Section B: Chapter 6

Yadkin-Pee Dee River Subbasin 03-07-06

South Yadkin River Watershed including Hunting Creek, Fourth Creek, Third Creek and Second Creek

6.1 Water Quality Overview

Subbasin 03-07-06 at a Glance

Land and Water

Total area:	907 mi^2
Stream miles:	684.3
Lake acres:	7.7

Population Statistics

1990 Est. Pop.:	94,594 people
Pop. Density:	104 persons / mi^2

Land Cover (%)

Forest / Wetland:	54.0
Surface Water:	0.3
Urban:	1.5
Cultivated Crop:	6.2
Pasture / Managed Herbaceous:	38.0

The South Yadkin River watershed makes up this large subbasin in primarily Iredell and Rowan counties. The South Yadkin River is one of three major tributaries to the Yadkin River in North Carolina. Streams within the subbasin include Hunting Creek, Rocky Creek, and Second, Third and Fourth Creeks. Statesville is the largest municipality, although portions of Mocksville and Mooresville are also included.

A map including the locations of NPDES discharges and water quality monitoring stations is presented in Figure B-7. Table B-11 contains a summary of monitoring data types, locations and results. Use support ratings for waters in this subbasin are summarized in Table B-12. Appendix I provides a key to discharge identification numbers. Refer to Appendix III for a complete listing of monitored waters and more information about use support ratings.

About 54 percent of the land is forested. Approximately 6 percent is cultivated and nearly 40 percent is in pasture. The subbasin contains more than 100,000 people, and the population of Iredell County is expected to increase by 49 percent between 2000 and 2020. Projected increases for Davie and Rowan counties are 37 and 32 percent, respectively. There are 29 NPDES permitted discharges and 50 registered animal operations in the subbasin. Despite a significant decrease between 1994 and 1998, this subbasin alone contains approximately 20 percent of state's capacity for dairy production. Facilities with compliance or toxicity problems are discussed in following sections.

Water quality cannot be generalized across this subbasin. The northern portion contains many streams with Excellent bioclassifications and several other streams where there are a few problem areas. In the lower portion, more water quality impacts are evident, but there are still streams that received Good bioclassifications. The headwaters of the South Yadkin River are classified WS-II and receive the same level of protection offered by the HQW classification. Although several other streams likely qualify, there are no other waters classified HQW or ORW in the subbasin. All or part of Hunting Creek, Rocky Creek, Little Hunting Creek, North Little Hunting Creek, and a larger segment of the upper South Yadkin River likely qualify for either HQW or ORW. Refer to page 54 of Section A for details on stream classifications.

