

# Chapter 18 - Cape Fear River Subbasin 03-06-18 Includes the South River and Big Creek

## 18.1 Water Quality Overview

### ***Subbasin 03-06-18 at a Glance***

#### **Land and Water Area (sq. mi.)**

Total area:	495
Land area:	493
Water area:	2

#### **Population Statistics**

1990 Est. Pop.:	39,895 people
Pop. Density:	81 persons/mi <sup>2</sup>

#### **Land Cover (%)**

Forest/Wetland:	56.1
Surface Water:	1.3
Urban:	1.7
Cultivated Crop:	34.4
Pasture/ Managed Herbaceous:	6.6

#### **Use Support Ratings**

##### *Freshwater Streams:*

Fully Supporting:	165.9 mi.
Partially Supporting:	0.0 mi.
Not Supporting:	0.0 mi.
Not Rated:	113.7 mi.

##### *Lakes:*

Bay Tree Lake - Partially Supporting

This subbasin is located in the inner coastal plain and contains the cities of Dunn and Roseboro. Major tributaries of the Cape Fear River in this subbasin include the South River and Black River (Little Black River). The South River below Big Swamp was designated an outstanding resource water (ORW) in 1994. Land use in this subbasin is primarily agriculture in the form of animal operations (mostly hog farms). Streams in this subbasin are characterized as slow-moving blackwater swamp streams. There are 3 permitted dischargers in the subbasin, none with a design flow >0.05 MGD. A map of the subbasin, including water quality sampling locations, is presented in Figure B-18.

Biological ratings for these sample locations are presented in Table B-18. Refer to Appendix III for a complete listing of monitored waters and use support ratings. Bay Tree Lake is partially supporting. See Section A, Chapter 3, Table A-31 for a summary of lakes and reservoirs use support data.

The benthic site on the South River near Parkersburg has consistently received a rating of either Good or Excellent since 1983. Fish tissue samples collected from the South River in 1998 contained significant mercury levels. Elevated mercury was measured in multiple species including warmouth, suckers, pickerel, perch and bass.

For more detailed information on water quality in this subbasin, refer to *Basinwide Assessment Report – Cape Fear River Basin – June 1999*, available from DWQ Environmental Sciences Branch at (919) 733-9960.

Cape Fear River 030618

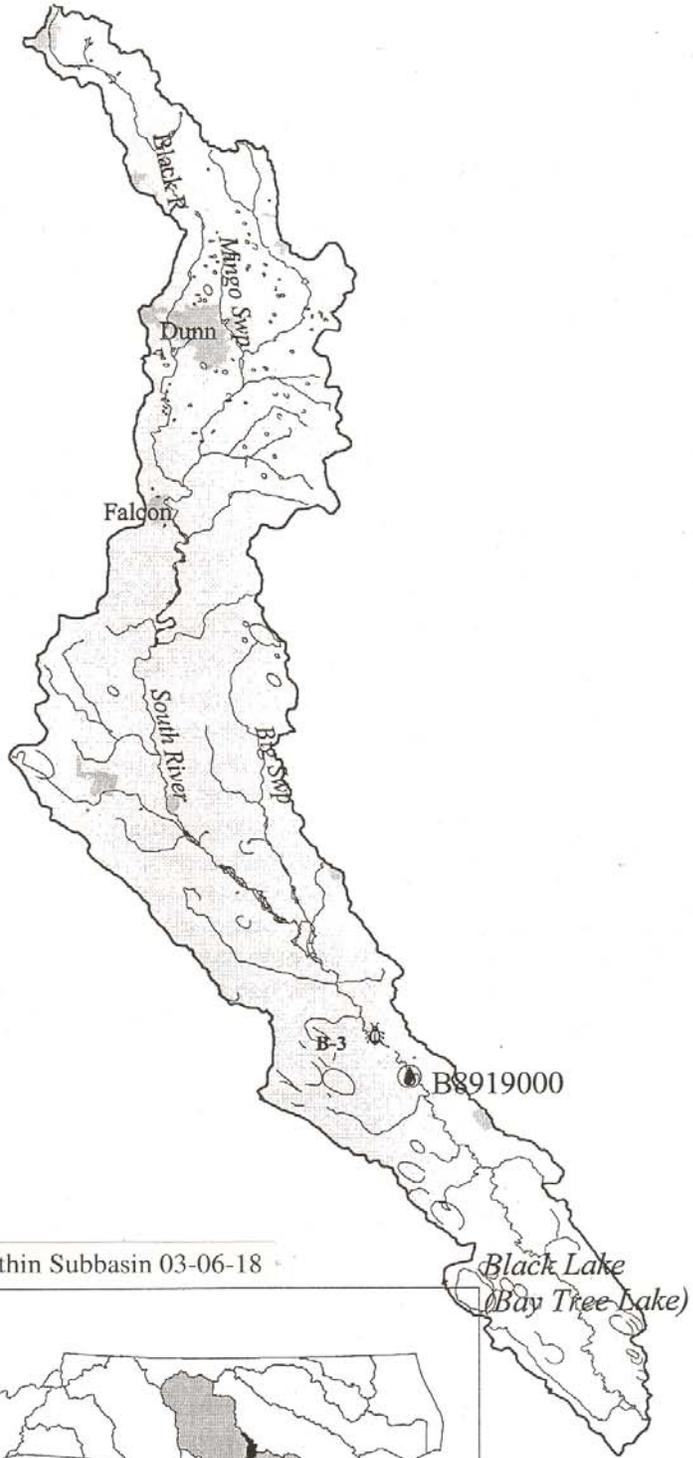
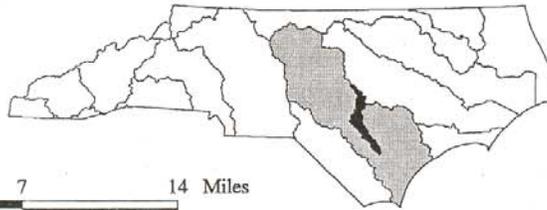


