Chapter 6 -
Catawba River Subbasin 03-08-35
Includes Henry Fork, Jacob Fork, Clark Creek, Indian Creek and South Fork Catawba River

6.1 Water Quality Overview

Subbasin 03-08-35 at a Glance

Land and Water Area (sq. mi.)

Total area:	559
Land area:	558
Water area:	1

Population Statistics

1990 Est. Pop.:	110,523 people
Pop. Density:	198 persons/mi^2

Land Cover (%)

Forest/Wetland:	57%
Surface Water:	0%
Urban:	3%
Cultivated Crop:	4%
Pasture/ Managed Herbaceous:	35%

Use Support Ratings

Freshwater Streams:

Fully Supporting:	285.6 mi.
Fully Supporting but Threatened:	106.3 mi.
Partially Supporting:	19.0 mi.
Not Supporting:	0.0 mi.
Not Rated:	81.2 mi.

Lakes:

Maiden Lake - Fully Supporting but Threatened - 23 acres

Land use in this subbasin is primarily agriculture with some urban areas. The largest dischargers in this subbasin are the municipalities of Hickory, Lincolnton and Newton. Smaller dischargers include Cherryville, Delta Mills and Stanley. Nine facilities in this subbasin currently monitor effluent toxicity under their NPDES permit. A map of this subbasin including water quality sampling locations is presented in Figure B-7. Biological ratings for these sample sites are presented in Table B-6.

The upper reaches of Henry Fork and Jacob Fork have Excellent water quality ratings and have been designated ORW areas. The lower reaches of Jacob Fork and Henry Fork generally have Good water quality. These areas receive nonpoint source runoff and effluent from point source dischargers. Streams with the worst water quality include Clark Creek (which receives effluent from domestic, industrial and textile sources) and Mauney Creek (which receives effluent from the Stanley WWTP).

Of the seven sites that have long-term data, all but Clark Creek experienced an increase in water quality or remained stable. However, the Clark Creek ambient location improved between 1983 and 1997.

A special study in 1997, requested by the Mooresville Regional Office, investigated the effects of leakage from underground storage tanks along Mauney Creek. Although the tanks had been removed, gasoline contaminated the groundwater and was reaching Mauney Creek. The Stanley WWTP, discharging only 0.2 miles above the gasoline contamination area, was found to be the most likely source of instream toxicity.