Figure B-7 Yadkin-Pee Dee River Subbasin 03-07-06

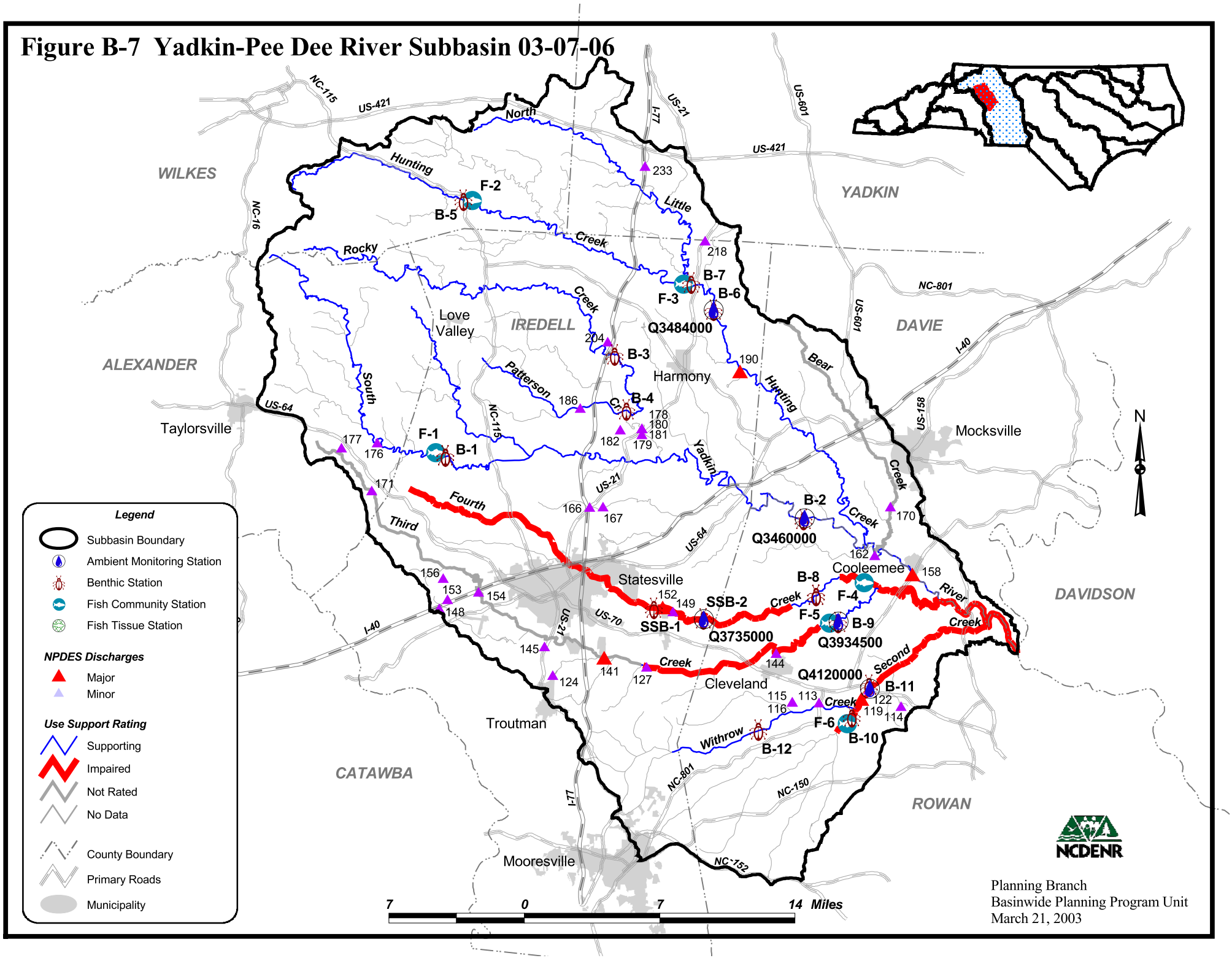

Table B-11 DWQ Monitoring Locations, Bioclassifications and Notable Chemical Parameters (1998-2002) for Yadkin-Pee Dee River Subbasin 03-07-06

Site	Stream	County	Road	Bioclassification or Noted Parameter[2]
Benthic Macroinvertebrate Community Monitoring				
B-1	South Yadkin River[1]	Iredell	SR 1561	Good
B-2	South Yadkin River	Davie/Rowan	SR 1159	Excellent
B-3	Rocky Creek[1]	Iredell	SR 1884	Excellent
B-4	Patterson Creek[1]	Iredell	SR 1890	Good
B-5	Hunting Creek[1]	Wilkes	NC 115	Excellent
B-6	Hunting Creek	Iredell	SR 2115	Excellent
B-7	N Little Hunting Cr[1]	Iredell	SR 1829	Excellent
SSB-1	Fourth Creek[1]	Iredell	SR 2316	Fair
SSB-2	Fourth Creek	Iredell	SR 2308	Fair
B-8	Fourth Creek	Iredell	SR 1003	Good
B-9	Third Creek[1]	Rowan	SR 1970	Good
B-10	Second Creek[1]	Rowan	SR 1526	Fair
B-11	Second Creek	Rowan	US 70	Fair
B-12	Withrow Creek[1]	Rowan	SR 1547	Good-Fair
Fish Community Monitoring				
F-1	South Yadkin River[1]	Iredell	SR 1561	Good-Fair
F-2	Hunting Creek[1]	Wilkes	NC 115	Excellent
F-3	N Little Hunting Cr[1]	Iredell	SR 1829	Good
F-4	Fourth Creek[1]	Rowan	SR 1985	Poor
F-5	Third Creek[1]	Rowan	SR 1970	Poor
F-6	Second Creek[1]	Rowan	SR 1526	Good-Fair
Ambient Monitoring				
Q3460000	South Yadkin River	Davie/Rowan	SR 1159	Turbidity, Fecal coliform
Q3484000	Hunting Creek	Iredell	SR 2115	Fecal coliform
Q3735000	Fourth Creek	Iredell	SR 2308	Turbidity, Fecal coliform, Nutrients
Q3934500	Third Creek	Rowan	SR 1970	Fecal coliform, Nutrients
Q4120000	Second Creek	Rowan	US 70	Fecal coliform

