



CONSERVATION ENHANCEMENT ACTIVITY
E395137X - Colorado

CONSERVATION
STEWARDSHIP
PROGRAM

Stream habitat improvement through placement of woody biomass

Conservation Practice 395: Stream Habitat Improvement & Management

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

RESOURCE CONCERN ADDRESSED: Fish & Wildlife

Inadequate PRACTICE LIFESPAN: 5 years

Enhancement Description

Flexible placement of wood (unanchored/unpinned) in small, 1st and 2nd order streams to improve stream habitat conditions for aquatic species and natural stream processes.

Criteria

- Provide a heterogeneous and complex physical habitat consistent with the physiographic setting and important to fish and other aquatic species in the watershed.
- Apply to 1st- and 2nd-order streams, typically less than 15 feet wide, that are lacking in woody biomass. The stream should not be actively incising or down cutting.

Stream Orders. A stream of the first order is a stream which does not have any other intermittent or perennial stream feeding into it. When two first-order streams come together, they form a second-order stream. If the stream is not of first or second order, this enhancement does not apply. Figure 1.

Woody Biomass. To determine if a stream is lacking woody biomass, first review the landscape to determine if the area naturally supports or should support woody vegetation (such as willows, alders, cottonwoods). To learn more, visit the Field Guide to the Wetland/Riparian Plant Associations of Colorado (CNHP, 2003) at:

http://www.cnhp.colostate.edu/download/documents/2003/wetland_field_guide_2003.pdf.

If the site would not naturally support woody vegetation this enhancement does not apply.

Figure 1—Stream Orders



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Woody Biomass (cont.)

Next, determine if the stream is lacking woody biomass. Review the stream segment from bend to bend:

Are there more than ten fallen trees or parts of trees (large branches or root balls) that are submerged in the water and large enough to remain in-place reach during normal flows?

If yes, this enhancement does not apply, there is adequate woody biomass.

Actively Incising/Down cutting. Channels are naturally dynamic (in a continual state of change) but when there is a dramatic drop in streambed elevation (II. incision) or the stream banks are eroding at a rapid rate (III. down cutting/widening) it's considered to be in a degraded state. This enhancement can only safely be used if the stream is in a healthy state, or it may result in further stream degradation. Figure 2.

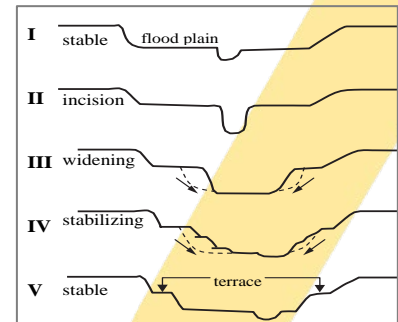


Figure 2 - Channel Evolution Model. Schumm, Harvey and Watson, 1984

- Develop a written plan detailing the actions, including a map indicating the action locations, for the stream segment(s) being impacted.
- Obtain all necessary Clean Water Act, Section 404 permits, and other federal, state or local permits, as required.
- If present, implement upstream of beaver flowages or wetlands which will collect wood moving downstream.
- Select stream segments where ample canopy cover exists and cut trees will not greatly reduce shading. Refrain from cutting trees on the stream bank, which are creating undercut banks or adding to the stability of the system. Trees or tree parts will only be harvested away from the streambank, unless in their currently location they are causing adverse effects.
- Leave felled logs on floodplains to increase roughness elements that will reduce the effects of flooding and create wildlife habitat; where felled logs will not pose a floating debris hazard in the event of a flood (watch for downstream bridges, water diversions, structures, etc.).
- Develop areas called “strainers” where a few large trees can be felled across the stream on the downstream end of the treatment area to collect any wood which may dislodge during high flows.

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- Cut trees a few feet from the ground leaving a higher than normal stump on the downstream side to help secure recently cut trees.
- Where possible, utilize trees with full intact rootwads to create complex habitat.
- Design the expanded buffer enhancement for an expected life of at least 5 years.

Additional Documentation

Design Guidance for Adding Woody Biomass

Large wood (logs, root wads, large branches) are harvested on-site or nearby where it won't cause a detriment by being harvested. The wood is placed strategically at discrete locations within the stream channel and/or along streambanks. Placement may include single log placements or as 'engineered' log jams. Although some degree of adjustment or even relocation may be allowed, large wood placements are expected to remain relatively stable within the channel and to provide benefits to natural channel processes and aquatic habitat within their zone of influence. Refer to the 395 Practice Standard and Specifications for criteria and further details.



Figure 3 - Habitat complexity provided by adding a rootwad.



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Documentation and Implementation Requirements

Participant will:

- Prior to implementation, develop a written plan detailing proposed actions, including a map indicating the action locations for the stream segment(s) being impacted, using Conservation Practice Standard Stream Habitat Improvement and Management (Code 395). (NRCS will provide technical assistance, as needed.)
- Prior to implementation, obtain all necessary Clean Water Act, Section 404 permits, and other federal, state or local permits, as required.
- Prior to implementation, document pre-treatment conditions of the area including the use of representative digital images/photos.
- During implementation, place wood using appropriate methods to provide complex and diverse stream habitat as per the plan and specifications.
- During implementation, notify NRCS of any planned changes to verify the planned system meets the enhancement criteria.
- After implementation, document post-treatment conditions of the area including the use of representative digital images/photos.
- After implementation, conduct periodic inspections and prompt repair or modification of any structures that are found to cause excessive streambank or streambed instability.

NRCS will:

- As needed, provide technical assistance to meet the criteria of the enhancement, including NRCS engineering oversight where required.
- Prior to implementation, provide and explain NRCS Conservation Practice Standard Stream Habitat Improvement and Management (Code 395) as it relates to implementing this enhancement.
- Prior to implementation, ensure that the planned habitat enhancement is consistent with the physiographic setting and to fish and other aquatic species in the watershed. Use the NRCS Stream Visual Assessment Protocol, Version 2 or comparable evaluation



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tool to ensure that the planned activities will meet or exceed the minimum planning criteria for stream habitat in Section II of the FOTG.

- Prior to implementation, ensure that all necessary Clean Water Act, Section 404, and other federal, state, or local permits have been acquired and cover the planned work.
- Prior to implementation, prepare specifications for applying this enhancement using Code 395, approved state implementation requirements, national technical notes, state technical notes, and other appropriate guidance.
- During implementation, evaluate any planned changes to verify they meet the enhancement criteria.
- During implementation, verify all erosion control needed for the site is functioning and is maintained to specifications developed for the site.
- After implementation, verify that the stream enhancement was established to specifications developed for the site. Use pre- and post-treatment images/photos of the area as part of this verification.

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

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