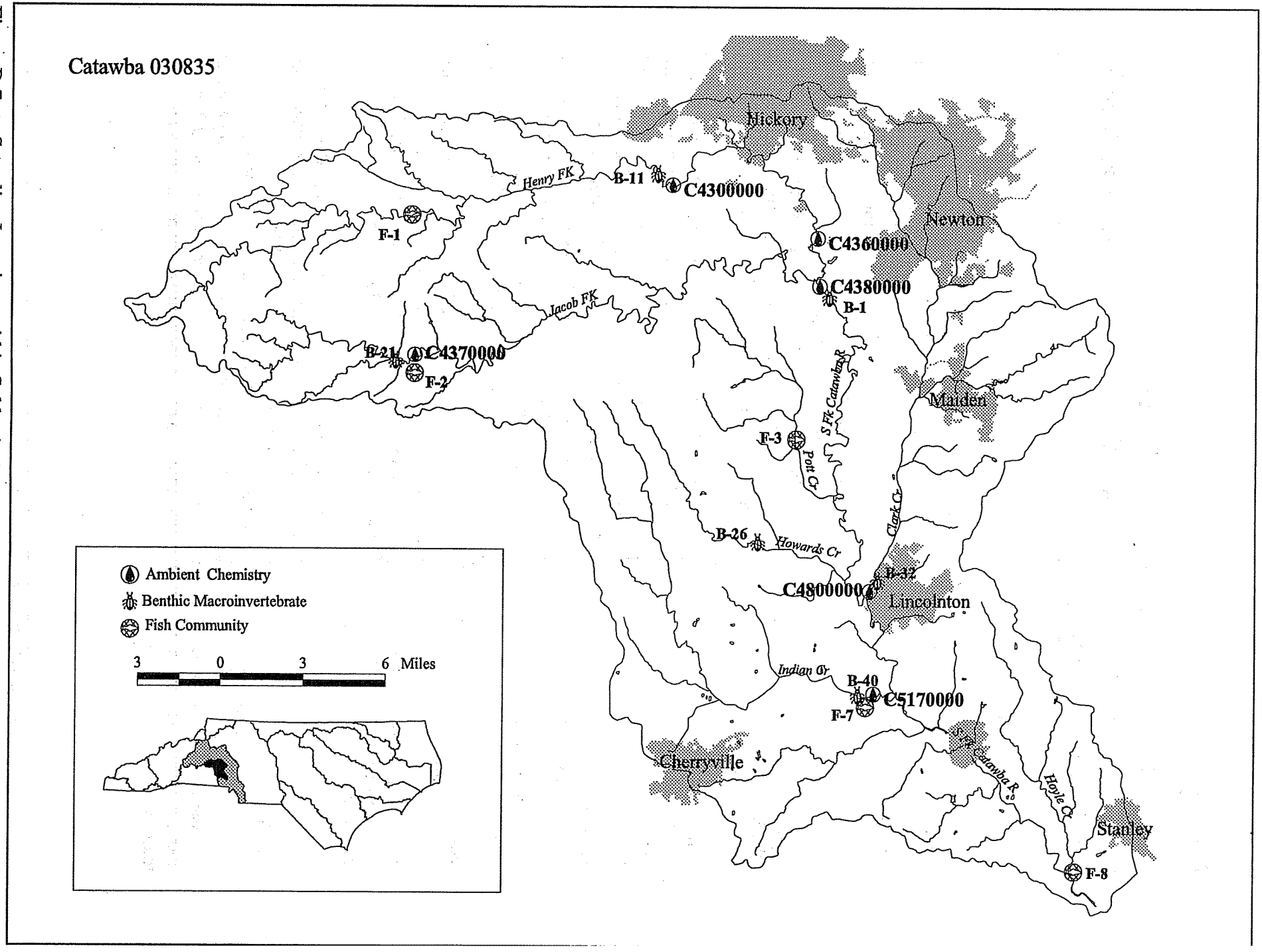


Figure B-7 Sampling Locations within Subbasin 03-08-35

Table B-6 Biological Assessment Sites in Catawba River Subbasin 03-08-35 (1997)

Site	Stream	County	Road	Rating
B-1	South Fork Catawba River	Catawba	NC 10	Good
B-11	Henry Fork	Catawba	SR 1124	Good
B-21	Jacob Fork	Burke	SR 1924	Excellent
B-26	Howards Creek	Lincoln	SR 1200	Good
B-32	Clark Creek	Lincoln	SR 1008	Good-Fair
B-40	Indian Creek	Lincoln	SR 1252	Good
B-42	Mauney Creek	Gaston	SR 1831 (ab)	Fair
B-43	Mauney Creek	Gaston	SR 1831 (bl)	Fair
F-1	Henry Fork	Burke	SR 1916	Fair
F-2	Jacob Fork	Burke	SR 1924	Good
F-3	Pott Creek	Lincoln	SR 1217	Fair
F-7	Indian Creek	Lincoln	SR 1252	Poor
F-8	Hoyle Creek	Gaston	SR 1836	Fair

Key:
B = Benthic Macroinvertebrate Sites
F = Fish Sites

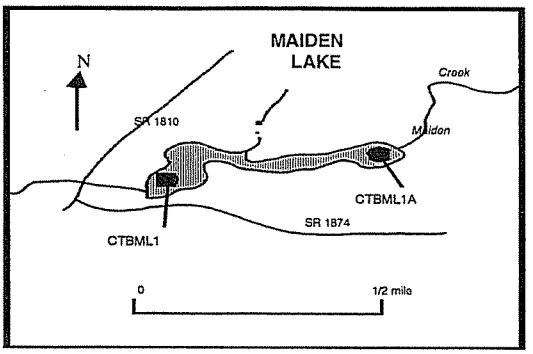
Biological and chemical monitoring data are used to develop use support ratings. These ratings are used to prioritize DWQ activities towards protecting and restoring waters in the basin. There are two streams listed as impaired in this subbasin: Clark Creek (partially supporting) and Mauney Creek (partially supporting). Further discussion on these streams can be found in Part 6.3 below.