Yadkin-Pee Dee River Basin Association Monitoring				
Q3555000	Bear Creek	Davie	SR 1116	Dissolved oxygen
Q3720000	Fourth Creek	Iredell	SR 2316	Fecal coliform
Q3735000	Fourth Creek[3]	Iredell	SR 2308	Turbidity
Q3900000	Third Creek	Iredell	SR 2342	None
Q3932000	Third Creek	Iredell	SR 2359	Fecal coliform
Q3970000	South Yadkin River	Davie/Rowan	US 601	Turbidity
Q4030000	Second Creek	Rowan	SR 1526	None
Q4165000	Second Creek	Rowan	US 601	Turbidity

[1] Historical data of this type are available for this waterbody; refer to Appendix II. Sites may vary.

[2] Parameters are noted if in excess of state standards in more than 10 percent of samples collected within the assessment period (9/1996-8/2001).

[3] This site duplicates a DWQ ambient monitoring station.

For more detailed information on sampling and assessment of streams in this subbasin, refer to the *Basinwide Assessment Report - Yadkin-Pee Dee River Basin* (NCDENR-DWQ, June 2002), available from DWQ Environmental Sciences Branch at http://www.esb.enr.state.nc.us/bar.html or by calling (919) 733-9960.

Table B-12 Use Support Ratings Summary (2002) for Monitored and Evaluated Freshwater Streams (miles) and Lakes (acres) in Yadkin-Pee Dee River Subbasin 03-07-06

Use Support Category	Units	Supporting	Impaired	Not Rated	No Data	Total[1]
Aquatic Life/Secondary Recreation	miles	320.4	**67.1**	34.7	262.1	684.3
	acres	7.7	0.0	0.0	0.0	7.7
Fish Consumption	miles	684.3	0.0	0.0	0.0	684.3
	acres	7.7	0.0	0.0	0.0	7.7
Primary Recreation	miles	0.0	0.0	0.0	0.0	0.0
	acres	0.0	0.0	0.0	0.0	0.0
Water Supply	miles	353.3	0.0	0.0	0.0	353.3
	acres	7.7	0.0	0.0	0.0	7.7

[1] Total stream miles/acres assigned to each use support category in this subbasin. Column is not additive because some stream miles are assigned to more than one category.

6.2 Status and Recommendations for Previously Impaired Waters

This section reviews use support and recommendations detailed in the 1998 basinwide plan, reports status of progress, gives recommendations for the next five-year cycle, and outlines current projects aimed at improving water quality for each water. Fourth Creek was the only stream rated Impaired at the time of the 1998 Yadkin-Pee Dee River basin plan. It is discussed below.

6.2.1 **Fourth Creek** (29.3 miles from source to SR 1972 and from SR 1985 to South Yadkin River)

1998 Recommendations

Problems with low dissolved oxygen, high fecal coliform concentrations and elevated levels of nutrients downstream of Statesville were discussed in the 1998 basin plan. Recommendations are for further identification of causes and sources of pollution, along with reduction of nutrients. DWQ also planned to consider reallocation of oxygen-consuming wastes based on an updated 7Q10 flow estimate if instream dissolved oxygen standards continued to be violated.

Status of Progress

Biological surveys were conducted at four sites along Fourth Creek over the last five-year planning period. In addition, water chemistry data were collected from two sites. With the exception of a small portion of the stream in the lower half of the watershed, all of Fourth Creek is currently rated as Impaired. Much of the watershed contains significant habitat degradation. Elevated turbidity and nutrients were also observed below Statesville; however, both permitted discharges are in compliance with permit limits. There is no indication of a dissolved oxygen problem in Fourth Creek.

