NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

CRITICAL AREA PLANTING

(Ac.)

CODE 342

DEFINITION

Establishing permanent vegetation on sites that have or are expected to have high erosion rates, and on sites that have physical, chemical or biological conditions that prevent the establishment of vegetation with normal practices.

PURPOSE

- Stabilize areas with existing or expected high rates of soil erosion by water.
- Stabilize areas with existing or expected high rates of soil erosion by wind.
- Restore degraded sites that cannot be stabilized through normal methods.

CONDITIONS WHERE PRACTICE APPLIES

On areas with existing or expected high rates of erosion or degraded sites that usually cannot be stabilized by ordinary conservation treatment and/or management, and if left untreated, could be severely damaged by erosion or sedimentation or could cause significant off-site damage. Examples are dams, dikes, surfaced mined areas, and denuded or gullied areas. This practice also applies to vegetative grassed waterways.

CRITERIA

General Criteria Applicable To All Purposes

Species selected for seeding or planting shall be suited to current site conditions and intended uses. Selected species will have the capacity to achieve adequate density and vigor within an appropriate time frame to stabilize the site sufficiently to permit suited uses with ordinary management activities.

Species, rates of seeding or planting, minimum quality of planting stock, such as PLS or stem caliper, and method of establishment shall be specified before application. Only viable, high quality seed or planting stock will be used.

Site preparation and seeding or planting shall be done at a time and in a manner that best ensures survival and growth of the selected species. What constitutes successful establishment, e.g. minimum percent ground/canopy cover, percent survival, stand density, etc. shall be specified before application.

Fertilization, mulching, or other facilitating practices for plant growth shall be timed and applied to accelerate establishment of selected species.

Livestock shall be excluded and vehicular traffic will be curtailed until vegetation is well established.

Comply with all applicable federal, state, and local laws, rules, and regulations.

Additional Criteria To Restore Degraded Sites

If gullies or deep rills are present, they will be treated, if feasible, to allow equipment operation and ensure proper site and seedbed preparation.

Soil amendments will be added as necessary to minimize or eliminate physical or chemical conditions that inhibit plant establishment and growth. Required amendments, such as compost or manure to add organic matter and improve soil structure and water holding

capacity; agricultural limestone to increase the pH of acid soils; or elemental sulfur to lower the pH of calcareous soils shall be included in the site specification with amounts, timing, and method of application.

CONSIDERATIONS

Native species or mixes that are adapted to the site and have multiple values should be considered.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded and filed using the approved job sheets and narrative statements in the conservation plan.

Seed

Seed shall meet state seed law requirements. Seed will be labeled with a germination and purity test completed within the last 12 months of seeding. Certified seed is preferred. Seed that becomes wet, moldy, or otherwise damaged in transit may not be used.

Legume Inoculation

Legume seeds shall be treated with a pure culture of nitrogen fixing bacteria prepared specifically for the species being seeded. Where more than one legume is included in the seed mixture, inoculate each species separately. Seed pre-inoculated greater than 60 days will be re-inoculated. Legumes not pre-inoculated will be inoculated within 12 hours of seeding. A sticker, as recommended by the inoculant manufacturer, will be used to secure the bacteria to the seed.

Soil Amendments

Agricultural lime will be applied to adjust soil pH levels as necessary for the species to be established. If a soil test is not available, apply lime at the rate of 3 tons per acre.

For temporary seedings, apply fertilizer at the rate of 60 lbs. acre each of N, P_2O_5, K_2O as needed. For permanent seedings fertilizer will be applied according to soil tests or at a rate of 120 lbs. acre each of N, P_2O_5, K_2O.

Establishment Methods

Temporary Vegetation

Seedbed preparation for temporary seedings shall be performed according to the following guidelines:

- Temporary cover seedings will be limed and fertilized according to Table 3. Amendments will be incorporated to a depth of 3 inches. Seedbed preparation may be limited to the extent required to incorporate soil amendments.

