Section B - Chapter 3
Tar-Pamlico River Subbasin 03-03-03
Tar River, Cokey Swamp, Bynums Creek and Conetoe Creek

3.1 Subbasin Overview

Subbasin 03-03-03 at a Glance

Land and Water Area

Total area:	423.4 mi²
Land area:	420.5 mi²
Water area:	2.9 mi²

Population Statistics

2000 Est. Pop.: 91,606 people
Pop. Density: 138 persons/mi²

Land Cover (percent)

Forest/Wetland:	54.7
Surface Water:	0.40
Urban:	2.1
Cultivated Crop:	40.5
Pasture/ Managed Herbaceous:	2.3

Counties

Edgecombe, Martin, Nash, Pitt and Wilson

Municipalities

Tarboro, Falkland, Pinetops and Sharpsburg

Population growth of the subbasin is concentrated around Tarboro in the northern portion along the Tar River. Tarboro experienced rapid growth in the 1980s but has since slowed, and the remainder of the subbasin is experiencing very little growth. The predominant land cover is forest and wetland, with extensive cultivated cropland as well.

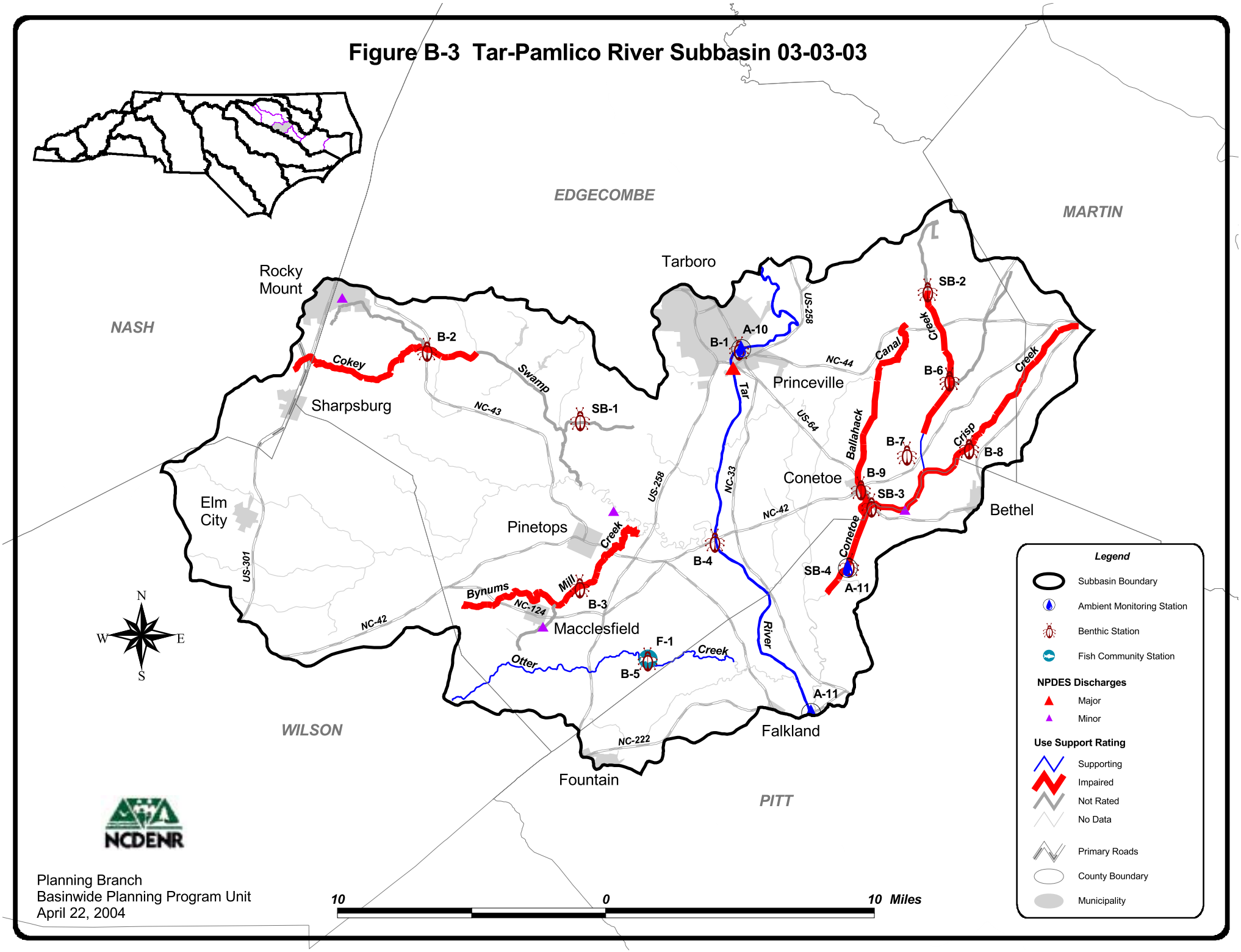
There are five NPDES wastewater discharge permits in this subbasin with a total permitted flow of 6.3 MGD (Figure B-3). The largest is Tarboro WWTP (5.0 MGD). There are also four general NPDES wastewater permits, one individual NPDES stormwater permit, and 19 general NPDES stormwater permits in the subbasin. Refer to Appendix I for identification and more information on individual NPDES permit holders.