The geometric means of fecal coliform samples collected from two stations between 1998 and 2001 and one station between 1996 and 2001 from Fourth Creek (543, 306 and 504 colonies/100ml, respectively) indicate that the stream may not be suitable for primary recreation. In addition, fecal coliform concentrations were greater than 400 colonies/100ml in more than 20 percent of samples from each site. Fourth Creek is not currently classified for primary recreation (Class B). However, the stream was historically placed on the 303(d) list for fecal coliform and a TMDL has already been developed by DWQ.

2002 Recommendations

DWQ's fecal coliform TMDL for Fourth Creek was approved by the EPA in 2001. The study revealed that the sources of fecal coliform in the Fourth Creek watershed include urban sources in the Statesville area, livestock grazing and manure application on agricultural lands, the Fourth Creek WWTP, and wildlife in the forested areas of the watershed. The Coliform Routing and Allocation Program was utilized to simulate instream fecal concentrations and to allocate the fecal coliform loads to the various sources. In order for water quality standards for fecal coliform to be met in Fourth Creek, a nonpoint source load reduction of 40-60 percent under dry weather conditions and 84-98 percent under wet weather conditions must be met. The model estimates that the Fourth Creek WWTP contributes less than one percent of the total fecal coliform loading in the watershed. Therefore, the majority of the reduction allocation focuses on fecal coliform loading from urban sources in the Statesville area and livestock grazing and manure application on agricultural lands.

These calculations are the first step in reducing fecal coliform concentrations in the watershed. Many of the BMPs employed to implement the TMDL will likely help reduce habitat degradation, turbidity and nutrient concentrations in the watershed as well. The Fourth Creek TMDL can be viewed on the DWQ Modeling and TMDL Unit website under "Approved" TMDLs at http://h2o.enr.state.nc.us/tmdl/General_TMDLs.htm. DWQ plans to conduct further

investigation into the causes and sources of the biological impairment of Fourth Creek during this basinwide planning cycle, beginning in 2003.

DWQ will notify local agencies of water quality concerns regarding these waters and work with them to conduct further monitoring and to locate sources of water quality protection funding. In addition, Rowan County is required to obtain an NPDES permit for municipal stormwater systems under the Phase II stormwater rules. Statesville will likely be required by DWQ to obtain a stormwater permit. Refer to page 37 of Section A, Chapter 2 for details.

Water Quality Improvement Initiatives
The DWQ Nonpoint Source Pollution Program is working with Carolina Land and Lakes, Resource Conservation and Development, Inc., and the Iredell Soil and Water Conservation District to implement management strategies outlined in the Fourth Creek fecal coliform TMDL. The main goal of the Fourth Creek TMDL Implementation Project will be to reduce the fecal coliform load to the creek from agricultural sources by excluding grazing cattle from the stream.

Results of modeling during DWQ's TMDL study suggest that in order to attain water quality standards, fecal coliform loading from grazing has to be reduced by 40-50 percent during dry weather conditions and by 95-98 percent during wet weather conditions. Such substantial reductions can be achieved by completely eliminating free access that cattle have to the stream and providing alternative watering sources. The project will include construction of the fences along the streambanks, reestablishing vegetation in the buffer zone to reduce erosion, construction of the stream crossing and installation of the water wells and waterers with associated infrastructure. For more information about the Carolina Land and Lakes RC&D, refer to page 296 of Section C.

Fourth Creek and the lower South Yadkin River watersheds (03040102 030020 & 030040) are two of 55 watersheds in the Yadkin-Pee Dee River basin that have been identified by the NC Wetlands Restoration Program (NCWRP) as areas with the greatest need and opportunity for stream and wetland restoration efforts. This watershed will be given higher priority than a nontargeted watershed for the implementation of NCWRP restoration projects. Refer to page 278 in Section C for details.

6.3 Status and Recommendations for Newly Impaired Waters

A portion of South Yadkin River, Third Creek and Second Creek are rated Impaired based on recent DWQ monitoring (1996-2001). This section outlines the potential causes and sources of impairment and provides recommendations for improving water quality.

