Section B - Chapter 9
Catawba River Subbasin 03-08-38
Sixmile Creek, Twelvemile Creek and Waxhaw Creek

9.1 Subbasin Overview

Subbasin 03-08-38 at a Glance

Land and Water Area

Total area:	179mi²
Land area:	178mi²
Water area:	1mi²

Population Statistics

2000 Est. Pop.:	48,660 people
Pop. Density:	277 persons/mi²

Land Cover (percent)

Forest/Wetland:	61%
Surface Water:	1%
Urban:	4%
Agriculture:	35%

Counties

Mecklenburg and Union

Municipalities

Charlotte, Indian Trail, Marvin, Mineral Springs, Monroe, Stallings, Waxhaw, Weddington and Wesley Chapel

This small subbasin includes portions of two ecoregions – the Southern Outer Piedmont and the Carolina Slate Belt. These tributaries to the Catawba River in South Carolina have very low flows during the summer and may stop flowing during drought periods. Much of the subbasin is forested, but a greater percentage of the land is classified as cultivated than in any other subbasin. This is changing rapidly, however, as residential communities expand into the area. Union County has the highest expected population growth rate of any in the basin. The county population is expected to increase by more than 40 percent in the next 20 years (Table A-6 and A-7).

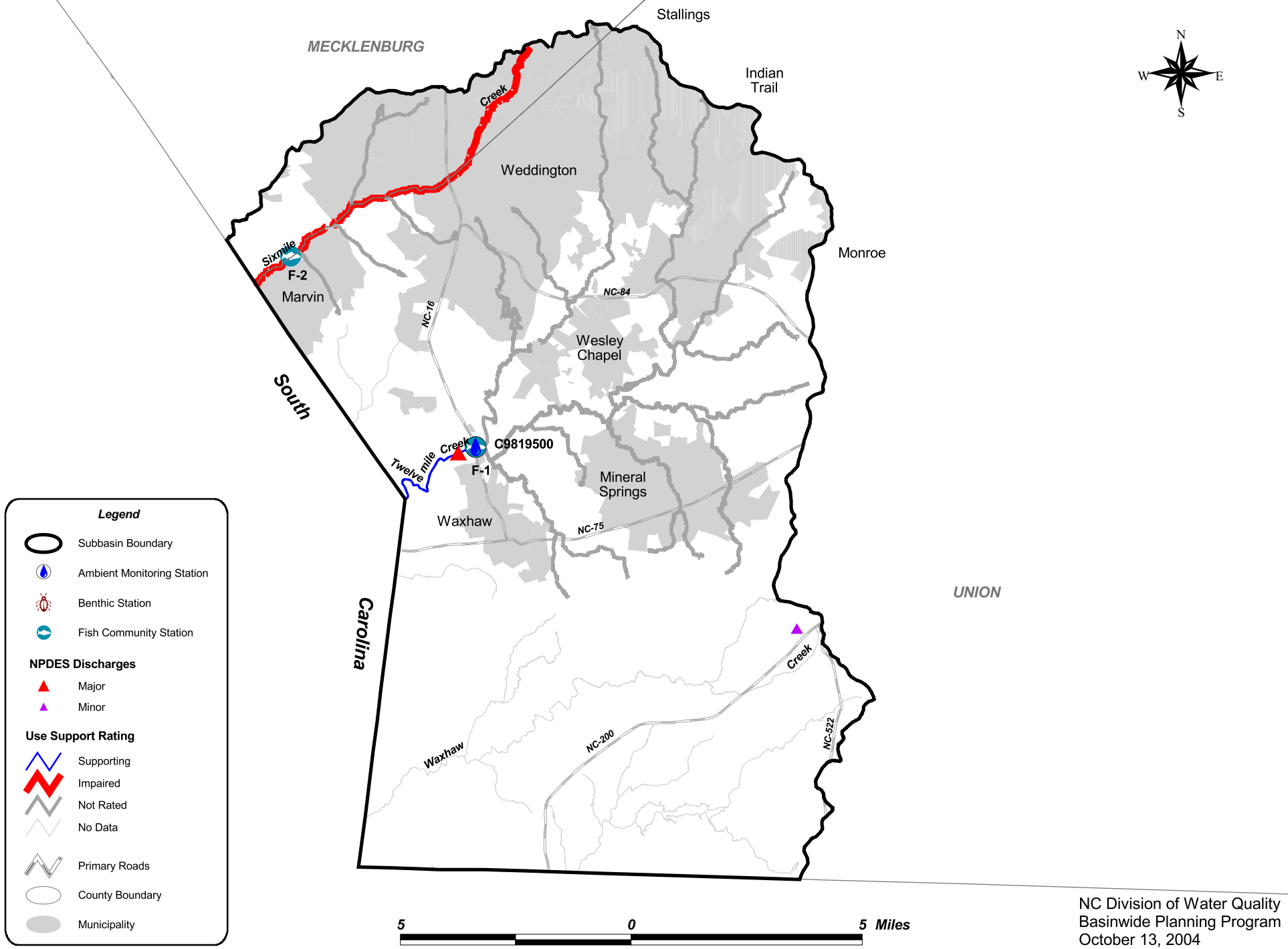
Major dischargers in this subbasin include the Union County/Sixmile Creek (1.0 MGD) and Twelvemile Creek WWTPs (2.5 MGD). There are two facilities in this subbasin which are required to monitor effluent toxicity. Since 1997, the Union County/Sixmile Creek WWTP failed two tests and the Union County/Twelvemile Creek WWTP failed three tests.

