Chapter 9
Cape Fear River Subbasin 03-06-09
Including: Hasketts Creek, Deep River, Polecat Creek and Sandy Creek

9.1 Subbasin Overview

Subbasin 03-06-09 at a Glance

Land and Water Area

Total area:	446 mi²
Land area:	445 mi²
Water area:	1 mi²

Population Statistics

2000 Est. Pop.: 80,068 people
Pop. Density: 180 persons/mi²

Land Cover (percent)

Forest/Wetland:	68.7%
Surface Water:	0.6%
Urban:	1.1%
Cultivated Crop:	2.8%
Pasture/ Managed Herbaceous:	26.9%

Counties

Chatham, Guilford, Moore and Randolph

Municipalities

Asheboro, Franklinville, Liberty, Ramseur and Seagrove

Subbasin 03-06-09 is mostly in the Carolina slate belt with a small portion in the piedmont. Most of the watershed is forest and pasture land. Development is occurring around Asheboro. Population is expected to grow by 220,000 people in counties with portions or all of their areas in this subbasin by 2020.

There are 13 individual NPDES wastewater discharge permits in this subbasin with a permitted flow of 9.8 MGD (Figure 12). The largest is Asheboro WWTP (9 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 9.3 for Impaired waters and in Section 9.4 for other waters.

There are six registered dairy operations, one registered cattle operation, one registered poultry operation and seven swine operations in this subbasin.

There were 11 benthic community samples and three fish community samples (Figure 12 and Table 12) collected during this assessment period. Data were also collected from seven ambient monitoring stations including three UCFRBA (Appendix V) stations, two DWQ stations and two shared ambient stations. Two reservoirs were also monitored. 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.

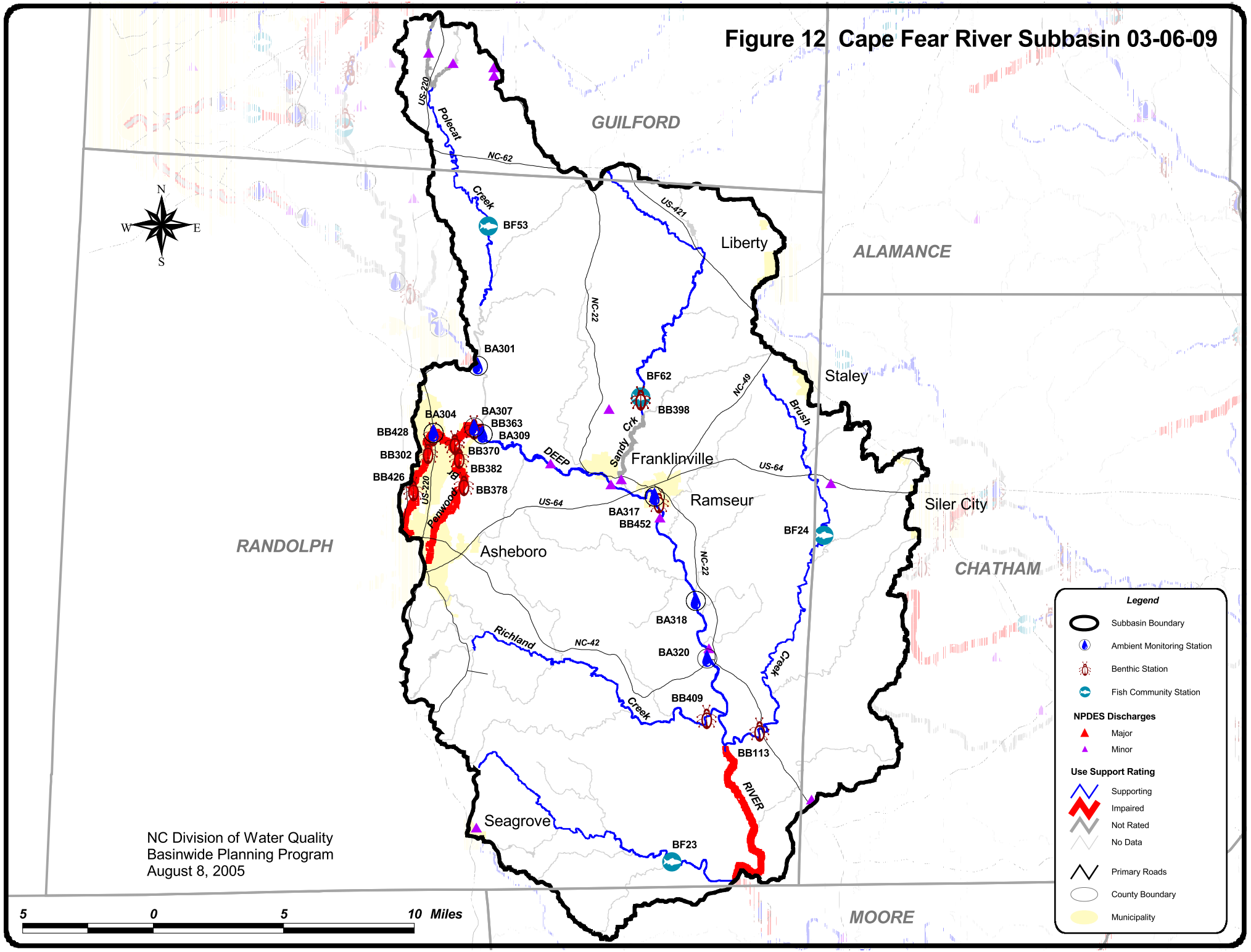
Figure 12 Cape Fear River Subbasin 03-06-09
GUILFORD
ALAMANCE
RANDOLPH
CHATHAM
MOORE
Liberty
Staley
Franklinville
Ramseur
Siler City
Asheboro
Seagrove
US-220
Polecat
Creek
NC-62
US-421
NC-22
NC-49
Brush
Crk
Sandy
DEEP
US-64
Penwood
Richland
NC-42
RIVER
BF53
BA301
BF62
BB398
BA304
BA307
BB363
BA309
BB428
BB302
BB370
BB382
BB426
BB378
BA317
BB452
BF24
BA318
BA320
BB409
BB113
BF23
N
S
E
W
NC Division of Water Quality
Basinwide Planning Program
August 8, 2005
5 0 5 10 Miles
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