6.3.1 **South Yadkin River** (5.3 miles from Fourth Creek to the Yadkin River)

Current Status
Even though only a small portion of the South Yadkin River is Impaired, impacts are evident throughout the watershed. There is light to moderate habitat degradation in the upper portions of the watershed, but overall the biological communities upstream of Cooleemee are in good condition. No biological surveys have been conducted by DWQ downstream of Cooleemee, but water chemistry data indicate turbidity problems. More than 24 percent of samples collected at

US 601 were in excess of state water quality standards. Turbidity was only slightly elevated at a site above Hunting Creek (8 percent of samples exceeded water quality standards). The Davie County WWTP near Cooleemee was in significant noncompliance for chronic problems with total suspended solids over the assessment period; concentrations ranged from 50 to 400 mg/l.

In addition, the geometric means of fecal coliform samples collected from one station between 1996 and 2001 and a second station between 1998 and 2001 from the South Yadkin River (398 and 225 colonies/100ml) indicate that the stream may not be suitable for primary recreation. Fecal coliform concentrations were greater than 400 colonies/100ml in more than 20 percent of samples from each site as well. Current methodology requires additional bacteriological sampling for streams with a geometric mean greater than 200 colonies/100ml or when concentrations exceed 400 col/100ml in more than 20 percent of samples. However, these additional assessments are prioritized such that, as monitoring resources become available, the highest priority is given to those streams where the likelihood of full-body contact recreation is greatest. The South Yadkin River is not currently classified for primary recreation (Class B).

2002 Recommendations

DWQ will work with the Davie County WWTP to regain compliance; however, local actions are also needed to reduce turbidity in runoff associated with all kinds of land uses. Section A, Chapter 4 contains additional recommendations for reducing the impacts of nonpoint source pollution. Further investigation into the causes and sources of these water quality impacts is needed before more specific recommendations to improve water quality can be made.

Water Quality Improvement Initiatives

The lowest 24 miles of the South Yadkin River corridor was included in a conservation plan developed in 2001 by The LandTrust for Central North Carolina. The highest priorities for conservation identified by the plan are land between Fourth Creek and the South Yadkin River, above and including the confluence of the two streams; and land between the South Yadkin River and the Yadkin River, above and including the confluence of the two rivers (Merrill, December 2001). Page 179 of this chapter discusses the conservation plan in greater depth. Page 294 of Section C contains more information about The LandTrust for Central NC.

The South Yadkin River watershed is one of three priority areas in the Yadkin-Pee Dee River basin under the USDA Environmental Quality Incentives Program (EQIP). EQIP provides technical, educational and financial assistance to farmers and ranchers to address soil, water and related natural resource concerns on their lands. Refer to page 274 in Section C for details.

The lower South Yadkin River watersheds (03040102 020070 and 030040) comprise two of 55 watersheds in the Yadkin-Pee Dee River basin that have been identified by the Wetlands Restoration Program as an area with the greatest need and opportunity for stream and wetland restoration efforts. These watersheds will be given higher priority than nontargeted watersheds for the implementation of NCWRP restoration projects. Refer to page 278 in Section C for details.

6.3.2 **Third Creek** (22.1 miles from SR 2359 to SR 1970)

1998 Recommendations
Third Creek was rated support threatened in the 1998 basin plan, primarily due to high concentrations of fecal coliform. Recommendations were for reduction in nonpoint source pollution.

Status of Progress
The middle section of Third Creek near Cleveland is currently Impaired based on a Poor fish community bioclassification in 2001 and a Fair bioclassification in 1996. Severe habitat degradation was observed and the water was plum-colored at the time of sampling. Conductivity and nutrients were elevated over the five-year assessment period. The Town of Cleveland WWTP was in significant noncompliance for pH in 2000.

The geometric means of fecal coliform samples collected from one station between 1996 and 2001 and two stations between 1998 and 2001 from Third Creek (375, 314 and 294 colonies/100ml) indicate that the stream may not be suitable for primary recreation. Fecal coliform concentrations were greater than 400 colonies/100ml in more than 20 percent of samples from each site as well. Current methodology requires additional bacteriological sampling for streams with a geometric mean greater than 200 colonies/100ml or when concentrations exceed 400 col/100ml in more than 20 percent of samples. However, these additional assessments are prioritized such that, as monitoring resources become available, the highest priority is given to those streams where the likelihood of full-body contact recreation is greatest. Third Creek is not currently classified for primary recreation (Class B).

