

Chapter 2 -

French Broad River Subbasin 04-03-02

Includes Mud Creek, Cane Creek, Hominy Creek, Swannanoa River, Sandymush Creek and Newfound Creek

2.1 Water Quality Overview

Subbasin 04-03-02 at a Glance

Land and Water Area (sq. mi.)

Total area:	806
Land area:	801
Water area:	5

Population Statistics

1990 Est. Pop.:	232,903 people
Pop. Density:	290 persons/mi ²

Land Cover (%)

Forest/Wetland:	74%
Surface Water:	1%
Urban:	3%
Cultivated Crop:	1%
Pasture/ Managed Herbaceous:	21%

Use Support Summary

Freshwater Streams:

Fully Supporting:	554.5 miles
Partially Supporting:	35.1 miles
Not Supporting:	33.3 miles
Not Rated:	354.5 miles

Lakes:

Lake Julian – Fully Supporting
Burnett Reservoir – Fully Supporting
Beetree Reservoir – Fully Supporting

This subbasin contains approximately 40 river miles of the French Broad River below the Henderson/Transylvania County line to the confluence of Sandymush Creek in Buncombe County. The French Broad River in this subbasin is a very wide river capable of supporting many species of warmwater gamefish. The urban areas of Asheville and Hendersonville are within this subbasin. The French Broad River, because of its proximity to these large urban areas, is a popular water-based recreational resource. Many of the tributaries have viable populations of brook trout. A map of this subbasin, including water quality sampling locations, is presented in Figure B-2. Biological ratings for these sample locations are presented in Table B-2.

Agriculture (apple orchards, corn, tomatoes and burley tobacco), dairy operations and urbanization affect the middle and lower French Broad River and some smaller tributaries. There are 83 permitted point source discharges in this subbasin, but only 6 of these facilities discharge more than 0.5 MGD.

Ambient water quality data are collected from eight monitoring locations in this subbasin with four of these locations on the mainstem of the French Broad River. These data show an increase in concentration for several water quality parameters from the upstream location at Blantyre through Buncombe County to the Alexander monitoring location. Median concentrations for conductivity, total phosphorus and ammonia nitrogen all increase downstream. However, there does not appear to

be any significant changes over time in these parameters during this review period. Downstream increases in total suspended solids also were found at ambient monitoring locations at Rosman, Asheville and Marshall. Many of these observations are corroborated by data collected by the VWIN program (see below).

