Section B: Chapter 3
Yadkin-Pee Dee River Subbasin 03-07-03
Ararat River Watershed

3.1 Water Quality Overview

Subbasin 03-07-03 at a Glance

Land and Water

Total area:	198 mi^2
Stream miles:	172.8
Lake acres:	14.1

Population Statistics

1990 Est. Pop.:	36,299 people
Pop. Density:	183 persons / mi^2

Land Cover (%)

Forest / Wetland:	59.1
Surface Water:	0.2
Urban:	3.0
Cultivated Crop:	4.9
Pasture / Managed Herbaceous:	32.7

The Ararat River and many of its tributaries originate in Virginia. The river enters North Carolina just north of the Town of Mount Airy and flows south near the Town of Pilot Mountain into the Yadkin River. Almost all of this subbasin lies within Surry County.

A map including the locations of NPDES discharges and water quality monitoring stations is presented in Figure B-3. Table B-5 contains a summary of monitoring data types, locations and results. Use support ratings for waters in this subbasin are summarized in Table B-6. 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.

Nearly 40 percent of the land is in agriculture while only 3 percent is characterized as urban. Mountains dot the landscape, and part of Pilot Mountain State Park is contained within the subbasin. The population is more than 36,000 with a moderate density of 183 persons per square mile. Population is expected to increase in the area by 24 percent between 2000 and 2020.

Water quality is generally Good-Fair throughout the subbasin. Many streams exhibit water quality impacts and portions of several are Impaired. There are currently no Outstanding Resource Waters and Toms Creek is the only watershed containing High Quality Waters protection (WS-II). Toms Creek and the upper reaches of Stewarts Creek are also the only streams that received Excellent bioclassifications during the most recent sampling period. There are 11 NPDES permitted discharges and three animal operations in the subbasin. Facilities with compliance or toxicity problems are discussed in following sections.