Tarboro, as well as Edgecombe and Pitt counties, will be required to develop stormwater programs under Phase II (page 75) and will also have to submit model stormwater ordinances as required by the Tar-Pamlico NSW strategy (page 61) stormwater rules. Significant issues related to compliance with NPDES permit conditions are discussed below. There are also 24 registered animal operations in this subbasin.

There were 12 benthic macroinvertebrate community samples (Figure B-3 and Table B-5) collected in 2002 as part of basinwide monitoring. Six sites maintained the same bioclassification. Three sites were monitored for the first time, and there were three special study samples collected in the subbasin during the assessment period. Data were collected from three ambient monitoring stations and one fish tissue site as well.

Refer to *2003 Tar-Pamlico 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-3 Tar-Pamlico River Subbasin 03-03-03



NCDENR

Planning Branch
Basinwide Planning Program Unit
April 22, 2004

Table B-5 DWQ Assessment and Use Support Ratings Summary for Monitored Waters in Subbasin 03-03-03

Waterbody	Assessment	DWQ Classification	Length/ Area	Category	Data Type with Map Number and Data Results			Use Support Rating	
					Biological	Ambient	Other	2004	1998
TAR RIVER	28-(79.5)	WS-IV NSW CA	0.5 mi	AL	B-1 G--02			S	FS
TAR RIVER	28-(80)	C NSW	14.8 mi	AL	B-1 G--02 B-4 E--02	A-10 nce		S	ST
TAR RIVER	28-(80)	C NSW	14.8 mi.	REC		A-10 nce		S	N/A
TAR RIVER	28-(80)	C NSW	14.8 mi.	FC	FT-2 ce			I	N/A
Cokey Swamp	28-83-3a	C NSW	8.6 mi	AL	B-2 SS--02			I	FS
Sasnett Mill Branch	28-83-3-3	C NSW	3.1 mi	AL	SB-1 NR--01			NR	FS
Bynums Mill Creek	28-83-4	C NSW	9.7 mi	AL	B-3 SS--02			I	ST
TAR RIVER	28-(84)a	WS-IV NSW	6.3 mi	AL		A-11 nce		S	NS
TAR RIVER	28-(84)a	WS-IV NSW	6.3 mi.	REC		A-11 nce		S	N/A
Otter Creek	28-86-(0.3)	C NSW	13.9 mi	AL	B-5 MS--02			S	PS
Conetoe Creek	28-87-(0.5)c	C NSW	1.5 ac	AL	B-7 MS--02			S	FS
Conetoe Creek	28-87-(0.5)d	C NSW	6.7 mi.	AL	SB-3 F--01 SB-4 P--01	A-12 nce		I	NR
Conetoe Creek	28-87-(0.5)d	C NSW	6.7 mi.	REC		A-12 nce		S	N/A
Conetoe Creek	28-87-(0.5)a	C NSW	3.9 mi.	AL	SB-2 NR--01			NR	FS
Conetoe Creek	28-87-(0.5)b	C NSW	5.9 mi.	AL	B-6 SS--02			I	FS
Crisp Creek	28-87-1	C NSW	8.7 mi.	AL	B-8 SS--02			I	ST
Ballahack Canal	28-87-1.2	C NSW	8.4 mi.	AL	B-9 SS--02			I	FS