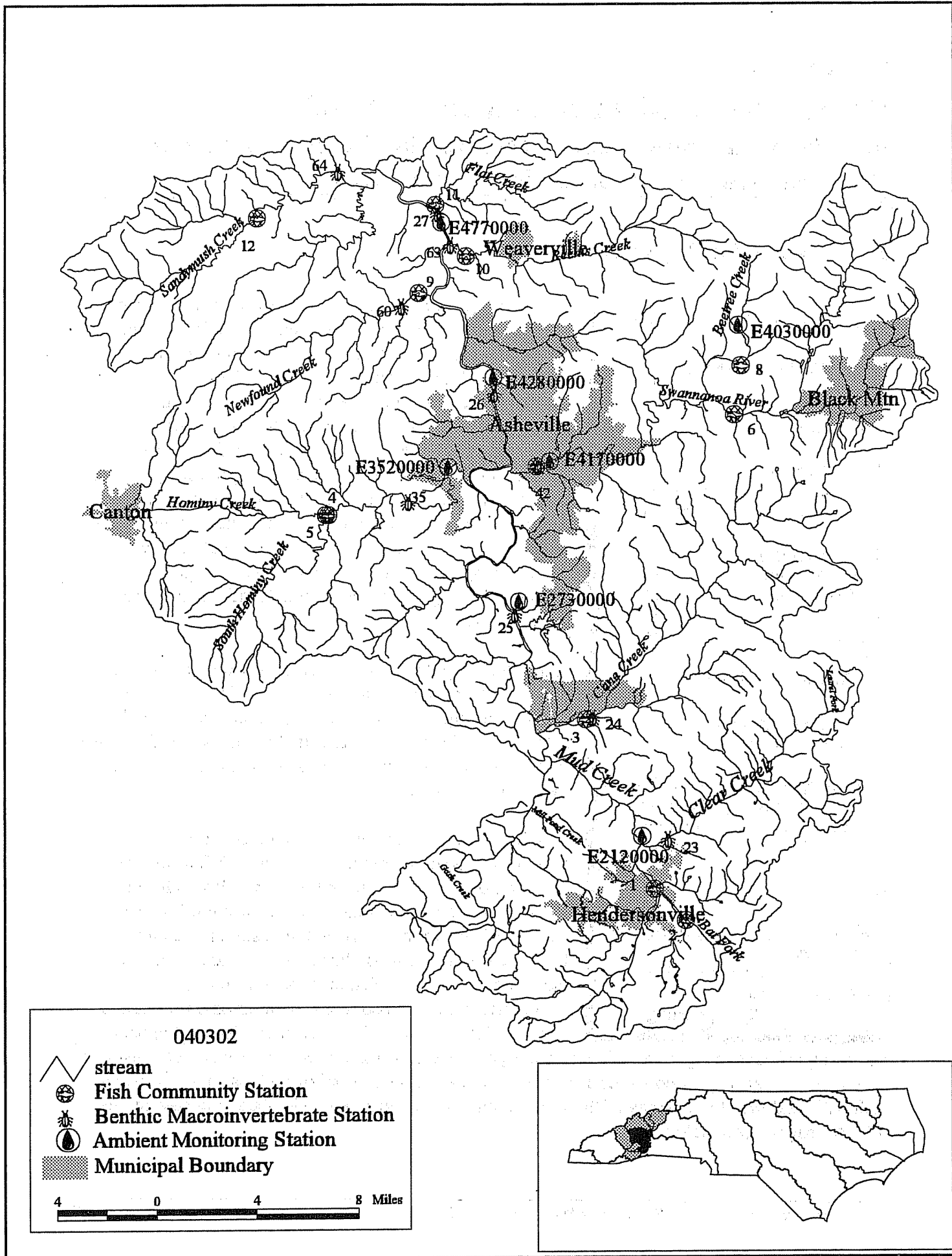


Figure R.2 Sampling Locations within Subbasin 04-03-02

Table B-2 Basinwide Biological Sites in French Broad River Subbasin 04-03-02 (1997)^o

Site #	Stream	County	Road	Rating
<i>Benthic Macroinvertebrates</i>				
B-23	Clear Creek	Henderson	SR 1513	Poor
B-24	Cane Creek	Henderson	SR 1006	Good-Fair
B-25	French Broad River	Buncombe	NC 146	Good-Fair
B-26	French Broad River	Buncombe	SR 1348	Good
B-27	French Broad River	Buncombe	SR 1634	Good-Fair
B-35	Hominy Creek	Buncombe	SR 3412	Fair
B-42	Swannanoa River	Buncombe	US 25	Good-Fair
B-62	Newfound Creek	Buncombe	SR 1622	Good-Fair
B-63	Reems Creek	Buncombe	NC 251	Good
B-65	Sandymush Creek	Madison	SR 1114	Good
<i>Fish Community</i>				
F-1	Mud Creek	Henderson	SR 1647	Not Rated*
F-2	Bat Fork	Henderson	SR 1779	Not Rated*
F-3	Cane Creek	Henderson	US 25	Not Rated*
F-4	Hominy Creek	Buncombe	NC 151	Not Rated*
F-5	South Hominy Creek	Buncombe	NC 151	Not Rated*
F-6	Swannanoa River	Buncombe	SR 2435	Not Rated*
F-8	Beetree Creek	Buncombe	SR 2427	Not Rated*
F-9	Newfound Creek	Buncombe	SR 1641	Not Rated*
F-10	Reems Creek	Buncombe	NC 251	Not Rated*
F-11	Flat Creek	Buncombe	SR 1742	Not Rated*
F-12	Sandymush Creek	Madison	SR 1107	Not Rated*

* Refer to Section A, Chapter 3 for more information on fish community ratings

^o Locations of ambient monitoring stations can be found in Section A, Table A-25

The number of fecal coliform samples collected that exceed NC's water quality criterion (200 colonies/100ml) are fewer during this basinwide review period (1993-1997) than during the previous review period (1988-1993) at all ambient monitoring locations in this subbasin. Fecal coliform exceedences were higher at the Mud Creek location than at any other location in the subbasin.