- Temporary seedings expected to last more than one year will be applied with conventional seedbed preparation methods.

Permanent Vegetation Establishment

Incorporate required amendments to depth of 3 inches leaving a firm seedbed free of large clods, stones, and debris larger that 6 inches in diameter. Seedbed must be firmed with a cultipacker/cultimulcher, harrow, or similar tool designed to break clods, level, and firm the seedbed. Seedbeds are considered firm when footprints leave no more than a 1/2 inch deep depression. Apply seed uniformly at a depth of 1/4-1/2 inch with a drill or cultipacker type seeder. Note: Native grasses should not be planted deeper than 1/4 inch. Broadcast methods are acceptable where the seed will be applied uniformly and covered 1/4-1/2 inch deep with a cultipacker/cultimulcher, harrow, or similar tool designed to break clods, level, and firm the seedbed.

Dormant Seedings

Prepare a conventional seedbed when soils are conducive to tillage. Apply and anchor mulch according to the Mulching Practice Standard and Specifications (484). Apply seed using the broadcast or hydroseed method during the dormant seeding period.

Hydroseeding

Seed, fertilizer, lime, and mulch may be applied together. Hydrated lime may not be used in the slurry mix. Slurry mixes will have no more than 125 pounds of solids per 100

gallons of water. The pH of the slurry shall be a minimum of 6.0 when inoculated legumes are included in the seed mixture.

Legumes to be hydroseeded will be inoculated three times the rate recommended by the manufacturer. When inoculant is added to the fertilizer and lime mixture, apply slurry within 30 minutes. Re-inoculate slurry if not applied within one hour.

Hydroseeded slurries should be applied to a moist soil surface.

Mulching

All critical area seedings will be mulched unless seeding into a cover crop during the dormant seeding period. Apply mulch according to the Mulching Practice Standard and Specifications (Practice Code 484).

Establishing Sod

Grade area(s) to a slope of 2:1 or flatter if possible. Smooth area to remove rills and gullies. Remove all debris that would prevent contact between the soil and sod roots. Use of ladders on steep slopes will speed sod installation, prevent disruption of the seedbed, and avoid damage to the sod. Sodding must be complete by October 15.

Lime and fertilize according to soil tests. Where soil tests are unavailable apply 120 lbs./ac each of N, P_2O_5, K_20. Incorporate required soil amendments 3 inches deep and prepare a conventional seedbed. Moisten soil to at a rate needed to provide a firm soil surface. Use only moist, freshly cut sod cut uniformly 1/2-1 inch in thickness. Start laying sod on the lower end of slopes and perpendicular to the flow of runoff. Stagger joints and fill them with loose soil and compact after sod strips are laid. Tamp or roll installed sod to ensure uniform and complete contact between the soil and sod roots. Irrigate installed sod with sufficient volume to percolate to the soil layer under the sod.

Mine Spoil

In addition to herbaceous material, trees and shrubs may be used to vegetate acid mine spoils. Tree spacing and site preparation shall be performed according to the Tree/Shrub Establishment practice standard and specifications (612).

VEGETATING NATURAL OR CONSTRUCTED WATERWAYS

The constructed channel and adjacent areas disturbed during construction where vegetation is needed for proper functioning of the waterway shall be vegetated.

When shaping and grading is complete, remove roots, limbs, rocks, or other debris that would interfere with seeding and maintenance activities.

Prior to seedbed preparation, apply 120 lbs./acre each N, P_2O_5, and K_2O. Apply lime according to soil test or 3 tons/acre when a soil test is not available.

Prepare the seedbed as specified in the “Seedbed Preparation and Establishment Methods For Permanent Vegetation” Section.

Select a suitable seed mixture from Table 2. Seed rates are the minimum amounts and may be increased by 25% as appropriate.