Assessment Unit Number - Portion of DWQ Classified Index where monitoring is applied to assign a use support rating.

Use Categories:
AL - Aquatic Life
REC - Recreation
FC - Fish Consumption

Monitoring data type:
F - Fish Community Survey
B - Benthic Community Survey
SF - Special Fish Community Study
SB - Special Benthic Community Study
A - Ambient Monitoring Site
FT - Fish Tissue Site

Bioclassifcations:
E - Excellent
G - Good
GF - Good-Fair
F - Fair
P - Poor
N - Natural
MS - Moderate Stress
SS - Severe Stress

Ambient Data
nce - no criteria exceeded
ce - criteria exceeded

Use Support Ratings 2004:
S - Supporting, I - Impaired, NR - Not Rated

Use Support Ratings 1998:
FS - fully supporting, ST - supporting but threatened,
PS - partially supporting, NS - not supporting,
NR - not rated, N/A - not applicable

Use support ratings for all waters in subbasin 03-03-03 are summarized in Part 3.2 below. Recommendations, current status and future recommendations for waters that were Impaired in 1999 are discussed in Part 3.3 below. Current status and future recommendations for newly Impaired waters are discussed in Part 3.4 below. Waters with noted water quality impacts are discussed in Part 3.5 below. Water quality issues related to the entire subbasin are discussed in Part 3.6. Refer to Appendix III for a complete list of monitored waters and more information on Supporting monitored waters.

3.2 Use Support Assessment Summary

Use support ratings were assigned for waters in subbasin 03-03-03 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 statewide fish consumption advice for mercury that is applied in this category to basins east and south of I-85 (page 90). Also, 14.8 miles of the Tar River are Impaired in the fish consumption category based on fish tissue monitoring data. In the water supply category, all waters are Supporting on an evaluated basis based on reports from DEH regional water treatment plant consultants.

There were 94.2 stream miles (37 percent) monitored during this assessment period in the aquatic life use category. There were 48.0 (30 percent) Impaired stream miles in this use category. Refer to Table B-6 for a summary of use support ratings by use category for waters in subbasin 03-03-03.

Table B-6 Summary of Use Support Ratings by Category in Subbasin 03-03-03

Use Support Rating	Aquatic Life	Fish Consumption	Recreation	Water Supply
Monitored Waters				
Supporting	39.2 mi	0	27.8 mi	0
Impaired	48.0 mi	14.8 mi	0	0
Not Rated	6.9	0	0	0
Total	**94.2 mi**	**14.8 mi**	**27.8 mi**	**0**
Unmonitored Waters				
Supporting	15.2 mi	0	0	21.2 mi
Impaired	0	239.9 mi	0	0
Not Rated	20.2 mi	0	0	0
No Data	140.3 mi	0	226.9 mi	0
Total	**160.5 mi**	**239.9 mi**	**226.9 mi**	**21.2 mi**
Totals				
All Waters	**254.7 mi**	**254.7 mi**	**254.7 mi**	**21.2 mi**

3.3 Status and Recommendations of Previously Impaired Waters

Waters in the following section 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.

