

# Chapter 3

## Chowan River Subbasin 03-01-03

Including: Chowan River (Middle)

### 3.1 Subbasin Overview

<i>Subbasin 03-01-03 at a Glance</i>	
<b><u>Land and Water Area</u></b>	
Total area:	123 mi <sup>2</sup>
Land area:	100 mi <sup>2</sup>
Water area:	23 mi <sup>2</sup>
<b><u>Land Cover (percent)</u></b>	
Forest/Wetland:	40%
Cultivated Crop:	40%
Surface Water:	19%
Urban:	<1%
Pasture/ Managed Herbaceous:	<1%
<b><u>Counties</u></b>	
Bertie, Chowan, Hertford and Gates	
<b><u>Municipalities</u></b>	
Colerain	
<b><u>Monitored Waterbody Statistics</u></b>	
<b><u>Aquatic Life:</u></b>	
Total:	14.1 mi
Total Supporting:	14.1 mi
<b><u>Recreation:</u></b>	
Total:	14.1 mi
Total Supporting:	14.1 mi

This subbasin contains the middle section of the Chowan River, below Bennetts Creek (Merchants Millpond) and above Rockyhock Creek and includes the Indian Creek and Catherine Creek tributaries. The entire subbasin is designated as Nutrient Sensitive Waters. This subbasin contains the Colerain/Cow Island Swamp and Slopes Natural Heritage Area. Tidal Cypress-Gum Swamp, a designated significant natural heritage area, is found along much of the shoreline of the Chowan River and represents an important wetland ecosystem within the Chowan River basin.

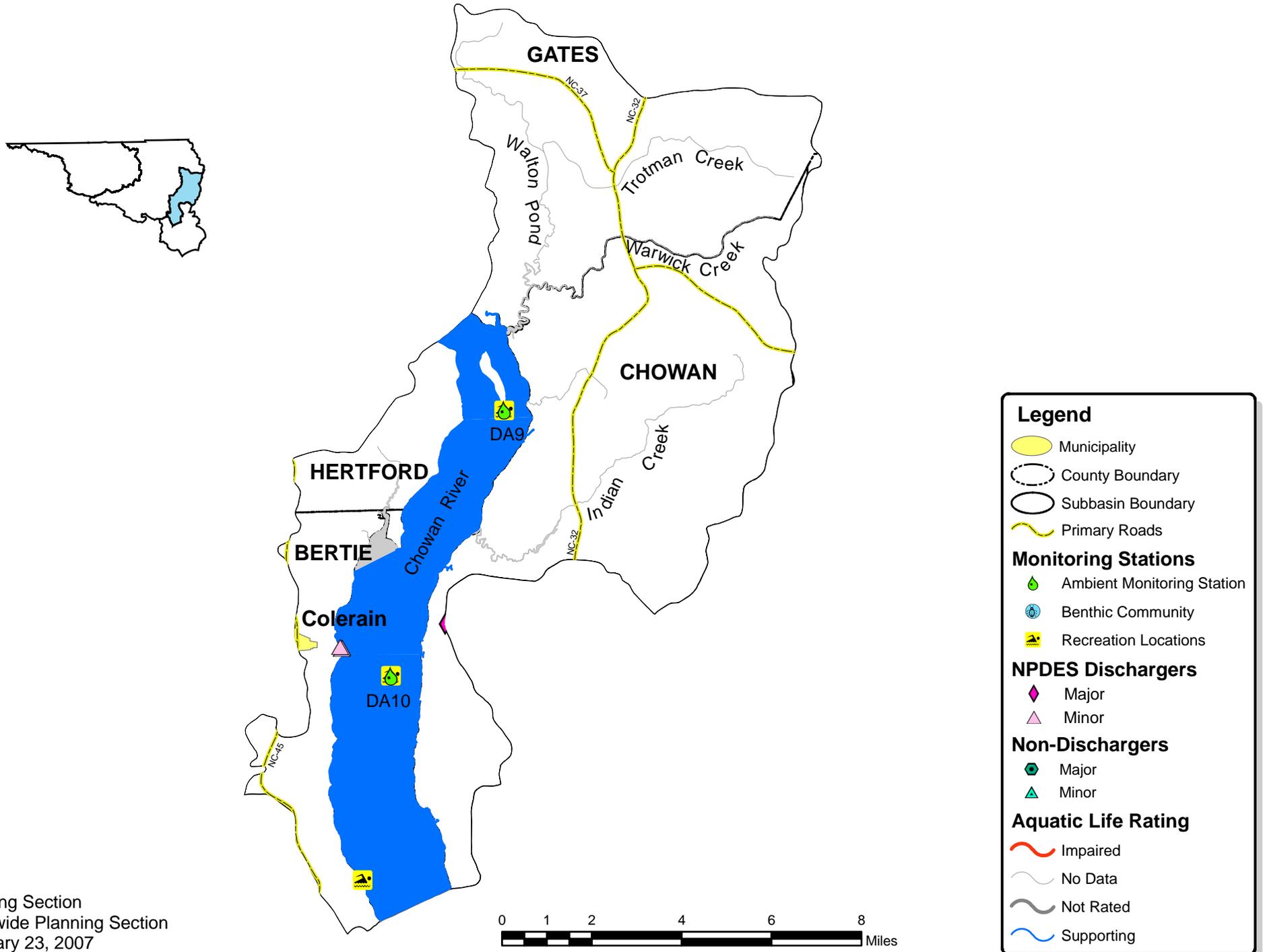
Land use is mainly forested wetlands and agricultural cropland. The largest municipality in the subbasin is Colerain with a population of approximately 221 persons and has experienced an overall net decline since 1990. Additional information regarding population and land use changes throughout the entire basin can be found in Chapter 8.

