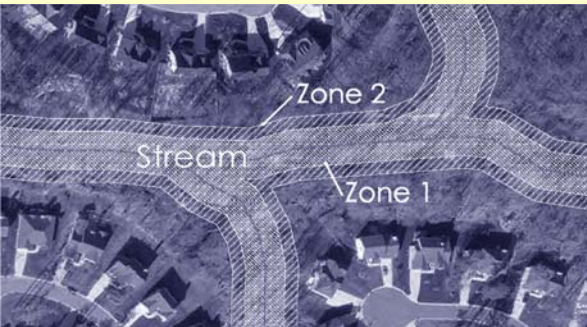


## Riparian Buffers

A riparian buffer can be simply described as a vegetated strip of land next to a creek, river, or stream. Buffers play an important role in ecosystem health and function by providing a number of water quality, fish habitat, wildlife habitat, and soil stability benefits. Vegetation and organic material in a buffer slow and filter solids and sediment from runoff flowing through them. Nutrients and other potential contaminants in groundwater can be treated by the plants and microbes that occur in buffers. Buffers help maintain and improve habitat by providing shade and a source of food and shelter for insects, fish, birds, and mammals. Root systems extending from buffer vegetation improve stream bed and bank stability and reduce erosion.

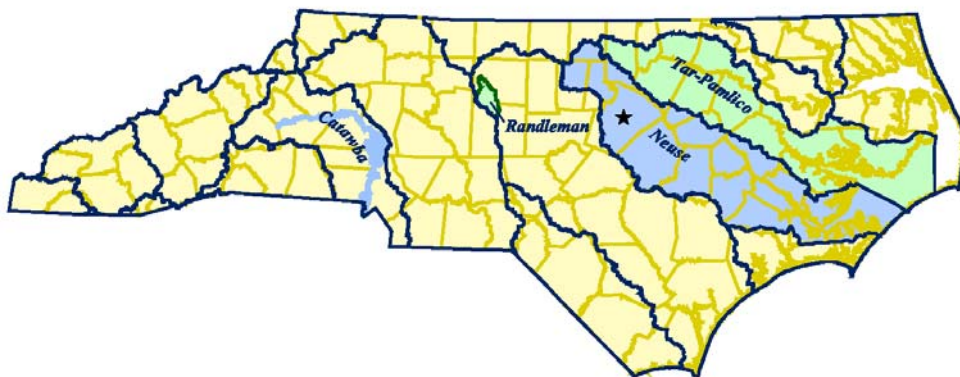
Although research has produced various recommendations for the size of these systems, buffers of almost any width can have some benefits. Small buffers can provide streambank stability, and buffers of moderate width can provide filtering and water quality benefits, while wider buffers are generally needed to produce significant habitat improvements. Buffers can contain any variety of vegetation, but the most effective buffers will have a mix of low, dense, native vegetation with shallow, fibrous root mats and taller vegetation with deeper, branching root systems. A crucial element to properly functioning buffers is diffuse overland flow of water. Concentrated or channelized flow (such as in channels and ditches) will short-circuit the natural water treatment processes that a riparian buffer provides.



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## Buffer Rules in North Carolina

The State of North Carolina has adopted mandatory buffer rules in the Neuse and the Tar-Pamlico River Basins. They have been effective as permanent rules since August 1, 2000. Similar rules have been adopted for the main stem of the Catawba River below Lake James and for the Randleman Lake reservoir. The main purpose of these rules is to protect and maintain a 50-foot wide vegetated riparian buffer along surface waters (creeks, lakes, ponds, rivers, streams) to preserve water quality, fish habitat, and wildlife habitat. The rules also require that any stormwater flow being directed into the buffer should be diffuse and non-erosive. Rules apply to perennial and intermittent streams and waterbodies defined on either the NRCS county soil survey maps or the 1:24,000 scale USGS topographic maps (as blue lines). Rules do not apply to agricultural ditches, manmade waterways or ephemeral streams. Rules apply when existing land use is changed. For example, if land use changes from agricultural use (farming) to residential use (homes), the rules require for the protection or placement of a 50-foot vegetated buffer along the regulated waters. Mitigation is usually required if impacts are permitted. The NC Division of Water Quality (DWQ) has been given the task of enforcing these buffer rules. A few municipalities across the state also have their own riparian buffer rules, which are stricter than those in place at the state level.



## NC Riparian Buffer Zones and Regulations

The 50-foot wide vegetated buffer is divided into two zones - Zone 1 is the first 30 feet from the top of bank landward while Zone 2 represents the next 20 feet landward. Under current buffer rules, Zone 1 is to essentially remain undisturbed. Removal of individual trees are allowed for the protection of structures and human life, for the removal of diseased or dead trees, or for protecting the stream bank. Mechanical equipment is not allowed in Zone 1, unless it is necessary for activities that involve streambank protection or restoration. Zone 2 must be a vegetated zone, but does not have to consist of trees. It can be a zone of trees, shrubs, and/or grasses. Best management practices (BMPs) are to be followed for those activities which may impact the buffer zones (i.e. forestry operations and stormwater alterations).

To read/review the buffer rules, go to the NC Division of Water Quality webpage at <http://h2o.enr.state.nc.us/ncwetlands/regcert.html>. The rules specify allowable activities and exemptions. The document, *Guidelines for Riparian Buffer Restoration*, is available at the NC Wetlands Restoration Program web page.