No benthic macroinvertebrate community samples and two fish community samples (Figure B-9 and Table B-18) collected during this assessment period. Both sites were sampled for the first time during this assessment period. Refer to *2003 Catawba River Basinwide Assessment Report* at http://www.esb.enr.state.nc.us/bar.html and Section A, Chapter 3 for more information on monitoring.

There is only one ambient monitoring site in this subbasin: Twelvemile Creek at NC 16. This site has exhibited elevated conductivity since the early 1990s; other parameters have remained stable since monitoring began in the early 1980s.

Nonpoint source runoff is a major source of water quality degradation in this subbasin. However, acute and prolonged lack of flows during the summer intrinsically limits the diversity of the aquatic life. No benthic macroinvertebrate samples have been collected from this subbasin since 1992. Benthic macroinvertebrates have been collected only six times from three locations since 1983. Four of the collections were made in the winter and early spring when flows were the highest. Twelvemile and Waxhaw Creeks were last rated Good-Fair in the early 1990s. The fish community in Twelvemile Creek declined from Good in 1997 to Good-Fair in 2002, while Sixmile Creek maintained its Fair rating in 2002.

Figure B-9 Catawba River Subbasin 03-08-38



NC Division of Water Quality
Basinwide Planning Program
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Table B-18 DWQ Assessment and Use Support Ratings Summary for Monitored Waters in Subbasin 03-08-38

Waterbody	Assessment Unit Number	DWQ Classification	Length / Area	Category	Data Type with Map Number and Data Results			Use Support Rating	
					Biological	Ambient	Other	2004	1998
Sixmile Creek	11-138-3	C	8.8 mi.	AL	F-2 F--02			I	-
Twelvemile Creek	11-138	C	3.0 mi.	AL	F-1 GF-02	C9819500		S	-
Twelvemile Creek	11-138	C	3.0 mi.	REC		C9819500		NR	-

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

Use Categories:	**Monitoring data type:**	**Bioclassifcations:**	**Use Support Ratings 2004**:
AL - Aquatic Life	F - Fish Community Survey	E - Excellent	S - Supporting, I - Impaired, NR - Not Rated
REC - Recreation		G - Good	
		GF - Good-Fair	
		F - Fair	
		P - Poor	

Ambient Data
nce - no criteria exceeded
ce - criteria exceeded

Waters in Parts 9.3, 9.4 and 9.5 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.

Use support ratings are summarized in Part 9.2 below. Recommendations, current status and future recommendations for waters that were Impaired in 1999 and newly Impaired waters are discussed in Part 9.3 below. Supporting waters with noted water quality impacts are discussed in Part 9.4 below. Other water quality issues are discussed in Part 9.5. Refer to Appendix III for use support methods and more information on all monitored waters.

9.2 Use Support Assessment Summary

Use support ratings in subbasin 03-08-38 were assigned for aquatic life, fish consumption, recreation and water supply. All waters in the subbasin are considered Impaired on an Evaluated basis because of a fish consumption advice (Section A, Chapter 4, Part 4.10). All water supply waters are Supporting on an Evaluated basis based on reports from DEH regional water treatment plant consultants. Refer to Table B-19 for a summary of use support ratings by use support category for waters in the subbasin.

Table B-19 Summary of Use Support Ratings by Use Support Category in Subbasin 03-08-38

Use Support Rating	Aquatic Life	Fish Consumption	Recreation	Water Supply
Monitored Waters				
Supporting	3.0 mi	0	0	0
Impaired	8.8 mi	0	0	0
Not Rated	13.6 mi	0	3.0 mi	0
Total	**25.4 mi**	**0**	**3.0 mi**	**0**
Unmonitored Waters				
Supporting	0	0	0	0
Impaired	0	166.4 mi	0	0
Not Rated	74.0 mi	0		0
No Data	67.0 mi	0	163.4 mi	0
Total	**141.0 mi**	**166.4 mi**	**163.4 mi**	**0**
Totals				
All Waters	**166.4 mi**	**166.4 mi**	**166.4 mi**	**0**

Note: All waters include monitored, evaluated and waters that were not assessed.

