

Section B: Chapter 5

Yadkin-Pee Dee River Subbasin 03-07-05

Dutchman Creek Watershed

5.1 Water Quality Overview

Subbasin 03-07-05 at a Glance

Land and Water

Total area:	130 mi ²
Stream miles:	133.1
Lake acres:	41.6

Population Statistics

1990 Est. Pop.:	11,800 people
Pop. Density:	91 persons/mi ²

Land Cover (%)

Forest/Wetland:	56.8
Surface Water:	0.6
Urban:	1.9
Cultivated Crop:	5.5
Pasture/ Managed Herbaceous:	35.1

At only 130 square miles, subbasin 03-07-05 is the smallest of the 17 Yadkin-Pee Dee River subbasins. The subbasin contains the Dutchman Creek watershed and lies almost completely within Davie County. Major tributaries to Dutchman Creek include Cedar and Elisha Creeks. Mocksville is the only municipality.

A map including the locations of NPDES discharges and water quality monitoring stations is presented in Figure B-6. Table B-9 contains a summary of monitoring data types, locations and results. Use support ratings for waters in this subbasin are summarized in Table B-10. 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.

Land within this subbasin is mostly low rolling hills, characteristic of the piedmont. Land use is dominated by forest (57 percent) and pasture (35 percent), although residential development is increasing. The population of Davie County is projected to increase 37 percent between 2000 and 2020.

Water quality is generally Good-Fair throughout the subbasin, although many streams are small and have not been monitored by DWQ. There are no streams classified as High Quality Waters or Outstanding Resource Waters, but many streams, including the upper portion of Dutchman Creek are classified for primary recreation (Class B). There are also some waters classified for drinking water supply (WS-IV). There are only two NPDES permitted discharges and three registered animal operations in this subbasin.

Figure B-6 Yadkin-Pee Dee River Subbasin 03-07-05

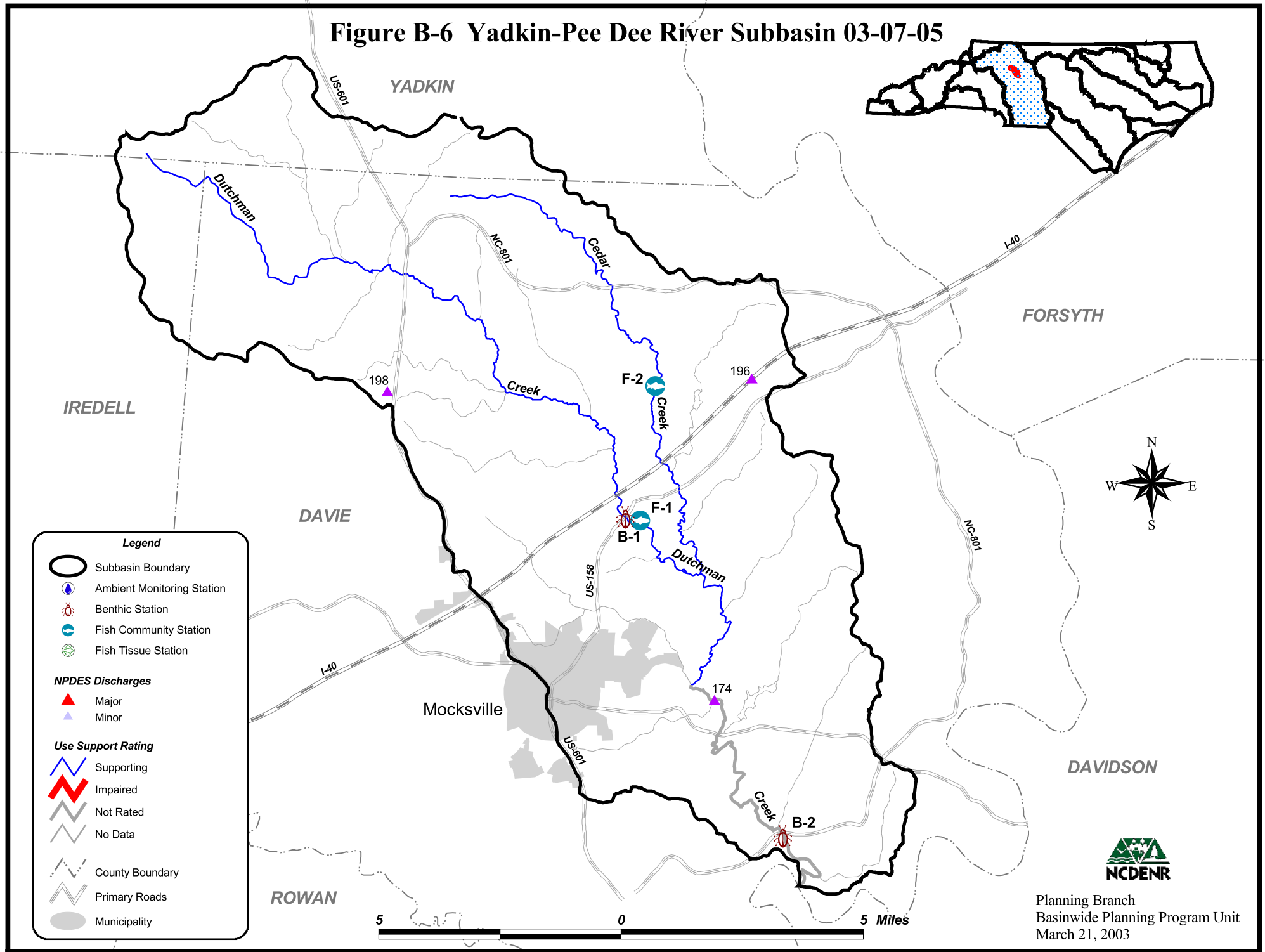


Table B-9 DWQ Monitoring Locations, Bioclassifications and Notable Chemical Parameters (1998-2002) for Yadkin-Pee Dee River Subbasin 03-07-05

