

Chapter 23 -

Cape Fear River Subbasin 03-06-23

Includes Northeast Cape Fear River and Burgaw Creek

23.1 Water Quality Overview

Subbasin 03-06-23 at a Glance

Land and Water Area (sq. mi.)

Total area:	795
Land area:	789
Water area:	6

Population Statistics

1990 Est. Pop.:	64,540 people
Pop. Density:	82 persons/mi ²

Land Cover (%)

Forest/Wetland:	82.5
Surface Water:	0.9
Urban:	2.1
Cultivated Crop:	11.2
Pasture/ Managed Herbaceous:	3.2

Use Support Ratings

Freshwater Streams:

Fully Supporting:	304.1 mi.
Partially Supporting:	0.0 mi.
Not Supporting:	14.3 mi.
Not Rated:	37.5 mi.

This subbasin is located in the outer Coastal Plain and contains the Town of Burgaw. The area is characterized by slow-flowing blackwater streams. Most of the streams in this subbasin stop flowing or dry up during the summer. Much of this subbasin is undeveloped and included in either the Holly Shelter Game Refuge or the Angola Bay Game Refuge. A map of the subbasin, including water quality sampling locations, is presented in Figure B-23.

Biological ratings for these sample locations are presented in Table B-23. The current sampling resulted in impaired ratings for four of the seven stream segments. Refer to Appendix III for a complete listing of monitored waters and use support ratings.

There are six permitted dischargers in the subbasin, with the largest dischargers being Occidental Chemical, Thorn Apple Valley and Burgaw WWTP.

Ambient chemistry data show average nutrient levels in the Northeast Cape Fear River at US 117 to be lower than more upstream river sites.

Benthic macroinvertebrate data indicated stable water quality at most sites in the subbasin, except for the mainstem Northeast Cape Fear River, which has shown steady improvement from Fair water quality in 1985 to a Good rating in 1998. Fair conditions were maintained at Angola Creek, and Cypress Creek maintained its Good rating. Most other sites were not rated using macroinvertebrate data because of the swampy characteristics of these waters. Burgaw Creek below the WWTP, and Burnt Mill Creek in Wilmington were rated Poor. The fish community in Burgaw Creek below the WWTP was also impacted, receiving a Fair NCIBI rating. Mercury above EPA and /or FDA/NC limits was found in the tissue of bass and bowfin in this subbasin.

