6.1 Subbasin Overview

Subbasin 03-04-06 at a Glance

Land and Water Area

Total area:	317 mi^2
Land area:	317 mi^2
Water area:	0 mi^2

Population Statistics

2000 Est. Pop.:	54,160 people
Pop. Density:	172 persons / mi^2

Land Cover (percent)

Forest / Wetland:	59.4
Surface Water:	0.8
Urban:	3.2
Cultivated Crop:	33.0
Pasture / Managed Herbaceous:	3.7

Municipalities

Rolesville, Zebulon, Wendell and Goldsboro

Counties

Franklin, Johnston, Wake, Wayne and Wilson

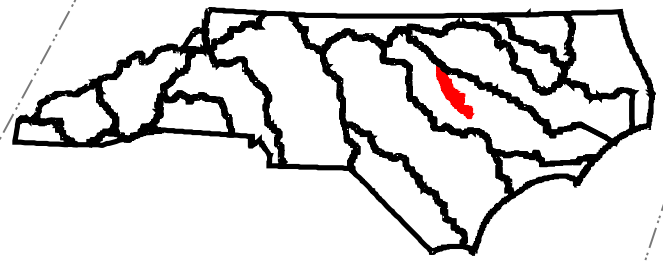
Population growth in the subbasin is increasing near Wendell and Zebulon in eastern Wake County and near Goldsboro in Wayne County. Population density is highest (320-1,600 persons/mi^2) in the lower portion of the subbasin, near Goldsboro.

There are 2,047 acres of managed public lands in this subbasin including land around the Little River Reservoir in the upper portion of the subbasin and the Claridge Forest Center near Goldsboro.

There are six NPDES wastewater discharge permits in this subbasin with a total permitted flow of 0.9 MGD (Figure B-6). There is also one individual NPDES stormwater permit in the subbasin. Wayne and Wake counties will be required to develop a stormwater program under Phase II (page 76). Johnston County and the above counties have submitted model stormwater ordinances as required by the Neuse NSW strategy stormwater rules (page 64). There are also 11 registered animal operations in this subbasin.

There were four benthic macroinvertebrate community samples and two fish community samples (Figure B-6 and Table B-16) collected in 2000 as part of basinwide monitoring. Two sites remained the same; two sites increased in bioclassification, and two sites had a lower bioclassification. Lower bioclassifications at the fish community sites may have been related to recent hurricanes. Refer to *2001 Neuse River Basinwide Assessment Report* at http://www.esb.enr.state.nc.us/bar.html and Section A, Chapter 3 for more information on monitoring.

Figure B-6 Neuse River Subbasin 03-04-06



FRANKLIN
NASH
WILSON
WAKE
JOHNSTON
WAYNE
Rolesville
Zebulon
Wendell
Micro
Kenly
Goldsboro
B-1
F-1
A-2
F-2
B-3
B-2
A-4
A-1
A-3
A-5
B-4
179
173
157
152
130
122
92
US-401
NC-98
NC-96
NC-39
US-64
NC-42
NC-581
NC-222
US-301
I-95
US-70
US-117
Little River
Buffalo Creek
Little Creek
River

Legend

- Subbasin Boundary
- Ambient Monitoring Station
- LNBA Sites
- Benthic Station
- Fish Tissue Station

NPDES Discharges

- Major
- Minor

Use Support Rating

- Supporting
- Impaired
- Not Rated
- No Data

- County Boundary
- Primary Roads
- Municipality

N
W
E
S

5 0 5 10 *Miles*

NCDENR

Planning Branch
Basinwide Planning Program Unit
September 10, 2002

Table B-16 DWQ Monitoring Locations in Subbasin 03-04-06

Benthic Macroinvertebrate Community Monitoring Sites					
Map #[1]	**Waterbody**	**County**	**Location**	**1995**	**2000**
B-1	Little River[2]	Wake	NC 96	Good-Fair	Good-Fair
B-2	Little River[2]	Johnston	SR 2130	Good-Fair	Good
B-3	Buffalo Cr	Johnston	SR 1941	Fair (1991)	Good-Fair
B-4	Little R[2]	Wayne	NC 581	Good-Fair	Good-Fair
Fish Community Monitoring Sites					
Map #[1]	**Waterbody**	**County**	**Location**	**1995**	**2000**
F-1	Little R	Wake	NC 96	Good	Good-Fair
F-2	Buffalo Cr	Johnston	SR 1941	Excellent	Good-Fair
Ambient Monitoring Sites					
Map #[1]	**Waterbody**	**County**	**Location**	**Station #**	**Noted Parameters[3]**
A-1	Little River	Johnston	Near Princeton	J5850000	none
A-2[4]	Little River	Wake	SR 2333	J5620000	none
A-3[4]	Little River	Johnston	US 301	J5690000	DO
A-4[4]	Little River	Johnston	I 95	J5730000	DO
A-5[4]	Little River	Wayne	SR 1234	J5900000	DO
A-6[4]	Little River	Wayne	Nr Asylum	J5950000	none

[1] B = benthic macroinvertebrates; F = fish community; A = ambient monitoring station; SB = benthic macroinvertebrates special study site; and SF = fish community special study site.

[2] Historical data available at this site. Refer to Appendix II.

[3] Parameters are noted if in excess of state standards in greater than 10 percent of all samples.

[4] LNBA Sites (page 220). Only dissolved oxygen, chlorophyll *a* and fecal coliform were analyzed.

