Chapter 19
Cape Fear River Subbasin 03-06-19

Including: Black River, Six Runs Creek, Great Coharie Creek and Little Coharie Creek

19.1 Subbasin Overview

Subbasin 03-06-19 at a Glance

Land and Water Area

Total area:	739 mi²
Land area:	737 mi²
Water area:	2 mi²

Population Statistics

2000 Est. Pop.:	46,801people
Pop. Density:	63 persons/mi²

Land Cover (percent)

Forest/Wetland:	87%
Surface Water:	<1%
Urban:	<1%
Cultivated Crop:	<1%
Pasture/Managed Herbaceous:	12%

Counties

Bladen, Duplin, Johnston, Pender and Sampson

Municipalities

Clinton, Garland, Harrels, Magnolia, Newton Grove, Roseboro, Salemburg, Turkey and Warsaw

Subbasin 03-06-19 is in the coastal plain and drains many wetlands with tannin stained slow-moving streams. Most of the watershed is forested with some agriculture present and very few urban areas. Development is occurring near Clinton. Population is expected to grow by 70,000 people in counties with portions or all of their areas in this subbasin by 2020.

There are eight individual NPDES wastewater discharge permits in this subbasin with a permitted flow of 6.8 MGD (Figure 22). The largest is Clinton WWTP (5 MGD). Refer to Appendix VI and Chapter 30 for more information on NPDES permit holders. Issues related to compliance with NPDES permit conditions are discussed below in Section 19.3 for Impaired waters.

There are 374 registered swine operations in this subbasin. Issues related to agricultural activities are discussed below in Section 19.5.

There were five benthic community samples (Figure 22 and Table 22) collected during this assessment period. Data were also collected from nine ambient monitoring stations including three LCFRP (Appendix V) stations and six DWQ ambient stations. Refer to the *2003 Cape Fear River Basinwide Assessment Report* at http://www.esb.enr.state.nc.us/bar.html and Appendix IV for more information on monitoring.

Waters in the following sections are identified by assessment unit number (AU#). This number is used to track defined segments in the water quality assessment database, 303(d) Impaired waters list and the various tables in this basin plan. The assessment unit number 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 assessment unit and the DWQ index segment are the same.

