Executive Summary

North Carolina's Basinwide Approach to Water Quality Management

Basinwide water quality planning is a nonregulatory watershed-based approach to restoring and protecting the quality of North Carolina's surface waters. Basinwide water quality plans are prepared by the NC Division of Water Quality (DWQ) for each of the 17 major river basins in the state. Each basinwide plan is revised at five-year intervals. While these plans are prepared by the DWQ, their implementation and the protection of water quality entail the coordinated efforts of many agencies, local governments and stakeholders in the state. The first basinwide plan for the Broad River basin was completed in 1998.

This document is the first five-year update of the *Broad River Basinwide Water Quality Plan*. The format of this plan was revised in response to comments received during the first planning cycle. DWQ replaced much of the general information in the first plan with more detailed information specific to the Broad River basin. A greater emphasis was placed on identifying causes and sources of pollution for individual streams in order to facilitate local restoration efforts.

DWQ considered comments from three public workshops held in October 2001 at Lake Lure, Spindale and Shelby. Discussions with local resource agency staff and citizens during draft plan development were also essential. This input, along with that received during public review, will help guide continuing DWQ activities in the basin.

Goals of the Basinwide Approach

The goals of DWQ's basinwide program are to:

- identify water quality problems and restore full use to impaired waters;
- identify and protect high value resource waters;
- protect unimpaired waters while allowing for reasonable economic growth;
- develop appropriate management strategies to protect and restore water quality;
- assure equitable distribution of waste assimilative capacity for dischargers; and
- improve public awareness and involvement in the management of the state's surface waters.

Broad River Basin Overview

The headwaters and major tributaries of the Broad River basin begin in the Blue Ridge Mountains of western North Carolina and flow through the foothills and piedmont of North Carolina before entering South Carolina. The Broad River continues to flow through South Carolina via the Congaree and Santee Rivers and into the Atlantic Ocean. There are four major tributaries to the Broad River in North Carolina: the Green, Second Broad, First Broad and North Pacolet Rivers. Four major man-made lakes in the basin were sampled by DWQ: Lake Lure, Lake Summit, Lake Adger and Moss Lake (Kings Mountain Reservoir).

Approximately 74 percent of the land in the basin is forested and about 22 percent is in pasture. Only 2 percent of the land falls into the urban/built-up category. Despite the large amount of forested lands and the relatively small amount of urban area, the basin has seen a significant decrease (-62,300 acres) in cultivated cropland and increase (+60,500 acres) in developed areas over a 15-year period (1982 to 1997).

The estimated population of the basin in 2000 was 342,282, and the population is projected to increase 23 percent by 2020. Most of the basin's population is found in subbasin 03-08-02 in Spindale, Rutherfordton and Forest City and in subbasin 03-08-04 in and around Shelby, although there are large number of municipalities scattered throughout the basin.

The geography of the Broad River basin contributes to its ecological significance. The basin drains a section of the Blue Ridge escarpment, yet the area is primarily within the Piedmont physiographic province providing a wide range of habitat types in the basin. The Broad River basin is home to 15 rare aquatic and wetland-dwelling animal and plant species. The basin includes a considerable portion of the South Mountains--a biographically rich area that is considered of national importance for its ecological assemblage.

Assessment of Water Quality in the Broad River Basin

Surface waters are classified according to their best intended uses. Determining how well a waterbody supports its uses (*use support* status) is an important method of interpreting water quality data and assessing water quality.

Surface waters are currently rated as *supporting* or *impaired.* These ratings refer to whether the classified uses of the water (such as water supply, aquatic life protection and recreation) are being met. For example, waters classified for fish consumption, aquatic life protection and secondary recreation (Class C for freshwater) are rated Supporting if data used to determine use support meet certain criteria. However, if these criteria were not met, then the waters would be rated as Impaired. Waters with inconclusive data are listed as Not Rated. Waters lacking data are listed as No Data.