Table 12 CAPE FEAR Subbasin 03-06-09

AU Number / Description	Classification	Length/Area		Aquatic Life Assessment						Recreation Assessment					
				AL Rating	Station	Result	Parameter	Year/ % Exc		REC Rating	Station	Result		Stressors	Sources
Brush Creek															
17-23a	C	19.0	FW Miles	**S**						ND					
From source to Little Brush Creek					BF24	G	2003								
17-23b	C	5.0	FW Miles	**S**						ND					
From Little Brush Creek to Deep River					BB113	GF	2003								
DEEP RIVER															
17-(10.5)d	C	20.9	FW Miles	**S**	BA309	NCE	Chlor a	7.4		**NR***	BA309	NCE		Chlorophyll a	Unknown
					BA317	NCE	Turbidity	8.4			BA318	NCE		Turbidity	Unknown
					BA318	NCE	Turbidity	9.8						Habitat Degradation	Unknown
					BA320	NCE								Fecal Coliform Bacteria	Unknown
From Haskett Creek to Brush Creek					BB452	G	2003								
17-(10.5)e1	C	6.7	FW Miles	**I**	BA322	CE	Turbidity	10.9		**S**	BA322	NCE		Turbidity	Unknown
From Brush Creek to Subbasin 03-06-09 and 03-06-10 boundary															
Fork Creek															
17-25	C	15.1	FW Miles	**S**						ND					
From source to Deep River					BF23	G	2003								
Haskett Creek															
17-12a	C	6.3	FW Miles	**I**	BA304	NCE	Turbidity	7.5		**NR***	BA304	NCE		Habitat Degradation	MS4 NPDES
From source to SR 2149					BB302	P	2003								
					BB370	P	1998								
					BB370	F	2003								
					BB426	P	2003								
					BB428	P	2003								
17-12b	C	1.3	FW Miles	**I**	BA307	NCE				**NR***	BA307	NCE		Fecal Coliform Bacteria	MS4 NPDES
From SR 2149 to Deep River					BB363	P	2003							Habitat Degradation	WWTP NPDES
					BB363	P	1998							Habitat Degradation	MS4 NPDES