2002 Recommendations
DWQ will work with the Town of Cleveland WWTP to reduce impacts to Third Creek from its discharge. DWQ will also investigate the source of color in Third Creek and develop a strategy for color reduction over the next basinwide planning cycle. Local actions are needed to reduce sedimentation, turbidity and fecal coliform contamination and to promote the production of instream habitat by restoring riparian vegetation throughout the watershed. Section A, Chapter 4 contains general recommendations for reducing habitat degradation from a variety of sources.

Water Quality Improvement Initiatives
The middle and lower portions of the Third Creek watershed (03040102 040030 & 040040) are two of 55 watersheds in the Yadkin-Pee Dee River basin that have been identified by the Wetlands Restoration Program as areas with the greatest need and opportunity for stream and wetland restoration efforts. This watershed will be given higher priority than a nontargeted watershed for the implementation of NCWRP restoration projects. Refer to page 278 in Section C for details.

6.3.3 **Second Creek** (10.4 miles from source to South Yadkin River)

1998 Recommendations
Second Creek was discussed in the 1998 basin plan as being support threatened. There were some concerns about low dissolved oxygen, and recommendations focused on better estimations of assimilative capacity in the event that a new or expanding WWTP requested a permit.

Status of Progress
Moderate to severe habitat degradation was observed along Second Creek during biological surveys of both fish communties and benthic macroinvertebrates in 2001 and 2002. There were no indications of problems with dissolved oxygen conentrations in the stream. Three facilities in the watershed were in significant noncompliance over the review period: RDH Tire and Retread (total suspended solids); Rowan County Second Creek WWTP (pH); and Aquasource (ammonia). However, impairment also occurred above all permitted discharges.

The geometric means of fecal coliform samples collected from one station between 1996 and 2001 and a second station between 1998 and 2001 from Second Creek (309 and 359 colonies/100ml) indicate that the stream may not be suitable for primary recreation. Fecal coliform concentrations were greater than 400 colonies/100ml in more than 20 percent of samples from each site as well. Current methodology requires additional bacteriological sampling for streams with a geometric mean greater than 200 colonies/100ml or when concentrations exceed 400 col/100ml in more than 20 percent of samples. However, these additional assessments are prioritized such that, as monitoring resources become available, the highest priority is given to those streams where the likelihood of full-body contact recreation is greatest. Second Creek is not currently classified for primary recreation (Class B).

2002 Recommendations
DWQ will work with these facilities to regain and maintain compliance with NPDES permits. However, local actions are needed to reduce the effects of nonpoint source pollution, particularly from agricultural activities, and to restore habitat in the watershed. DWQ will notify local agencies of water quality concerns regarding these waters and work with them to conduct further monitoring and to locate sources of water quality protection funding.

Water Quality Improvement Initiatives
The Second Creek watershed (03040102 050020 and 050030) is one of 55 watersheds in the Yadkin-Pee Dee River basin that has been identified by the NC Wetlands Restoration Program (NCWRP) as an area with the greatest need and opportunity for stream and wetland restoration efforts. This watershed will be given higher priority than a nontargeted watershed for the implementation of NCWRP restoration projects. Refer to page 278 in Section C for details.

6.4 Section 303(d) Listed Waters

Currently, portions of Fourth Creek are on the state's draft 2002 303(d) list for fecal coliform, turbidity and biological impairment. A total maximum daily load (TMDL) study, which DWQ completed in 2001, has been approved by the EPA for use in reducing fecal coliform concentations in the Fourth Creek watershed. It is likely that portions of the South Yadkin River, Third Creek and Second Creek, discussed above, will be added to the 303(d) list in the future. Refer to Appendix IV for more information on the state's 303(d) list and listing requirements.

6.5 Status and Recommendations for Waters with Notable Impacts

Based on DWQ's most recent use support assessment, the surface waters discussed below are not Impaired. However, notable water quality impacts were documented. While these waters are not

considered Impaired, attention and resources should be focused on them over the next basinwide planning cycle to prevent additional degradation or facilitate water quality improvement. A discussion of how impairment is determined can be found in Appendix III.

Although no action is required for these streams, voluntary implementation of BMPs is encouraged and continued monitoring is recommended. DWQ will notify local agencies and others of water quality concerns discussed below and work with them to conduct further monitoring and to locate sources of water quality protection funding. Additionally, education on local water quality issues is always a useful tool to prevent water quality problems and to promote restoration efforts. Nonpoint source agency contacts are listed in Appendix VI.