Beginning in 2000 with the *Roanoke River Basinwide Water Quality Plan*, DWQ assesses ecosystem health and human health risk through the development of use support ratings for six categories: aquatic life and secondary recreation, fish consumption, shellfish harvesting, primary recreation, water supply and "other" uses. These categories are tied to the uses associated with the primary classifications applied to NC rivers and streams. A single water could have more than one use support rating corresponding to one or more of the six use support categories. For many waters, a use support category will not be applicable (N/A) to the use classification of that water (e.g., water supply is only applied to Class WS waters). This method of determining use support differs from that done prior to 2000; in that, there is no longer an *overall* use support rating for a water.

The aquatic life/secondary recreation use support category is applied to all waters in North Carolina. Therefore, this category is applied to the total number of stream miles (1,494.8) in the North Carolina portion of the Broad River basin. A basinwide summary of current aquatic life/secondary recreation use support ratings is presented in Table 1.

Approximately 37 percent of stream miles (546.2 miles) were monitored for the protection of aquatic life and secondary recreation by DWQ during this basinwide planning cycle. All waters rated impaired in the aquatic life/secondary recreation use support category were monitored within the past five years. Impaired waters accounted for 0.3 percent of the total stream miles and 0.9 percent of monitored stream miles.

Table 1 Aquatic Life/Secondary Recreation Use Support Summary Information for Waters in the Broad River Basin (2000)

Aquatic Life/Secondary Recreation Use Support Ratings	Monitored and Evaluated Waters*			Monitored Waters Only**	
	Miles or Acres	%		Miles or Acres	%
Supporting	**844.7** Miles **1,954.0** Acres	**56.5%** **100.0%**		**531.5** Miles **1,954.0** Acres	**97.3%** **100%**
Impaired	**4.7** Miles **0.0** Acres	**0.3%** **0.0%**		**4.7** Miles **0.0** Acres	**0.9%** **0.0%**
Not Rated	**16.7** Miles **0.0** Acres	**1.1%** **0.0%**		**10.0** Miles **0.0** Acres	**1.8%** **0.0%**
No Data	**628.7** Miles **0.0** Acres	**42.1%** **0.0%**			
TOTAL	**1,494.8** Miles **1,954.0** Acres			**546.2** Miles **1,954.0** Acres	

* = Percent based on total of all streams, both monitored and evaluated. ** = Percent based on total of all monitored streams.

Like the aquatic life/secondary recreation use support category, the fish consumption use support category is also applied to all waters in the state. No streams were monitored for the fish consumption category during this basinwide cycle because of the lack of any significant contaminant issues in the basin. Currently, there are no fish consumption advisories specific to the NC portion of the Broad River basin; and therefore, all waters are fully supporting the fish consumption use.

There are 11.8 stream miles and 964.0 lake acres currently classified for primary recreation in the Broad River basin. No stream miles were monitored by DWQ over the past five years for the primary recreation use. However, Lake Lure and Lake Summit were monitored by DWQ over the past five years and are fully supporting the primary recreation use. A basinwide summary of current primary recreation use support ratings is presented in Table 2.

Table 2 Primary Recreation Use Support Summary Information for Waters in the Broad River Basin (2000)

Aquatic Life/Secondary Recreation Use Support Ratings	Monitored and Evaluated Waters*			Monitored Waters Only**	
	Miles or Acres	%		Miles or Acres	%
Supporting	**0.0** Miles **964.0** Acres	**0.0%** **100.0%**		**0.0** Miles **964.0** Acres	**97.3%** **100%**
Impaired	**0.0** Miles **0.0** Acres	**0.0%** **0.0%**		**0.0** Miles **0.0** Acres	**0.0%** **0.0%**
Not Rated	**0.0** Miles **0.0** Acres	**0.0%** **0.0%**		**0.0** Miles **0.0** Acres	**0.0%** **0.0%**
No Data	**11.8** Miles **0.0** Acres	**100.0%** **0.0%**			
TOTAL	**11.8** Miles **964.0** Acres			**0.0 Miles** **964.0 Acres**	

* = Percent based on total of all streams, both monitored and evaluated. ** = Percent based on total of all monitored streams.

