

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

CLEARING AND SNAGGING

(Ft.)

CODE 326

DEFINITION

Removal of vegetation along the bank (clearing) and selective removal of snags, drifts, or other obstructions (snagging) from natural or improved channels and streams.

PURPOSE

Reduce risks to agricultural resources or civil infrastructure by removing obstructions that hinder channel flow or sediment transport to—

- Restore flow capacity and direction.
- Prevent excessive bank erosion by eddies or redirection of flow.
- Reduce the undesirable formation of bars.
- Minimize blockages by debris and ice.

CONDITIONS WHERE PRACTICE APPLIES

Any natural or improved channel where the removal of vegetation, trees, brush, and other obstructions is needed to accomplish one or more of the listed purposes.

CRITERIA

Clearing and snagging measures shall be planned, designed and constructed to comply with all Federal, State, and local laws and regulations.

Notify landowner and/or contractor of responsibility to locate all buried utilities in the project area, including drainage tile and other structural measures. The landowner is also required to obtain all necessary permits for project installation prior to construction.

Clearing and snagging shall not be completed on any channel where significant channel erosion will occur, major impairment to the

landscape resource quality is likely, or significant impairment to habitat for fish and wildlife will occur, unless needed restoration actions are included with the application of this practice. The design shall address all modified flow conditions caused by clearing and snagging.

Capacity. Determine the capacity of the channel, both before and after modification, using National Engineering Handbook (NEH) Part 654, Stream Restoration Design, Chapter 6, Stream Hydraulics. Select a value of Manning's "n" roughness coefficient to determine channel capacity after modification that reflects the degree of natural changes and maintenance expected to occur in future years.

Location. Include the perimeter and flow area of the channel in the area to be cleared and snagged. Trees on the bank that are leaning over or other objects that may fall into the channel may be included. If root balls are still attached to the streambank, cut off the log 6 to 12 inches above the ground and leave the stump and root mass for bank stability.

Clearing and snagging may also be used for other areas, such as temporary disposal areas or travel ways, required for implementation of this practice.

Stability. Clearing and snagging activities may affect channel stability. The effect on downstream and upstream reaches due to the removal of obstructions must be analyzed using appropriate stream and channel geomorphologic procedures. Avoid or mitigate activities that negatively affect stability.

If clearing and snagging will result in streambank erosion, criteria within Alabama Conservation Practice Standard (580), Streambank and Shoreline Protection will be used in conjunction with this standard.

Debris Disposal. Remove cleared and snagged material from the floodplain or deposit in areas or in a manner that will not significantly affect the flow capacity of the floodplain. Designate locations to dispose of any garbage encountered during clearing and snagging operations; such as construction materials, metal, rubber, glass, and plastic.

Vegetation. Restore all areas denuded and/or disturbed during clearing and snag removal by planting vegetation, unless the disturbance is minimal and conditions are highly conducive for natural regeneration of vegetation. Use native vegetation where practical. Vegetation established as part of this practice should include ecologically suitable species obtained from local sources wherever practical.

Minimize disturbance of wetlands, riparian areas, and fish and wildlife habitat sites and avoid disturbance where possible.

The establishment of vegetation on cleared and snagged areas will be in accordance with the criteria contained within Alabama Conservation Practice Standard (CPS) Critical Area Planting (Code 342).

CONSIDERATIONS

Ground-disturbing activities associated with this practice, including but not limited to areas of equipment/vehicle traffic in the channel and floodway and areas of vegetation removal, have the potential to adversely affect cultural resources.

Debris in stream systems affects the physical characteristics of the stream as well as the diversity and abundance of its aquatic organisms. Fisheries and/or aquatic biologists can assist in evaluating and incorporating measures to improve aquatic and riparian-wetland habitat:

Incorporate enhancements for fish and wildlife values as needed and practical. Special attention should be given to landscape aesthetics and to protecting and maintaining key shade, food, and den trees. Use Alabama CPS Stream Habitat Improvement and Management (Code 395).

Retain or replace habitat-forming elements that provide cover, food, pools, and water turbulence, to the extent possible.