Table 12 CAPE FEAR Subbasin 03-06-09

AU Number / Description	Classification	Length/Area	Aquatic Life Assessment						Recreation Assessment				
			AL Rating	Station	Result	Year/ Parameter	% Exc		REC Rating	Station	Result	Stressors	Sources
Penwood Branch													
17-12-1	C	6.1 FW Miles	I						ND				
From source to Haskett Creek				BB378	F	'2003							
				BB382	F	'2003							
Polecat Creek													
17-11-(1)b	WS-III	16.4 FW Miles	S						ND				
From Ut at Cone Mills Club to a point 0.4 mile downstream of Randolph County SR 2116				BF53	G	'2003							
Richland Creek													
17-22	C	14.6 FW Miles	S						ND				
From source to Deep River				BB409	G	'2003							
Sandy Creek													
17-16-(1)a	WS-III	16.1 FW Miles	S						ND				
From source to SR 2495				BB398	G	'2003							
				BB398	G	'2002							
				BB398	E	'2001							
				BB398	G	'2003							
				BF62	E	'1999							
				BF62	G	'2003							
17-16-(1)b	WS-III	19.3 FW Acres	NR	BL20	NCE	Chlor a	66		ND			Chlorophyll a	Agriculture
From SR 2495 to a point 0.6 mile upstream of NC Hwy 22												Chlorophyll a	Impervious Surfac
17-16-(3.5)	WS-III CA	4.6 FW Acres	NR	BL21	NCE	Chlor a	66		ND			Chlorophyll a	Agriculture
From a point 0.6 mile upstream of NC Hwy 22 to Ramseur water supply												Chlorophyll a	Impervious Surfac

Table 12 CAPE FEAR Subbasin 03-06-09

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	107.1	FW Miles
I	m	20.4	FW Miles
NR	m	23.9	FW Acres
NR	e	4.2	FW Miles
ND		182.4	FW Miles

Recreation Rating Summary

S	m	6.7	FW Miles
NR*	m	28.5	FW Miles
ND		279.0	FW Miles
ND		23.9	FW Acres

Fish Consumption Rating Summary

I	e	314.2	FW Miles
I	e	23.9	FW Acres

9.2 Use Support Assessment Summary

Use support ratings were assigned for waters in subbasin 03-06-09 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 WS classified waters (23.9 acres and 68.9 miles) 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 127.5 stream miles (40.6 percent) and 23.9 freshwater acres (100 percent) monitored during this assessment period in the aquatic life category. There are 20.4 stream miles (6.5 percent) identified as Impaired in this same category.

9.3 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.

9.3.1 Deep River [AU# 17-(10.5)d and e1]

Current Status
The Deep River [17-(10.5)d] from Haskett Creek to Brush Creek (20.9 miles) is Supporting aquatic life because of a Good benthic community rating at site BB452. There was a lack of pool and riffles, but streambank and riparian areas were intact. Turbidity was above the water quality standard in 9.8 of samples collected at site BA318. Chlorophyll *a* was above the standard in 7.4 percent of samples at site BA309, which is in a backwater of a dam just downstream of Hasketts Creek. The Ramseur WWTP (NC0026565) had significant violations of biological oxygen demand permit limits that could have negatively impacted aquatic life. The WWTP has had no violations since 2003. This segment is Not Rated for recreation because the fecal coliform bacteria screening criteria were exceeded at sites BA309 and BA318.

The Deep River [17-(10.5)e1] from Brush Creek to the subbasin boundary (6.7 miles) is Impaired for aquatic life because the turbidity standard was violated at site BA322 in 11 percent of samples collected during the assessment period. Site BA322 is subbasin 03-06-10.

2005 Recommendations
DWQ and the UCFRBA will continue to monitor these segments of the Deep River. The NPDES compliance process will be used to address the significant permit violations noted above.

Segment 17-(10.5e1) will be added to the 303(d) list of Impaired waters. TMDLs (Chapter 35) will be developed for identified stressors within 8-13 years of listing.

Water Quality Initiatives
In 1998, Ramseur received a $344,000 CWMTF (Chapter 34) grant to rehabilitate 7,500 linear feet of the wastewater collection system in order to reduce inflow and infiltration that was causing operational problems at the plant. In 1999, Franklinville received a $1,052,000 CWMTF grant to replace the WWTP and install UV disinfection and backup emergency power. In 2003, Ramseur received a $278,000 CWMTF grant to rehabilitate another 3,000 linear feet of the wastewater collection system and to purchase a backup generator.