There are 402.8 stream miles currently classified for water supply in the Broad River basin. All were evaluated within the past five years; all are fully supporting the water supply use.

Recommended Management Strategies for Restoring Impaired Waters

The long-range mission of basinwide planning is to provide a means of addressing the complex problem of planning for increased development and economic growth while maintaining, protecting and enhancing water quality and intended uses of the Broad River basin's surface waters. Within this basinwide plan, DWQ presents management strategies and recommendations for those waters considered to be impaired or that exhibit some notable water quality problem. Table 3 presents impaired waters in the Broad River basin, summaries of the recommended management strategies, and location of further information in the basinwide plan.

Table 3 Monitored Impaired Waters within the Broad River Basin (as of 2000)

Subbasin	Location in Section B	Name of Water	Miles or Acres	Use Support Rating – Category	Potential Sources	Management Strategy or Recommendation
03-08-02	Chap 2	Cathey's Creek+	1.9 miles	Aquatic Life/Secondary Recreation	P, NP	DWQ will continue to monitor these streams to further evaluate improvement due to decreased point source impacts. Local action is needed to reduce habitat degradation and to promote the production of instream habitat. Both streams are within an NCWRP targeted local watershed.
03-08-02	Chap 2	Hollands Creek+	2.8 miles	Aquatic Life/Secondary Recreation	P, NP	

P = Point Sources NP = Nonpoint Sources

+ = Only limited progress towards developing and implementing nonpoint source reduction strategies for these impaired water can be expected without additional resources.

Major water quality problems leading to impairment in the basin include habitat degradation and historical problems with wastewater treatment plants in the basin. Habitat degradation, including sedimentation, loss of riparian vegetation and streambank erosion, is primarily attributed to runoff from developed areas and agricultural activities.

Addressing Waters on the State's Section 303(d) List

For the next several years, addressing water quality impairment in waters that are on the state's 303(d) list will be a DWQ priority. Section 303(d) of the federal Clean Water Act requires states to develop a list of waters not meeting water quality standards or which have impaired uses. The waters in the Broad River basin that are on this list are discussed in the individual subbasin descriptions in Section B. States are also required to develop Total Maximum Daily Loads (TMDLs) or management strategies for 303(d) listed waters to address impairment. EPA issued guidance in August 1997 that called for states to develop schedules for developing TMDLs for all waters on the 303(d) list within 8-13 years.

There are approximately 2,387 impaired stream miles on the 2000 303(d) list in NC. The rigorous and demanding task of developing TMDLs for each listed water during a 13-year time frame will require the focus of many resources. It will be a priority for North Carolina's water quality programs over the next several years to develop TMDLs for 303(d) listed waters.

Challenges Related to Achieving Water Quality Improvements

To achieve the goal of restoring impaired waters throughout the basin, DWQ will need to work more closely with other state agencies and stakeholders to identify and control pollutants. The costs of restoration will be high, but several programs exist to provide funding for restoration efforts. These programs include the Clean Water Management Trust Fund, the NC Agricultural Cost Share Program, the Wetlands Restoration Program and the federally funded Conservation Reserve Enhancement Program.

With increased development occurring, there will be significant challenges ahead in balancing economic growth with the protection of water quality in this basin. Point source impacts on surface waters can be measured and addressed through the basinwide planning process. Nonpoint sources of pollution can be identified through the basinwide plan, but actions to address these impacts must be taken at the local level. Such actions should include: development and enforcement of local erosion control ordinances; requirement of stormwater best management practices for existing and new development; development and enforcement of buffer ordinances; and land use planning that assesses impacts on natural resources. This basinwide plan presents many water quality initiatives and accomplishments that are underway within the basin. These actions provide a foundation on which future initiatives can be built.