

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**RIPARIAN FOREST BUFFER**

(Ac.)

**CODE 391**

**DEFINITION**

An area predominantly trees and/or shrubs located adjacent to and up-gradient from watercourses or water bodies.

**PURPOSE**

- Create shade to lower or maintain water temperatures to improve habitat for aquatic organisms.
- Create or improve riparian habitat and provide a source of detritus and large woody debris.
- Reduce excess amounts of sediment, organic material, nutrients and pesticides in surface runoff and reduce excess nutrients and other chemicals in shallow ground water flow.
- Reduce pesticide drift entering the water body.
- Restore riparian plant communities.
- Increase carbon storage in plant biomass and soils.

**CONDITIONS WHERE PRACTICE APPLIES**

Riparian forest buffers are applied on areas adjacent to permanent or intermittent streams, lakes, ponds, and wetlands. They are not applied to stabilize stream banks or shorelines.

**CRITERIA**

**General Criteria Applicable to All Purposes**

Position the riparian forest buffer appropriately and design to achieve sufficient width, length,

vertical structure/density and connectivity to accomplish the intended purpose(s).

The minimum width on one side shall be at least 15 feet measured horizontally on a line perpendicular to the water body beginning at the normal water line, bank-full elevation, or the top of the bank as determined locally.

Add, at a minimum, an additional two feet of width for every percent slope greater than zero.

Widths will be extended in high nutrient, sediment, and animal waste application areas, where the contributing area is not adequately treated by minimum widths, or where an additional level of protection is needed.

Dominant vegetation will consist of existing, naturally regenerated, or seeded/planted trees and shrubs suited to the soil and hydrology of the site and the intended purpose(s).

The vegetation will extend a minimum width to achieve the purpose(s). Measurement shall begin at and perpendicular to the normal water line, bank-full elevation, or the top of the bank as determined locally.

Overland flow through the riparian area will be maintained as sheet flow.

For sites to be regenerated or planted, excessive sheet-rill and concentrated-flow erosion will be controlled.

Control excessive sheet-rill and concentrated-flow erosion in the areas immediately adjacent and up-gradient of the buffer site.

Use two or more each of tree and shrub species that are native and non-invasive. Select species that are common to the existing riparian area or use the plant lists provided in

General Specifications, Table 1 or Conservation Tree and Shrub Database in the eFOTG General Reference File. Substitution with improved and locally accepted cultivars or purpose-specific species is allowed. For plantings and seeding, only viable, high-quality and adapted plant materials will be used.

Plant spacing will be in accordance with the Riparian Forest Buffer Specification Guide Sheet.

Periodic removal of some forest products such as high value trees, medicinal herbs, nuts, and fruits is permitted provided the intended purpose is not compromised by the loss of vegetation or harvesting disturbance.

Necessary site preparation and planting shall be done at a time and manner to insure survival and growth of selected species for achieving the intended purpose(s).

Livestock shall be controlled or excluded as necessary to achieve the intended purpose. Refer to the standards Prescribed Grazing, 528, and/or Use Exclusion, 472, as applicable.

Harmful plant and animal pests present on the site will be controlled or eliminated as necessary to achieve and maintain the intended purpose. If pesticides are used, refer to the standard Pest Management, 595.

Comply with applicable federal, state, and local laws and regulations during the installation, operation (including harvesting activities) and maintenance of this practice.

**Additional Criteria to Reduce Excess Amounts of Sediment, Organic Material, Nutrients and Pesticides in Surface Runoff and Reduce Excess Nutrients and Other Chemicals in Shallow Ground Water Flow**

The minimum width on one side shall be at least 35 feet measured horizontally on a line perpendicular to the water body beginning at the normal water line, bank-full elevation, or the top of the bank as determined locally.

Existing, functional underground drains through the riparian area will pass pollutants directly to the outlet. To filter such pollutants, drains can be plugged, removed or replaced with perforated pipe/end plugs to allow passage and filtration of drain water through the riparian forest root zone. Caution is

advised that saturated conditions in the riparian and adjacent areas may limit existing land use and management.

**Additional Criteria to Create or improve riparian habitat and provide a source of detritus and large woody debris.**

Establish plant communities that address the target aquatic and terrestrial wildlife needs and have multiple values such as habitat, nutrient uptake and shading.

Widths will meet or exceed those needed to satisfy NRCS quality criteria for fish and wildlife using Maine wildlife habitat evaluation procedures (WHEPs) or other State Office approved habitat assessment procedures.

Existing functional underground drains shall be replaced with non-perforated pipe under the buffer area to alleviate root intrusion and to sustain the drains functionality. Alternatively, a regulating valve or structure may be installed on the drain to control drain outflow.

**Additional Criteria for Increasing Carbon Storage in Biomass and Soils**

Maximize width and length of the riparian forest buffer.

Select plants that have higher rates of carbon sequestration in soils and plant biomass and are adapted to the site to assure strong health and vigor. Plant the appropriate stocking rate for the site.

**CONSIDERATIONS**

Favor tree and shrub species that have multiple values such as those suited for timber, biomass, nuts, fruit, browse, nesting, aesthetics and tolerance to locally used herbicides.

Avoid tree and shrub species which may be alternate hosts to undesirable pests. Consider species diversity to avoid loss of function due to species-specific pests.

Consider the allelopathic impacts of plants.

Use the location, layout and density of the buffer to complement natural features and mimic natural riparian forests.

For sites where continued function of drains is desired, woody root penetration may

eventually plug the underground structure. In these cases, a setback of woody vegetation planted over the drain maintained in herbaceous cover or using rigid, non-perforated pipe will minimize woody root penetration.

Maximize widths, lengths, and connectivity of riparian forest buffers. Refer to the Riparian Forest Buffer (391) Specification Guide Sheet regarding desired buffer widths for individual species or species groups.

Buffers located in headwater streams tend to have greater influence on overall water quality within a watershed than buffers located further downstream.

The species and plant communities that attain biomass more quickly will sequester carbon faster. The rate of carbon sequestration is enhanced as riparian plants mature and soil organic matter increases.

#### **PLANS AND SPECIFICATIONS**

Specifications for applying this practice shall be prepared for each site and recorded using approved specification guide sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.

A map identifying the location of the practice and a design drawing showing the placement of plants is required.

Document plant species, type of stock, plants per acre, plant spacing and total number of each species required.

Document any soil amendments or plant protection devices needed, and any special planting methods or temporary storage requirements.

#### **OPERATION AND MAINTENANCE**

The riparian forest buffer will be inspected periodically and protected from adverse impacts such as excessive vehicular and pedestrian traffic, pest infestations, concentrated flows, pesticides, livestock or wildlife damage and fire.

Replacement of dead trees or shrubs and control of undesirable vegetative competition will be continued until the buffer is, or will progress to, a fully functional condition or 3 years, whichever is longer.

Any manipulation of species composition, stand structure and stocking by cutting or killing selected trees and understory vegetation shall sustain the intended purpose(s). Refer to the standard Forest Stand Improvement, 666.

Control or exclusion of livestock and harmful wildlife shall continue. Refer to the standards Prescribed Grazing, 528, and/or Use Exclusion, 472, as applicable.

Fertilizers, pesticides and other chemicals used to maintain buffer function shall not impact water quality.