Benthic macroinvertebrate samples were collected from 65 locations in this subbasin since 1983. Water quality conditions generally range from Good-Fair to Good in the French Broad River in this subbasin. Benthos samples conducted at 10 tributary basinwide locations during 1997 showed no change in bioclassification at Clear Creek, Cane Creek or the Swannanoa River near Biltmore, compared to the 1992 surveys. Improvements in bioclassifications were found at Hominy Creek (Poor to Fair), Newfound Creek (Fair or Poor to Good-Fair), and Reems Creek (Good-Fair to Good). Only Sandymush Creek had a lower bioclassification during the 1997 basinwide survey (Excellent to Good).

Fish community samples were collected from 11 tributary streams in this subbasin in 1997. In Beetree Creek, the fish communities appear to be responding to the lack of required minimum flow releases from Beetree Reservoir. In Newfound Creek and Sandymush Creek, the fish communities appear to be responding to sedimentation and habitat degradation.

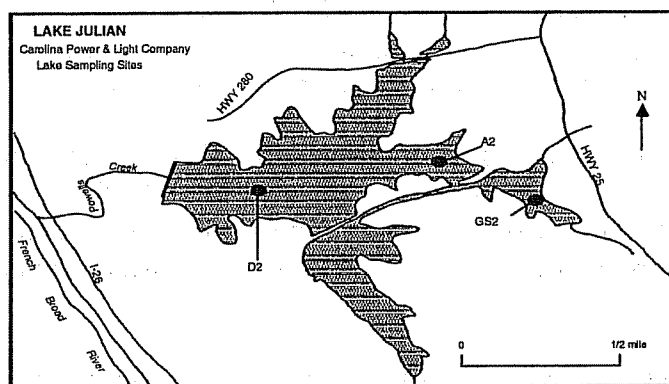
There are 19 wastewater treatment facilities in this subbasin that currently monitor effluent toxicity as part of their NPDES permit. General Electric began sending processed wastewater to the Hendersonville WWTP and is currently monitoring for groundwater and stormwater runoff.

The VWIN program (coordinated by UNCA) maintains 20 monitoring locations in Henderson County and 49 locations in Buncombe County. VWIN data from Henderson County show water quality problems at many sites in the Mud Creek watershed and the Cane Creek watershed (Maas et al., 1999). Numerous water quality problems are noted for Buncombe County streams. High turbidity and total suspended solids were recorded from Boylston, Little Willow, Sandymush, Newfound, Turkey and Hominy Creeks. Also, high conductivity levels were found in Reed, Flat and Sandymush Creeks (Maas et al., 1999).

Lake Julian Assessment

COUNTY:	Buncombe	CLASSIFICATION:	C
SURFACE AREA:	130 hectares (320 acres)	MEAN DEPTH:	66 feet (20 meters)
VOLUME:	$2.60 \times 10^6 \text{ m}^3$	WATERSHED:	$5 \text{ mi}^2 (12 \text{ km}^2)$

Lake Julian was constructed in 1963 by the Carolina Power and Light Company (CP&L) to serve as a source of cooling water for the Asheville Steam Electric Plant. Located on Powell Creek, the lake is also used for boating and fishing. The watershed is primarily urban and residential.



Lake Julian was most recently monitored by CP&L in 1996. Comparison of water quality data collected by CP&L indicates that most chemistry characteristics of the lake have remained relatively unchanged since 1992 when it was last sampled by DWQ and was determined to be oligotrophic.

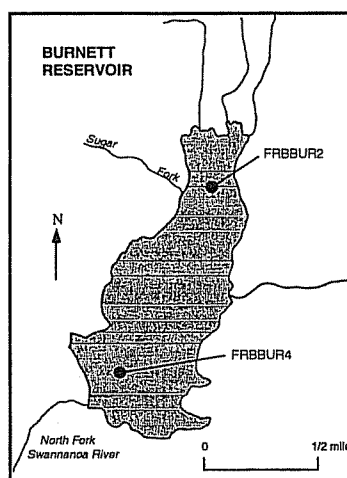
A special study of trace element concentrations in fish was conducted by CP&L during December 1995 in Lake Julian. This study showed, for the most part, that trace elements

(arsenic, copper, mercury, selenium and zinc) were comparable to background concentrations or slightly above background concentrations. Copper concentrations in fish liver (an indicator of bioconcentration) did not indicate any significant uptake of copper from reservoir waters. Concentrations of several key metals (arsenic, cadmium, mercury and selenium) were well below contaminant screening values recommended by the USEPA.