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 030623

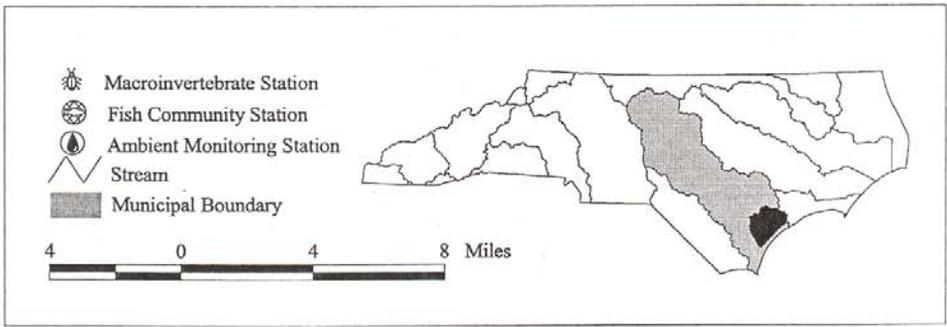


Figure B-23 Sampling Locations within Subbasin 03-06-23

Table B-23 Biological Assessment Sites in Cape Fear River Subbasin 03-06-23

<i>BENTHOS</i>				<i>Bioclassification</i>		
Site #	Stream	County	Location	1993	1998	
B-5	NE Cape Fear River	New Hanover	US 117	Good-Fair	Good	
B-8	Burgaw Creek	Pender	I-40	no sample	Poor	
B-9	Angola Creek	Pender	NC 53	Fair	Fair	
B-11	Cypress Creek	Pender	NC 53	Good	Good	
B-12	Juniper Swamp	Onslow	NC 50	Good-Excellent	Good-Excellent	
B-14	Merricks Creek	Pender	NC 210	Good-Excellent	Good-Excellent	
B-16	Shelter Swamp	Onslow	NC 50	no sample	Good-Excellent	
B-17	Burnt Mill Creek	New Hanover	Metts Avenue	no sample	Poor	
<i>FISH</i>				<i>Bioclassification</i>		
Site #	Stream	County	Location	1994	1998	
F-1	Burgaw Creek	Pender	US 117	no sample	Fair	
<i>FISH TISSUE</i>				<i>No. Samples Exceeding Criteria</i>		
Station	Description	Year Sampled	Total Samples	Metals	Organics	Comments
FT-1	Cape Fear River at NC 53	1995	6	1	0	EPA mercury limit exceeded in 1 bowfin sample
FT-2	NE Cape Fear River at Castle Hayne	1994	21	8	0	EPA mercury limit exceeded in 8 bowfin/ bass samples
		1998	25	3	0	EPA mercury limit exceeded in 3 samples; FDA/NC mercury limit exceeded in 1 sample

23.2 Impaired Waters

Portions of Cypress Creek, Burnt Mill Creek and Burgaw Creek were identified as impaired in the 1996 Cape Fear River Basinwide Water Quality Plan. Portions of Burnt Mill Creek and Burgaw Creek are 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 23.3 and waters with other issues, recommendations or projects are discussed in Part 23.4.

Cypress Creek

Current Status

Cypress Creek (8.0 miles from source to Long Creek) was partially supporting (PS) in the 1996 plan. DWQ has determined that the previous rating was inappropriate for this section. This

stream segment is currently not rated (NR) and is not on the 303(d) list. A downstream sample at NC 53 shows no impairment.

Burnt Mill Creek

Current Status

Burnt Mill Creek (4.8 miles from source to Smith Creek) was not supporting (NS) in the 1996 plan and is currently not supporting (NS) because of an impaired biological community. Instream habitat degradation associated with urban nonpoint sources and channel dredging is a possible cause of impairment. This stream is on the state's year 2000 303(d) list (not yet EPA approved).

2000 Recommendations

Further monitoring is recommended to determine the nature of the nonpoint source pollution. The 303(d) list approach will be to resample for biological and chemical data to attempt to determine potential problem parameters.

The NC Wetlands Restoration Program (see Section C, Chapter 1, Part 1.3.1) will be starting a stakeholder process to develop a Local Watershed Plan for the Burnt Mill Creek watershed in June, 2000.

Burgaw Creek

Current Status

Burgaw Creek (9.5 miles from Osgood Canal to Northeast Cape Fear River) was not supporting (NS) in the 1996 plan. This stream is currently not supporting (NS) because of an impaired biological community. Instream habitat degradation associated with urban nonpoint sources is a possible cause of impairment. There are indications of excessive nutrients in this stream, and fecal coliform bacteria are also noted as a problem parameter. Failing septic systems have been noted in this watershed as well. The stream is channelized and has been adversely impacted by desnagging activities after Hurricane Fran (see Section A, Chapter 4, Part 4.11). This stream is on the state's year 2000 303(d) list (not yet EPA approved).

2000 Recommendations

Further monitoring is recommended to determine the nature of the nonpoint source pollution. The 303(d) list approach will be to resample for biological and chemical data to attempt to determine potential problem parameters.

23.3 303(d) Listed Waters

There are two streams (14.3 stream miles) in the subbasin that are impaired and on the state's year 2000 303(d) list (not yet EPA approved). Burnt Mill Creek and Burgaw Creek are

discussed above. For information on 303(d) listing requirements and approaches, refer to Appendix IV.

23.4 Other Issues, Recommendations and Projects

The following surface waters are fully supporting using recent DWQ monitoring data. However, these data revealed some impacts to water quality. Although no action is required for these surface waters, continued monitoring is recommended. Enforcement of sediment and erosion control laws will help to reduce impacts on these streams and lakes. DWQ encourages the use of voluntary measures to prevent water quality degradation. Education on local water quality issues is always a useful tool to prevent water quality problems and to promote restoration efforts. For information on water quality education programs, workshops and nonpoint source agency contacts, see Appendix V.

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 five 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.

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 for more information.