Fully supporting but threatened waters (ST) in this subbasin include most of the South Fork Catawba River and Indian Creek. The 1995 basinwide plan listed only the lower portion of the South Fork Catawba River as ST. Therefore, there are currently more stream miles on the South Fork Catawba River rated ST than the previous plan. All other sampled tributary waters are fully supporting (FS). Refer to Appendix II for a complete listing of monitored waters and use support ratings.

Maiden Lake Assessment

COUNTY:	Catawba	**CLASSIFICATION:**	WS-II CA
SURFACE AREA:	14 acres (6 hectares)	**MEAN DEPTH:**	10 feet (3 meters)
VOLUME:	0.02 x10^6 m^3	**WATERSHED:**	20 mi^2 (52 km^2)

Maiden Lake is the water supply for the Town of Maiden. Built in the mid-1960s, the reservoir is fed by Maiden Creek and several springs. An average of 1.5 to 2 million gallons of water per



day are extracted from the lake for water supply. Increased siltation has been evident since mid-1990. An investigation was conducted in March 1993 pursuant to a complaint by the Town of Maiden regarding sediment buildup in Maiden Lake. The investigation indicated that siltation originated upstream of the lake from a land clearing operation for development of a nursery, as well as from other nonpoint sources located above this nursery. The investigation indicated that the entire watershed (above and below the nursery) is degraded, although a fishery survey indicated slightly higher levels of impact downstream (NCDEHNR, 1993).

Maiden Lake was most recently monitored by DWQ in June, July and August 1997 and was determined to be hypereutrophic in June, eutrophic in July and mesotrophic in August 1997. The lake has been given a use support rating of fully supporting but threatened (ST).

For more detailed information on water quality in subbasin 03-08-35, refer to the *Basinwide Assessment Report - Catawba River Basin - August 1998*, available from the DWQ Environmental Sciences Branch at (919) 733-9960.

6.2 Prior Basinwide Plan Recommendations (1995) and Achievements

6.2.1 Impaired Waters

The 1995 Catawba River basinwide plan identified two streams as impaired in this subbasin. These are described below along with recommendations for improving water quality.

Clark Creek

The lower sections of Clark Creek were listed in the 1995 basinwide plan as impaired (partially supporting and not supporting) due to instream violations of the fecal coliform bacteria and turbidity standards and copper action levels. Colored effluent from textile dischargers was noticeable on Clark Creek, and the plan recommended that DWQ conduct a color reduction study.

The potential for toxicity impacts from three major dischargers (Newton WWTP, Maiden WWTP and Delta Mills) was also cited as a concern. To address this concern, DWQ recommended that a toxicity Total Maximum Daily Load (TMDL) for Clark Creek be developed. DWQ also recommended that the Newton WWTP be required to meet new limits for certain metals upon permit renewal. Because copper levels above the action level have been observed,

DWQ recommended an assessment to determine if copper limits in the discharge permits were needed at next permit renewal.

Status of Progress

Limited progress has been made in developing a color reduction strategy since the 1995 basinwide plan. However, this initiative has recently been revived in response to citizen complaints and concerns expressed at public workshops. DWQ and the Division of Pollution Prevention and Environmental Assistance (DPPEA) are working to develop a color management strategy with stakeholder involvement prior to finalization of this revised basinwide plan (see Section A, Chapter 4, Part 4.1.4 for more information).

