

Chapter 5

North Carolina Water Quality Classifications and Standards

5.1 Description of Surface Water Classifications and Standards

North Carolina's Water Quality Standards Program adopted classifications and water quality standards for all the state's river basins in 1963. The program remains consistent with the Federal Clean Water Act and its amendments. Water quality classifications and standards have also been modified to promote protection of surface water supply watersheds, high quality waters (HQW), and unique and special pristine waters with outstanding resource values (ORW).

5.1.1 Statewide Classifications

All surface waters in the state are assigned a *primary* classification that is appropriate to the best uses of that water. In addition to primary classifications, surface waters may be assigned a *supplemental* classification. Most supplemental classifications have been developed to provide special protection to sensitive or highly valued resource waters. Table 12 briefly describes the best uses of each classification. A full description is available in the document titled: *Classifications and Water Quality Standards Applicable to Surface Waters and Wetlands of North Carolina* (NCDENR-DWQ, 2004). Information on this subject is also available at DWQ's website: www.ncwaterquality.org/csu/.

5.1.2 Statewide Water Quality Standards

Each primary and supplemental classification is assigned a set of water quality *standards* that establish the level of water quality that must be maintained in the waterbody to support the uses associated with each classification. Some of the standards, particularly for HQW and ORW waters, outline protective management strategies aimed at controlling point and nonpoint source pollution. These strategies are discussed briefly below. The standards for C and SC waters establish the basic protection level for all state surface waters. The other primary and supplemental classifications have more stringent standards than for C and SC, and therefore, require higher levels of protection.

Some of North Carolina's surface waters are relatively unaffected by pollution sources and have water quality higher than the standards that are applied to the majority of the waters of the state. In addition, some waters provide habitat for sensitive biota such as trout, juvenile fish, or rare and endangered aquatic species.

Primary Recreation (Class B)

There are 105.5 freshwater miles and 15,600 freshwater acres classified for primary recreation in the Chowan River basin. Waters classified as Class B are protected for primary recreation, including frequent and/or organized swimming, and must meet water quality standards for fecal coliform bacteria. Sewage and all discharged wastes to Class B waters must be treated to avoid potential impacts to the existing water quality.

Table 12 Primary and Supplemental Surface Water Classifications

PRIMARY FRESHWATER AND SALTWATER CLASSIFICATIONS	
<u>Class*</u>	<u>Best Uses</u>
C and SC	Aquatic life propagation/protection and secondary recreation.
B and SB	Primary recreation and Class C and SC uses.
SA	Suitable for commercial shellfish harvesting and SB and SC uses.
WS	<i>Water Supply (WS)</i> : Assigned to watersheds based on land use characteristics. The WS classifications have management strategies to protect the surface water supply. For WS-I through WS-IV, these include limits on point source discharges and local programs to control nonpoint source and stormwater runoff. A WS Critical Area (CA) has more stringent protection measures and is designated within one-half mile from a WS intake or WS reservoir. All WS classifications are suitable for Class C uses.
WS-I	Generally located in natural and undeveloped watersheds.
WS-II	Generally located in predominantly undeveloped watersheds.
WS-III	Generally located in low to moderately developed watersheds.
WS-IV	Generally located in moderately to highly developed watersheds.
WS-V	Generally upstream of and draining to Class WS-IV waters. No categorical restrictions on watershed development or treated wastewater discharges.
SUPPLEMENTAL CLASSIFICATIONS	
<u>Class</u>	<u>Best Uses</u>
Sw	<i>Swamp Waters</i> : Waters that have low velocities and other natural characteristics that are different from adjacent streams (i.e., lower pH, lower levels of dissolved oxygen).
Tr	<i>Trout Waters</i> : Provides protection to freshwaters for natural trout propagation and survival of stocked trout.
HQW	<i>High Quality Waters</i> : Waters that have excellent water quality, primary nursery areas and other functional nursery areas, WS-I and WS-II or SA waters.
ORW	<i>Outstanding Resource Waters</i> : Unique and special waters of exceptional state or national recreational or ecological significance which require special protection.
NSW	<i>Nutrient Sensitive Waters</i> : Waters subject to excessive plant growth and requiring limitations on nutrient inputs.

* Primary classifications beginning with "S" are assigned to saltwaters.

Aquatic Life Propagation and Secondary Recreation (Class C)

There are 704 freshwater miles and 1,370 freshwater acres classified for aquatic life propagation/protection and secondary recreation in the Chowan River basin.

Nutrient Sensitive Waters (Class NSW)

Nutrient sensitive water (NSW) is a supplemental classification that the EMC may apply to surface waters that are experiencing or are subject to growths of microscopic or macroscopic vegetation. In 1979, all waters of the Chowan River basin were designated as NSW. The Chowan River basin was the first waterbody in the state to receive the supplemental classification because of water quality problems associated with nutrient enrichment. In response to nuisance algal blooms and fish kills in North Carolina's waters, the EMC established the NSW supplemental classification in May 1979 as a legal basis for controlling the discharge of nutrients, primarily nitrogen and phosphorus, into surface waters. This classification took effect in September 1979 for the Chowan River; thereby, enabling nutrient limits to be included in the NPDES permits of wastewater treatment plants that discharge in the river basin. Of the Class B and C waters in the Chowan River basin, all receive supplemental NSW classification for a total of 810 miles and 16,970 acres. The implementation of the NSW strategy continues to be successful, with a reduction in Impaired waterbodies from 135 Impaired miles on the 2006 303(d) list to 22.5 miles on the draft 2008 303(d) list of Impaired waters.

5.1.3 Nutrient Sensitive Waters Management

Although there have been gains in nutrient reductions and associated water quality benefits, continued implementation of the nutrient reductions and conservation measures are recommended. A Nutrient Sensitive Waters strategy was initially adopted in 1982 and updated in 1990. Overall, as of 1990, the nitrogen reduction goal of 20 percent had been accomplished and total phosphorus had been reduced by 29 percent (goal of 35 percent). Major points of the 1990 management strategy include:

- Reduction in phosphorus inputs from point and nonpoint sources by 35-40 percent
 - *Point Sources*
 - ◆ Land application systems for municipal wastewater treatment plants
 - ◆ Phosphorus limits of 1 mg/l in the North Carolina portion of the basin
 - *Nonpoint Sources*
 - ◆ Target funds from the Agriculture Cost Share Program to the Chowan River basin
- Reduction of nitrogen inputs from all sources by 20 percent
 - *Point Sources*
 - ◆ Land application systems for municipal wastewater treatment plants
 - ◆ Nitrogen limits of 3 mg/l in the North Carolina portion of the basin
 - *Nonpoint Sources*
 - ◆ Target funds from the Agriculture Cost Share Program to the Chowan River basin

As a result of the NSW strategy, many wastewater treatment plants that were previously discharging to surface waters converted their plants to land application. These non-discharge systems that treat domestic wastewater are required to meet total nitrogen and total phosphorus limits. It is recommended that new dischargers be required to model nutrient impacts on water quality to ensure chlorophyll a standards are not exceeded. Also, Agricultural Cost Share Program monies have resulted in the application of best management practices in the basin (see Chapter 9) and are also contributing to the reduction of over-enrichment conditions. Such efforts need to continue to further improve the water quality of the Chowan River basin.

For more information on NSW waters and nutrient strategies refer to administrative code 15A NCAC 2B .0223 for specifics on NSW rules.

