



## CONSERVATION ENHANCEMENT ACTIVITY

### E391127Z - Colorado

# CONSERVATION STEWARDSHIP PROGRAM

## Increase stream shading for stream temperature reduction

### Conservation Practice 391: Riparian Forest Buffer

**APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture; Forest; Associated Ag Land; Farmstead**

**RESOURCE CONCERN ADDRESSED: Water Quality Degradation**

**PRACTICE LIFE SPAN: 15 Years**

#### Enhancement Description

Riparian area tree canopy cover density is increased and the extent of the forested riparian area is increased to provide greater stream shading.

#### Criteria

- Existing buffer width shall be at least 35 feet or (if applicable) the minimum State buffer-width requirement<sup>1]</sup>, whichever is greater. Maximum enhancement buffer width may be increased up to the greater of 180 feet or the State-allowed maximum width<sup>2]</sup>, but no greater than the width of the geomorphic floodplain.

<sup>1]</sup>The minimum State-allowed buffer-width is 35 feet. <sup>2]</sup> There is no State-allowed maximum width.

- See the Additional Information section for details pertaining to this criteria.
- Where necessary to improve stream shading, increase canopy cover density in the existing buffer area. It is necessary to improve stream shading where the stream surface is has less than 50% shading.
  - Estimate the percent of the stream surface area that is shaded. Time of the year, time of the day, and weather can affect your observation of shading. Therefore, the relative amount of shade is estimated by assuming that the sun is directly overhead and the vegetation is in full leaf-out. See below for examples.



Example: <5% Canopy Cover



Example: >75% Canopy Cover



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- In addition to providing shading, establish plant communities that address aquatic and terrestrial wildlife and pollinator needs and have multiple values such as habitat enhancement and nutrient uptake.
- 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 of providing stream shading.
  - Natural regeneration may only be used in lieu of planting where regeneration of native species can reasonably be expected to result in a healthy, functioning woody riparian plant community within two years. Typically, natural regeneration will be used to supplement a planting.
  - Planting is the preferred method. There is generally a low success rate to seeding woody riparian plants.
  - For information on site suitability, refer to the USDA PLANTS Database (<http://plants.usda.gov>) and the CNHP Field Guide to the Wetland and Riparian Plant Associations of Colorado.
- Use tree and shrub species that are native, locally adapted and non-invasive. 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.
- Favor tree and shrub species that have multiple values such as those suited for timber, nuts, fruit, florals, browse, nesting, and aesthetics.
- Periodic removal of some forest products such as high value trees, medicinal herbs, nuts, and fruits is permitted provided the buffer area is not compromised by the loss of vegetation or harvesting disturbance. Tree removal will only occur outside of the primary nesting season (March 15 to July 15).
- Necessary site preparation and planting shall be done at a time and manner to insure survival and growth of selected species.
- Harmful plant and animal pests present on the site will be controlled or eliminated as necessary to achieve and maintain the intended purpose. Pest management will be conducted in a manner that mitigates impacts to pollinators. Refer to [USDA-NRCS Agronomy Technical Note No. 9, Preventing or Mitigating Potential Negative Impacts of Pesticides on Pollinators Using Integrated Pest Management and Other Conservation Practices](#). February, 2014.



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- Protect riparian vegetation until the desired plant community is well established; livestock grazing will be deferred for a minimum of two years after planting. Grazing thereafter will follow a Prescribed Grazing Plan (CPS 528).
- Design the expanded buffer enhancement for an expected life of at least 15 years.
- The enhancement will comply with all applicable federal, state, and local laws and regulations, and with States' Forestry Best Management Practices for Water Quality.

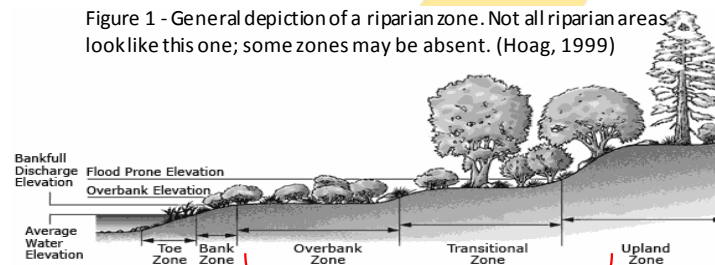
## Additional Information

### I. Determining the Existing and Enhanced Buffer Widths

Existing Buffer Width. Is defined, for this purpose, as: an area predominantly trees and/or shrubs located adjacent to and up-gradient from watercourses or water bodies (such as river, stream, pond, lake, or other waterbody) which is at least 35 feet wide, as measured perpendicular to the water body (see Figure 1).

- The buffer width is for each side of a waterway or around the entire perimeter of a water body.
  - In some cases, the minimum width may be less than 35 feet; in areas where the geomorphic potential *naturally* limits the width. A typical example is where the outside bend of a streambank may only naturally support a narrower width but overall the site averages a width of at least 35 feet. Note: if the bend was not supporting woody vegetation because of erosion (i.e. bank sloughing) it does not meet this criteria. A NRCS conservationist will assist in making this determination.
- Existing means, that the area is established into predominantly woody riparian plant species (such as willows, cottonwoods, alders) to the extent that it is meeting one or more 391 Practice Standard purpose.

