan is available online and can be found here: https://deq.nc.gov/chowan2020. The plan includes information about water quality and quantity and existing management strategies. It acknowledges that the location of algal blooms in a large river system, like the Chowan River, are highly dependent on several environmental factors including nitrogen and phosphorus availability, stream flow, and climate (temperature, light intensity, precipitation, wind driven tides and storm events). The location of algal blooms shifts constantly with these changing conditions. More research is needed to understand the nutrient sources and environmental factors influencing the algal blooms in the basin. The Nutrient Criteria Development Plan (NCDP) Science Advisory Council (SAC) began working in the Chowan River and Albemarle Sound in 2019. The NCDP was developed in 2014 and approved by EPA with the goal of developing site-specific criteria to protect waterbodies. Working with the NCDP SAC, DWR has identified what uses need to be protected in the Chowan River and Albemarle Sound, developed a list of sensitive organisms, and is in the process of determining the appropriate response variables to assess water quality.

Recommendations in the basin plan are categorized and include:

- Continued use of BMPs to control nonpoint source pollution from agriculture, forestry, and stormwater
- Improved communication with agencies working in Virginia and North Carolina
- Identify research and monitoring needs for groundwater, surface water, stream flow, water withdrawal, nutrient sources, climate change, etc.

Written comments on any part of the basin plan can be sent to **Forest Shepherd** (forest.shepherd@ncdenr.gov) by October 30, 2020. The final basin plan is scheduled to be presented to the EMC in January 2021.

Special thanks to the Albemarle Resource Conservation & Development Council, Inc. (ARCD), the Chowan-Edenton Environmental Group (CEEG), researchers and local stakeholders that have provided their input into the plan.

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