



391-Riparian Forest Buffer

Conservation Practice Specification Job Sheet

391-WA-JS
Natural Resources Conservation Service, Washington
JANUARY 2007

Client:



NRCS Photo

Riparian Forest Buffer

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

Purposes

This practice may be applied as part of a conservation management system to accomplish one or more of the following purposes.

- Create shade to lower 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
- Reduce pesticide drift entering the water body
- Restore natural riparian plant communities
- Increase carbon storage in plant biomass and soils

Condition Where Practice Applies

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

Conservation Management System

Riparian Forest Buffer is the key component of a conservation management system in woody riparian buffer zones. A diversified riparian area is key in

maintaining or improving ecological conditions and providing habitat for wildlife. Other facilitating and accelerating practices may be utilized in the system to treat other identified resources concerns.

Plans and Specifications

Plans and specifications will be developed in each field or management unit where the practice will be applied. The plan and specifications will include:

- Site preparation requirements
- Tree or shrub species to plant
- Number of tree/shrubs to plant
- Control of vegetation in years 2-3+
- Protection needs for tree/shrubs
- Location of tree/shrubs being planted
- Practices to control off-site erosion influences
- Livestock exclusion, if applicable
- Other facilitating practices, as needed

If the landscape varies enough for the need to require different plants, site preparation, etc., they will be identified and treatment described.

Operation and Maintenance

All operations will comply with applicable federal state laws, and local laws and regulations during the installation, operation, and maintenance of the practice.

The area of treatment will be periodically inspected and protected from adverse impacts from insects, disease, livestock, wildlife and fire damage.

Competing vegetation will be controlled until the desired species are well established or have grown above the competition.

Trees/shrubs shall be replanted to maintain adequate stocking to accomplish the intended purpose. Removal, incorporation, bio- or photo-degradation of tree protective devices and associated materials shall be consistent with the intended purpose and site conditions.

The Natural Resources Conservation Service provides leadership in a partnership effort to help people Conserve, maintain and improve our natural resources and environment.

Natural Resources Conservation Service, Oregon

RIPARIAN FOREST BUFFER SPECIFICATION SHEETClient/Operating
Unit:

Tract:

Farm No.:

Farm/Ranch
Location:

Field No.:

Program:

Specifications
Date:Planned Installation
Date:Other Identifying
Data

Installation shall be in accordance with the following specifications, drawings, and other requirements. NO CHANGES ARE TO BE MADE IN THE SPECIFICATIONS WITHOUT PRIOR APPROVAL BY AN AGENCY REPRESENTATIVE.

RIPARIAN FOREST BUFFER SPECIFICATION SHEET**Practice Purpose** (check one or more that apply)

<input type="checkbox"/>	Create shade to lower/maintain water temp.	<input type="checkbox"/>	Reduce pesticide drift into a water body
<input type="checkbox"/>	Provide detritus and large woody debris	<input type="checkbox"/>	Restore riparian plant community
<input type="checkbox"/>	Increase carbon storage in plants/soil	<input type="checkbox"/>	Other:
<input type="checkbox"/>	Reduce Excess Sediment, O.M., Nutrients, Pesticides in surface runoff and Other Chemicals in Shallow Groundwater Flow *		

Buffer Prescription

Describe the treatment needed for each side. Note hydrology of site for selection of woody species. When different treatments are needed on each side, identify by widths, areas, or location and describe each treatment. **Right and left sides are determined by looking upstream**

Right Side Treatment*:

Left Side Treatment*:

*minimum width is 35 feet if excess sediment, nutrients, pesticides are in surface waters and excess nutrients and other chemicals are in shallow ground water flow.

Buffer length (ft):

Additional Information:

SITE PREPARATION shall be completed **PRIOR** to seedling establishment. Follow 490-Tree/Shrub Site Preparation job/specification worksheet for site preparation requirements.

Tree/Shrub Requirements

Tree Specie	Location to Plant ¹	Ave. Tree Spacing	Trees/Ac	No. of Trees/ Stock Type ²
				/
				/
				/
				/
				/
				/
Shrub Specie	Location to Plant ¹	Ave Shrub Spacing	Shrubs/ Acre	No. of Shrubs/ Stock Type ²
				/
				/
				/
				/
				/
				/

¹ – Describe location where plants will be planted (i.e. at bank edge, 0-15 feet from bank, etc.)