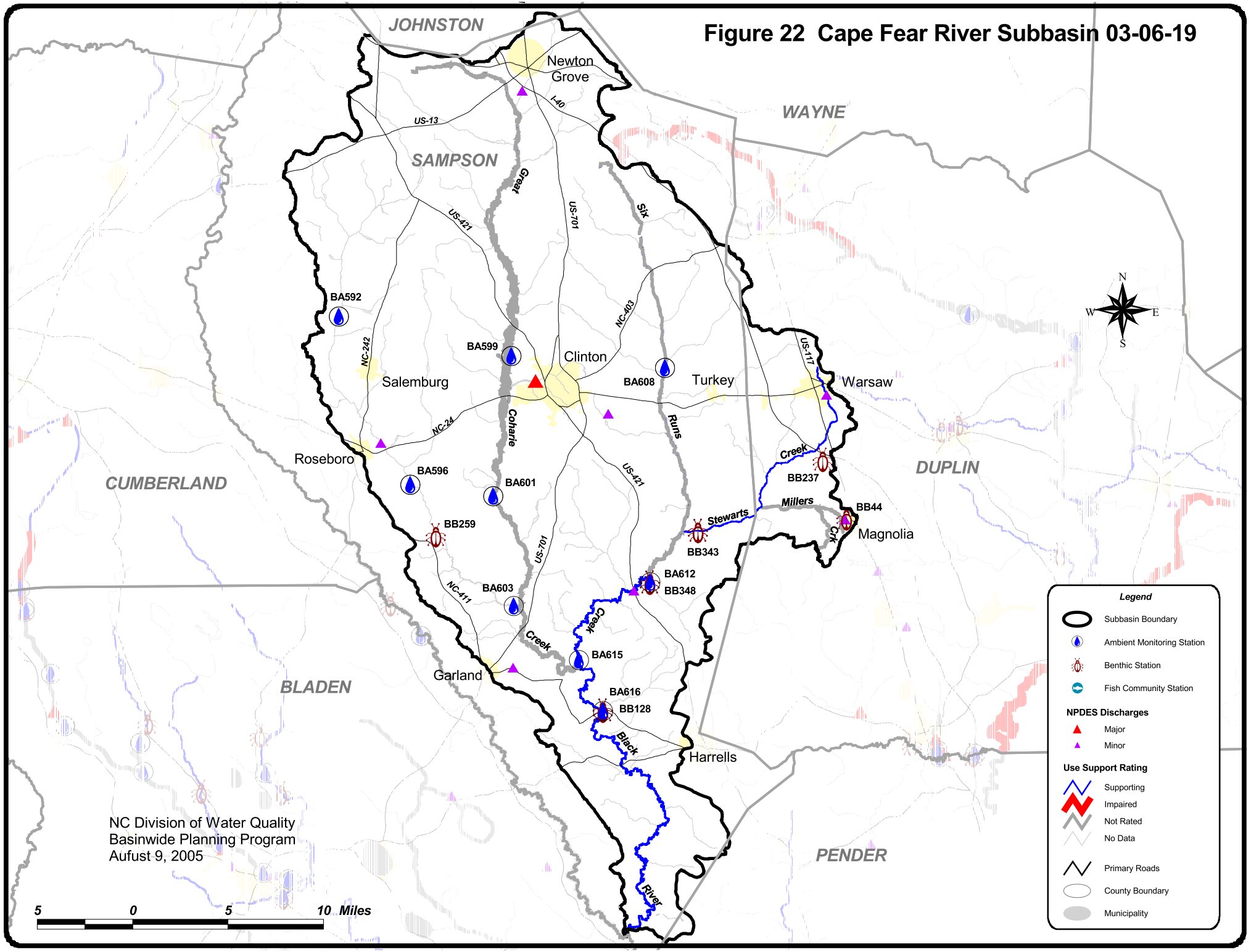
Figure 22 Cape Fear River Subbasin 03-06-19
JOHNSTON
WAYNE
SAMPSON
CUMBERLAND
DUPLIN
BLADEN
PENDER
Newton Grove
Clinton
Salemburg
Roseboro
Turkey
Warsaw
Magnolia
Garland
Harrells
US-13
I-40
US-421
US-701
NC-242
NC-24
NC-403
US-117
NC-411
Great Coharie Creek
Six Runs Creek
Stewarts Creek
Millers Creek
Black River
BA592
BA599
BA608
BA596
BA601
BB259
BA603
BB237
BB44
BB343
BA612
BB348
BA615
BA616
BB128
N
W
E
S
Legend
Subbasin Boundary
Ambient Monitoring Station
Benthic Station
Fish Community Station
NPDES Discharges
Major
Minor
Use Support Rating
Supporting
Impaired
Not Rated
No Data
Primary Roads
County Boundary
Municipality
NC Division of Water Quality
Basinwide Planning Program
Aufust 9, 2005
5 0 5 10 Miles

Table 22 CAPE FEAR Subbasin 03-06-19

AU Number / Description	Classification	Length/Area		Aquatic Life Assessment						Recreation Assessment				
				AL Rating	Station	Result	Year/ Parameter	% Exc		REC Rating	Station	Result	Stressors	Sources
Black River														
18-68a	C Sw ORW	31.9	FW Miles	S	BA616	NCE				S	BA616	NCE		
From source to Subasin 19/20 boundary					BB128	E	2002							
					BB128	G	1998							
Great Coharie Creek (Blackmans Pond)														
18-68-1	C Sw	42.6	FW Miles	NR	BA599	NCE	Low DO	44.8		S	BA599	NCE	Low Dissolved Oxygen	Unknown
					BA601	NCE	Low DO	16.9			BA601	NCE		
From source to Black River														
Little Coharie Creek (Sinclair Lake)														
18-68-1-17a	C Sw	28.6	FW Miles	NR	BA592	NCE	Low DO	44.8		S	BA592	NCE		
					BA596	NCE	Low DO	14.3			BA596	NCE		
From source to SR 1240														
18-68-1-17b	C Sw	12.2	FW Miles	S	BA603	NCE				S				
From SR 1240 to Great Coharie Creek					BB259	G	2003							
Six Runs Creek														
18-68-2-(0.3)	C Sw	26.0	FW Miles	NR	BA608	NCE	Low DO	55.2		S	BA608	NCE		
From source to Quewiffle Swamp														
18-68-2-(11.5)	C Sw ORW	11.7	FW Miles	S	BA612	NCE				S	BA612	NCE		
					BA615	NCE					BA615	NCE		
From Quewiffle Swamp to Black River					BB348	G	2003							
					BB348	GF	1998							
Stewarts Creek														
18-68-2-10	C Sw	15.5	FW Miles	S						ND				
From source to Six Runs Creek					BB343	G	2003							
					BB343	NR	2003							
Unnamed Tributary at Magnolia														
18-68-2-10-3-1	C Sw	2.5	FW Miles	NR						NR				
From source to Millers Creek					BB44	NR	2000							