3.3.1 Conetoe Creek [AU# 28-87-(0.5)a, b, c and d]

1999 Recommendations
It was recommended that the Town of Bethel cooperate with DWQ and the City of Greenville to connect Bethel WWTP to the Greenville sewer system. It was also recommended that nonpoint sources of pollution be investigated in this watershed.

Current Status
Conetoe Creek (12.6 miles) is currently Impaired from SR 1516 to just north of NC 42 and from Crisp Creek to SR 1414 because of a Severe Stress bioclassification at site B-6 [AU# 28-87-(0.5)b] and a Fair bioclassification at site SB-3 [AU# 28-87-(0.5)d]. A bioclassification could not be assigned at site SB-2 [AU# 28-87-(0.5)a] near the source, and no data were collected in the lowest segment [AU# 28-87-(2)]. A 1.5-mile segment above NC 42 is currently Supporting because of a Moderate Stress bioclassification at site B-7 [AU# 28-87-(0.5)c].

Most of the data collected in this watershed during the assessment period was part of the DWQ Watershed Assessment and Restoration Program funded by CWMTF. The study area included the Conetoe Creek watershed and its two major tributary streams, Ballahack Canal and Crisp Creek (discussed below). The watershed land cover is 60 percent agriculture including row crops and swine production. Over 95 miles of stream were channelized in the 1960s with intermittent de-snagging and dredging since then. Woody debris is sparse and the habitat is generally poor throughout the watershed.

The study found that aquatic organisms are impacted by toxicity, habitat degradation and organic enrichment causing low dissolved oxygen levels. Agricultural chemicals are thought to be the cause of toxicity and channelization the cause of the habitat degradation. Nutrient overloading is also widespread. Bethel is in the process of closing out the wastewater treatment plant and is sending its wastewater to the Greenville WWTP.

2004 Recommendations
DWQ will continue to monitor water quality in the Conetoe Creek watershed. DWQ will work with the appropriate agricultural agencies and local farmers to better understand the toxic impacts to the stream. DWQ will work with the drainage district and NRCS to reduce habitat degradation during clearing and de-snagging operations. DWQ is currently working with the local advisory committees (LACs) to reduce nutrient inputs through the Tar-Pamlico NSW strategy (page 61). Reestablishment of buffers along the intermittent and perennial streams should be encouraged to reduce nutrient inputs and provide habitat for aquatic organisms.

EEP has also started development of local watershed plans that will include the Conetoe Creek watershed. These plans will seek to identify sources of water quality impacts and make recommendations to address these impacts. For more information, refer to page 170.

Current Water Quality Initiatives
Because of the water quality impairment noted above, Conetoe Creek has been identified by EEP as one of 27 local watersheds in the basin with the greatest need and opportunity for stream and wetland restoration efforts. This watershed will be given higher priority than nontargeted watersheds for implementation of EEP restoration projects.

The Town of Bethel received a CWMTF grant of $1,500,000 to rehabilitate the wastewater collection system. Bethel WWTP has connected to the Greenville WWTP and no longer discharges into Conetoe Creek.

3.3.2 Otter Creek [AU# 28-86-(0.3)]

1999 Recommendations
It was recommended that Otter Creek be resampled using swamp criteria to determine if the stream is Impaired.

Current Status
Otter Creek (13.9 miles) is currently Supporting from its source to just upstream of Kitten Creek because of a Moderate Stress bioclassification at site B-5. The habitat in Otter Creek was in good condition at the sample site, and the reduced bioclassification may have been because of drought conditions.

2002 Recommendations
DWQ will continue to monitor water quality in Otter Creek to determine if the cause of the depressed biological community is from extreme meteorological events or land use activities. Land-disturbing activities should implement BMPs to minimize or prevent future impacts to water quality in the Sandy Creek watershed.