² -- ba-bareroot, pl-plug, co-containerized, cu-cutting

Additional Planting Information:

Chemical Use: If chemicals are planned to control competing vegetation, at any time, the chemical(s) will be evaluated with the WIN-PST program. A rating of intermediate or higher will require mitigation through the use of the Pest Management specification. Attach the hazard ratings to the specification worksheet.

RIPARIAN FOREST BUFFER SPECIFICATION SHEET**SEEDLING AND PLANTING INFORMATION**

Select seedlings from the appropriate seed zone and elevation or a geographic area of similar climate within an elevation of 500 feet higher or lower and within 100 miles north to 100 miles south of the planting site. Stock for introduced species must be from a proven, adapted source.

SEEDLING INSPECTION: While at the nursery or before accepting delivered seedlings, check that seedlings match what's specified on the order. This information should be printed on the container. Open several packages at random. While protecting exposed seedlings from drying, check for the following signs of damage:

- Dry roots
- White tip roots
- Swollen or burst buds
- Presence of mold on needles or stems
- Presence of sour odors
- Physical damage to seedlings
- Seedlings frozen in a solid block of ice
- Ripped or crushed bags or boxes exposed to circulating air

Remove a few seedlings from each opened package and strip areas of bark along the roots and stem with a fingernail or knife edge to reveal the woody tissues. The cambium layer of the stem must be green and moist with a light-colored sapwood beneath. Moist and consistently light colored woody tissue should be found along the stripped root.

DO NOT ACCEPT DAMAGED SEEDLINGS: The seedlings must be alive, dormant, and disease free. Immediately contact the nursery staff for further instructions.

TEMPORARY STORAGE INSTRUCTIONS: Bareroot seedlings and cuttings may be stored for up to 7 - 10 days at temperatures from 36 to 45 degrees F. If snow is available storage can be provided by constructing a cavity for the packaged seedlings (on a north facing slope or under shade if possible). If planting has to be delayed or cold storage is not available, unpack bareroot seedlings and "heel in": 1) Dig a V-shaped trench in a moist, shady place; 2) Break bundles and spread seedlings out evenly, 3 or 4 thick, in an upright position to a depth equal to the root collar; 3) Fill in with loose soil, and water; 4) Complete filling in soil and pack firmly. Store container plants in a cool area. Unrooted cuttings and whips can be soaked in cold water (lower 1/3 to 1/2 is sufficient) for 48 hours prior to planting to enhance root formation.

SITE PREPARATION: Clear the planting area to mineral soil. Size of clearing must be large on sites with heavy grass or herbaceous cover. Follow specific instructions on the 490-Tree/Shrub Site Preparation job/specification worksheet.

CARE AT PLANTING TIME: Keep seedlings roots moist at all times after removal from shipping packages or heel-in trench. At the field site store seedlings in the shade or under a reflective space blanket. Do not use canvas to protect seedlings from solar heating. Use suitable container (bucket, bag, or planting tray) for carrying the trees during the planting operation. Keep wet material around roots to prevent their damage through exposure. Never carry a handful of trees exposed to the sun and wind. Take one tree at a time from the container and plant it immediately. Trim excessively long roots with a sharp hatchet, machete, shears, or scissors. Do not tear or rip roots.

TIMING OF PLANTING: Avoid planting on hot, windy days. Planting site must be free of snow and the soil frost-free. Do not carry more seedlings than can be planted in 1 hour (warm, windy, dry day) to 2 hours (calm, humid day). Utilize debris and stumps to provide shade for newly planted seedlings wherever possible.

RIPARIAN FOREST BUFFER SPECIFICATION SHEET**PLANTING METHODS:**

Bareroot Seedlings - Open a hole or slit deeper than the root size to be planted to accommodate the root system with all roots pointing down (no "J" or "L" shaped roots). Plant seedlings slightly deeper than they grew in the nursery (indicated by a change in bark characteristics) with roots naturally positioned. Do not twist or bunch roots. In slit planting, push the tree down to the bottom of the slit, then with a shaking motion, raise it gently back to the correct level. While holding the tree in an upright position, at the correct depth, bring loose, moist soil in around the root system. Do not let dry soil or surface litter fall into the hole. When the slit or hole is filled, pack the moist soil down firmly. No roots should be exposed or foliage covered.