6.5.1 Bear Creek

Bear Creek flows south near Mocksville into the South Yadkin River above Cooleemee. The headwaters are primarily in agriculture with some channelization present. The mid-section contains moderate road coverage and an increasing level of development around Mocksville along US 64. The last biological survey was done in 1994 and a Good-Fair bioclassification was assigned. These data are too old to base a current use support rating on. Yadkin-Pee Dee River Basin Association data show 6 percent of samples between 1998 and 2001 contained dissolved oxygen below 5.0 mg/l and 2 percent of samples contained concentrations less than 4.0 mg/l.

The geometric mean of fecal coliform samples collected between 1998 and 2001 from Bear Creek (382 colonies/100ml) indicates that the stream may not be suitable for primary recreation. Current methodology requires additional bacteriological sampling for streams with a geometric mean greater than 200 colonies/100ml. However, these additional assessments are prioritized such that, as monitoring resources become available, the highest priority is given to those streams where the likelihood of full-body contact recreation is greatest. Bear Creek is not currently classified for primary recreation (Class B).

The Town of Mocksville was in significant noncompliance for cyanide in 2001, and there were also a few violations of the total suspended solids permit limit. Due to the potential impacts and the lack of adequate data to assess these impacts, the stream is currently not rated. DWQ plans to collect benthic macroinvertebrate samples in order to better assess the aquatic life use of the stream. In the meantime, DWQ will work with the Town of Mocksville WWTP to ensure compliance with the NPDES permit. Local actions are needed to reduce the effects of nonpoint source pollution, both from agriculture activities and from developed areas. Section A, Chapter 4 contains general recommendations for reducing nonpoint source pollution from a variety of sources.

6.5.2 Olin Creek

Olin Creek is a tributary to Patterson Creek in the Rocky Creek watershed. The stream flows southeast from near Love Valley and the headwaters are mostly forested. However, there is extensive channelization in the lower portion of the watershed. I-77 also crosses the stream. DWQ does not have recent data on which to base an assessment; however, fish community data collected in 1996 indicated impairment. There are eight registered animal operations in the watershed; all are dairy. DWQ plans to resample this stream over the next basinwide planning

period. However, local actions are needed to reduce the effects of nonpoint source pollution. Section A, Chapter 4 contains general recommendations for reducing nonpoint source pollution from a variety of sources.

6.6 Additional Water Quality Issues with Subbasin 03-07-06

The previous parts discussed water quality concerns for specific stream segments. This section discusses water quality issues related to multiple watersheds within the subbasin. Information found in this section may be related to concerns about things that threaten water quality or about plans and actions to improve water quality.

6.6.1 NPDES Discharges

Twenty of the 29 NPDES discharges had a few permit violations over the two-year review period. Table B-13 presents summary information for nine facilities which were in significant noncompliance.

Table B-13 NPDES Discharges with Significant Discharge Violations in Subbasin 03-07-06 (9/1999-8/2001)

Facility	Receiving Stream	Problem Parameter	Dates
Gulistan Carpet – Turnersburg Plant	Rocky Creek	pH	1999
NC DOT I-77 Rest Area – Iredell Co	Camel Branch	Ammonia	2001
Aquasource, Inc. – Pine Valley	Setman Branch	Ammonia	2000
Town of Cleveland	Third Creek	pH	2000
RDH Tire and Retread	Beaverdam Creek	Total suspended solids	2000
Rowan Co – Second Creek WWTP	Second Creek	pH	2001
Davie Co – Cooleemee WWTP	South Yadkin River	Total suspended solids	Two-year review period
Town of Mocksville	Bear Creek	Cyanide	2001
NC DOT I-77 Rest Area – Yadkin Co	Rocky Branch	Total suspended solids	2001

Eleven facilities are required to monitor effluent toxicity. Two have had recent problems meeting whole effluent toxicity permit limits: Town of Mocksville WWTP and the NCDOT I-77 rest area in Yadkin County. Recent noncompliances at the NC Department of Transportation's I-77 rest area in Yadkin County have been attributed to excessive chlorination. Facility staff members are investigating installation of a flow-paced chlorination system.