9.3.2 Haskett Creek [AU#17-12a and b]

2000 Recommendations
The 2000 basin plan recommended that these segments of Hasketts Creek be resampled using the 303(d) approach to determine problem parameters.

Current Status
Haskett Creek [17-12a] from source to SR 2149 (6.3 miles) is Impaired for aquatic life because of Poor and Fair benthic community ratings at sites BB426, BB428, BB302 and BB370. Turbidity was also above the water quality standard in 7.5 percent of samples collected at site BA304. This segment is Not Rated for recreation because the fecal coliform bacteria screening criteria were exceeded at site BA304.

Haskett Creek [17-12b] from SR 2149 to the Deep River (1.3 miles) is Impaired for aquatic life because of a Poor benthic community rating at site BB363. The Asheboro WWTP (NC0026123) had significant violations of chlorine permit limits in the last two years of the assessment period. Instream toxicity testing downstream of the WWTP in August 2003 indicated no toxicity, and the facility has had only one violation since 2003.

A stressor study completed in the Hasketts Creek watershed indicated that habitat degradation from urban runoff were stressors to the benthic community. Streambank erosion, inadequate riparian areas and channelization were also noted stressors. Hasketts Creek is subjected to rapid increases in flow after rainfall events due to urban runoff.

2005 Recommendations
DWQ will continue to monitor the Hasketts Creek watershed. The NPDES compliance process will be used to address the significant permit violations noted above. Refer to Chapter 31 for more information and recommendations for urban streams. Both segments will remain on the 303(d) list of Impaired waters.

9.3.3 Penwood Branch [AU#17-12-1]

Current Status
Penwood Branch was Not Rated in the 2000 plan; however, Penwood Branch [17-12-1] from source to Hasketts Creek (6.1 miles) is Impaired for aquatic life because of Poor benthic community ratings at sites BB378 and BB382. A stressor study completed in the Hasketts Creek watershed (including Penwood Branch) indicated that habitat degradation from urban runoff

were stressors to the benthic community. Streambank erosion, inadequate riparian areas and channelization were also noted stressors. Hasketts Creek is subjected to rapid increases in flow after rainfall events due to urban runoff.

2005 Recommendations
DWQ will continue to monitor the Penwood Branch watershed. Refer to Chapter 31 for more information and recommendations for urban streams.

Penwood Branch will be added to the 303(d) list of Impaired waters. TMDLs (Chapter 35) will be developed for identified stressors within 8-13 years of listing.

9.4 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.

9.4.1 Polecat Creek [AU#17-11-1a]

Current Status and 2005 Recommendations
Polecat Creek from source to UT at Cone Mills Club (2.8 miles) is Not Rated on an evaluated basis for aquatic life because Monroe Mobile Home Park (NC0055913) had significant violations of biological oxygen demand permit limits in the last two years of the assessment period that could have negatively impacted aquatic life. The facility continued to have occasional violations of BOD in 2004. The lower 16.4 miles are Supporting aquatic life because of a Good fish community rating at site BF53. DWQ will continue to monitor the Polecat Creek. The NPDES compliance process will be used to address the significant permit violations noted above.

9.4.2 Sandy Creek (Sandy Creek Reservior) [AU# 17-19-(1)b and (3.5)]

Current Status and 2005 Recommendations
Sandy Creek Reservoir (23.9 acres) is Not Rated for aquatic life because 33 percent of chlorophyll *a* samples exceeded the water quality standard. However, not enough samples were collected to assign a use support rating. Nutrient levels in the reservoir were higher than in previous years and blue-green algal blooms occurred throughout the summer months. These blooms can cause taste and odor problems in treated drinking water. DWQ will determine if increased monitoring efforts in this lake are warranted to better assess water quality.

Water Quality Initiatives
In 1997, the Piedmont Land Conservancy received a $134,000 CWMTF grant to acquire 144 acres of permanent easements in this watershed (Chapter 34).

9.4.3 UT at Cone Mills Club [AU#17-11-2-(2)]

Current Status and 2005 Recommendations

UT at Cone Mills Club from Cone Mills Lake Club Dam to Polecat Creek (1.4 miles) is Not Rated on an evaluated basis because the Woodlake Mobile Home Park (NC0023299) had significant violations of biological oxygen demand permit limits in the last two years of the assessment period that could have negatively impacted aquatic life. The facility has new owners that hired a new operator and plan to upgrade the facility. The NPDES compliance process will be used to address the permit violations.