

# FORESTRY & WATER QUALITY

## Forestland Ownership

Approximately 73% of the forestland in the Basin is privately-owned, with forest industry owning an estimated 15% and the remaining 12% in public ownership (Brown, 2004). However, since the most recent forest inventory was completed, significant shifts have taken place regarding the ownership of forestland across much of eastern North Carolina. Forest products companies have largely sold their forestlands to timberland investment management organizations (TIMO's), private investors/buyers, and conservation groups.

## Forest Water Quality Regulations

Forestry operations in North Carolina are subject to regulation under the Sedimentation Pollution Control Act of 1973 (Article 4-GS113A, referred to as "SPCA"). However, forestry operations may be exempted from specific requirements of the SPCA if the operations meet the compliance performance standards outlined in the Forest Practices Guidelines Related to Water Quality (02 NCAC 60C.0100-.0209, referred to as "FPGs") and General Statutes regarding stream and ditch obstructions (GS 77-13 and GS 77-14).

The FPG performance standard rule-codes and topics include:

- .0201 Streamside Management Zone (SMZ)
- .0202 Prohibition of Debris Entering Streams and Waterbodies
- .0203 Access Road and Skid Trail Stream Crossings
- .0204 Access Road Entrances
- .0205 Prohibition of Waste Entering Streams, Waterbodies, and Groundwater
- .0206 Pesticide Application
- .0207 Fertilizer Application
- .0208 Stream Temperature
- .0209 Rehabilitation of Project Site.

The North Carolina Forest Service (NCFS) is delegated the authority to monitor and evaluate forestry operations for compliance with these aforementioned laws and/or rules. In addition, the NCFS works to resolve identified FPG compliance questions brought to its attention through citizen complaints, during normal NCFS staff work duties, and by request of private individual or companies involved with timber harvest in NC. Issues of non-compliance with the FPG performance standards that cannot be resolved by the NCFS are referred to the appropriate state agency for enforcement action.

For the period of 2003-2014, the NCFS completed 4,275 FPG inspections on approximately 341,000 acres of land undergoing forestry operations in the Tar-Pamlico River Basin. The compliance with FPG regulations was extremely high (97%). Very few citizen complaints were received, with complaints noted as the reason for <1% of the FPG inspections.

## Tar-Pamlico River Basin Riparian Buffer Rule

The Tar-Pamlico River Basin is subject to riparian buffer protection rule 15A NCAC 02B .0259. Forestry activities must comply with this buffer rule in addition to the requirements for SMZ establishment as defined within the FPG rules. The NCFS monitors forestry activities for

compliance with the buffer rule and notifies the NC-DWR if violations are observed. To assist loggers, landowners and foresters with the implementation of the buffer rule, the NCFS has developed a 2-page Forestry Leaflet that is available at local NCFS offices and can be downloaded from the website [http://ncforestservice.gov/water\\_quality/buffer\\_rules.htm](http://ncforestservice.gov/water_quality/buffer_rules.htm).

## Other Water Quality Regulations

In addition to the multiple state regulations noted above, NCFS monitors the implementation of the following federal rules relating to water quality and forestry operations:

- The Section 404 silviculture exemption under the Clean Water Act for activities in wetlands;
- The federally mandated 15 best management practices (BMPs) related to road construction in wetlands;
- The federally mandated BMPs for mechanical site preparation activities for the establishment of pine plantations in wetlands of the southeastern U.S.

## Water Quality Foresters

Nearly the entire river basin falls within the coverage area of a NC District Water Quality Forester. Statewide, there is a Water Quality Forester position in nine of NCFS's 13 operating districts. Water Quality Foresters conduct FPG inspections, survey BMP implementation, develop pre-harvest plans, and provide training opportunities for landowners, loggers, and the public regarding water quality issues related to forestry. These foresters also assist County Rangers on follow-up site inspections and provide enhanced technical assistance to local agency staff. Water Quality Foresters are the primary point of contact in their districts for responding to water quality or timber harvesting questions or concerns that are suspected to be related to forestry activities.

## Forestry Best Management Practices

Implementing forestry BMPs is strongly encouraged to efficiently and effectively protect the water resources of North Carolina. In 2006, the first ever revision to the North Carolina forestry BMP manual was completed. This comprehensive update to the forestry BMP manual is the result of nearly four years of effort by the NCFS and a DENR-appointed Technical Advisory Committee consisting of multiple sector stakeholders, supported by two technical peer-reviews. The forestry BMP manual describes measures that may be implemented to help comply with the forestry regulations while protecting water quality. Copies of the forestry BMP manual can be obtained at a County Ranger or District Forester office, or online: [http://ncforestservice.gov/water\\_quality/bmp\\_manual.htm](http://ncforestservice.gov/water_quality/bmp_manual.htm).

## Protecting Stream Crossings with Bridgemats

The NCFS provides bridgemats on loan to loggers for establishing temporary stream crossings during harvest activities in an effort to educate loggers about the benefits of installing crossings in this manner. Temporary bridges can be a very effective solution for stream crossings, since the equipment and logs stay completely clear of the water channel. Since 2005, all District Offices in the basin have had bridgemats available for loan-out.

## Bottomland Hardwood/Cypress Swamps

Across the Tar-Pamlico River basin, (and elsewhere in North Carolina) there are prime examples of high-quality and highly productive bottomland hardwood/cypress swamps. These swamps have provided a sustainable source of wood fiber for well over 200 years, and served as the foundation for the creation of the forest products industry in eastern North Carolina. Since the settlement of North Carolina in colonial times, our forests have been harvested multiple times, including these hard-to-access swamps. Practically-speaking, it is inconceivable that any “old growth” or “virgin” timber remain in this region.

A diversity of forest tree species are adapted to grow in these bottomland swamps, some regenerating by seed and others primarily by sprouting from severed stumps. Nearly all swamp-adapted tree species require full sunlight to adequately regenerate, thus necessitating a removal of the shading overstory. The planting of trees to regenerate a swamp after a timber harvest is not commonly observed as a suitable or viable silviculture practice due to the cyclic nature of the hydrology in a specific swamp, fluctuations in the water table, and the obvious difficulty of site access for tree planting.

Management of a swamp forest is relatively passive when compared with pine or upland hardwood forest areas. Once the new stand of trees has successfully regenerated, there is usually little need to conduct intermediate stand treatments that might otherwise be suitable on pine or upland hardwood forests. Implementing a silviculturally-sound swamp timber harvest in a manner that minimizes soil and water impacts has shown to be the practical and viable prescription for forest management in swamps.

## Education & Outreach

Each year since 2004 the NCFS summarizes its BMP, water quality, and nonpoint source accomplishments in a color brochure entitled “Year In Review”. This report is available on the Web: [http://ncforestservice.gov/water\\_quality/year\\_in\\_review.htm](http://ncforestservice.gov/water_quality/year_in_review.htm).

The North Carolina Forestry Association, in cooperation with forest industry, NCFS, and NC State University, conducts educational programs annually at different locations in the North Carolina. The first program is called the Forestry and Environmental Camp, and is for middle and high school aged children. These 3-day long camps introduce children to the basic science and math skills needed when practicing forestry. The second program is the Sustainable Forestry Teachers Academy/Tour, and educates school teachers about forestry practices and how forest products are manufactured. For more information about these programs visit [www.ncforestry.org](http://www.ncforestry.org).

## References

Brown, Mark J. 2004. USDA-Forest Service “Forest Statistics for North Carolina, 2002.” Southern Research Station Resource Bulletin SRS-88. January 2004).