3.3.2 Little Cokey Swamp [AU# 28-83-3-1]

1999 Recommendations
It was recommended that Little Cokey Swamp be resampled to determine if the stream is Impaired.

Current Status
Little Cokey Swamp has not been resampled since 1992 and is currently Not Rated. A sample site on Cokey Swamp at the confluence with Little Cokey Swamp is discussed in Part 3.4.1.

2002 Recommendations
DWQ will address water quality issues in Little Cokey Swamp with Cokey Swamp (see below).

3.4 Status and Recommendations of Newly Impaired Waters

Waters in the following section 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.

3.4.1 Cokey Swamp [AU# 28-83-3a]

Current Status
Cokey Swamp (8.6 miles) is currently Impaired from its source to Dickinson Creek because of a Severe Stress bioclassification at site B-2. Habitat degradation, as well as high conductivity, was noted at site B-2. There were few riffles and pools at the sample site. Tributaries to this segment drain urban areas in southern Rocky Mount. The downstream extent of the Impaired biological community is not known.

2004 Recommendations
DWQ will continue to monitor water quality in the Cokey Swamp watershed. DWQ will work with the Town of Rocky Mount in developing stormwater programs that will reduce future and current impacts to streams in this watershed.

3.4.2 Ballahack Canal [AU# 28-87-1.2]

Current Status
Ballahack Canal (8.4 miles) is currently Impaired from its source to Conetoe Creek because of a Severe Stress bioclassification at site B-9. Ballahack Canal was part of the Conetoe Creek WARP study discussed above in Part 3.3.1.

2004 Recommendations
The WARP study recommended that Ballahack Canal be prioritized for buffer restoration as this watershed was in worse condition than other streams within the Conetoe Creek watershed. Refer to Part 3.3.1 above for more recommendations to restore water quality in this watershed.

3.4.3 Crisp Creek [AU# 28-87-1]

Current Status
Crisp Creek (8.7 miles) is currently Impaired from its source to Conetoe Creek because of a Severe Stress bioclassification at site B-8. Crisp Creek was part of the Conetoe Creek WARP study discussed above in Part 3.3.1.

2002 Recommendations
Refer to Part 3.3.1 above for more recommendations to restore water quality to this watershed. A local watershed plan is being developed for Crisp Creek by the EEP (page 168).

3.4.4 Bynums Mill Creek [AU# 28-83-4]

Current Status
Bynums Mill Creek (9.7 miles) is currently Impaired from its source to Town Creek because of a Severe Stress bioclassification at site B-3. Excessive algal growth and a braided channel were noted at site B-3. Tributaries to Bynums Mill Creek drain areas of Macclesfield and Pinetops. The Macclesfield WWTP also discharges into Briery Branch above site B-3.

2004 Recommendations
DWQ will continue to monitor water quality in the Bynums Mill Creek watershed. Land-disturbing activities should implement BMPs to minimize or prevent future impacts to water quality in the Bynums Mill Creek watershed.

3.4.5 Tar River [AU# 28-(80)]

Current Status
The Tar River (14.8 miles) is currently Impaired in the fish consumption category from Tarboro water supply intake to Suggs Creek because fish tissue (site FT-2) collected in this segment exceeded the state criterion of 0.4 μg of methylmercury per gram of fish tissue. Seven of 13 large mouth bass collected in this segment exceeded this criterion. There is also statewide consumption advice for mercury in fish tissue that is applied to waters east and south of I-85.

2002 Recommendations
Contamination of fish tissue with mercury is a regional issue. Refer to page 90 for more information on plans to address mercury.

3.5 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 these 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#). 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.

3.5.1 Hendricks Creek [AU# 28-81]

Current Status and 2004 Recommendations
The current use support rating of Hendricks Creek is No Data. Hendricks Creek has never been monitored by DWQ; however, EEP (page 168) has a planned project in this local watershed. This is one of 27 local watersheds in the Tar-Pamlico River basin that has been identified by EEP as an area with the greatest need and opportunity for stream and wetland restoration efforts.

This watershed will be given higher priority than nontargeted watersheds for implementation of EEP restoration projects.