As a result of the 1995 basinwide plan concerns for toxicity, the Town of Newton was given permit limits for cadmium and lead and monitoring limits for copper and toluene. In February 1997, the facility requested a review of the cadmium and lead limits. DWQ conducted a Reasonable Potential Analysis of the data and reasoned it acceptable to drop the cadmium and lead limits from the NPDES permit. Under the *Reasonable Potential Analysis Policy*, the EPA requires that the Director of DWQ must limit a pollutant after determining that it "may be discharged at a level which will cause, or have the reasonable potential to cause ... an excursion above any State water quality standard" [40 CFR 122.44 (d)(i)]. However, monitoring for lead, cadmium, copper, zinc, nickel and toluene continue under the Pretreatment Long-Term Monitoring Plan.

DWQ has completed a draft review of toxics information for the Clark Creek watershed (NCDENR, 1999). Recommendations from this study are discussed in Part 6.3. North Carolina uses a statistical method approved by the EPA to determine the potential of a discharge to violate a water quality standard for a given parameter based on existing data. If a calculated maximum predicted effluent concentration is greater than the allowable level, then a parameter is determined to have the reasonable potential to violate the state's water quality standard, and a limit will be required in the permit. The toxics review conducted for Clark Creek did not indicate that any of the parameters in question would exceed water quality standards for Clark Creek.

Clark Creek is still an impaired water and recommendations for improving water quality in the creek are presented in Part 6.3. The creek is also on the 303(d) list, and a combination TMDL and management strategy will be developed (see Part 6.3.2 below for further discussion).

Bills Branch

Bills Branch was listed as impaired due to effluent from the North Carolina Department of Correction Catawba Correctional Center WWTP. This facility ceased discharging in 1990. Additional monitoring was recommended to determine if the stream has improved.

Status of Progress

DWQ biologists have determined that Bills Branch is a low flow stream, and therefore, too small to adequately sample. There is still one discharger to this creek: Precedent, Incorporated. In

1993, this discharger received a letter from DWQ requesting that the facility look into possible connection to a publicly-owned wastewater facility or non-discharge alternatives. A report of this investigation is to be provided by the facility at the time of requesting permit renewal. DWQ will review this information at the next permit renewal.

6.2.2 Other Recommendations

South Fork Catawba River

The South Fork Catawba River is used both as a drinking water supply and for the assimilation of wastewater. To address concerns about potential toxicity, DWQ recommended that point source wasteload allocations for each facility discharging to the South Fork Catawba River from Lincolnton to Lowell should include a TMDL analysis for total loading at the Lowell Gage. Nonpoint source strategies, implemented through the industrial NPDES stormwater program, were expected to be helpful in reducing toxic substance loading to surface waters.

Status of Progress

Current EPA requirements for 303(d) listing and the development of TMDLs have significantly changed since the 1995 basinwide plan (see Appendix IV for more details). The development of TMDLs for the South Fork Catawba River is not required because the river is not an impaired water (current status is fully supporting but threatened). Additional studies were not conducted to determine if potentially toxic chemicals are present in the South Fork Catawba River. However, a review of existing data was performed to identify those chemicals that may contribute to a toxicity problem in the South Fork Catawba River. Because the South Fork Catawba River flows through two subbasins, the South Fork Toxics Review of the South Fork Catawba River is discussed in Section A, Chapter 4, Part 4.1.5.

6.3 Current Priority Issues and Recommendations

6.3.1 Monitored Impaired Waters

There are two impaired waters in this subbasin: Clark Creek and Mauney Creek. Discussion on these creeks and recommendations for improving water quality are presented below. These creeks are also on the state's year 2000 (not yet EPA approved) 303(d) list (see Part 6.3.2 below).

Clark Creek

The entire length (10.1 mi.) of Clark Creek is impaired (partially supporting) due to urban runoff, agriculture and point sources. Fecal coliform bacteria, turbidity and copper are the listed problem parameters. As noted in Part 6.2.1, the potential for toxicity impacts has also been of concern to DWQ. To address the potential toxicity issue, DWQ conducted a toxics review for Clark Creek. Although not directly contributing to impairment of Clark Creek, the colored effluent visible in the creek is also a matter of concern to DWQ.