Use support ratings are summarized in Part 6.2 below. Recommendations, current status and future recommendations for waters that were impaired in 1998 are discussed in Part 6.3 below. Current status and future recommendations for newly impaired waters are discussed in Part 6.4 below. Water quality issues related to the entire subbasin are discussed in Part 6.5. Unless otherwise noted, all discussions are for the aquatic life and secondary recreation use support category. Refer to Appendix III for a complete list of monitored waters by use support category and more information on supporting monitored waters.

6.2 Use Support Summary

Use support ratings (page 54) in subbasin 03-04-06 were assigned for aquatic life and secondary recreation, fish consumption and water supply. All waters in the subbasin are considered impaired on an evaluated basis because of fish consumption advisories (page 93). All water

supply waters are supporting on an evaluated basis based on reports from DEH regional water treatment consultants.

There were 103 stream miles (47 percent) monitored during this assessment period. Approximately 20 (19 percent) of the monitored stream miles are impaired. Refer to Table B-17 for a summary of use support ratings by use support category for waters in the subbasin. Use support ratings for waters that were monitored and impaired in at least one use support category or were impaired in 1998 are presented in Table B-18.

Table B-17 Summary of Use Support Ratings by Use Support Category in Subbasin 03-04-06

Use Support Rating	Basis	Aquatic Life and Secondary Recreation	Fish Consumption	Primary Recreation	Water Supply
Supporting	Monitored	82.9 mi	0	0	0
	All Waters	82.9 mi	0	0	120.4 mi
Impaired	Monitored	**20.0**	0	0	0
	All Waters	20.0	217.4 mi	0	0
Not Rated	Monitored	0	0	0	0
No Data	N/A	114.5 mi	0	7.4 mi	0
Total	Monitored	102.9 mi	0	0	0
	All Waters	217.4 mi	217.4 mi	7.4 mi	120.4 mi
	Percent Monitored	47% mi	0%	0%	0%

Note: All waters include monitored, evaluated and waters that were not assessed.

Table B-18 Previously or Currently Impaired Waters in Subbasin 03-04-06

Name	1998 Status	2002 Status	Use Support Category	Miles
Little River	Supporting	Impaired	Aquatic Life/Secondary Recreation	20.0
Buffalo Creek	Impaired	Supporting/Not Rated	Aquatic Life/Secondary Recreation	N/A
			Total 2002 Impaired Miles	**20.0**

6.3 Status and Recommendations of Previously Impaired Waters

6.3.1 Buffalo Creek

1998 Recommendations
Buffalo Creek was partially supporting from the source to the Little River. It was recommended that a more detailed study of the watershed be undertaken to determine possible causes of impairment and that the creek be resampled.

Current Status
Buffalo Creek (15 miles) from the Wendell Lake to the Little River is currently supporting with Good-Fair bioclassifications at sites B-3 and F-2. There was a drop in bioclassification for the fish community because of a decrease in diversity. Good instream habitat was noted although some hurricane impacts were also noted. The upper watershed is in the rapidly developing area of eastern Wake County.

2002 Recommendations
DWQ will continue to monitor Buffalo Creek to assess future impacts related to development in the upper watershed. Communities in eastern Wake County should consider water quality impacts to Buffalo Creek during development and utilize BMPs to minimize these impacts during and after development activities. Refer to (page 81) for a description of urban stream problems and recommendations for reducing impacts and restoring water quality. Because of the water quality impacts noted above and the rapid development, Buffalo Creek is a NCWRP targeted local watershed (page 203).

6.4 Status and Recommendations of Waters Newly Impaired Waters

6.4.1 Little River

Current Status 2002 Recommendations
The Little River (20 miles from Buffalo Creek to NC581) is currently impaired because dissolved oxygen was below 4 mg/l in 16.3 percent (site A-3), 17.5 percent (site A-4) and 10.0 percent (site A-5) of samples at these sites.

The Little River is currently supporting based on Good-Fair bioclassifications in the upper and lower watershed and a Good bioclassification in the middle segment. Several rare invertebrate species were collected at the upper site with good instream habitat noted. The fish community here may have been impacted by recent hurricanes. The middle site had infrequent pools and riffles. This segment also contains large numbers of rare mussels and aquatic insects. There is noted long-term decline in water quality at the lower site. No mussels were collected although dead shells were observed. Rare aquatic insects were not collected at this site. Recent silt deposition was noted at this site as well.

The upper watershed drains the rapidly developing area of eastern Wake County. The lower watershed is near Goldsboro.

2002 Recommendations

DWQ and LNBA (page 220) will continue to monitor the Little River to assess impacts related to land use changes and to determine the source of the low dissolved oxygen. Because of the rare species in the Little River, this watershed should be targeted for land acquisition to protect the riparian area beyond the 50-foot required buffer (page 64). Refer to page 81 for a description of urban stream problems and recommendations for reducing impacts and restoring water quality. Wake County Parks and Recreation has received a CWMTF grant to establish greenways on portions of the Little River. Because of the water quality impacts noted above and the increasing development pressure, parts of the Little River are NCWRP targeted local watersheds (page 203).

6.5 Additional Water Quality Issues Within Subbasin 03-04-06

This section discusses issues that may threaten water quality in the subbasin that are not specific to particular streams, lakes or reservoirs. The issues discussed may be related to waters near certain land use activities or within proximity to different pollution sources.

6.5.1 Impacts of Post-Hurricane De-Snagging on Instream Habitats

Many streams in the subbasin have noted impacts from the recent hurricanes. The biological community in the streams can recover rapidly if instream habitat is maintained. De-snagging operations should carefully remove debris from stream channels to restore natural flow and leave enough instream habitats so the biological community can recover. For more information on this issue, refer to page 86.