

USDA
NATURAL RESOURCES
CONSERVATION SERVICE

DELAWARE CONSERVATION
PRACTICE STANDARD

CLEARING AND SNAGGING

CODE 326
(Reported by Ft.)

DEFINITION

Removing snags, drifts, or other obstructions from a channel or drainage way.

PURPOSES

Reducing significant human and/or natural environmental risks by improving physical characteristics of a channel to:

- Restore flow capacity;
- Prevent bank erosion by eddies;
- Reduce the formation of bars; and/or
- Minimize blockages by debris and ice.

**CONDITIONS WHERE PRACTICE
APPLIES**

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

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.

Insure that threatened and endangered species and their habitat shall not be permanently adversely impacted by the use of this practice.

Effects on water quantity and quality should be considered.

Removal of deadfalls, stumps, and trees from streambanks and channels may increase discharge, velocity and channel capacity that could reduce flood damage from out of bank flow.

Improved flow conditions may lower the hydraulic gradient and drain flood plains more quickly. Rapid drawdown may cause sloughing of saturated, unstable streambanks.

Decreased groundwater recharge in water-losing streams may result from reduced residence time of water in the channel.

Temporary losses of aquatic or wetland habitat may occur with the removal of vegetation.

During implementation of the practice, there may be increased turbidity due to an increased sediment load. Water quality may be further degraded by chemical substances (i.e. organic nitrogen or phosphorus) attached to the sediment particles.

During construction, a heavy organic load may be produced resulting in a decreased availability of dissolved oxygen. Long-term effects may cause a decrease in yields of sediment and sediment-attached substances.

Increased surface water temperatures, at low flow, may occur from removal of shade-producing canopy until regrowth occurs. Accelerated flows may reduce the period of time water is exposed for "sun warming," thus reducing water temperature.

In streams carrying dissolved substances, a

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

reduction in groundwater recharge may contribute to improved aquifer quality.

The number of pools and riffles forming the channel bottom may be reduced and fish habitat could be adversely affected.

Measures and construction methods that enhance fish and wildlife values should be incorporated as needed and practical. Special attention should be given to landscape aesthetics, to protecting and maintaining key shade, food, and den trees, and to stabilization of disturbed areas.

Consider removal methods and the disposal location of cleared material that will not be used for bioengineering (removal from site, placement in or out of the floodplain, not placed in wetland areas, etc.), and implement according to permit conditions.

This practice has the potential to affect National Register listed cultural resources or eligible (significant) cultural resources. These may include archeological, historic, or traditional cultural properties. Care should be taken to avoid adverse impacts to these resources. Follow NRCS state policy for considering cultural resources during planning.

CRITERIA

Criteria Applicable to All Purposes

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

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.

Capacity. The capacity of the channel, both before and after improvement, shall be determined using Manning's Formula with applicable values of the retardance factor "n" from Supplement B to the National Engineering Handbook, Section 5 - Hydraulics, or similar source. The value of "n" used to determine

channel capacity after improvement shall reflect the degree of natural changes and maintenance expected to occur in future years.

Location. The area to be cleared and snagged shall include the perimeter of the channel, the flow area of the urban floodway, or both. Trees on the bank that are leaning over or other objects that may fall into the channel shall also 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.

Stability. Clearing and snagging shall only be specified for other areas such as: berms, areas used for temporary disposal sites or travelways, or for other planned conservation uses where needed to implement this practice.

Clearing and snagging shall not impair channel stability. The criteria for determining channel stability shall comply with conservation practice standard (582), Open Channel. The effect on downstream and upstream reaches due to the removal of obstructions shall be analyzed using appropriate stream and channel geomorphologic procedures.

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

Vegetation. All areas denuded and disturbed during snag removal shall be restored by planting native vegetation where practical.

Disturbance of wetlands, riparian areas, and fish and wildlife habitat sites shall be minimized or avoided where possible. Cleared material shall be removed from the floodplain or deposited in approved areas that will not significantly affect the flow capacity of the stream.

SPECIFICATIONS

Plans and specifications for clearing and snagging shall be prepared in accordance with the previously listed criteria. Plans and specifications shall contain sufficient detail to ensure successful implementation of this practice. Documentation shall be in

accordance with the section "Supporting Data and Documentation" in this standard.

OPERATION AND MAINTENANCE

An operation and maintenance (O&M) plan shall be established by the landowner/user to maintain channel capacity and vegetative cover. Items to consider are:

1. Where applicable, control grazing in the construction area during vegetative establishment and when soil conditions are wet.
2. Fertilize as needed to maintain a vigorous vegetative cover.
3. Promptly repair eroded areas.
4. Remove major silt and sediment accumulations in the channel cross-section as soon as practical, when the effects are causing significant bank erosion problems.
5. Re-establish vegetation cover immediately where scour erosion has removed established seeding.
6. Keep inlets to side drainage structures and channels open and armor if necessary.
7. Periodically inspect the area for signs of significant streambank undermining or instability.

SUPPORTING DATA AND DOCUMENTATION

The following is a list of the minimum data and documentation to be recorded in the case file:

1. Location the clearing and snagging on the conservation map.
2. Assistance notes. The notes shall include dates of site visits, name or initials of the person who made the visit, specifics as to alternatives discussed, decisions made, and by whom.

Field Data and Survey Notes

The following is a list of the minimum data needed:

1. Plan view sketch.
2. Boundary of the treated area.
3. Location and description of items to be cleared or snagged.
4. Location and description of the disposal area, as appropriate.
5. Cross-sections and profile of the disposal area and special precautions if needed.

Design Data

Record on appropriate engineering paper. For guidance on the preparation of engineering plans see Chapter 5 of the Engineering Field Handbook - Part 650. The following is a list of the minimum required design data:

1. Determine soil type and any special restrictions.
2. Design the clearing and snagging to meet the criteria of this practice standard.
3. Show the engineering job class on the plans.
4. Plan view sketch, showing location of items to be cleared or snagged, and location of the disposal area, as appropriate.
5. Description of the items to be cleared or snagged.
6. Description of the method of disposal of the items that will be cleared or snagged.
7. Grading plan for the treated area and the disposal area, as appropriate.
8. Estimated Quantities.
9. Planting plan. This must meet the criteria, specifications, and documentation requirements of the conservation practice standard for Critical Area Planting (Code

342). Show on the planting areas on the design.

Construction Check Data/As-Built Plans

Record on survey notepaper, NRCS-ENG-28, or other appropriate engineering paper. Survey data will be plotted in red. The following is a list of minimum data needed for As-built documentation:

1. Check notes recorded during or after completion of construction showing grade and cross-section of the treated area and the disposal area, as appropriate.
2. Calculate acreage.
3. Statement on seeding and fencing, as appropriate.
4. Final quantities and documentation for quantity changes. Materials certifications as appropriate.
5. Sign and date check-notes and plans by someone with appropriate approval authority. Include statement that practice meets or exceeds plans and NRCS practice standards.