Root balls of fallen trees that are securely anchored in the channel or naturally formed logjams may provide fish habitat and/or stability. The effects of these items must be included in the channel capacity hydraulic analysis. Existing root structure and stumps firmly within the soil should remain to help stabilize the soil and facilitate re-sprouting of woody vegetation.

Incorporate existing onsite woody debris into the design to help stabilize banks, modify channel flow, provide anchorage and food for invertebrates, and provide habitat and cover for fish. Note that woody debris should be securely fastened as dislodged woody debris may be a risk to downstream structures such as bridges, dams, or other civil works. Use NEH Part 654, Stream Restoration Design Technical Supplement 14E, for determining the forces acting on woody debris, and the necessary anchoring.

Erosion rates decline as a percentage of vegetative roots in a streambank increases. Selection of appropriate riparian vegetation will increase the streambank's ability to resist future erosion.

Clearing and snagging activity may re-suspend sediments in the flow. Consider treatments that promote beneficial sediment deposition and the filtering of sediment and dissolved substances.

During construction, woody materials may float downstream and cause additional snags and drifts. Incorporate measures and practices, as needed and practical to address this concern.

Schedule in-stream work to avoid environmentally sensitive periods such as spawning and migration to the fullest extent possible.

Incorporate measures and practices, as needed and practical, to address modified flow conditions such as—

- A lowered hydraulic gradient which may drain adjacent flood plains more quickly.
- Decreased groundwater recharge in water-losing streams resulting from reduced residence time in the channel and adjacent floodplains.

Ground-disturbing activities associated with this practice have the potential to adversely affect protected plant species and may

encourage the establishment of exotic and/or nonnative species. Quickly revegetating disturbed areas can minimize the introduction of nonnative species.

Temporary erosion control and sediment control best management practices can be used to minimize the delivery of fine sediment to adjacent and downstream reaches.

Incorporate construction methods that enhance fish and wildlife values as needed and practical to include—

- The use of hand-operated equipment, water-based equipment, or small equipment to minimize soil, water, and other resource disturbances.
- The operation of heavy machinery from atop adjacent streambanks to the fullest extent possible.
- Limiting machinery access to riparian areas to minimize damage to stream habitat after the material has been removed from streambank locations.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for clearing and snagging that describe the requirements for applying the practice to achieve its intended purpose(s).

Construction operations shall be carried out in a manner and sequence so that impacts on the environment will be minimized and held within acceptable limits.

As a minimum, include, as applicable, the following items in the plans and specifications:

- Map of overall area including limits of clearing and snagging required.
- Location of ingress and egress to the site.
- Description of works of improvement, extent of removal, and manner of disposal.
- Location of disposal areas or location of areas off limits for disposal of debris.
- Requirements for disposal area to address final dressing, stabilization, drainage, and vegetation.

- Location and description of trees or woody vegetation to be left undisturbed.
- Method of debris disposal.
- Manner and sequence of construction operations so that impacts on the environment will be minimized.
- Erosion control measures, as applicable.
- Vegetative requirements for areas denuded and disturbed, as applicable.

Carry out all operations in a safe and skillful manner. Observe all safety and health regulations and use appropriate safety measures.

OPERATION AND MAINTENANCE

Provide an operation and maintenance plan to the landowner/user to maintain channel capacity and vegetative cover. Items to include are—

- Assess the area after each major storm event for downed trees and debris accumulation. Remove or relocate and anchor downed trees and debris accumulations that are causing bank erosion problems as soon as possible.
- Periodically inspect the area for signs of streambank undermining or instability. Remove any debris accumulations that may contribute to the instability and closely monitor the area.
- Clear any vegetation and/or debris that block side drainage structures and channels.

REFERENCES

USDA-NRCS. 2007. National Engineering Handbook, Part 654, Stream Restoration Design. Washington, D.C.

USDA-NRCS. 2009. National Biology Handbook, Part 614, Stream Visual Assessment Protocol Version 2. Washington, D.C.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the latest version of this standard, contact your Natural Resources Conservation Service [State Office](#), or visit the [Field Office Technical Guide](#).