

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

CHANNEL VEGETATION

(Ac.)

CODE 322

DEFINITION

Establishing and maintaining adequate plants on channel banks, berms, spoil, and associated areas.

PURPOSE

To stabilize channel banks and adjacent areas and reduce erosion and sedimentation. To maintain or enhance the quality of the environment, including visual aspects and fish and wildlife habitat.

SCOPE

This standard applies to the vegetation of open channels, streams, or ditches. It applies to Floodwater Diversions (400), Floodways (404), Open Channels (582), Stream Channel Stabilization (584), Streambank Protection (580), and Surface Drainage, Main or Lateral (607-B). It does not apply to Diversions (362), Grassed Waterways Or Outlets (412), or Surface Drainage, Field Ditches (607-A).

CONDITIONS WHERE PRACTICE APPLIES

On channel banks, berms, spoil, and associated areas; except grassed waterways, diversions and areas with protective linings, those covered with water for an extended period, or in areas where conditions will not support adequate vegetation.

PLANNING CONSIDERATIONS

Evaluate slopes and soil material, time of year for proper establishment of vegetation, necessity for irrigation, visual aspects, fish and wildlife, fire hazards and special needs when

construction is done from one side. Other considerations include:

1. Protection of channel vegetation from sediment deposits resulting from wind and water erosion;
2. Provisions for safety and protection of human life and property in all aspects of designs, application, and maintenance;
3. Methods by which endangered and threatened plants and nationally recognized natural vegetated areas will be identified and protected;
4. Requirements for overseeding or planting woody or herbaceous vegetation on the unexcavated side when construction is done from one side;
5. Identification of desirable trees and other vegetation and means for their preservation; and
6. Special techniques for establishing and maintaining vegetation near inlets, outlets, or other appurtenances.

CRITERIA

- Side Slopes - Side slopes shall be in accordance with the conservation practice standard for the specified type of channel or spoil area.
- Seedbed Preparation – Seedbed preparation shall consist of the least tillage necessary to break compaction, incorporate lime and fertilizers and allow proper placement of seed, sprigs, or plants. Side slopes or other areas with slopes too steep for tillage operations shall be planted soon after construction before

formation of a crust (typically within 48 hours).

- Fertilizer and Soil Amendments –

All applications of nutrients shall be in accordance with the conservation practice standard for Nutrient Management.

- A. On seedings for short-term cover, a minimum of 50 pounds per acre of nitrogen will be uniformly applied at planting. Lime will not be required for seedings for short-term cover unless a soil test shows the pH to be below 4.5 or unless it is desirable to apply lime for the benefit of a long-term planting which will follow the short-term seeding.
- B. On plantings of grasses, forbs and legumes for long-term cover soil analysis shall be obtained (where feasible) for the typical conditions to provide a basis for fertilizer and lime requirements for the specific site. Where soil sampling is not feasible or practical, lime and fertilizers will be applied at rates which equal those shown below:
 - 1) Agricultural limestone: 1 ½ tons per acre (70 pounds per 1,000 square feet), or equivalent.
 - 2) Fertilizers as one of the following:
 - a. 1,000 pounds per acre (23 pounds per 1,000 square feet) of 10-10-10 fertilizer or the equivalent at planting time, or
 - b. 1,000 pounds of 5-10-10 fertilizer per acre at planting, plus a topdressing of fertilizer at a later date. The topdressing shall include a minimum of 50 pounds per acre (1.1 pounds per 1,000 square feet) of available nitrogen where grasses are to be encouraged, or a minimum of 40 pounds per acre (0.9 pounds per 1,000 square feet) each of P₂O₅ and K₂O

where legumes are to be encouraged.