Table 22 CAPE FEAR Subbasin 03-06-19

AU Number	Classification	Length/Area	Description	Aquatic Life Assessment					Recreation Assessment				
				AL Rating	Station	Result	Year/ Parameter	% Exc	REC Rating	Station	Result	Stressors	Sources

AL - Aquatic Life	BF - Fish Community Survey	E - Excellent	S - Supporting, I - Impaired
REC - Recreation	BB - Benthic Community Survey	G - Good	NR - Not Rated
	BA - Ambient Monitoring Site	GF - Good-Fair	NR*- Not Rated for Recreation (screening criteria exceeded)
	BL- Lake Monitoring	F - Fair	ND-No Data Collected to make assessment
	S- DEH RECMON	P - Poor	**Results**
		NI - Not Impaired	CE-Criteria Exceeded > 10% and more than 10 samples
	Miles/Acres	S- Severe Stress	NCE-No Criteria Exceeded
	FW- Fresh Water	M-Moderate Stress	
	S- Salt Water	N- Natural	

Aquatic Life Rating Summary

S	m	71.3	FW Miles
NR	m	99.7	FW Miles
ND		338.4	FW Miles

Recreation Rating Summary

S	m	153.0	FW Miles
NR	e	8.8	FW Miles
ND		347.6	FW Miles

Fish Consumption Rating Summary

I	m	74.5	FW Miles
I	e	434.9	FW Miles

19.2 Use Support Assessment Summary

Use support ratings were assigned for waters in subbasin 03-06-19 in the aquatic life, recreation, fish consumption and water supply categories. All waters are Impaired on an evaluated basis in the fish consumption category because of fish consumption advice that applies to the entire basin. In the water supply category, all waters are Supporting on an evaluated basis based on reports from DEH regional water treatment plant consultants. Refer to Appendix X for a complete list of monitored waters and more information on Supporting monitored waters.

There were 171 stream miles (33.6 percent) monitored during this assessment period in the aquatic life category. There were no Impaired stream miles identified as Impaired in this category.

19.3 Status and Recommendations of Previously and Newly Impaired Waters

The following waters were either identified as Impaired in the previous basin plan (2000) 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 2006 303(d) list. The current status and recommendations for addressing these waters are presented below, and each is identified by an assessment unit number (AU#). Refer to the overview for more information on AUs. Information regarding 303(d) listing and reporting methodology is presented in Appendix VII.

19.3.1 Black River [AU# 18-68a]

Current Status and 2005 Recommendations
The Black River from source to the subbasin boundary (31.9 miles) is Supporting aquatic life because of an Excellent benthic community rating at site BB128. This site has been Excellent, except after hurricanes. The river has a very diverse benthic community. This portion of the Black River is supplementally classified as Outstanding Resource Waters (ORW). This segment is Impaired on a monitored basis in the fish consumption category and will be added to the 303(d) list of Impaired waters.

19.3.2 Stewarts Creek River [AU#18-68-2-10] and UT at Magnolia [18-68-2-10-3-1]

2000 Recommendations
The 2000 basinwide plan recommended that Stewarts Creek be resampled. It was also recommended that the Magnolia WWTP be monitored as repairs are made to the collection system. Magnolia WWTP discharges into an UT in the headwaters of Stewarts Creek.

