Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

CRITICAL AREA PLANTING

CODE 342

(ac)

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 seeding/planting methods.

PURPOSE

This practice is used to accomplish one or more of the following purposes–

- Stabilize areas with existing or expected high rates of soil erosion by wind or water
- Stabilize stream and channel banks, ponds and other shorelines, and earthen features of structural conservation practices
- Stabilize areas such as sand dunes and riparian areas

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to stabilization of highly disturbed areas, such as:

- Active or abandoned mined lands;
- Urban restoration sites;
- Construction areas;
- Conservation practice construction sites;
- Areas needing stabilization before or after natural disasters such as floods, hurricanes, tornados, and wildfires;
- Eroded banks of natural channels, banks of newly constructed channels, and lake shorelines;
- Other areas degraded by human activities or natural events.

CRITERIA

General Criteria Applicable to All Purposes

Site Preparation

Conduct a site investigation to identify any physical, chemical, or biological conditions that could affect the successful establishment of vegetation.

Clear areas to be planted of unwanted materials, and smooth or shape as needed to meet planting purpose(s).

Prepare a suitable seedbed for all seeded species. Rip compacted layers and re-firm the soil prior to seedbed preparation, as needed.

As site conditions dictate, when grading slopes, stockpile topsoil to be redistributed over area to be planted.

Species Selection
Select species for seeding or planting that are suited to local site conditions and intended uses, and are commonly used in the area. Selected species will have the capacity to achieve adequate density and vigor to stabilize the site within an appropriate period.

Establishment of Vegetation
Plant seeds using the method or methods best suited to site and soil conditions.

Specify species, rates of seeding or planting, legume inoculation, minimum quality of planting stock (e.g., pure live seed (PLS) or stem caliper), method of seedbed preparation, and method of establishment. Use only viable, high-quality seed or planting stock.

Seed or plant at a time and in a manner that best ensures establishment and growth of the selected species. Plant during approved times for the species to be used.

Limit sod placement to areas that can naturally supply needed moisture, or sites that can be irrigated during the establishment period. Place and anchor sod using techniques to ensure that it remains in place until established.

Apply soil amendments (e.g., lime, fertilizer, compost) according to the requirements in the Maryland Conservation Planting Guide for the type of vegetation to be established.

Mulch or otherwise stabilize plantings as necessary to ensure successful establishment. Refer to the Maryland conservation practice standard for Mulching (484).

Refer to the applicable sections of the Maryland Conservation Planting Guide for additional requirements concerning site preparation, species selection, planting, and establishment of herbaceous and/or woody species.

Site Protection and Access Control
Restrict access to planted areas until fully established.

Control livestock access to planted areas for a minimum of two growing seasons during the establishment period. A prescribed grazing plan is required for all areas to be grazed. Grazing shall be permanently excluded on high hazard sites, such as cut banks, areas of seepage, or other potentially unstable areas.

Additional Criteria to Stabilize Stream and Channel Banks, Ponds and Other Shorelines, and Earthen Features of Structural Conservation Practices

Bank and Channel Slopes
Shape channel side slopes so that they are stable and allow establishment and maintenance of desired vegetation. A combination of vegetative and structural measures may be necessary on slopes steeper than 3:1 to ensure adequate stability.

Species Selection
Plant materials used for this purpose must:

- Be adapted to the hydrologic zone into which they will be planted;
- Be adapted and proven in the regions in which they will be used;
- Be compatible with existing vegetation in the area;
- Protect the channel banks but not restrict channel capacity.

Select native species over introduced species when commercially available native species can provide equal or better protection at a reasonable cost.

Establishment of Vegetation
The species used, planting rates, spacing, and methods and dates of planting shall be based on specifications in the Maryland Conservation Planting Guide.

Identify and protect desirable existing vegetation during practice installation.

Use a combination of vegetative and structural practices to mix plant materials with inert material when flow velocities, soils, and bank stability preclude stabilization by vegetative establishment alone. Refer to the Maryland conservation practice standard for Streambank and Shoreline Protection (580), and to other technical guidance such as the NRCS Engineering Field Handbook Part 650, Chapter 16, *Streambank and Shoreline Protection, and Chapter 18, Soil Bioengineering for Upland Slope Protection and Erosion Reduction.*

Control existing vegetation on a site that will compete with species to be established vegetatively (e.g.. bare-root, containerized, ball-and-burlap, potted) to ensure successful establishment of the planted species.

Additional Criteria to Stabilize Areas such as Sand Dunes and Riparian Areas
Plants for sand dunes and coastal sites must be able to survive being buried by blowing sand, sand blasting, salt spray, salt water flooding, drought, heat, and low nutrient supply.

Include sand trapping devices such as sand fences or brush matting in the revegetation/stabilization plans where applicable.

Select native species over introduced species when commercially available native species can provide equal or better protection at a reasonable cost.

Note: Specific programs may dictate criteria in addition to, or more restrictive than, those specified in this standard.

CONSIDERATIONS

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

Consider the use of native species over introduced species when native species can provide equal or better protection.

To benefit pollinators and other wildlife, flowering shrubs and wildflowers with resilient root systems and good soil-holding capacity should also be considered for incorporation as a small percentage of a larger grass-dominated planting. Where appropriate, consider a diverse mixture of legumes and forbs to support pollinator habitat.

Avoid species that may harbor pests. Species diversity should be considered to avoid loss of function due to species-specific pests.

Planning and installation of other conservation practices such as Diversion (362), Obstruction Removal (500), Subsurface Drain (606), or Underground Outlet (620) may be necessary to prepare the area or ensure vegetative establishment.