- Species Selection and Planting –

- A. Plants shall be selected on the basis of species characteristics, site and soil conditions, the time of year the planting is to be made, the needs and desires of the land user, and secondary values including wildlife habitat and aesthetics (see Tables 1 and 2).
- B. Seeding mixtures may include nurse crops of a small grain or a grass (such as browntop millet) for quick cover; however, the rate of the nurse crop in a mixture shall not be greater than 25 percent of the rate when it is seeded alone.
- C. Sufficient space shall be allowed between the channel and plantings of trees and shrubs so as not to interfere with planned maintenance operations. Trees with a height range of more than 30 feet shall not be planted on sideslopes
- D. Seeds of legumes will be inoculated with a strain of nitrogen fixing bacteria appropriate for the legume species immediately prior to planting.
- E. Use of native species for long-term cover is desired. Planting of perennials will not be required provided the following criteria are met:
 - 1) Temporary cover from Table 1 is seeded to stabilize the area.
 - 2) Nutrients are applied in accordance with the criteria of this conservation practice standard and the conservation practice standard for Nutrient Management.
 - 3) An abundance of seed plants of native species are present. (The seed source shall be no more than 40 feet from the critically eroding area or the area to be seeded shall be topdressed with seed laden topsoil).

- 4) Concentrated runoff does not outlet onto or through the area to be vegetated.
 - 5) Slopes are no greater than 8%.
- F. Use of invasive species shall be avoided.
- G. Herbaceous species shall be used to stabilize these sites. On areas where the desired long-term cover is tree/shrub species, those plants may be planted concurrently with the herbaceous species or planted after the site is stabilized with herbaceous cover.
- **Mulching** – Areas subject to excessive erosion shall be mulched in accordance with the conservation practice standard for Mulching.
 - **Construction from One Side**
When construction is done from one side only, the existing vegetation on the opposite stream bank and berm will be preserved to the extent possible. However, the stream bank and berm will usually need some treatment. Woody vegetation should be removed from the wetted perimeter by mowing or cutting, and trees along channel bank edge which appear unstable (leaning severely, root mass exposed, etc.) shall be cut.

SPECIFICATIONS GUIDE

An adequate vegetative cover stabilizes the channel area and provides for temporary or permanent protection or both.

Side slopes. Specify side slopes that permit establishing and maintaining desired vegetation and that have been effective in the past. In urban and recreation areas, flatter side slopes may be required to provide for

public safety and enhancement of visual resources.

Species selection. Specify species that are suited to the soil, climate, and exposure. They must provide a lasting cover to protect the channel area and to maintain the channel design capacity. Use special purpose plantings outside the channel for wildlife, recreation, or visual resources.

Seedbed preparation. Specify seedbed preparation, fill rills and gullies, and remove stones and debris.

Fertilizer and soil amendments. Specify fertilizers and soil amendments, including analyses, rate, method of application, and requirements for top-dressing.

Planting. Specify dates, rates, and methods of seeding sprigging, sodding or planting. (Refer to Tables 1 and 2 for plants, planting rates, and planting dates).

Mulching. Specify types and rates of mulch materials and the methods of anchoring.

Irrigation. Specify irrigation if it is needed for establishing vegetation.

Controlled access. Control access to channels, as needed by fencing or by other means to protect slopes and vegetation from damage.

Maintenance. Provide for:

1. Periodic inspection and evaluation of channel vegetation to determine maintenance needs.
2. Management of vegetation growth, as applicable, by mowing controlled grazing, approved chemicals, or other means to maintain the desired cover.
3. Reseeding or replanting, along with the use of fertilizers and/or soil amendments and irrigation, as needed.
4. Repair of appurtenances and fences.

**PLANNING CONSIDERATIONS FOR
WATER QUANTITY AND QUALITY**

Quantity

1. Potential runoff from bare soil during construction.
2. Effects on the water budget components, especially on volumes and rates of runoff.

Quality

1. Effects of nutrients or pesticides in runoff during establishment of vegetation.
2. Effects of stream bank erosion before vegetative establishment.