Noncompliances beginning in August 2001 at the Town of Mocksville's Bear Creek WWTP were associated with high levels of nickel and zinc that have been attributed to a particular industrial user. The levels of zinc detected in the effluent coupled with whole effluent toxicity failures have made the facility subject to DWQ's Action Level Implementation Strategy. The facility is required to either accept a permit limit for zinc or conduct investigations that

definitively rule out zinc as the cause of toxicity. The investigations must be completed by the end of September 2002.

Although Statesville's Fourth Creek WWTP and Tyson Foods-Harmony Division had historical toxicity problems, both facilities passed all tests in 2000 and 2001.

6.6.2 High Fecal Coliform Concentrations

Fecal coliform bacteria are widely used as an indicator of the potential presence of pathogens typically associated with the intestinal tract of warm-blooded animals and are therefore found in their wastes. Coliform bacteria are relatively easy to identify and are usually present in larger numbers than more dangerous pathogens, even though they respond to the environment and to treatment in much the same way. Sources of fecal coliform bacteria, as well as other more dangerous pathogens, include runoff from pastures, feedlots, poultry operations and lagoons that do not employ appropriate best management practices. Other sources include straight pipes, leaking and failing septic systems, and noncompliant WWTPs. Wildlife and pet waste also contribute to elevated concentrations of pathogens.

The water quality standard for fecal coliform bacteria is based on a geometric mean of 200 colonies/100ml of five samples collected within 30 days, or 20 percent of samples having a concentration greater than 400 colonies/100ml. High levels of fecal coliform bacteria are widespread through this subbasin. Samples were collected from 13 locations on seven streams, and the geometric means for each over the five-year assessment period was greater than 200 colonies/100ml. These data indicate that many streams in this subbasin may not be suitable for primary recreation. Current methodology requires additional bacteriological sampling for streams with a geometric mean greater than 200 colonies/100ml. However, these additional assessments are prioritized such that, as monitoring resources become available, the highest priority is given to those streams where the likelihood of full-body contact recreation is greatest. Currently, no waters in this subbasin are classified for primary recreation (Class B).

6.6.3 Projected Population Growth

Iredell County has the fourth largest projected population increase (49 percent between 2000 and 2020) of the 21 counties that comprise the Yadkin-Pee Dee River basin. Population is also expected to increase by 32 percent for Rowan County over the same 20-year period. Growth management within the next five years will be imperative, especially in and around urbanizing areas, in order to protect or improve water quality in this subbasin. Growth management can be defined as the application of strategies and practices that help achieve sustainable development in harmony with the conservation of environmental qualities and features of an area. On a local level, growth management often involves planning and development review requirements that are designed to maintain or improve water quality. Refer to Section A, Chapter 4 for more information about urbanization and development and recommendations to minimize impacts to water quality.

6.6.4 The South Yadkin/Yadkin River Corridor Conservation Plan

The LandTrust for Central NC (LTCNC) received $7,500 from the Conservation Trust for North Carolina and the Clean Water Management Trust Fund to develop a report evaluating the conservation needs and opportunities along 24 miles of the lower South Yadkin River and a 26-mile section of the Yadkin River above High Rock Lake. This corridor incidentally included the lowermost portions of Fourth and Second Creeks as well.

The South Yadkin/Yadkin River Corridor Conservation Plan was completed in December 2001. The highest priorities for conservation identified by the plan are land between Fourth Creek and the South Yadkin River, above and including the confluence of the two streams; and land between the South Yadkin River and the Yadkin River, above and including the confluence of the two rivers. There are large tracts of land (owned by Duke Power-Progress Energy) along the Yadkin River which are in close proximity to lands that are already by LTCNC. There are also large amounts of riparian land (owned by ALCOA) along both the South Yadkin and Yadkin Rivers. These Duke Power and ALCOA lands also received high priority for protection (Merrill, December 2001).

The conservation plan has been integrated into the daily efforts of LTCNC while pursuing conservation opportunities in the Yadkin-Pee Dee River basin. Page 294 of Section C contains more information about The LandTrust for Central NC. You may also visit the website for details about the many lands which LTCNC helped place in conservation ownership at http://www.landtrustcnc.org/aboutlandtrust.html.