Seeding will be completed within the seeding periods specified in Table 1. Late summer dates can be extended by 14 days if soil moisture and temperatures favor the establishment of the seeding.

Where temporary vegetative cover is necessary to stabilize a waterway during the midsummer period, establish one of the following warm season covers;

Sudangrass or grain sorghum	30 lbs./ac
Wheat, Cereal Rye, or Oats	90 lbs./ac

Where temporary vegetative cover is necessary to stabilize a waterway after the fall seeding period has passed establish one of the following cool season covers:

Wheat	90 lbs./ac
Cereal rye	90 lbs./ac

OPERATION AND MAINTENANCE

Use of the area shall be managed as long as necessary to stabilize the site and achieve the intended purpose.

Control or exclude pests that will interfere with the timely establishment of vegetation.

Inspections, reseeding or replanting, fertilization, and pest control may be needed to insure that this practice functions as intended throughout its expected life.

Table 1. Planting Dates

TYPE OF SEEDING	COOL SEASON SPECIES	WARM SEASON SPECIES
SPRING	March 1 - May 15	April 15 – June 30
LATE SUMMER/FALL	August 1 – October 15 [1/]	Not Recommended
DORMANT [2/]	December 10 – February 28	Not Recommended

[1/] Grassed Waterways: August 1 – September 15

[2/] Liming, fertilizing, seedbed preparation and mulching may be completed ahead of the dormant seeding, with the seed being broadcast on top of the mulch.

Table 2. Seed Mixtures for Grassed Waterways

Seed Mixture	Seeding Rate PLS lbs./acre	SITE SUITABILITY *	
		Well Drained	Poorly Drained
KY Bluegrass	35	1	
Tall Fescue	50	1	2
Tall Fescue Redtop	50 4	1	2
Tall Fescue Timothy	50 5	1	2
Nurse Crops for Above If Needed			
Perennial Ryegrass	10	1	
Annual Ryegrass	10	1	2
Spring Oats	32	1	2
Wheat	20	1	2

- Site suitability: 1 – preferred; 2 – will tolerate

Table 3. Temporary Cover

Duration	Species	Seeding Rate PLS lbs./acre	Fertilizer (lbs./acre) $N\text{-}P_2O5, K_2O$
45 – 365 days	Oats, wheat, or cereal rye	90	60-60-60
> 365 days	Perennial ryegrass	20	60-60-60

Table 4. Critical Area Seeding Mixtures

Species No.	Seed Mixture	Seeding Rate PLS lbs./acre	pH Suitability
1	Tall Fescue	50	5.5 – 8.3
2	Tall Fescue Birdsfoot trefoil	50 10	5.8 – 7.5
3	Tall Fescue 'Lathco' Flatpea	50 30	5.5 – 7.5
4	KY Bluegrass	35	5.5 – 7.0
5	Tall Fescue Redtop or Timothy Alsike or Red Clover	50 3 8	6.0 – 7.0
6	Tall Fescue Crownvetch	25 10	5.5 – 8.3
7	Tall Fescue Perennial Ryegrass Alfalfa	20 10 10	6.0 – 7.5
8	Tall Fescue 'Lathco' Flatpea Deertongue 'Tioga'	20 20 10	4.5 – 8.0
9	Switchgrass 'Cave-in-Rock'	10	5.5 – 7.0
10	Switchgrass 'Cave-in-Rock' Big Bluestem Indiangrass	2 4 4	5.5 – 7.0

Note: 'Lathco' Flatpea can be poisonous to livestock.

Table 5. Site Groupings

Use Species No.	Site Group Description
1, 9, 10	Ditch, Channel, Spoil, Streambank
1, 3	Levee, Dike, Embankment, Spillway, Borrow Areas, Diversion
All	Steep bank, Cut/Fill Areas, and Severely Gullied Areas
2, 3, 5, 6, 8	Acid Mine Refuse, Slurry Pit Areas, and/or Acid Overburden Material