Table 1: Plants, Planting Rates, and Planting Dates**Short-Term Cover**

Species	Rates		Resource Area	Planting Dates												Soil Conditions	Remarks	
	Per Acre	Per 1,000 sq. ft.		(Solid lines indicate optimum dates; broken lines acceptable, but more hazardous dates)														
				J	F	M	A	M	J	J	A	S	O	N	D			
<u>Lespedeza Annual</u>																	Well-drained soils.	Quick cover.
(alone)	40 lbs.	0.9 lb.	130 & 136			—												
			133, 137, & 153			—												
(mixtures) ¹	10 lbs.	0.2 lb.	130 & 136			—												
			133, 137, & 153			—												
<u>Millet, Browntop</u>																	Slightly droughty to poorly drained soils.	Quick, dense, fairly low cover.
(alone)	40 lbs.	0.9 lb.	130 & 136				—	—	—	—								
			133, 137, & 153				—	—	—	—								
(mixtures) ¹	10 lbs.	0.2 lb.	130 & 136				—	—	—	—								
			133, 137, & 153				—	—	—	—								
<u>Millet, Japanese</u>																	Best suited to clayey or moist soils.	Quick cover.
(alone)	40 lbs.	0.9 lb.	130 & 136				—	—	—	—								
			133, 137, & 153				—	—	—	—								
(mixtures) ¹	10 lbs.	0.2 lb.	130 & 136				—	—	—	—								
			133, 137, & 153				—	—	—	—								

Table 1: Plants, Planting Rates, and Planting Dates (continued)

Short-Term Cover																	
Species	Rates		Resource Area	Planting Dates (Solid lines indicate optimum dates; broken lines acceptable, but more hazardous dates)												Soil Conditions	Remarks
	Per Acre	Per 1,000 sq. ft.		J	F	M	A	M	J	J	A	S	O	N	D		
Rye (grain)																Especially well adapted to sandy soils.	Quick cover.
(alone)	56 lbs.	1.3lb.	130 & 136	.	.	—	.					.	—	—	.		
			133, 137, & 153	.	.								—	—	.		
(mixtures) ¹	10 lbs.	0.2 lb.	130 & 136	.	.	—	.					.	—	—	.		
			133, 137, & 153	.	.								—	—	.		
Ryegrass																Poorly drained to well drained soils.	Quick cover. Too competitive for use in mixtures.
(alone)	50 lbs.	1.1lb.	130 & 136	.	.	.							—	—	.		
			133, 137, & 153	.	.	.							—	—	.		
Sudan-grass																Moderately well drained to droughty soils.	Quick cover. Not recommended for use in mixtures.
(alone)	60 lbs.	1.4 lb.	130 & 136				.	—	—	.							
			133, 137, & 153				.	—	—	.							
Barley																Require fertile well drained to somewhat poorly drained soils.	
(alone)	190 lbs.	4.4 lb.	130 & 136										.	—			

Table 1: Plants, Planting Rates, and Planting Dates (continued)

Short-Term Cover																				
Species	Rates		Resource Area	Planting Dates (Solid lines indicate optimum dates; broken lines acceptable, but more hazardous dates)												Soil Conditions	Remarks			
	Per Acre	Per 1,000 sq. ft.		J	F	M	A	M	J	J	A	S	O	N	D					
Barley (cont.)			133, 137, & 153																	
Oats																			Require fertile well drained to somewhat poorly drained soils.	
(alone)	130 lbs.	3.0 lb.	130 & 136	.	.															
			133, 137, & 153																	
Wheat																			Require fertile well drained to somewhat poorly drained soils.	
(alone)	180 lbs.	4.1lb.	130, 136, 133, 137, 153	.	.	.														
Long-Term Cover																				
Bahia-grass																			Moderately well drained to droughty soils.	Low growing, sod forming.
(alone)	40 lbs.	0.9 lb.	136, 133, 137, & 153	.	.															
(mixtures) ¹	30 lbs.	0.7 lb.	133, 136, 137, & 153	.	.															
Bermuda-Grass, Hulled																			Moderately well drained to droughty soils. Does best on loamy or clayey soils.	Low growing, sod forming.