One minor and one major NPDES permit have been issued in this subbasin with a total permitted flow of 1.52 MGD. Perry-Wynns Fish Company in Bertie County is permitted to discharge 0.02 MGD. It is classified as a minor industrial process and commercial NPDES facility and is currently in compliance. Edenton Dyeing and Finishing LLC in Chowan County is permitted to discharge 1.5 MGD. It is classified as a major industrial process and commercial NPDES facility. By permit, Edenton Dyeing and Finishing must also conduct whole effluent toxicity (WET) testing. The facility failed seven WET tests during

the last two years of the assessment period and enforcement was taken on five separate occasions. Edenton Dyeing and Finishing is currently in compliance with their permit limits, but the facility has recently closed. There are no permitted non-discharge systems or stormwater discharges in this subbasin. For the listing of NPDES permit holders, refer to Appendix III.

A map including the locations of the NPDES facilities and water quality monitoring stations is presented in Figure 5. Table 7 contains a summary of monitored waterbodies with their associated assessment unit numbers (AU#) and lengths, monitoring data types, locations and results, along with use support ratings for waters in the subbasin.

**Figure 5 Chowan River Subbasin 03-01-03**



**Table 7 CHO**

**Subbasin 03-01-03**

AU Number	Classification	Length/Area	Aquatic Life Assessment				Recreation Assessment					
			AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	Stressors	Sources	
<b>CHOWAN RIVER</b>												
25b	B;NSW	14.1 FW Miles	<b>S</b>	DA9	NCE			<b>S</b>	N59	NCE	Toxic Impacts	WWTP NPDES
				DA10	NCE				DA9	NCE	Ammonia	WWTP NPDES
									DA10	NCE		
From the Subbasin 03-01-01/03-01-03 boundary to the Subbasin 03-01-03/03-01-04 Boundary												

<b>Use Categories:</b> AL - Aquatic Life REC - Recreation	<b>Monitoring data type:</b> DF - Fish Community Survey DB - Benthic Community Survey DA - Ambient Monitoring Site DL- Lake Monitoring	<b>Results:</b> E - Excellent G - Good GF - Good-Fair F - Fair P - Poor NI - Not Impaired	<b>Use Support Ratings 2005:</b> S - Supporting, I - Impaired NR - Not Rated NR*- Not Rated for Recreation (screening criteria exceeded) ND-No Data Collected to make assessment NR+-Not Rated because draft criteria used for rating
<b>Miles/Acres</b> FW- Fresh Water	m- Monitored e- Evaluated	N- Natural M- Moderate S- Severe	<b>Results</b> CE-Criteria Exceeded > 10% and more than 10 samples NCE-No Criteria Exceeded ID- Insufficeint Data Available

<b>Aquatic Life Rating Summary</b>	<b>Recreation Rating Summary</b>	<b>Fish Consumption Rating Summary</b>
S m 14.1 FW Miles 17.1 FW Miles	S m 14.1 FW Miles 17.1 FW Miles	I e 31.2 FW Miles

No biological (benthic or fish community) samples were collected in this subbasin; however, DWQ conducted a reconnaissance in 2005 to identify potential sampling sites during the next basinwide assessment period. These potential sampling sites are listed in Table 8.

Table 8 Potential Biological Sampling Locations in Subbasin 03-01-03

Waterbody	Location	County
Chowan River	Holiday Island	Chowan
Chowan River	Below Arrowhead Beach	Chowan
Indian Creek	NC 32 (Welch Road)	Chowan
UT Warwick Creek	NC 32 (Welch Road)	Chowan
Warwick Creek	SR 1232 (Cannon Ferry/Catherine's Creek Road)	Gates/Chowan
Trotman Creek	SR 1100 (Carters Road)	Gates

Data were collected from two ambient monitoring stations (DA9 and DA10). No criteria were exceeded at either site. Some salinity occurs in this stretch of the Chowan River, with readings as high as 3.0 parts per trillion (ppt). Refer to the *2006 Chowan River Basinwide Assessment Report* (<http://www.ncwaterquality.org/esb/Basinwide/ChowanBASINWIDEFinal.pdf>) and Appendix I for more information on monitoring.