Current Status
Stewarts Creek from source to Six Runs Creek (15.5 miles) is Supporting aquatic life because of a Good benthic community rating at site BB343. The UT from source to Millers Creek (2.5 miles) is Not Rated for aquatic life because a benthic community rating could not be assigned at site BB44. A stressor study in 2003 found swampy conditions in Stewarts Creek and many

blockages due to debris and aquatic weeds. Nitrogen levels were slightly elevated. A long-term study found that the benthic community had recovered after impacts from hurricanes in 1996.

Magnolia WWTP has made repairs that have greatly reduced sanitary overflows into Stewarts Creek. The town received $3 million from CG&L in 2001 to replace the WWTP and for a reuse project.

2005 Recommendations
DWQ will continue to monitor the Stewarts Creek watershed. Stewarts Creek will be recommended for removal from the 303(d) list.

19.4 Status and Recommendations for Waters with Noted Impacts

The surface waters discussed in this section are not Impaired. However, notable water quality problems and concerns have been documented for some waters based on this assessment. While these waters are not Impaired, attention and resources should be focused on these waters to prevent additional degradation or facilitate water quality improvement. Waters in the following section are identified by assessment unit number (AU#). See overview for more information on AU#s.

19.4.1 Great Coharie Creek [AU# 18-68-1]

Current Status and 2005 Recommendations
Great Coharie Creek from source to Black River (42.6 miles) is Not Rated for aquatic life because dissolved oxygen was below 4 mg/l in 45 and 17 percent of samples at sites BA599 and BA601. Great Coharie Creek is classified as C Sw, which acknowledges natural characteristics of swamps such as low dissolved oxygen. DWQ will continue to monitor the Great Coharie watershed. Great Coharie Creek is Impaired on a monitored basis in the fish consumption category and will be added to the 303(d) list of Impaired waters.

Water Quality Initiatives
The Town of Garland received a $45,000 CWMTF (Chapter 34) grant to install generators to prevent overflows during power outages at pump stations and the WWTP. The NCEEP has also preserved 154,000 linear feet of stream in this watershed (Chapter 34).

19.4.2 Little Coharie Creek [AU# 18-68-1-17a and b]

Current Status and 2005 Recommendations
Little Coharie Creek [18-68-1-17a] from source to SR 1240 (28.6 miles) is Not Rated for aquatic life because dissolved oxygen was below 4 mg/l in 45 and 14 percent of samples at sites BA592 and BA596. Little Coharie Creek is classified as C Sw, which acknowledges natural characteristics of swamps such as low dissolved oxygen.

Little Coharie Creek [18-68-1-17b] from SR 1240 to Great Coharie Creek (12.2 miles) is Supporting because of a Good benthic community rating at site BA259 and because no criteria were exceeded at site BA603. DWQ will continue to monitor the Little Coharie watershed.

19.4.3 Millers Creek [AU# 18-68-2-10-3]

Current Status and 2005 Recommendations
Millers Creek from source to Stewarts Creek (6.3 miles) is Not Rated for recreation on an evaluated basis because the Magnolia WWTP (NC0020346) had significant violations of fecal coliform bacteria permit limits during the last two years of the assessment period. The NPDES compliance process will be used to address the significant permit violations noted above.

19.4.4 Six Runs Creek [AU# 18-68-2-(0.3) and (11.5)]

Current Status and 2005 Recommendations
Six Runs Creek [18-68-2-(0.3)] from source to Quewhiffle Swamp (26 miles) is Not Rated for aquatic life because dissolved oxygen was below 4 mg/l in 55 percent of samples at site BA608. Six Runs Creek is classified as C Sw, which acknowledges natural characteristics of swamps such as low dissolved oxygen.

Six Runs Creek [18-68-2-(11.5)] from Quewhiffle Swamp to Black River (11.7 miles) is Supporting because of a Good benthic community rating at site BA348 and because no criteria were exceeded at sites BA612 and BA615. DWQ will continue to monitor the Six Runs Creek watershed.