Areas of vegetation established with this practice can create habitat for various type of wildlife. Maintenance activities, such as mowing or spraying, can have detrimental effects on certain species. When wildlife habitat is a concern, perform management activities at the times and in a manner that causes the least disruption to wildlife.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be prepared in accordance with the previously listed criteria. Refer to the applicable sections of the Maryland Conservation Planting Guide for specifications concerning site preparation, species selection, planting, and establishment of herbaceous and/or woody species. Plans and specifications shall contain sufficient detail concerning site preparation and establishment to ensure successful management of the practice and may be recorded in narrative form, on Implementation Requirements (IR) sheets, engineering designs and specifications, or on other approved forms.

Use the Maryland NRCS fact sheets *Cool-Season Grasses, Warm-Season Grasses, and Trees and Shrubs* to provide additional information when needed, and complete the 342 IR sheet. The IR sheet and appropriate fact sheet(s) can serve as the planting plan and specifications for implementing this practice.

When this practice is used to specify the vegetative component of another practice (e.g., diversion, filter strip, pond, etc.), plans and specifications shall meet the requirements of this standard and the other applicable standard to achieve the intended purpose of the practice. The completed work shall be checked and documented to verify that the practice was completed according to the drawings and specifications of both standards.

The following items shall be addressed, as appropriate:

- Purpose of the planting (type of problem site), or conservation practice to be seeded/planted (if used as the planting component of another conservation practice);
- Method of site preparation;
- Topsoil requirements;
- Rate and type of soil amendments to be applied;
- Method of seedbed/planting area preparation;
- Species and rates to be seeded/planted;
- Method of seeding/planting;
- Seeding/planting dates;
- Rate and type of mulch and anchoring methods;
- Protection of plantings.

Supporting Data and Documentation

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

- Location of the practice on the conservation plan map;
- 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;
- Completed IR sheet, and other specifications and management plans, as applicable.

Additional Documentation for Construction Check Data/As-Built. In addition to the general requirements listed above, the following is a list of minimum documentation to be included in the case file when Critical Area Planting (342) is used to specify the planting component of structural practices:

- Assistance notes shall include inspection date(s), name of the person who performed the inspection(s), specifics as to what was inspected, alternatives and adjustments discussed, decisions made and by whom;
- Dimensions of the stabilized area;
- Certification statement on seeding/planting;
- Final quantities, and documentation for any quantity changes. Include materials certification when

requested;
- Sign and date check notes and plans to include the statement that the practice meets or exceeds the requirements of the NRCS conservation practice standard.

OPERATION AND MAINTENANCE

An Operation and Maintenance (O&M) plan shall be prepared and is the responsibility of the client to implement. The appropriate fact sheet(s) and IR sheet may serve as the O&M plan, as well as supporting documentation, and shall be reviewed with and provided to the client.

At a minimum, the following components shall be addressed in the O&M plan, as applicable:

- For seeded areas, evaluate the site within several months of seeding. If the stand is uniform but too thin (50 to 80% ground cover), plant additional seed during the next optimum seeding period. Apply seed at one-half the original rate with a no-till drill, grain drill, or hydro-seeder as site conditions dictate. Sites with an establishment rate of less than fifty percent (50%) should be reseeded in accordance with the original planting plan. Determine the reasons for planting failure and incorporate corrective measures into the remedial planting;
- If soil moisture becomes critically deficient, irrigate the site if feasible;
- For sodded areas, water sod as needed for the first 30 days after placement;
- Inspect the planting at least twice during the establishment year, then at least annually thereafter. Shape and replant areas damaged by heavy rainfall, livestock, chemicals, tillage, or equipment traffic, and any other areas where the vegetation is not adequate;
- Check for insects and diseases, and if an incidence threatens stand survival, take corrective action to keep the pest under control;
- Control undesirable plants by pulling, mowing, or spraying with a selective herbicide. Control noxious weeds as required by state law;
- Protect the planting from wildfire and damage from livestock, wildlife, and equipment, to the extent feasible;
- Where wildlife habitat is a concern, do not mow during the primary nesting season (April 15 to August 15);
- Remove temporary diversions, silt fences, etc. after the area is stabilized;
- Apply soil amendments periodically, based on soil test results, if needed to maintain ground cover density at the desired level (usually 90% or greater). At a minimum, test the soil at least once every five years, or more often if indicated by periodic inspections of the site. If woody plants are included in the planting, do not fertilize in the first year because the plants will develop too much top growth compared to the roots. If fertilizer is used, it must be applied in compliance with Maryland nutrient management regulations, as applicable;
- Describe the acceptable uses (e.g., flash grazing, haying, etc.) and time of year or frequency of use restrictions, if any. *Pay particular attention to program requirements as they relate to acceptable vs. restricted uses and other management restrictions.*

REFERENCES

Federal Interagency Stream Restoration Working Group. 2001 (revised). Stream Corridor Restoration: Principles, Processes, and Practices. National Engineering Handbook, Part 653.

Maryland Department of the Environment, Water Management Administration. 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control.

Maryland Seeding Association, 2005. MSA Guideline Specifications 2005 (MSA-GS-05.0). http://www.marylandseeding.org/msaSpec.htm

Penn State Extension. 2015. The Agronomy Guide, 2015-2016. http://agguide.agronomy.psu.edu/

Turner, Thomas, and Funk, David. June, 2015. Recommended Turfgrass Cultivars For Certified Sod Production and Seed Mixtures in Maryland. Technical Update TT- 77, University of Maryland Extension.

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