Table 1: Plants, Planting Rates, and Planting Dates (continued)

Long-Term Cover																		
Species	Rates		Resource Area	Planting Dates												Soil Conditions	Remarks	
	Per Acre	Per 1,000 sq. ft.		(Solid lines indicate optimum dates; broken lines acceptable, but more hazardous dates)														
				J	F	M	A	M	J	J	A	S	O	N	D			
Bermuda-Grass, Hulled (alone)	8 lbs.	0.2 lb.	130			.	—	—		.								Common bermuda only. May partially winter kill the first year.
			133, 136, 137, & 153			—	—	—		.	.							
(mixtures) ¹	4 lbs.	0.09 lb.	130			.	—	—		.								
			133, 136, 137, & 153			—	—	—		.	.							
Bermuda-Grass, Unhulled																	Moderately well drained to droughty soils. Does best on loamy or clayey soils.	Low growing, sod forming.
(alone)	15 lbs.	0.3 lb.	130		—													Common bermuda only. May partially winter kill the first year.
			133, 136, 137, & 153		—													
(mixtures) ¹	8 lbs.	0.2 lb.	130		—													
			133, 136, 137, & 153		—													
Bermuda-grass, Sprigs																	Moderately well drained to droughty soils.	Hybrid varieties are propagated only by sprigs.

Table 1: Plants, Planting Rates, and Planting Dates (continued)

Long-Term Cover

Species	Rates		Resource Area	Planting Dates (Solid lines indicate optimum dates; broken lines acceptable, but more hazardous dates)												Soil Conditions	Remarks		
	Per Acre	Per 1,000 sq. ft.		J	F	M	A	M	J	J	A	S	O	N	D				
Bermuda-grass, sprigs (cont.) (triple rate if sprigs are broadcast planted)	25 bus.	0.6bu	130		.	.	—	—	—	.									
Carpet-grass, Seed																		Well drained to poorly drained soils: Best suited to sandy and sandy loam soils with moisture near the surface for most of the year.	Low growing and sod forming.
Alone	10 lbs.	0.25 lb	130 & 136		.	—	—	—	.										
Alone	10 lbs.	0.25 lb	133, 137, & 153		.	—	—	—	.										
(Sprigs)	25 bus.	0.6bu	130 & 136			.	—	—	.	.	.								
			133, 137, & 153			.	—	—	.	.									
Fescue, Tall																		Not suited on droughty or very wet sites.	
Alone	40 lbs.	0.9 lb	130																
			133, 136, 137, & 153		.	.				.	—	—	.	.					
(mixtures) ¹	20 lbs.	0.5 lb	130																

Table 1: Plants, Planting Rates, and Planting Dates (continued)

Long-Term Cover

<u>Species</u>	<u>Rates</u>		<u>Resource Area</u>	<u>Planting Dates</u> (Solid lines indicate optimum dates; broken lines acceptable, but more hazardous dates)												<u>Soil Conditions</u>	<u>Remarks</u>	
	Per Acre	Per 1,000 sq. ft.		J	F	M	A	M	J	J	A	S	O	N	D			
Fescue, Tall (mixtures) ¹ (cont.)			133, 136, 137 & 153	.	.								—	—	.	.		
Indian-grass (mixtures) ¹ only ²	5 lbs.	0.12 lb	All	.	—	—	—	.										Good nesting species for quail.
Lespedeza Sericea Scarified seed (mixtures) ¹	40 lbs.	0.9 lb	130			.	—	—	—	.								Nesting for quail.
			133, 136, 137 & 153				—	—	—	.								
Unscarified seed (mixtures) ¹	60 lbs	1.4 lb	130	—	—	—	—	.	.	.	.	.	—	—	—	—
			133, 136 137 & 153	—	—	—	—	.	.	.	.	.	—	—	—	—
Little bluestem (mixtures) ¹ only ²	5 lbs.	0.12 lb	All	.	—	—	—	.										Nesting and brood rearing vegetation for quail.
Switch-grass (alone) ²	10 lbs.	0.34	All	.	—	—	—	.										
(mixtures) ¹ only ²	5 lbs.	0.12 lb	All	.	—	—	—	.										