Burnett Reservoir Assessment

COUNTY:	Buncombe	CLASSIFICATION:	WS-I
SURFACE AREA:	134 hectares (330 acres)	MEAN DEPTH:	39 feet (12 meters)
VOLUME:	$22.00 \times 10^6 \text{ m}^3$	WATERSHED:	$2 \text{ mi}^2 (6 \text{ km}^2)$

Burnett Reservoir was constructed in 1954 to provide drinking water for the City of Asheville. The North Fork Swannanoa River, Sugar Fork and several unnamed tributaries drain the forested watershed and flow into the lake. Burnett Reservoir was most recently monitored by DWQ in June, August and September 1997 and was found to be oligotrophic.

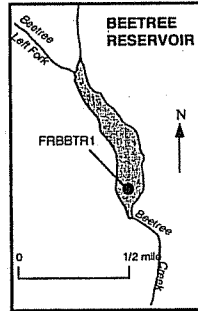


Beetree Reservoir Assessment

COUNTY:	Buncombe	CLASSIFICATION:	WS-I
SURFACE AREA:	22 hectares (55 acres)	MEAN DEPTH:	33 feet (10 meters)
VOLUME:	$1.90 \times 10^6 \text{ m}^3$	WATERSHED:	$8 \text{ mi}^2 (20 \text{ km}^2)$

Beetree Reservoir was constructed in 1926 to serve as a water supply for the City of Asheville. Beetree Reservoir is not used for recreation, and access to the lake is limited. The watershed is owned by the City of Asheville and consists of undeveloped forested land.

Beetree Reservoir was most recently monitored by DWQ in June, August and September 1997. Beetree Reservoir is assumed to have been oligotrophic on the days it was sampled due to the low nutrient and chlorophyll *a* values observed.



For more detailed information on water quality in this subbasin, refer to the *Basinwide Assessment Report – French Broad River Basin – November 1998*, available from the DWQ Environmental Sciences Branch at (919) 733-9960.

2.2 Prior Basinwide Plan Recommendations (1995) and Achievements

2.2.1 Impaired Waters

The 1995 French Broad River Basinwide Plan identified nine stream segments in this subbasin as impaired. Each of these segments is discussed below.

Mud Creek (15.2 miles above and below Henderson WWTP, from source to Byers Creek)

This section of Mud Creek was listed as not supporting due to turbidity and fecal coliform bacteria. New and expanding dischargers were required to meet advanced tertiary treatment with limits of 10 mg/l BOD₅ and 2 mg/l NH₃-N. Field-calibrated model results suggested that Hendersonville WWTP discharge should be relocated to the French Broad River. All other facilities were encouraged to connect onto the Hendersonville WWTP.

Status of Progress

Hendersonville plans to move its expanded discharge downstream in Mud Creek to the mouth of Clear Creek. This expansion includes more restrictive permit limits. All dischargers have hooked onto the Hendersonville WWTP. The creek is still considered to be impaired due to nonpoint source pollution and further discussion can be found in Part 2.3 below.

Bat Fork Creek (4.8 miles from source to Johnson Drainage Ditch)

This section of Bat Fork Creek was listed as not supporting due to both point and nonpoint source impacts. A field-calibrated model was conducted on Bat Fork Creek prior to the 1995 basinwide plan. The model did not indicate dissolved oxygen violations, but did indicate a BOD residual downstream. It was recommended that dischargers to the creek connect to city sewer. General Electric (GE) was scheduled to send its waste to the Hendersonville WWTP, which would remove a problematic discharge. Stormwater discharges from the GE site were to be monitored and limits would be developed as needed.

Status of Progress

GE's wastewater is now sent to Hendersonville WWTP with the exception of its groundwater and stormwater. Groundwater and stormwater monitoring are being conducted by GE and limits are being met. The creek is still considered to be impaired, and further discussion can be found in Part 2.3 below.