Figure 1 - General depiction of a riparian zone. Not all riparian areas look like this one; some zones may be absent. (Hoag, 1999)



### Enhanced Buffer Width

- The buffer will be expanded on both side (or around the entire pond, wetland, lake or other water body) unless the land is not under the control of the applicant. In which case, the buffer will be extended to the area required by this enhancement which is under the control of the applicant.
- The buffer will be increase to 180 feet wide, but no greater than the width of the geomorphic floodplain (see Figure 1). That is, the riparian buffer does not extend into the upland.

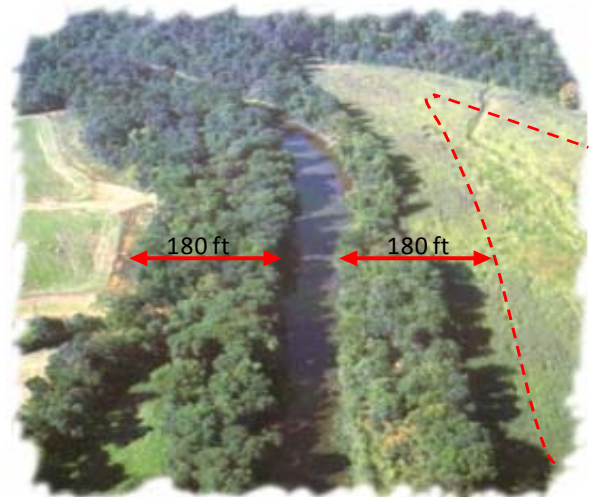


Figure 2 – Example of buffer enhancement



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## Documentation and Implementation Requirements

Participant will:

- Prior to implementation, prepare the planned buffer area according to the planting plan NRCS has developed with you. Refer to NRCS Conservation Practice Standard Riparian Forest Buffer (Code 391). (NRCS will provide technical assistance)
- Prior to implementation, select planting date, method, and density/spacing appropriate for the site and soil conditions. (NRCS will provide technical assistance.)

Planting Date	
Planting Method	
Density and spacing	

- Prior to implementation, work closely with NRCS to select plant species that are adapted to the specific site and that meet the goal of providing increased stream shading.

Species	Vegetative or Rootstock	Size	Protection (tubes, mats, nets)

- During implementation and before planting, grade the site, as needed, to eliminate concentrated flow through the buffer including water coming from uphill of the buffer.
- During implementation, conduct planting of selected species according to dates, methods, spacing and other requirements listed in the planting plan.
- During implementation, install and maintain erosion control measures as needed, such as silt fencing and mulching.
- During implementation, notify NRCS of any planned changes to allow NRCS to verify that the changes meet NRCS enhancement criteria.
- After implementation, control harmful pests and vegetation and in a manner that limits effects to pollinators. Inspect and maintain tubes and protection measures regularly.



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- After implementation, livestock and wildlife may need be controlled or excluded to achieve the buffer's stream shading purpose. If livestock are present, follow a Prescribed Grazing Plan (Code 528) and defer grazing for a minimum of two years. Wildlife may need to be controlled during establishment of vegetative treatments. Temporary and local population control methods should be used with caution and within state and local regulations.

### NRCS will:

- Prior to implementation, provide and explain NRCS Conservation Practice Standard Riparian Forest Buffer (Code 391) to show how it relates to this enhancement.
- Prior to implementation, verify no plants on the Federal or state noxious weeds list are included in the planting list.
- Prior to implementation, NRCS will provide technical assistance on:
  - Site preparation and planting plan that meets NRCS Conservation Practice Standard Riparian Forest Buffer (Code 391) and lists the species, vegetation type, density, protection measures, and planting dates.
  - Selecting planting techniques and timing appropriate for the site and soil conditions.
  - The potential for denser species plantings and focus in areas that will provide the most shade to the stream throughout the day.
  - Preparing specifications for applying this enhancement for each site using approved state implementation requirements, national technical notes, appropriate state technical notes, and narrative statements in the conservation plan, or other acceptable documentation.
- During implementation, review any planned changes to ensure they meet the enhancement criteria.
- During implementation, verify all erosion control needed for the site is functioning and is maintained to specifications provided to the participant.



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- After implementation, verify the vegetation was established and any protections required are being maintained according to specifications provided to the participant.
- After implementation verify livestock are controlled or excluded as necessary to achieve the buffer’s goal of greater stream shading. If livestock are present, verify a Prescribed Grazing Plan (Code 528) is being followed and grazing is being deferred for a minimum of two years.

### **NRCS Documentation Review:**

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name \_\_\_\_\_ Contract Number \_\_\_\_\_

Total Amount Applied \_\_\_\_\_ Fiscal Year Completed \_\_\_\_\_

\_\_\_\_\_  
NRCS Technical Adequacy Signature

\_\_\_\_\_  
Date

### **References**

Carsey, K., G. Kittel, K. Decker, D. J. Cooper, and D. Culver. 2003. *Field Guide to the Wetland and Riparian Plant Associations of Colorado*. Colorado Natural Heritage Program, Fort Collins, CO. Online at: <http://www.cnhp.colostate.edu/cwic/ident/plantAssociations.asp>

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