9.3 Status and Recommendations of Previously and Newly Impaired Waters

The following waters were identified in the 1999 basin plan as Impaired or are newly Impaired based on recent data. The current status and recommendations for addressing these waters are presented below. These waters are identified by assessment unit number (AU#). Refer to the overview above for more information on AUs.

9.3.1 Sixmile Creek [AU# 11-138-3]

Sixmile Creek flows along the border between Mecklenburg and Union counties and drains the southeast and southwest portions of each county, respectively. The 8.8-mile segment from its source to the NC/SC border is Impaired for aquatic life because of a Fair bioclassification at site F-2. The South Carolina portion is Impaired because of elevated fecal coliform levels.

1999 Recommendations
DWQ recommended that the two remaining dischargers not connected to Charlotte Mecklenburg Utilities sewer lines perform an Engineering Alternative Analysis (EAA). DWQ stated that the stream was too small to rate and would not be sampled during the next assessment period.

Current Status and 2004 Recommendations
Since the 1999 plan, all NPDES point sources have been removed from Sixmile Creek. Charlotte-Mecklenburg Utilities Department constructed the collection system in the watershed and purchased the private wastewater collection systems. Therefore, EAAs are no longer applicable. DWQ biologists also determined that while the creek was too small in late summer to rate using benthic methodologies, a fish community analyses performed in the wetter spring season is appropriate. DWQ, therefore, again sampled this creek in 2002.

Despite the removal of all NPDES discharges, Sixmile Creek received the highest conductivity rating of any stream in the basin during the 2002 sampling effort. It was also noted that cattle had access to the stream. These two points and the natural low flow state of this stream indicate its sensitivity to nonpoint source runoff. DWQ encourages Union County to develop management strategies that address runoff in this developing watershed. Please refer to Section A, Chapter 4, Part 4.11 for more suggestions on land use planning. DWQ will work with local resource agencies to implement agricultural BMPs for cattle exclusion.

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 AUs.

9.4.1 Twelvemile Creek [AU# 11-138]

Current Status and 2004 Recommendations
The watershed of Twelvemile Creek abuts the Crooked Creek watershed in the Yadkin-Pee Dee River basin. There are no NPDES facilities within the watershed. The South Carolina portion of the stream is Impaired because of copper, turbidity and fecal coliform concentrations.

From 1997 to 2002, the bioclassification at site F-1 declined from Good to Good-Fair, and no pollution intolerant species were found. Additionally, suspended sediment from the West Fork Twelvemile Creek colored the entire Twelvemile Creek channel. A study should be conducted to compare fish populations and habitat in the East and West Forks of Twelvemile Creek to the mainstem in hopes of determining the primary stressors in this watershed. In the meantime, DWQ encourages Union County to develop management strategies that address runoff in this developing watershed. Please refer to Section A, Chapter 4, Part 4.11 for more suggestions on land use planning.

9.5 Additional Water Quality Issues within Subbasin 03-08-38

9.5.1 Waxhaw Creek [AU# 11-139]

Current Status and 2004 Recommendations
The Catawba Lands Conservancy (CLC) identified Waxhaw Creek in Southwest Union County as a priority for land protection efforts because it is the only stream in the Catawba River basin that supports populations of the federally endangered Carolina heelsplitter mussel. A total of only six populations of this mussel occur in the entire world, including one other North Carolina population in Goose Creek, in the Yadkin-Pee Dee River basin. Perhaps the single most important factor in the conservation of the Carolina heelsplitter is protecting the water quality of their creek habitats, including the use of forested buffers and prevention of siltation and other sources of pollution.

Funded by a grant from the NC Clean Water Management Trust Fund and the Conservation Trust for North Carolina, the Conservancy conducted a study of the integrity of the stream corridor and identified areas most important for conservation and restoration activities. DWQ supports the work being conducted by CLC and will assist in any way possible to protect this unique resource. DWQ also encourages Union County to develop management strategies that address runoff in this developing watershed. Please refer to Section A, Chapter 4, Part 4.11 for more suggestions on land use planning.

The downstream portion of Waxhaw Creek in South Carolina is Impaired because of elevated copper and fecal coliform concentrations. Consequently, in the future, North Carolina will be subject to an interstate TMDL. DWQ will work cooperatively with South Carolina as they develop a TMDL for Waxhaw Creek.