Clear Creek (6.3 miles from source to SR 1513)

This section of Clear Creek was listed as not supporting due to nonpoint sources of pollution. Studies were to be conducted to determine if pesticides from apple orchards were contributing to the impairment. A pesticide control program would be recommended if appropriate.

Status of Progress

A pesticide study was completed in 1994. Results of the study showed some low levels of pesticides present. This creek is still considered to be impaired and is discussed further in Part 2.3 below.

Hominy Creek (11.8 miles from NC 112 to French Broad River)

This length of Hominy Creek was listed as partially and not supporting due to both point and nonpoint sources of pollution. Toxicity limits for BASF were to be reevaluated at permit renewal and instream monitoring was recommended. Tomato farms and erosion were also cited as sources of impacts to this creek. DWQ anticipated conducting a field-calibrated model of the French Broad River in this area and more closely examining the impact of BASF on Hominy Creek.

Status of Progress

The BASF facility is in compliance with its NPDES discharge permit. DWQ did not conduct additional modeling of the French Broad River in this area and no longer anticipates conducting such modeling given current priorities. The lower portion of Hominy Creek is still impaired due to tomato farming and urban and nonurban development and is discussed further in Part 2.3 below.

French Broad River (9.6 miles from Blantyre to Alexander)

This section of the French Broad River was listed as partially supporting. A field-calibrated model was developed for the French Broad River between Ecusta and Hwy 64 in 1980. An updated model was planned for the revised basinwide plan, but the empirical model was to be used in the interim. Water quality impacts were noted below the Buncombe County MSD facility, and the facility was operating under a Judicial Order of Consent (JOC) due to anticipated construction-related compliance problems during expansion from a 25 MGD to a 40 MGD

facility. The WWTP's permit and compliance records were to be closely evaluated to determine future management strategies.

Status of Progress

The empirical model has been applied to this portion of the river. A field-calibrated model was not developed for the French Broad River and development of such a model is no longer planned given current DWQ priorities. This section of the French Broad River is no longer considered to be impaired based on recent DWQ monitoring data. However, there are notable impacts to the benthic macroinvertebrate community along the river and elevated turbidity at the state line sampling site.

The Buncombe County MSD facility completed facility upgrades in 1991 and is no longer under the Judicial Order of Consent. The facility routinely operates within compliance. Since 1990, MSD has spent approximately \$124,000,000 on treatment facility upgrades and sewer system rehabilitation.

Swannanoa River (10.8 miles from SR 2416 to US 25)

This section of the Swannanoa River was listed as partially supporting. The primary concerns for this river were urban runoff and sedimentation. General management strategies for controlling sedimentation were presented.

Status of Progress

The river has been sampled at the US 25 location five times during summer months since 1985. Water quality conditions have varied during this time period, with conditions improving since 1988. The Swannanoa River is no longer considered to be impaired based on the most recent DWQ monitoring data. The trend in water quality improvement at this location parallels the trend at the ambient monitoring location on the French Broad River site approximately 5 miles below the confluence with the Swannanoa River.

DWQ believes that this segment of the river should continue to be a priority for sediment control due to the changing nature of the watershed from a rural to nonurban character. Therefore, DWQ recommends a strategy of monitoring the river to identify sources of sediment. Sediment controls should be enhanced and in accordance with regulations or ordinances. The implementation of best management practices and correction of existing sources of sediment would prevent this river from becoming impaired. Riverlink has received \$532,400 to develop a detailed watershed management plan that, when implemented in full, will provide significant protection for the Swannanoa River. Riverlink is encouraging the participation of other groups to ensure the plan is implemented successfully.

Newfound Creek (10.2 miles from SR 1297 to SR 1622)

This length of Newfound Creek was previously listed as partially and not supporting. The primary concerns for this river were due to sedimentation, and general management strategies for controlling sedimentation were presented.