Figure B-18 Sampling Locations within Subbasin 03-06-18

- Macroinvertebrate Station
- Fish Community Station
- Ambient Monitoring Station
- Stream
- Municipal Boundary



7 0 7 14 Miles

Table B-18 Biological Assessment Sites in Cape Fear River Subbasin 03-06-18

<i>BENTHOS</i>				<i>Bioclassification</i>	
Site #	Stream	County	Location	1993	1998
B-3	South River	Bladen	SR 1502, nr Parkersburg	Good	Good

<i>FISH TISSUE</i>				<i>No. Samples Exceeding Criteria</i>		
Station	Description	Year Sampled	Total Samples	Metals	Organics	Comments
FT-1	South River near NC 701	1998	20	16	0	EPA mercury limit exceeded in 16 samples of multiple species; FDA/NC mercury limit exceeded in 6 samples

## 18.2 Impaired Waters

Portions of the South River and Black River (Little Black) were identified as impaired in the 1996 Cape Fear River Basinwide Water Quality Plan. Bay Tree Lake is currently rated as impaired according to recent DWQ monitoring. Current status of each of these streams is discussed below. Prior recommendations, future recommendations and projects aimed at improving water quality for these waters are also discussed when applicable. 303(d) listed waters are summarized in Part 18.3 and waters with other issues, recommendations or projects are discussed in Part 18.4.

### South River

#### Current Status

The South River (7.2 miles from source to NC 13) was partially supporting (PS) in the 1996 plan. This river segment was not sampled by DWQ during recent monitoring because of low flow conditions. This segment of the South River is currently not rated (NR) but remains on the state's year 2000 303(d) list (not yet EPA approved). A downstream segment (SR 1502, near Parkersburg) is not impaired.

#### 2000 Recommendations

The 303(d) list approach will be to resample this segment of the river to obtain updated use support information.

### Black River (Little Black)

#### Current Status

The Black River (Little Black) (from Dunn to I-95) was partially supporting (PS) in the 1996 plan. The river was not sampled by DWQ during recent monitoring because of low flow

conditions. This segment of the Black River (Little Black) is currently not rated (NR) but remains on the state's year 2000 303(d) list (not yet EPA approved).

### 2000 Recommendations

The 303(d) list approach will be to resample the river to obtain updated use support information. Fish tissue samples will be collected to determine if mercury contamination is a problem in this segment of the river.

