Natural Resources Conservation Service
Conservation Practice Standard

FOREST HARVEST TRAILS AND LANDINGS
(Ac.)
CODE 655

DEFINITION

Application of one or more erosion control measures on forest land.

Forest land erosion control includes the use of conservation plants, cultural practices, and erosion control structures on disturbed forest land for the control of sheet and rill erosion, gully formation, and mass soil movement.

PURPOSE

To protect the resource base by reducing erosion and sedimentation and by protecting and improving water quality on forest land disturbed by silvicultural or other activities.

CONDITIONS WHERE PRACTICE APPLIES

Applies to untreated disturbed forest land areas including logging roads, skid roads, and loading areas; buffer or filter strips; slash disposal areas; site preparation; and burned and overgrazed areas.

PLANNING CONSIDERATIONS

Water quantity

- Effects on the water budget, especially on runoff and ground water recharge.
- Effects of the volume of downstream flow on environmental, social and economic values.
- Effects on downstream flows or aquifers that could affect other water uses or users.

Water quality

- Effects on erosion and the movement of sediment and soluble and sediment-attached substances that would be carried by runoff.
- Effects on the movement of dissolved solids to ground water.
- Effects on wetlands or water-related wildlife habitats.
- Effects on visual quality of water resources.

PLANS AND SPECIFICATIONS

An effective harvesting contract, logging supervision, and frequent inspection are the first steps involved in protecting soil and site resources from excessive damage associated with harvesting practices. The contract should require posting a performance bond by the purchase (usually 5 percent of total sale), a site plan with roads and landing flagged and approved by the landowner, notification of logging commencement and pre-entry conference between logger and landowner or the authorize agent(s), specified actions or practices that are not permitted, penalties for non-compliance or termination clauses for breach of contract, and provisions for final inspection and performance bond settlement.

The following clauses are particularly important features of an effective contract to protect soil and site resources:

1. Landowner or authorized agent has authority to suspend logging when wet conditions create ruts deeper than 6 inches on permanent woods roads.

2. Restoration of designated and existing primary roads and stream crossings to original grade and condition including the necessary provisions for drainage.

3. Stream management zones or filter strips will be designated and protected.

4. All logging debris and slash will be removed from perennial streams.

Seeding Disturbed Areas Such as Roads, Skid Trails, and Landings

Site preparation, where needed, may include grading, shaping, and smoothing water bars, ripping and disking for seedbed preparation. The Mississippi Planting Guide, SCS, June 1994, will be used for vegetative specifications.

Leaving Filter Strips Between Disturbed Areas and Streams or OtherSensitive Zones

A woodland filter strip is a buffer of natural vegetation left between a disturbed area and the top bank of a perennial stream. These areas are also called stream management zones (SMZ) and should have only light selective cutting. They are valuable for wildlife habitat diversity and scenic beauty in addition to protecting water quality. Trees should not be felled into any stream. Both sides of all perennial streams should have filter strips designated on the ground with flagging prior to timber harvests and the width determined from the guidelines listed in the chart below.

Soil Survey Erosion Hazard	Recommended Filter Strip Width in Feet % Slope						
	0	10	20	30	40	50	60
Slight	30	55	80	105	130	155	180
Moderate	40	75	100	140	170	200	235
Severe	50	90	130	170	210	250	290

Needed Grazing Control

This may include stocking rates, use seasons, temporary fencing and exclusion, or distribution of grazing to permit cover and regeneration to become established on recently treated areas. Refer to Proper Woodland Grazing (530).

Road and Skid Trail Design and Maintenance

This section applies to temporary access roads and skid trails needed for forest management operations. For permanent roads refer to Access Road (560).

1. Location, gradient, alignment, and width. Where possible, locate roads just below the crest of ridges so gradients can improve drainage. Grades should be kept flatter than 10 percent where possible and roads should follow the contour as much as possible.

   Grades of 15 to 20 percent may occur for short distances (200 to 300 feet). Minimum road width should be 12 to 14 feet and should be widened at intervals of about 300 feet to provide turnouts for vehicles to pass. Where turnouts are used, road width should be increased to a minimum of 20 feet for a distance of 30 feet.

   Minimum widths of 16 feet should be used on all curves and on areas of substantial cut or fill. An adequate filter strip, as described above, should be provided between roads and adjacent streams.

2. Water bars. Water bars should be used on roads for removing surface runoff and routing it safely off the road. Water bar should always be installed on sloping roads and skid trails because of the potential erosion problem. The water bars may be shallow or deep, depending on need. Shallow water bars may be constructed prior to and during logging use. Deep water bars are usually used on roads or skid trails that will be closed to vehicular traffic. Water bars are installed at a 30-degree angle down slope. Care should be taken to ensure adequate drainage at the out-flow of the water bar and an adequate buffer zone to allow filtering of the water. The discharge area should be protected with either stone, grass sod, heavy litter, brush, logs, or anything that will reduce the velocity of the water. Natural litter may be adequate in most cases if the terrain is not to steep.

The following spacings are recommended between water bars:

Road Grade	Approximate Distance Between Water Bars (feet)
1	400
2	250
5	135
10	80
15	60
20	45
30	35
40	30

4. Skid trails and landings. Locate landings on high, dry, level areas so skidding will be uphill which will result in a fan shape distribution of skid trails to dispense runoff rather than concentrating water flow and causing erosion. Include provisions in the logging contract to have contractor construct water bar upon completion of harvesting.

Designing and Maintaining Stream Crossings

Always cross streams at a right angle to the direction of flow. The anticipated water quality needed downstream should be considered in selecting the method of stream crossing.

1. Fords should be avoided where possible and used only where streambed and approaches have solid foundations for traffic, such as limestone or gravel.

2. Pipes or Culverts (Permanent or Temporary Crossings). Size should be adequate for the drainage area involved. Refer to Grade Stabilization Structure (410), Table 2, for pipe sizes up to 3 inches. For drainage areas larger than 50 acres, consult with the area engineer.

3. Bridges should be used for permanent crossings and where sensitive areas downstream require good water quality. Wheel guards, made of poles or rough sawn lumber, should always be installed on the outer edges of the bridge for safety.