Figure B-3 Yadkin-Pee Dee River Subbasin 03-07-03

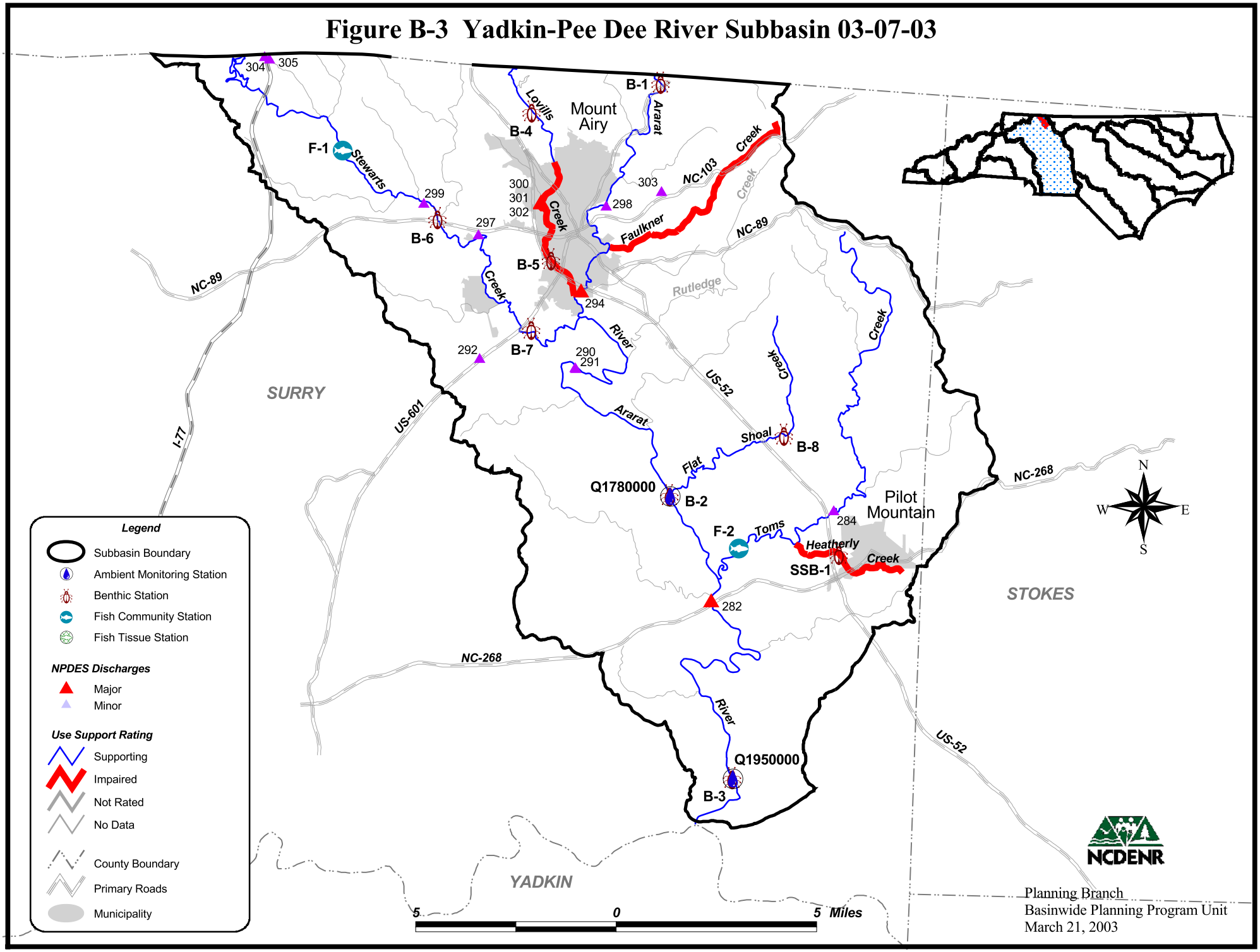

Table B-5 DWQ Monitoring Locations, Bioclassifications and Notable Chemical Parameters (1998-2002) for Yadkin-Pee Dee River Subbasin 03-07-03

Site	Stream	County	Road	Bioclassification or Noted Parameter[2]
Benthic Macroinvertebrate Community Monitoring				
B-1	Ararat River[1]	Surry	NC 104	Good-Fair
B-2	Ararat River	Surry	SR 2019	Good-Fair
B-3	Ararat River	Surry	SR 2080	Good
B-4	Lovills Creek[1]	Surry	SR 1700	Good-Fair
B-5	Lovills Creek	Surry	SR 1371	Fair
B-6	Stewarts Creek[1]	Surry	NC 89	Good-Fair
B-7	Stewarts Creek	Surry	SR 2258	Good
	Faulkner Creek	Surry	SR 1742	Not Impaired
	Faulkner Creek	Surry	SR 1756	Not Rated
B-8	Flat Shoals Creek[1]	Surry	SR 1827	Good-Fair
	Heatherly Creek	Surry	NC 268	Good-Fair
SSB-1	Heatherly Creek	Surry	US 52	Fair
Fish Community Monitoring				
F-1	Stewarts Creek[1]	Surry	SR 1622	Excellent
F-2	Toms Creek	Surry	SR 2024	Excellent
Ambient Monitoring				
Q1780000	Ararat River	Surry	SR 2019	None
Q1950000	Ararat River	Surry	SR 2080	Turbidity
Yadkin-Pee Dee River Basin Association Monitoring				
Q1500000	Ararat River	Surry	Above WWTP	None
Q1710000	Ararat River	Surry	Below WWTP	Fecal coliform
Q1725000	Ararat River	Surry	SR 2119	Fecal coliform
Q1935000	Ararat River	Surry	SR 2044	Turbidity 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-6 Use Support Ratings Summary (2002) for Monitored and Evaluated Freshwater Streams (miles) and Lakes (acres) in Yadkin-Pee Dee River Subbasin 03-07-03

Use Support Category	Units	Supporting	Impaired	Not Rated	No Data	Total[1]
Aquatic Life/Secondary Recreation	miles	124.8	**11.7**	0.0	36.3	172.8
	acres	0.0	0.0	0.0	14.1	14.1
Fish Consumption	miles	172.8	0.0	0.0	0.0	172.8
	acres	14.1	0.0	0.0	0.0	14.1
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	62.4	0.0	0.0	0.0	62.4
	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.