Status of Progress

Several segments of the Newfound Creek were previously rated as impaired, but are now no longer considered to be impaired based on recent data. There has been a great deal of effort focused on the Newfound Creek watershed, and these efforts have resulted in many improvements in the water quality of the creek. Several dairies in the watershed have closed, which has helped decrease bank destabilization associated with watering livestock out of the creek. Most of the remaining animal operations have certified waste systems. Despite these measurable improvements in water quality, the creek is still in need of continued restoration efforts. Sedimentation, turbidity and fecal coliform levels are notable problems for the creek. Nonurban development and agriculture remain sources of nonpoint pollution. To address remaining water quality problems in the creek, the Buncombe County Soil and Water Conservation District was awarded a Clean Water Management Trust Fund (CWMTF) grant (see Section C for more details). Newfound Creek, although not currently considered impaired, remains on the state's 303(d) list, and DWQ is proceeding with the development of a fecal coliform bacteria TMDL for Newfound Creek (See Appendix IV).

2.2.2 Other Recommendations

Gash Creek (3.7 miles from source to French Broad River)

The 1995 French Broad River Basinwide Plan did not identify Gash Creek as impaired; however, a recommendation was made to revise permit limits based on recent water quality modeling results using revised streamflow information. Permit limits were revised and a number of permits were rescinded prior to construction of the facility. A follow-up water quality survey was recommended to determine if there have been water quality improvements since the limits were revised.

Status of Progress

The NPDES discharge permit holders along the creek were either abandoned or consolidated into the Hendersonville WWTP. Follow-up monitoring has determined this section of the creek is impaired due to nonpoint source inputs. Gash Creek is discussed in Part 2.3 below.

2.3 Current Priority Issues and Recommendations

2.3.1 Monitored Impaired Waters

As noted in the previous basin plan, the greatest number of impaired stream segments in the French Broad River basin occurs in this subbasin. Segments of eight streams within this subbasin are rated as impaired based on the most recent data available. Each of these streams is presented and discussed below. These streams are also on the state's year 2000 (not yet EPA approved) 303(d) list (see Part 2.3.2).

Gash Creek (3.7 miles from source to French Broad River)

Gash Creek is listed as impaired (NS) due to nonurban development resulting in habitat degradation and the lack of biological community within the stream.

2000 Recommendation(s)

There is currently not enough information available to develop appropriate management strategies to restore Gash Creek. This creek is a good candidate for a NPS inventory, with particular focus on golf and construction activities. This type of watershed assessment could then be used to target resources toward correcting the water quality related impacts. DWQ will notify local agencies of water quality concerns for this creek and work with these various agencies to conduct further monitoring and assist agency personnel with locating sources of water quality protection funding.

Mill Pond Creek (3.6 miles from source to French Broad River)

Mill Pond Creek is listed as impaired (PS) due to nonpoint sources of pollution. A possible source of contamination is the Henderson County Stony Mountain Road landfill, which is located directly upstream of the sample site.

2000 Recommendation(s)

The Stony Mountain Road landfill is an unlined county landfill that was recently closed using approved techniques. The closure process includes capping the landfill and revegetating the area. The county must maintain post-closure activities that include well monitoring and assuring the stability of the area. County groundwater well sampling data does not show any contamination problems. However, the headwaters of Mill Pond Creek originate at the landfill and chemical sampling shows some impacts to the stream and biological sampling resulted in a Fair rating. The VWIN program samples Mill Pond Creek and notes consistently high conductivity levels (Maas et al., 2000) that may result from the landfill, a DOT storage site or upstream discharges.

DWQ will investigate and reduce the source of conductivity in the watershed while continuing to monitor this creek to better identify other problem parameters in order to develop an appropriate management strategy.

Mud Creek (18.4 miles from source to French Broad River)

Mud Creek is listed as impaired (NS) due to habitat degradation. Potential sources of impacts are both point (Hendersonville WWTP) and nonpoint (agriculture and urban to nonurban land uses). A special study of six sample sites was conducted in September 1997 to assess the overall watershed conditions. Four sites rated Poor and two sites rated Fair. Much of the land along Mud Creek is in row crops (tomatoes or corn) or pasture and hay. Mud Creek is the most developed watershed in Henderson County. Approximately 4-5 miles of the stream flows through the City of Hendersonville. Therefore, urban runoff is also of great concern for the water quality of the creek. The Hendersonville WWTP is potentially affecting only the upper sampling site just downstream of the facility.

2000 Recommendation(s)

The Hendersonville WWTP is currently operating under a Special Order by Consent (SOC) while the facility increases its flow capacity. The facility is currently meeting the effluent limits of the SOC, but is behind on the expansion construction schedule due to higher than anticipated contract bids. The city is looking for an additional \$5 million in funding to meet the needs of the expansion. After the expansion is complete, the SOC will be removed and the facility will continue to be monitored to assure it is meeting all permit limits.