1999 Recommendation(s)

DWQ completed a draft review of toxics information for the Clark Creek watershed (NCDENR, 1999). Data were assembled from dischargers through the NPDES and pretreatment programs and ambient instream data on Clark Creek at Lincolnton. Data were analyzed to determine if toxic effluent resulted in violations of water quality standards in the creek. The analysis showed that current levels of cadmium, chromium, cyanide, lead, nickel and toluene in effluent are not likely to result in instream violations of standards. Further analysis of copper and manganese are required since the standards for these two metals are frequently violated, and point sources may contribute to these violations. This level of analysis is being conducted as part of a toxics review for the South Fork Catawba River. Because the South Fork Catawba River flows through more than one subbasin, this issue is discussed further in the South Fork Catawba River toxics section (see Section A, Chapter 4, Part 4.1.5 for more information).

Clark Creek is on the 303(d) list and a TMDL approach will be used to address the fecal coliform bacteria, turbidity and copper parameters (see Part 6.3.2 below). DWQ is using a Clean Water Management Trust Fund grant to further identify sources of water quality problems in this watershed.

A discussion of a color reduction strategy is presented in Section A, Chapter 4, Part 4.1.4 because the issue of colored effluent is not unique to Clark Creek, but rather is of concern to DWQ for the entire South Fork Catawba River watershed.

Mauney Creek

About 4.3 miles of Mauney Creek is listed impaired (partially supporting) due to both nonpoint and point sources (Stanley WWTP) of pollution. The Stanley WWTP conducts whole effluent toxicity tests on the discharge and has been in compliance with permit limits recently, although they had toxicity problems in 1996. Recent compliance is due to improvements made at the facility, including dechlorination. In addition, Mount Holly is taking some of the Stanley WWTP waste to reduce the sewer overflows that are problematic for Stanley. This cooperation reduces the number of sewer overflows for the Stanley system.

1999 Recommendation(s)

DWQ will continue to work with the Stanley WWTP facility to assure permit limits are met. Additional resources will be necessary to conduct a watershed survey to determine the potential actions needed to address nonpoint sources of pollution to this creek. Mauney Creek is on the 303(d) list (see Part 6.3.2).

6.3.2 303(d) Listed Waters

Both Clark Creek and Mauney Creek are on the state's year 2000 (not yet EPA approved) 303(d) list. These creeks are currently considered to be impaired and are discussed above. Refer to Appendix IV for more information on 303(d) listing requirements. Eight miles of Henry Fork, though not considered to be impaired, are on the list due to turbidity levels, and a monitoring strategy will be used to assess the sources of turbidity.

6.3.3 Other Issues and Recommendations

South Fork Catawba River Watershed

Clark Creek is contributing to the degradation of the South Fork Catawba River water quality, including fecal coliform bacteria, metals and sedimentation. Other tributaries within the watershed are cumulatively affecting the water quality of the South Fork Catawba River. Colored effluent is noted in the South Fork Catawba, but the impact of this color on the biota of the stream is not apparent.

1999 Recommendation(s)

Although the South Fork Catawba River is not an impaired river, it has been given a use support rating of fully supporting but threatened (ST) for most of its length. There is obviously a need to improve water quality in the river based on water quality standards and on comments received at public workshops. The South Fork flows through more than one subbasin and is therefore discussed in Section A, Chapter 4, Part 4.1.5 for a color reduction strategy and for a review of toxics in the river.

Maiden Lake

Maiden Lake is experiencing eutrophication and siltation resulting from land use activities within the watershed. Given that this lake is the water supply for the Town of Maiden, the town will need to develop protection measures for the resource. These measures might include a local sedimentation and erosion control program, developing and enforcing ordinances to prevent erosion, and education efforts to increase public awareness about reducing runoff.