## **Bay Tree Lake**

### Current Status

Bay Tree Lake (1,400 acres) was partially supporting (PS) in the 1996 plan. The lake is currently partially supporting (PS) according to recent DWQ monitoring. Bay Tree Lake (also called Black Lake) is a shallow, natural lake located in the Coastal Plain near Elizabethtown. The lake is located in Bay Tree State Park and is owned by the State of North Carolina. Typical of Carolina Bay Lakes, Bay Tree Lake receives no significant overland inflows. Bay Tree Lake has a network of drainage canals built on its northern and eastern shores. The surrounding land is primarily flat, composed of wetlands and upland forests. Bay Tree Lake is used for fishing and boating. A private residential community is located along the northern and northeastern shoreline of the lake. The lake is on the state's year 2000 303(d) list (not yet EPA approved).

Because Bay Tree Lake is dystrophic, a trophic status of the lake cannot be accurately determined through the NCTSI scores (see Appendix III). Bay Tree Lake has experienced a die-off of yellow perch (*Perca flavescens*) every summer due to long-term exposure to the naturally low pH waters of the lake. There have been no increases in aquatic macrophytes or algae in recent years, nor have there been any public complaints regarding problems related to swimming in the lake.

### 2000 Recommendations

In 1994, a "No Consumption" advisory was placed on largemouth bass and bowfin. The advisory remains in effect. These species have been found to contain elevated levels of mercury (NCDEHNR, June 1997). The 303(d) list approach will to develop a TMDL for mercury.

## **18.3 303(d) Listed Waters**

There are two stream segments (102.5 stream miles) and one lake (1,400 acres) in the subbasin that are impaired and on the state's year 2000 303(d) list (not yet EPA approved). Bay Tree Lake, the South River and the Black River (Little Black) are discussed above. Portions of the South River are not impaired; however, because of fish consumption advisories, this 70.9-mile segment is on the 303(d) list (see Part 18.4 below). For information on 303(d) listing requirements and approaches, refer to Appendix IV.

## **18.4 Other Issues, Recommendations and Projects**

All the waters of the subbasin are affected by nonpoint sources. DENR, other state agencies and environmental groups have programs and initiatives underway to address water quality problems associated with nonpoint sources. DWQ will notify local agencies of water quality concerns in this subbasin and work with these various agencies to conduct further monitoring, as well as assist agency personnel with locating sources of funding for water quality protection.

### **The Lower Cape Fear River Program**

The Lower Cape Fear River Program maintains three sampling stations in this subbasin that are used along with DWQ ambient data to make use support determinations in this subbasin. Refer to Section C, Part 1.4.5 for more information on the program and the UNCW Center for Marine Sciences.

### **Mercury Advisories**

DWQ sampling in 1994 and 1998 noted mercury in fish tissue at levels greater than EPA limits and FDA/NC limits. Mercury in fish tissue is not exclusive to the Cape Fear River basin. In recent years, elevated levels of mercury in some fish species have been noted in other coastal areas. This issue is discussed further in Section A, Chapter 4, Part 4.8.4.

Largemouth bass, bowfin and chain pickerel in the South River and the Black River just below the South River contain higher than normal levels of mercury. Consumption of bass, bowfin and chain pickerel should be limited to no more than two meals per person per month. Women of childbearing age and children should eat no bass, bowfin or chain pickerel taken from this area until further notice. Swimming, boating and other recreational activities are not affected by this advisory.

DWQ is continuing to sample fish tissue in eastern North Carolina.

### **1999 Hurricanes**

In September and October 1999, three hurricanes made landfall near the mouth of the Cape Fear River. Although streams throughout the basin were impacted, the streams in the lower Cape Fear River subbasins were severely impacted. The extent of water quality problems and recovery of ecosystems in this subbasin will not be known for some time. Refer to Section A, Chapter 4, Part 4.11.

### **Black and South River Riparian Protection**

The Nature Conservancy has acquired a 295-acre tract in the Black River watershed ORW to demonstrate how the riparian buffer protects the river from nonpoint source pollution. Refer to Section C, Chapter 1, Part 1.5.5 for more information on this project.