The DWQ Asheville Regional Office has issued Notice of Violations (NOVs) to operators of the Sexton Dairy for discharging without a permit. While this facility has improved some of its operations, there are still considerable improvements that should be made. Local agencies can assist with both technical assistance and funding opportunities to implement best management practices.

The Land of Sky Regional Council (LOS) and the DWQ have received grants to conduct work on the Mud Creek watershed. The LOS will assemble stakeholder groups and assist DWQ with a detailed strategy for implementation of actions to restore the creek. For more information on these grants, see Section C. Additional funding sources will be needed to bring full restoration to the creek, but it is anticipated that this planning phase could result in measurable water quality improvements upon implementation of the identified needed actions. Implementation of these grants will be concluded within this next five-year planning cycle.

Bat Fork Creek (4.8 miles from source to Johnson Drainage Ditch)

This section of Bat Fork Creek is impaired (PS) due to habitat degradation resulting from nonpoint source inputs from both agriculture as well as urban and nonurban development. The creek has notable sedimentation problems that affect the suitability of habitat for aquatic life.

2000 Recommendation(s)

Bat Fork Creek could benefit from local initiatives that might include the formation of a citizens group to conduct stream cleanup efforts, assess the watershed for specific pollution sources, and identify possible solutions to these nonpoint sources of pollution. Local agencies could pursue funding opportunities to reduce these sources and to implement a watershed-wide education effort. DWQ will notify local agencies of water quality concerns for this creek and work with these various agencies to conduct further monitoring and assist agency personnel with locating sources of water quality protection funding.

Clear Creek (11.7 miles from source to Lewis Creek)

The Clear Creek watershed (44 square miles) is a large tributary of Mud Creek. Clear Creek is impaired (PS) due to nonpoint sources of pollution. Habitat degradation is the cause of impairment, and pesticides associated with apple production along the creek may also be a cause of the impaired aquatic community. Land use is primarily forested and agriculture (apple orchards). Two special studies have been conducted to assess the effects of pesticide runoff from apple orchards. Some low levels of pesticides were found in the 1994 study, and these levels

may be having an impact on the aquatic life in the creek. The composition of the benthic macroinvertebrate community in the 1997 sampling suggests that instream toxicity, possibly from apple orchard runoff, is affecting the biology of the stream and leading to its impairment.

2000 Recommendation(s)

Farmers who disturb the vegetative cover along stream edges could increase the use of streamside buffers to protect streambanks from eroding. There is a long list of applicants for agricultural cost share funding, but a funding shortfall and the length of time to process the applications have been inadequate to address all applications. Many of the farmers in the watershed lease land, resulting in turnover of farmers and little incentive to install best management practices (BMPs). The expansion of buffers and BMPs would greatly enhance water quality in the creek. Funding and other resources should be directed towards the use of BMPs along Clear Creek. DWQ will notify local agencies of water quality concerns for this creek and work with these various agencies to conduct further monitoring and assist agency personnel with locating sources of water quality protection funding.

Hominy Creek (11.8 miles from NC 151 to French Broad River) and South Hominy Creek (6.4 miles from source to Hominy Creek)

About 10 miles of the headwaters of Hominy Creek are not considered to be impaired, although there is sedimentation in the headwaters resulting in a notable habitat degradation and a decline in water quality. Straight piping is also suspected in the headwaters. The remainder of the creek is impaired (PS) due to nonpoint sources (urban and nonurban development and agriculture). Habitat degradation is a result of these nonpoint source inputs. Previous sampling for a water supply reclassification indicated pesticide contamination at two sampling stations. The DWQ Asheville Regional Office sampled those sites in June 1999. Results of this study were inconclusive. South Hominy Creek has declined in water quality since the last basinwide sampling from a Good-Fair to a Poor rating.

