

# STREAM DEBRIS REMOVAL

## DEFINITION/PURPOSE

- Stream Debris Removal is a Best Management Practice for removal of vegetation along the bank (clearing) and/or selective removal of snags, drifts, or other obstructions (snagging) from natural or improved channels and streams.
- This practice may be implemented to:
  - Reduce risks to agricultural resources by removing obstructions that hinder channel flow or sediment transport
  - Reduce excessive bank erosion by eddies or redirection of flow caused by obstructions.
  - Restore flow capacity and direction
  - Minimize blockages by debris
- To be eligible for cost share through the NC ACSP, Stream Debris Removal must result in documentable water quality improvements from reduced stream bank erosion on or adjacent to agricultural land.

## POLICIES

1. Stream Debris Removal may only be used to remove obstructions that are negatively impacting agricultural land.
2. The technical representative must work with the appropriate permitting agencies to determine if the stream debris removal activities will require permits. If no permits are required, documentation of concurrence from permitting agencies is required.
3. The landowner is required to obtain all necessary permits for project installation prior to construction.
4. Consult NC Wildlife Resources Commission to insure in-stream work will avoid environmentally sensitive periods, such as spawning and migration, in designated water bodies.
5. Notify landowner and/or contractor of responsibility to locate all buried utilities in the project area, including drainage tile and other structural measures.
6. Remove cleared and snagged material from the floodplain. Deposit in areas or in a manner so that the debris will not re-enter the stream and will not significantly affect the flow capacity of the floodplain. Debris may be disposed of through hauling, burning, chipping or other means consistent with the intent of the practice.
7. Designate locations to dispose of any garbage encountered during debris removal operations; such as construction materials, metal, rubber, glass, and plastic.
8. Trees on the bank that are leaning over the channel at an angle greater than 30 degrees of vertical and pose a threat of falling in the channel, or other objects that may fall into the channel may be included. Leave root system intact by cutting the tree at the stump.

9. Restore all areas denuded and/or disturbed during debris removal by planting vegetation.
10. Minimize disturbance of riparian areas, and fish and wildlife habitat sites and avoid disturbance where possible.

#### **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).
- As a minimum, include, as applicable, the following items in the plans and specifications:
  - Map of overall area including limits of stream debris removal 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.
  - Vegetative requirements for areas denuded and disturbed.
- 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.

<b>STREAM DEBRIS REMOVAL</b>	
<b>Maintenance Period</b>	1 year
<b>BMP Units</b>	LIN FT
<b>Required Effects</b>	SOIL_SAVED (Estimate amount of streambank/shoreline erosion in tons/yr.)
<b>JAA</b>	ENG – 326 – Clearing and Snagging
<b>Supporting Practices</b>	ECS – 342 – Critical Area Planting ENG – 580 – Streambank and Shoreline Protection
<b>CS2 Reference Materials</b>	NC-ACSP-11 Signature Page Map with BMP location, fields, and roads
<b>Cost Information</b>	ACTUAL costs with receipts not to exceed \$15,000 (75%) OR \$18,000 (90%) maximum cost share amount

#### **ADDITIONAL CONSIDERATIONS**

**The following items are included as considerations and are not required unless otherwise specified. The considerations listed below may not qualify for additional state cost share funds.**

- 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 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 and other embedded and affixed debris that are securely anchored in the channel or naturally formed logjams may provide fish habitat and/or stability and should be retained if practical.
- Existing root structure and stumps firmly within the soil should remain to help stabilize the soil and facilitate re-sprouting of woody vegetation.

- 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.
- Stream Debris Removal activity may resuspend 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.
- 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 and sediment best management practices should 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—
  - Use hand-operated equipment, water-based equipment, or small equipment to minimize soil, water, and other resource disturbances.
  - Operate heavy machinery from atop adjacent streambanks to the fullest extent possible.
  - After the material has been removed from streambank locations, limit machinery access to riparian areas to minimize damage to stream habitat.