All waters in this subbasin have the supplemental classification of Nutrient Sensitive Waters (NSW) in addition to the primary classification of Class C or Class B. See Chapter 5 for more information on surface water classifications.

Waters in the following sections and in Table 7 are identified by an assessment unit number (AU#). This number is used to track defined segments in the water quality assessment database, list 303(d) Impaired waters, and to identify waters throughout the basin plan. The AU# is a subset of the DWQ index number (classification identification number). A letter attached to the end of the AU# indicates that the assessment is smaller than the DWQ index segment. No letter indicates that the AU# and the DWQ index segment are the same.

### 3.2 Use Support Assessment Summary

All surface waters in the state are assigned a classification appropriate to the best-intended use of that water. Waters are regularly assessed by DWQ to determine how well they are meeting their best-intended use. Refer to Table 9 for a summary of use support for waters in subbasin 03-01-03.

In subbasin 03-01-03, use support was assigned for aquatic life, recreation and fish consumption categories. Waters are Supporting, Impaired, Not Rated, and No Data in the aquatic life and recreation categories on a monitored or evaluated basis. Waters are Impaired in the fish consumption category on an evaluated basis based on fish consumption advice issued by the Department of Health and Human Services (DHHS).

Table 9 Summary of Use Support Ratings by Category in Subbasin 03-01-03

Use Support Rating	Aquatic Life	Recreation
<b>Monitored Waters</b>		
Supporting	14.1 mi	14.1 mi
<b>Total</b>	<b>14.1 mi</b>	<b>14.1 mi</b>
<b>Unmonitored Waters</b>		
No Data	17.1 mi	17.1 mi
<b>Total</b>	<b>17.1mi</b>	<b>17.1mi</b>
<b>All Waters**</b>	<b>31.2 mi</b>	<b>31.2 mi</b>
* The noted percent Impaired is the percent of monitored mile/acres only.		
**Total Monitored + Total Unmonitored = Total All Waters.		

For more information about use support determinations, refer to Appendix II or the *Supplemental Guide to North Carolina's Basinwide Planning: Support Document for Basinwide Water Quality Plans* found at DWQ's website:

<http://www.newwaterquality.org/basinwide/SupplementalGuide.htm>. Appendix V provides definitions of the terms used throughout this basin plan.

### **3.3 Status and Recommendations of Previously and Newly Impaired Waters**

The following waters were either identified as Impaired in the previous basin plan (2002) or are newly Impaired based on recent data. If previously identified as Impaired, the water will either remain on the state's 303(d) list or will be delisted based on recent data showing water quality improvements. If the water is newly Impaired, it will likely be placed on the 2008 303(d) list. The current status and recommendations for addressing these waters are presented below, and each is identified by an AU#. Information regarding 303(d) listing and reporting methodology is presented in Chapter 11.

#### **3.3.1 Chowan River [AU# 25b]**

##### 2002 Status

The Chowan River was listed on the 2002 and 2004 303(d) list of impaired waters. It was listed based on 1998 historical listing for nutrients, with industrial and municipal facilities identified as potential sources. Previous basinwide water quality plans had identified historic algal blooms and dioxin as water quality concerns. Algal blooms were the result of excess nutrients and low pH levels; however, the implementation of best management practices (BMPs) and NPDES permitting strategies throughout the watershed resulted in a decrease in nutrients and therefore a reduction in the frequency and intensity of algal blooms.

DWQ recommended that wastewater and land application requirements and permits be evaluated to reduce the impact from point sources and that an analysis of nutrient reduction efforts be conducted throughout the entire river basin.

##### Current Status

The Chowan River, from the subbasin 03-01-01 and 03-01-03 boundary to the subbasin 03-01-03 and 03-01-04 boundary (14.1 miles), is Supporting in the aquatic life category due to ambient water quality data collected at sites DA9 and DA10. No water quality standards were exceeded at either of the two ambient monitoring stations.

##### 2007 Recommendations

DWQ will recommend removal of this segment of the Chowan River from the 303(d) list of impaired waters based on current noted water quality improvements. However, Edenton Dyeing and Finishing has a history of effluent limit violations; yet, even with recent monitoring and aquatic toxicity violations, the facility is not considered to be causing substantial harm to water quality. The DWQ regional office reports the facility has recently closed.