Site	Stream	County	Road	Bioclassification or Noted Parameter ²
<i>Benthic Macroinvertebrate Community Monitoring</i>				
B-1	Dutchman Creek ¹	Davie	US 158	Good-Fair
B-2	Dutchman Creek ¹	Davie	NC 801	Not Rated
<i>Fish Community Monitoring</i>				
F-1	Dutchman Creek ¹	Davie	US 158	Good-Fair
F-2	Cedar Creek ¹	Davie	SR 1437	Good
<i>Yadkin-Pee Dee River Basin Association Monitoring</i>				
Q3105000	Dutchman Creek	Davie	US 64	Turbidity, Dissolved oxygen, Fecal coliform

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).

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-10 Use Support Ratings Summary (2002) for Monitored and Evaluated Freshwater Streams (miles) and Lakes (acres) in Yadkin-Pee Dee River Subbasin 03-07-05

Use Support Category	Units	Supporting	Impaired	Not Rated	No Data	Total ¹
Aquatic Life/Secondary Recreation	miles	48.2	0.0	6.3	78.6	133.1
	acres	41.6	0.0	0.0	0.0	41.6
Fish Consumption	miles	133.1	0.0	0.0	0.0	133.1
	acres	41.6	0.0	0.0	0.0	41.6
Primary Recreation	miles	0.0	0.0	0.0	18.9	18.9
	acres	0.0	0.0	0.0	41.6	41.6
Water Supply	miles	10.7	0.0	0.0	0.0	10.7
	acres	0.0	0.0	0.0	0.0	0.0

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.

5.2 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. The 1998 Yadkin-Pee Dee River basin plan did not identify any Impaired waters in this subbasin.

5.3 Status and Recommendations for Newly Impaired Waters

No stream segments were rated as Impaired based on recent DWQ monitoring (1998-2001); however, as mentioned previously, some impacts to water quality were observed. Refer to Part 5.5 below, as well as Section A, Chapter 4 for further discussion of potential water quality problems in this portion of the basin.

5.4 Section 303(d) Listed Waters

No waters in this subbasin are listed on the state's draft 2002 303(d) list. Refer to Appendix IV for more information on the state's 303(d) list and listing requirements.

5.5 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.

5.5.1 Dutchman Creek

The 1998 basin plan notes some sedimentation in Dutchman Creek, but the stream was rated fully supporting. In 2001, Dutchman Creek was sampled in two locations for benthic macroinvertebrates and one location each for fish community and water chemistry. Habitat degradation, including sedimentation, was noted at both US 158 and NC 801, and some signs of nutrient enrichment were also observed. At the water chemistry site (US 64), turbidity was often elevated and dissolved oxygen was occasionally low. No flow was present when DWQ attempted to resample the stream in 2002. Impacts indicating possible impairment are evident in the lower portion of the watershed; however, DWQ is unable to separate the effects of water quality problems from the effects of the extended drought, and the stream is currently not rated.

The geometric mean of fecal coliform samples collected between 1998 and 2001 from Dutchman Creek (572 colonies/100ml) indicates 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. Dutchman Creek is not currently classified for primary recreation (Class B).

The Mocksville Dutchman's Creek WWTP is currently in significant noncompliance for dissolved oxygen which explains the low dissolved oxygen values observed at US 64. However, all other impacts to Dutchman Creek are likely due to nonpoint source pollution in the watershed. Davie County is required to obtain an NPDES permit for municipal stormwater systems under the Phase II stormwater rules. Page 37 of Section A, Chapter 2 for details. Section A, Chapter 4 contains recommendations and management strategies for reducing habitat degradation.

5.5.2 Elisha Creek Leonard Creek

Elisha and Leonard Creeks flow east into Dutchman Creek near Mocksville. These streams have not been monitored by DWQ, but are likely being impacted by stormwater runoff from developed areas. Much of the increasing residential and commercial development taking place along US 64 and near the I-40/US 64 interchange is within these watersheds. Care needs to be taken during development in order to protect the water quality of these streams and Dutchman Creek. Refer to Section A, Chapter 4 for recommendations and management strategies for reducing impacts of runoff from developed areas.

5.5.3 Cedar Creek

Cedar Creek was rated support threatened in the 1998 basin plan due to observations of possible nutrient enrichment. The recommendation was that additional water quality data be collected, particularly if a NPDES discharge permit was requested. There are currently no permitted discharges in the Cedar Creek watershed. Although the fish community received a Good bioclassification in 2001, habitat degradation, higher conductivity and lower dissolved oxygen than expected were noted at the time of sampling. This watershed is very similar to that of upper Dutchman Creek, and the majority of these impacts are likely related to agricultural activities in the watershed. Refer to Section A, Chapter 4 for recommendations and management strategies for reducing habitat degradation.

5.6 Additional Water Quality Issues within Subbasin 03-07-05

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.

5.6.1 Projected Population Growth

The population of Davie County is projected to increase 37 percent from 34,835 people in 2000 to 47,614 in 2020. Much of this development is likely to occur along highway corridors near Mocksville (I-40, US 64 and US 158). Growth management within the next five years will be imperative in order to improve or maintain 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 minimizing impacts to water quality from development.