

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

CHANNEL BANK VEGETATION

(Ac.)

CODE 322

DEFINITION

Establishing and maintaining vegetative cover on channel banks, berms, spoil, and associated areas.

PURPOSE

- Stabilize channel banks and adjacent areas and reduce erosion and sedimentation.
- Maintain or enhance the quality of the environment, including visual aspects and fish and wildlife habitat.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to establishing vegetation on channel banks, berms, spoil, and associated areas. This practice does not apply to grassed waterways, diversions, areas with protective linings, areas covered with water for an extended period of time, or areas where conditions will not support adequate vegetation.

CRITERIA

General Criteria Applicable to All Purposes

Plan and apply Streambank and Shoreline Protection (code 580) when stabilization of the Toe and/or Bank Hydrologic Zones is required before channel vegetation establishment.

Clear planting areas of unwanted materials and smooth or shape, if needed, to meet planting and landscaping purposes.

Shape channel side slopes so they are stable and allow establishment and maintenance of desired vegetation.

Stockpile topsoil before modifying slopes for seeding, and then spread over planting areas as needed to meet planting and landscaping needs.

Channel banks used for public access (fishing, swimming and related activities) will have side slopes no steeper than a ratio of four horizontal to one vertical (4:1).

Bank Stabilization Techniques

Plan a combination of vegetative and structural measures for slopes steeper than 3:1 to insure that they are stable.

Species Selection

Refer to Colorado Plant Materials Technical Note 59 for site-specific recommendations.

Plant materials selected for the site shall:

- Typically occur in the hydrologic zone where they will be planted - See Figure 1 for hydrologic zone locations and descriptions
- Be adapted, tested and proven cultivars for the local MLRA
- Produce plant communities that are compatible with adjacent plant communities
- Be resistant to diseases or insects common to the site or location
- Protect the channel banks and help maintain channel capacity.

Use certified seed if available, for all seeded species.

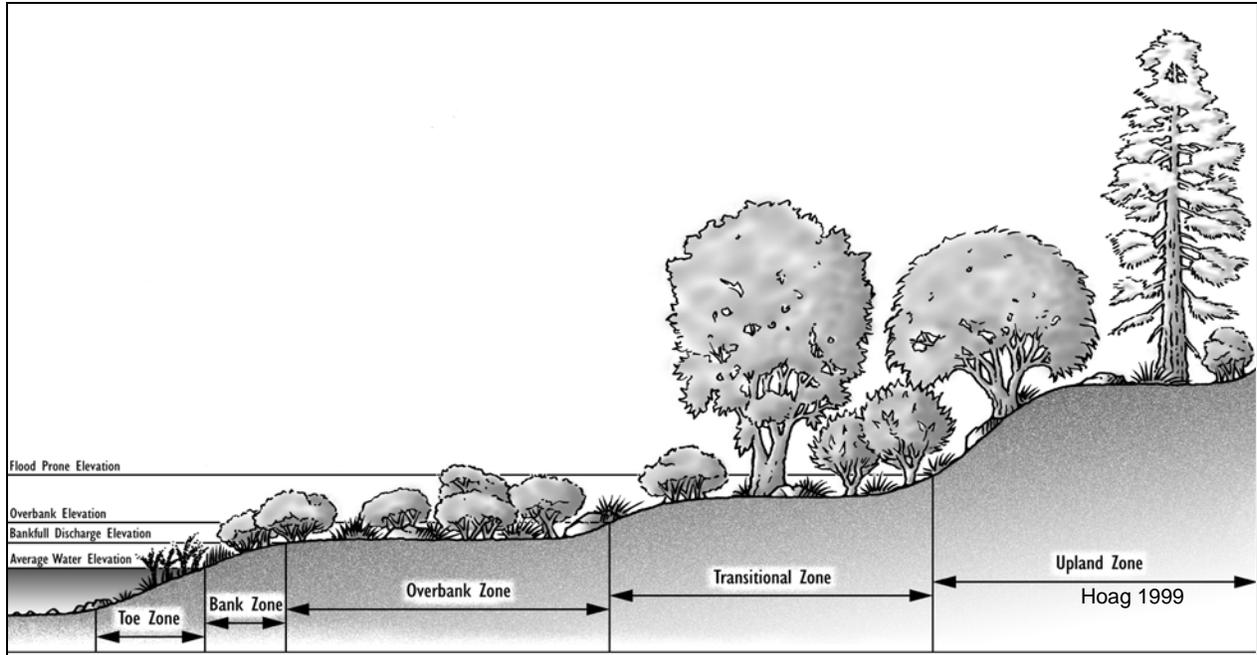


Figure 1. Location of Hydrologic Zones along a channel

Definitions and descriptions of hydrologic zones used for Channel Bank Vegetation:

Bankfull Discharge Elevation - In natural streams it is the elevation at which water fills the channel without overflowing onto the flood plain

Bank Zone - The area above the Toe Zone located between the average water level and the bankfull discharge elevation - Vegetation may be herbaceous or woody and is characterized by flexible stems and rhizomatous root systems

Overbank Zone - The area located above the bankfull discharge elevation continuing upslope to an elevation equal to two thirds of the flood prone depth - Vegetation is generally small to medium shrub species

Toe Zone - The portion of the bank that is between the average water level and the bottom of the channel at the toe of the bank - Vegetation is generally herbaceous emergent aquatic species, tolerant of long periods of inundation

Transitional Zone - The area located between the overbank zone and the flood prone width elevation - Vegetation is usually larger shrub and tree species

Upland Zone - The area above the Transitional Zone that is seldom if ever saturated

Note: some channels have fewer than four hydrologic zones because of differences in soils, topography, entrenchment and/or moisture regime.