3.2 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 identified portions of the Ararat River, Lovills Creek and Heatherly Creek as Impaired. The waters are discussed in further detail below.

3.2.1 **Ararat River** (10.3 miles from the Mount Airy WWTP to SR 2026 downstream)

1998 Recommendations

Fair and Poor benthic macroinvertebrate bioclassifications were assigned at several stations downstream of Mount Airy and the Mount Airy WWTP through the late 1980s and 1990s. DWQ required the Town of Mount Airy to do instream monitoring, in addition to effluent monitoring, to try to determine the impacts associated with the discharge. Recommendations were for DWQ to review the data, which suggested water quality problems related to oxygen-consuming wastes, and work with the Town of Mount Airy to improve the quality of its discharge. Recommendations were also made for reduction of nonpoint sources of pollution in the watershed.

Current Status

The benthic macroinvertebrate community improved to Good-Fair and Good at two stations downstream of Mount Airy and the Mount Airy WWTP in 2001. In addition, four YPDRBA monitoring sites and two ambient monitoring sites showed few signs of low dissolved oxygen problems. This improvement is likely due to the reduction in discharge (4.5 MGD to 3.0 MGD) and reduction in toxicity, due to fewer industrial inputs, from the WWTP. Further improvement may be a result of reduced nonpoint source pollution due to the extended drought. Some habitat degradation was noted, primarily sedimentation of pools and lack of instream woody habitat and leafpacks. Turbidity is slightly elevated at the lower end of the watershed.

Fecal coliform concentrations were greater than 400 colonies/100ml in more than 20 percent of samples collected from each of three stations between 1998 and 2001 (34%, 24% and 32%, respectively). 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.

2002 Recommendations

Although this stream is no longer considered Impaired, impacts from nonpoint source pollution are evident. 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.

Water Quality Improvement Initiatives

The upper and middle Ararat River watersheds (03040101 110010 & 110020) 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.

3.2.2 Lovills Creek (4.2 miles from the Mount Airy water supply dam to the Ararat River)

1998 Recommendations

The benthic macroinvertebrate community of Lovills Creek as it flows through the Town of Mount Airy has been assigned a Fair bioclassification since 1986. The 1998 basin plan states that further investigation into the causes and sources of impairment is needed before recommendations to improve water quality can be made.

Current Status

Lovills Creek continues to receive Fair bioclassifications in the reach that flows through Mount Airy. This portion of the watershed is almost completely developed and most certainly is affected by nonpoint source pollution. However, Proctor Silex, which discharges above the monitoring site, failed 38 percent of chronic toxicity tests between September 1997 and October 2000. These sporadic toxicity problems could be a large contributor to impairment as well. Proctor Silex closed in 2001 and no longer discharges to Lovills Creek. The NPDES permit for this facility will likely be rescinded.

2002 Recommendations

DWQ will continue to monitor Lovills Creek to evaluate any improvement following the closure of Proctor Silex. However, local actions are needed to reduce the effects of nonpoint source pollution, particularly from stormwater runoff, and to restore habitat in the lower portion of the watershed. In many locations, the stream may need extensive restoration work in order to fully support aquatic life.

Water Quality Improvement Initiatives

The Lovills Creek watershed (03040101 100020) 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.

3.2.3 **Heatherly Creek** (3.4 miles from source to Toms Creek)

1998 Recommendations

Benthic macroinvertebrate communities in Heatherly Creek were assigned Fair and Poor bioclassfications upstream and downstream (respectively) of the Pilot Mountain WWTP discharge. The Pilot Mountain WWTP had toxicity and low dissolved oxygen problems. In 1996, this discharge was relocated to the Ararat River, and the 1998 basin plan recommended that DWQ continue to monitor the stream to evaluate any improvement following the removal of the discharge.

Current Status

In 2001, DWQ sampled benthic macroinvertebrates upstream and downstream of the old Pilot Mountain discharge. Upstream Heatherly Creek is not Impaired; however, habitat degradation is apparent and improvement at this location could be related to reduced nonpoint source pollution as a result of the extended drought. Downstream the creek is still Impaired; however, improvement in the benthic community was also observed at this location. The future I-74 corridor (US 52) and NC 268 bisect the watershed in two directions. Development and its corresponding nonpoint source pollution impacts are increasing. The Impaired segment of Heatherly Creek has been reduced from 4.2 miles to 1.4 miles from NC 268 to Toms Creek.

