NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

# RIPARIAN FOREST BUFFER

**(Acre)**

**Code 391**

## DEFINITION

An area of trees and/or shrubs located adjacent to and/or upgradient from surface water and/or ground water resources.

## PURPOSES

- Moderate extreme water temperature fluctuations to improve habitat for aquatic organisms.
- Provide a source of detritus and large woody debris for aquatic organisms and habitat for wildlife.
- Reduce non point source pollutants in surface runoff, subsurface flow, and in shallow ground water.
- Improve, restore, or maintain aquatic and/or terrestrial habitat including corridors.

## CONDITIONS WHERE PRACTICE APPLIES

On areas adjacent to perennial and/or intermittent streams, rivers, lakes, ponds, wetlands, vernal pools, and or areas within designated aquifer protection areas.

Where the practice is a component of a resource management system (RMS) plan to:

1) minimize losses of nutrients, pesticides, sediments, total suspended solids (TSS), oxygen demanding substances ($BOD_5$), and/or bacteria and other infectious agents to surface and/or ground water resources.

2) improve restore, or maintain terrestrial and/or aquatic wildlife habitat.

3). minimize runoff impacts on riparian vegetation and/or minimize the transport of pollutants through the riparian buffer by concentrated flows.

## CRITERIA

**General Criteria Applicable To All Purposes Named Above.**

- The location, layout and density of the riparian forest buffer will accomplish the intended purpose and function.
- Dominant vegetation shall consist of existing, naturally regenerated, or planted trees, and or shrubs, and other vegetation suitable to the site and the intended purpose(s).
- All buffers will consist of a zone (identified as **zone 1**) that begins at the normal water line, or at the top of the bank, and extend a minimum horizontal distance of 15 feet, measured perpendicular to the water resource.
- **The primary purpose of Zone 1 is to provide shade to surface water and provide a source of organic material to the stream system.**
- Occasional removal of some tree and shrub products such as high value trees may be permitted in zone 1, 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.

- Only viable, high quality and adapted planting stock will be used.
- Site preparation shall be sufficient for establishment and growth of selected species and is done in a manner that does not compromise the intended purpose.
- Mowing and applications of fertilizers and pesticides shall be prohibited in Zones 1 and 2.
- Vehicles, heavy equipment, and/or livestock shall be excluded to achieve and maintain the intended purpose.
- A permanent marking system may be installed to delineate the up gradient edge of the buffer. A livestock exclusion fence may be used for this purpose.
- Invasive and/or non-native plant species present on the site shall be controlled or eliminated as necessary to achieve and maintain the intended purpose.
- The Connecticut / Rhode Island Guidelines for the Development of Riparian Forest Buffers, in combination with the Conservation Tree / Shrub Groups (CTSG), will be used to develop specifications for this practice.
- Comply with applicable federal, state, and local laws and regulations during installation, operation (including harvesting activities) and maintenance of this practice.

**Additional Criteria To Reduce Loading of Sediment, Organic Material, Nutrients and/or Pesticides to Surface Runoff and Reduce Loading of Nutrients and/or Other Chemicals to Ground Water and Provide Habitat Elements.**

- Zone 2 An additional area of land, zone 2, shall begin at the edge and up-gradient of zone 1 and extend a minimum distance of 20 feet measured horizontally on a line perpendicular to the water body. The minimum combined width of zones 1 and 2 shall be 100 feet or 30 percent of the geomorphic flood plain whichever is less, but not less than 35 feet.

- Criteria for zone 1 shall apply to zone 2 except that removal of tree and shrub products such as timber, nuts and fruit is permitted provided the intended purpose is not compromised by loss of vegetation or harvesting disturbance and the harvest is in accordance with a forest management plan.

- Zone 3 Sheet and rill erosion, concentrated flow erosion or mass soil movement shall be controlled in the up-gradient area immediately adjacent to zone 2 prior to establishment of the riparian forest buffer. This area is delineated and identified as zone 3. Zone 3 shall be designed in accordance with criteria in the CT/RI Filter Strip standard (Practice Code 393).

## CONSIDERATIONS

Evaluate the type and quantity of potential pollutants that will be derived from the contributing drainage area.

Target riparian buffer restoration on a watershed basis to address habitat fragmentation, connectivity, and corridors for wildlife.

Evaluate the existing vegetative cover and potential for regrowth of native species with exclusion of livestock and heavy equipment.

Favor planting of native plant materials that have multiple values such as those suited for timber, biomass, nuts, fruit, browse, nesting, aesthetics and tolerance to locally used herbicides.

Evaluate and consider corridor configuration, species planted, and management to enhance plant diversity, provide multiple values including aesthetics, and habitats for threatened, endangered, and other species of concern.

The location, layout and density of the buffer should compliment natural features.

Assess the severity of bank and shore erosion and its influence on existing or potential riparian trees and shrubs.

Watershed-level treatment or streambank and shoreline protection facilities in accordance with CT/RI Practice Standard 580 may be needed before establishing a riparian forest buffer.

If erosion and sedimentation due to concentrated flows cannot be controlled vegetatively, consider structural and or mechanical treatments to ensure sheet flow in zone 3

Consider tree and shrub species which may be alternate hosts to undesirable pests and avoid use if possible.

In accordance with NRCS State Policy, evaluate the potential this practice has to destroy or devalue cultural resources listed on the National or State Historic Register(s). This includes cultural resources that may be revealed by an archeological review.

Consider any local and or state permit requirements.

## PLANS AND SPECIFICATIONS

Specifications for this practice shall be prepared for each site in accordance with the NRCS CT/RI Guidelines for the Development of Riparian Forest Buffers and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.

## OPERATION AND MAINTENANCE

The following actions shall be carried out to ensure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance):

The riparian forest buffer shall be inspected periodically and protected to maintain its intended purpose from adverse impacts such as excessive vehicular and pedestrian traffic, pest infestations, pesticide use on adjacent lands, livestock damage and fire.

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

In zone 3, control erosion due to concentrated flows or mass soil movement as applicable to maintain buffer function.

Any removal of tree and shrub products shall be conducted in accordance with a management plan and in a manner that maintains the intended purpose.

In Zone 3, any use of fertilizers, pesticides and other chemicals to assure buffer function shall not compromise the intended purpose.

An operation and maintenance (O&M) plan for the riparian forest buffer shall be prepared. Prior to establishment, sufficient copies of the O&M plan will be provided to the owner/operator, designer, and approving agencies. The owner shall sign the O&M plan to indicate an understanding of the requirements and a commitment to operate and maintain the facility as specified.

The O&M plan shall contain as a minimum:

1. Inspection after major storms, and at least quarterly.

2. Timely repair of any erosion rills, channels, berms, or structures to restore sheet flow.

3. Management and maintenance of Zone 3 if applicable.

4. Maintenance of forest road or farm lane crossings.

5. A form on which to record operation and maintenance actions and activities.