Establishment of Vegetation

The species used, planting rates, spacing, and methods and dates of planting shall be based on plant materials program trials or other technical guidance, such as local planting guides or technical notes.

Identify, mark and protect desirable existing vegetation during practice installation.

Biotechnical slope stabilization practices (a combination of vegetative and structural measures using living and inert materials) are to be used when flow velocities, soils, and bank stability preclude stabilization by vegetative establishment alone.

The existing vegetation will be cleared in a three-foot diameter around each site where container, balled, potted, plug, paper sleeve and bare root stock plantings are planted.

Prepare a suitable seedbed for all seeded species. Rip compacted layers and re-firm the soil prior to seedbed preparation.

Plant seeds using the method or methods best suited to site and soil conditions.

Limit sod placement to areas that can naturally supply needed moisture, or sites where irrigation is available during the establishment year.

Install and anchor sod using appropriate techniques to insure that it remains in place during the establishment period.

Mulch all disturbed areas as necessary. Apply and anchor mulch according to the criteria in practice standard 484, Mulching.

Fertilization

Apply fertilizer and soil amendments in accordance with soil analysis and plant requirements according to the criteria in practice standard 590, Nutrient Management.

Site Protection and Access Control

Control grazing animal access to planted areas for a minimum of two growing seasons during the establishment period.

Plan and apply practice standard 528, Prescribed Grazing, for all grazed areas.

Permanently exclude grazing on high hazard sites such as cut banks, areas of seepage and other potentially unstable areas.

Install tree guards around landscaped areas as needed to protect against animal damage.

CONSIDERATIONS

Minimize disturbance to stable overhanging banks that can provide shade and cover for fish.

Channel stabilization and streambank protection practices may help facilitate establishment of channel vegetation.

A riparian functional assessment of live streams can help determine channel condition.

For constructed channels, the size of vegetation at maturity can restrict the capacity of the channel or conflict with surrounding uses.

Vegetative practices can provide effective stability and cover, and allow indigenous vegetation to volunteer on the site.

Filter strips, riparian forest buffers and conservation cover practices applied in conjunction with channel vegetation can improve water quality and enhance wildlife habitat.

Installation of upland wind and water erosion reduction practices can help protect channel vegetation from upland sediment deposits.

Channel bank vegetation can affect water budget components, especially runoff volumes and peak flows.

Sediment barriers, erosion control fabric and biodegradable mulches can minimize sedimentation impacts from practice installation.

Woody vegetation can affect stream temperatures and invertebrate populations.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for each site or treatment unit according to the Criteria and Operation and Maintenance sections of this standard. Specifications shall describe the requirements for applying this practice to meet the intended purpose.

Identify site conditions, required permits, and include design drawings showing location of planned measures, cut and fill cross sections, requirements for site preparation, location of planned species, planting dates, planting methods, plant spacing, planting depth, mulching, fertilizer and irrigation requirements.

Plan and implement a management strategy to protect the site prior to the installation of Channel Bank Vegetation improvements.

Complete specifications for each hydrologic zone located within the channel.

Record practice specifications on specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

Maintenance for this practice includes the following:

- Manage vegetative growth by mowing, prescribed grazing, applying approved pesticides, fertilizer, or other means, as applicable, to maintain the desired cover. Vegetation removal is restricted to periods having the least impacts on nesting wildlife. Allow adequate time for re-growth for all species, in order to provide winter cover for wildlife.
- Repair appurtenances and fences as needed.

REFERENCES

- Bentrup, G., and J.C. Hoag. 1998. The Practical Streambank Bioengineering Guide - User's Guide for Natural Streambank Stabilization Techniques in the Arid and Semi-arid Great Basin and Intermountain West. Interagency Riparian/Wetland Plant Development Project. USDA-NRCS, Aberdeen, ID. <http://plant-materials.nrcs.usda.gov/idpmc/streambank.html>
- FISRWG. 1998. Stream Corridor Restoration: Principles, Processes, and Practices. Federal Interagency Stream Restoration Working Group (FISRWG). http://www.nrcs.usda.gov/technical/stream_restoration/
- Hoag, J.C. 1999. Riparian Planting Zones. View from a Wetland, No. 5. (1998-1999) Interagency Riparian/Wetland Project, Plant Materials Center, USDA-NRCS, Aberdeen, ID. <http://plant-materials.nrcs.usda.gov/pubs/idpmcarwproj16.pdf>