2002 Recommendations

DWQ plans to conduct further investigation into the causes and sources of the biological impairment of Heatherly Creek during this basinwide planning cycle. 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. However, local actions are needed to reduce the effects of nonpoint source pollution, particularly from stormwater runoff.

3.3 Status and Recommendations for Newly Impaired Waters

Faulkner Creek is 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.

3.3.1 **Faulkner Creek** (6.1 miles from source to the Ararat River)

Current Status

Faulkner Creek was sampled by DWQ in two locations in 2002 because it was historically placed on the 303(d) list of Impaired waters based on visual observations of water quality problems. Sediment was listed as the cause of impairment, and agriculture and urban runoff were listed as

the potential sources. Results indicate that the stream is Impaired from McBride Road (SR 1742) to the Ararat River. Habitat degradation was apparent throughout the watershed, but is more of an impact lower in the watershed. Sedimentation and a lack of riparian vegetation were identified as causes of impairment, along with an unknown source of toxicity. Indicators of nutrient enrichment were also observed at the downstream location.

2002 Recommendations

A portion of Faulkner Creek will remain on the 303(d) list, and DWQ will work towards the development of a TMDL for sediment. As resources allow, DWQ will also further investigate the source of toxicity in the watershed. This area is increasingly impacted by residential and commercial development as the Town of Mount Airy grows along highway corridors. Local actions are needed to reduce sedimentation and to promote the production of instream habitat by restoring riparian vegetation throughout the watershed.

3.4 Section 303(d) Listed Waters

Currently, portions of four waters in this subbasin are listed on the state's draft 2002 303(d) list: Ararat River, Lovills Creek, Heatherly Creek and Faulkner Creek. A sediment TMDL for Faulkner Creek will likely be developed by DWQ and/or the EPA during this basinwide planning cycle. Refer to Appendix IV for more information on the state's 303(d) list and listing requirements.

3.5 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.

3.5.1 Stewarts Creek

The 1998 basin plan noted compliance problems at the Virginia I-77 rest area near the state line in the Stewarts Creek watershed, but these problems seem to have been resolved based on recent compliance reports. Additionally, the fish community in the uppermost portion of the watershed received an Excellent bioclassification in 1996 and 2001. Further downstream, however, water quality impacts are evident. The Surry County Gentry Elementary School discharge was significantly noncompliant for ammonia over the assessment period. In addition, residential and commercial development is increasing between two currently disconnected pieces of the Town of

Mount Airy, as well as along highway corridors in general throughout the watershed. DWQ will work with Surry County to regain compliance at the elementary school. Local actions are needed to reduce sedimentation and to promote the production of instream habitat by restoring riparian vegetation throughout the watershed.

The Stewarts Creek watershed (03040101 100010) 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.

3.5.2 Rutledge Creek

Rutledge Creek has not been sampled by DWQ; however, concerns for this watershed are increasing due to development pressure along NC 89 and US 52 and the increase in number of small animal operations throughout the watershed. This stream flows parallel to and contains similar land use as Faulkner Creek, which is Impaired. As resources allow, DWQ will sample Rutledge Creek over this basinwide planning cycle.

3.6 Additional Water Quality Issues within Subbasin 03-07-03

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.

3.6.1 NPDES Discharges

Four facilities had significant compliance or toxicity problems over the most recent review period. The Surry County Gentry Middle School was in significant noncompliance for ammonia. Violations at Pilot Mountain WWTP were for total suspended solids and cyanide. Proctor Silex and the Surry County Flat Rock Elementary School had toxicity problems. The problems at Proctor Silex are believed to be contributing to the impairment of Lovills Creek; however, the facility closed in 2001 and the WWTP no longer discharges. The other facilities, though likely impacting the streams into which they discharge, are not resulting in impairment. DWQ will work to ensure compliance at all facilities over this basinwide planning cycle.