Table 1: Plants, Planting Rates, and Planting Dates (continued)

Long-Term Cover																	
Species	Rates		Resource Area	Planting Dates (Solid lines indicate optimum dates; broken lines acceptable, but more hazardous dates)												Soil Conditions	Remarks
	Per Acre	Per 1,000 sq. ft.		J	F	M	A	M	J	J	A	S	O	N	D		
Virginia or Canadian Wildrye (mixtures) ¹ only ¹	10 lbs.	0.34lb	All		.	.							—	—	.		
River Oats (mixtures) ¹ only ¹	10 lbs.	0.34lb	All		.	.							—	—	.		

¹ Included in mixtures with other species providing long-term cover.

² PLS = Pure Live Seed

Table 2: Trees and Shrubs for Aesthetic and Wildlife Values

Species	Height Range (Ft.)	Spacing (Ft.)	Site Adaptation	Food for Wildlife
Amur Honeysuckle	8 - 15	As desired, but not less than 3 feet.	Does best on well-drained soils.	Yes
American Beautyberry	3 - 6	As desired but not less than 3 feet	Moderately well drained to well-drained soils; sun to partial sun.	Yes
Autumn Olive	8 -18	As desired but not less than 3 feet	Moderately well drained to well-drained soils; sun to partial sun.	Yes
Wild Cherry	5 – 25 depending on species	As desired but not less than 5 feet	Moderately well drained to well-drained soils; sun to partial sun.	Yes
Elderberry	5 - 10	As desired but not less than 4 feet	Moderately well drained to well-drained soils; sun to partial sun.	Yes

Table 2: Trees and Shrubs for Aesthetic and Wildlife Values (continued)

<u>Species</u>	<u>Height Range (Ft.)</u>	<u>Spacing (Ft.)</u>	<u>Site Adaptation</u>	<u>Food for Wildlife</u>
Flowering Dogwood	10 - 20	5 feet	Moist to well drained soils; sun to shade.	Yes
Holly	5 - 40	4 – 10 Depending on species	Moderately well drained to well-drained soils; sun to partial sun.	Yes
Pyracantha	6 - 12	As desired but not less than 5 feet	Moderately well drained to well-drained soils; sun to partial sun.	Yes
Sawtooth Oak	20 - 50	25	Well-drained soils, but tolerates intermittent flooding in dormant season.	Yes
Crepe Myrtle	6 - 10	5	Well-drained to moderately well-drained.	
Shrub lespedeza (Bicolor or Thunbergii	6 -15	As desired, but not less than 3 feet.	Do best on well drained to somewhat poorly drained soils.	Yes
Waxleaf Ligustrum	10 - 20	5	Well-drained to somewhat poorly drained.	
Redbud	10 - 20	8	Well-drained to poorly drained.	
Eastern Red Cedar	15 - 25	8	Well-drained to poorly drained.	Yes
Cottonwood	15 - 25	25	Well-drained bottomlands.	
Loblolly Pine	20 - 75	25	Well drained to poorly drained soils.	
Red Maple	20 - 50	25	Well drained to somewhat poorly drained soils.	
Sweet Gum	20-75	25	Does best on rich bottomland.	
Sycamore	20-75	25	Well drained to poorly drained soils.	
Willow Oak	20 - 50	25	Well drained to poorly drained bottomland soils.	Yes
Water Oak	20 - 50	25	Well drained to somewhat poorly drained soils.	Yes
White Oak	20 - 50	25		

Table 2: Trees and Shrubs for Aesthetic and Wildlife Values (continued)

<u>Species</u>	<u>Height Range (Ft.)</u>	<u>Spacing (Ft.)</u>	<u>Site Adaptation</u>	<u>Food for Wildlife</u>
Honey Locust	20 - 40	20	Somewhat poorly drained to well-drained soils.	
Yellow Poplar	20 -75	25	Well drained to somewhat poorly drained soils.	