Plugs - Plugs are easily planted due to their shape. Plugs are grown in cylindrical containers. Larger size plugs, i.e. 20 cubic inch, have larger root systems and grow quickly. Open a hole and place plug in hole at the same depth as grown in the container. Place moist soil around the plug and pack. Firm up soil completely around plug. An optional, slow release fertilizer can be placed in the bottom of the planting whole. Make sure that initially there is no contact between the fertilizer and seedling roots.

Un-rooted Cuttings - For un-rooted cuttings and whips open a hole or slit deep enough to allow cuttings to be inserted so at least 1/2 - 2/3 of the cutting length is below ground. Insert cutting vertically with buds pointing up, insuring that one to three bud remain above ground. Firm the soil around the cutting so good contact with the soil is obtained. An optional, slow release fertilizer can be placed in the bottom of the planting whole. Make sure that initially there is no contact between the fertilizer and seedling roots.

Containerized - Containerized plants are best planted in the spring, summer and fall. Dig a hole at least 50 percent wider than the container. Plant the root ball top at or just below natural ground level. Root-bound plants should have the root system slit and flared out over a mound of soil in the planting hole. Cut off any long roots before planting. If more than 20% of the root system is cut off, remove (proportionately) the same amount of leaf area. Refill hole with soil and pack well to remove air-pockets. If available, water plants. Prune off diseased or damaged branches, suckers, etc.

MOISTURE CONSERVATION: Control competing vegetation for a minimum of 2 years after planting, using one of the following methods.

Mechanical - Use a hoe, shovel, brush cutter or chainsaw to control all competing vegetation in the immediate area (3 foot minimum diameter) of the seedling. Repeat as necessary to

Chemical - Apply herbicides according to label directions. The herbicide selected must be formulated and registered for use on forestland. Consult a local weed specialist for rates, timing and restrictions. Repeat as often as needed to control competing vegetation. Treat all vegetation within 1.5 ft of the seedling (3 ft. diameter). Run WIN-PST and attach hazard ratings for selected chemical (s).

Mulch - Spread mulch material (paper, plastic, geotextile, etc.) around the base of seedling for a minimum of 1.5 radius around the seedling. See Mulching Specification #484 and complete spec. sheet if using mulch.

SEEDLING PROTECTION - Where browsing pests damage seedlings, seedlings will be protected. Protection techniques will be commensurate with the pest causing damage. Acceptable methods include fencing, tree tubes, bud caps, repellants, and whole tree protectors.

Additional Specification Requirements and Operation and Maintenance:

Natural Resources Conservation Service

RIPARIAN FOREST BUFFER SPECIFICATION SHEET**DESIGN AND INSTALLATION/LAYOUT APPROVAL:**

I have job approval authority and certify this practice has been designed with specifications to meet the conservation practice standard and that the client has been advised of installation and layout elements:

NRCS Representative name and title (type or print):		
NRCS Representative Signature:		Date:

LANDOWNER/OPERATOR ACKNOWLEDGES:

- They have received a copy of the specifications and understand the contents including the scope and location of the practice.
- They have obtained all necessary permits and/or rights in advance of practice application, and will comply with all ordinances and laws pertaining to the application of this practice.
- No changes will be made in the installation of the job without prior concurrence of the NRCS.
- Maintenance of the installed work is necessary for proper performance during the life of the practice. The practice life is _____.

I have reviewed all specifications and agree to install as specified:

Landowner/operator name and title (type or print):		
Landowner/operator Signature:		Date:

RECORD OF COMPLETION AND CHECK OUT CERTIFICATION:

Units (_____)	Date Completed by Client:	Date Certified:	Approver's Initials:

I have job approval authority and certify this practice has been applied and meets design specifications:

NRCS Representative name and title (type or print):		
NRCS Representative Signature:		Date:
Notes:		

RIPARIAN FOREST BUFFER SPECIFICATION SHEET

Notes con't:

Empty rectangular box for notes.