2000 Recommendation(s)

Tomato farms are a likely contributor of pesticides in any watershed where there is intensive tomato growing. Tomatoes must be sprayed every 6 days with a high-volume sprayer throughout the growing season (April – September) and are, therefore, usually located in bottomlands near a readily available water source. In general, tomato farmers lease land in these bottomland floodplains, so the incentive to invest in chemical handling facilities is reduced. These facilities can greatly increase the potential for containing chemical spills. There is a need to increase the funding and implementation of chemical handling facilities. DWQ will notify local agencies of water quality concerns for this creek and work with these various agencies to conduct further monitoring and assist agency personnel with locating sources of water quality protection funding.

Ross Creek (1.7 miles from I-240 to Swannanoa River)

This section of Ross Creek is impaired (NS) due to loss of habitat. Urban runoff, sediment and nutrients are related to this runoff. DWQ conducted sampling on two sites along Ross Creek in January 1999. The upper site was in an unimpaired section of the creek, but even this section

was impacted by residential development and cattle access to the creek. The 1.7 miles of impaired waters are located in a heavily urbanized area. The stream channel has been modified and straightened to allow for Tunnel Road. The banks have been riprapped to reduce erosion, but erosion is still evident in areas.

2000 Recommendation(s)

The impacts of urbanization on this creek are evident and long-term. Significant funding and effort will be required to undertake the projects needed to make measurable water quality improvements in Ross Creek. A management strategy or TMDL approach will be used under the 303(d) process (see Part 2.3.2) to address this impairment. DWQ will coordinate and collaborate with local agencies over the next basinwide cycle to make progress towards this end. The Land-of-Sky Regional Council has a project underway to increase stakeholder awareness of the stream and develop a restoration plan (see Section C, Chapter1). In addition, the Metropolitan Sewerage District of Buncombe County has acquired right-of-way to rehabilitate approximately one-half mile of existing sewer along Ross Creek near the Swannanoa River to the upper end of Kenilworth Lake.

2.3.2 303(d) Listed Waters

Several segments of streams are on the state's year 2000 (not yet approved) 303(d) list for this subbasin. These streams are currently impaired and discussed above (Part 2.3.1). Refer to Appendix IV for more information on the state's 303(d) methodology and listing requirements.

2.3.3 Other Issues and Recommendations

The following surface water segments are rated as fully supporting using recent DWQ monitoring data. However, these data revealed some impacts to water quality. Although no action is required for these surface waters, continued monitoring is recommended. Enforcement of sediment and erosion control laws will help to reduce impacts on these streams. DWQ encourages the use of voluntary measures to prevent water quality degradation. Education on local water quality issues is always a useful tool to prevent water quality problems and to promote restoration efforts. For information on water quality education programs and nonpoint source agency contacts, see Appendix VI. DWQ will notify local agencies of water quality concerns for these creeks and work with these various agencies to conduct further monitoring and assist agency personnel with locating sources of water quality protection funding.

The primarily agricultural watershed of Puncheon Camp Creek (2.6 miles from source to Clear Creek) is impacted by nonpoint sources of pollution resulting in habitat degradation. DWQ recommends local initiatives to implement agricultural BMPs in this watershed to reduce potential water quality degradation.

Cane Creek (12.4 miles from Ashworth Creek to the French Broad River) is affected by agricultural activities in the watershed that have resulted in habitat degradation. DWQ recommends local initiatives to implement agricultural BMPs in this watershed to reduce potential water quality degradation. To this end, RiverLink has conducted an assessment of the ecological health of the Buncombe County portion of the watershed. RiverLink will use this

information to prioritize efforts within high priority tributaries, initiate a watershed project, and seek partners interested in helping to improve and protect Can Creek. RiverLink hopes to continue the study downstream and include the Haywood County section of the watershed.

Although the Swannanoa River is not considered to be impaired, impacts to water quality are evident along the length of the river (see Part 2.2.1 above). The watershed of the river is being developed, and this urban to nonurban development is resulting in habitat degradation within the river. The VWIN program monitors several sites within the Swannanoa River watershed, as well as five sites on the Swannanoa River itself (Maas, et al., 1999). Data from this program note declines in water quality from upstream to downstream in the reach near Grassy Branch over the last couple of years. There is a need for land use planning within this watershed that will protect the future water quality of the river. Best management practices for all construction activities should be in place and monitored.

The Wetlands Restoration Program has prioritized watersheds within this subbasin for developing local watershed restoration strategies. For further information on this program, refer to Section C, Chapter 1, Part 1.3.