USDA
NATURAL RESOURCES
CONSERVATION SERVICE

MARYLAND CONSERVATION
PRACTICE STANDARD

RIPARIAN HERBACEOUS COVER

CODE 390
(Reported by Acre)

DEFINITION

Grasses, grass-like plants and forbs that are established or managed to provide a herbaceous buffer in the transitional zone between terrestrial and aquatic habitats.

PURPOSES

This practice may be applied for one or more of the following purposes:

1. Provide food and cover for wildlife and aquatic organisms;
2. Protect and improve water quality;
3. Reduce erosion from wind and water;
4. Increase carbon storage in biomass and soils.

CONDITIONS WHERE PRACTICE APPLIES

This practice may only be applied on land adjacent to water courses, water bodies and wetlands where bank stability is adequate to support the practice.

This practice does not apply to:

1. Plantings that will be established on eroding streambanks or shorelines, for which the conservation practice standard Streambank and Shoreline Protection, Code 580, is applicable;
2. Plantings that are intended to intercept significant amounts of sediment or other pollutants, for which the conservation practice standards for Filter Strip, Code 393; or Vegetated Treatment Area, Code 635, are applicable.

CONSIDERATIONS

Consider the long-term land use objectives of the client. For example, if the land user is primarily interested in using the riparian buffer to provide wildlife habitat or additional hay production, consider the plant species that may be suitable for these uses.

Assess site conditions including surrounding land uses, soils, residual herbicides (to the extent known), available moisture during the growing season, and existing vegetation on the site and in adjacent areas, including any noxious weeds which may be present.

When making site and plant species selection, consider the maintenance and management activities (e.g., burning, disking) required for achieving the client's objectives. Also consider the client's limitations (e.g., equipment, time) for implementing the required management.

Consider using native plant species that have multiple values such as those suited for nesting habitat, fruit, seeds, browse, aesthetics and tolerance to locally used herbicides. Native plant species usually provide the best overall benefits for wildlife, and are well-adapted to local conditions.

Avoid plant species that may be alternate hosts to undesirable pests or that may be considered invasive or undesirable. Species diversity should be encouraged in order to minimize problems due to species-specific pests, and maximize the potential for a variety of beneficial organisms.

Consider the adverse impacts of high populations of nuisance wildlife, such as deer and groundhogs, on the establishment and maintenance of vegetation. When feasible, select plant species that are not preferred foods of nuisance animals, and utilize methods for

protecting the plants until they become well established.

Also consider the potential for attracting nuisance wildlife into an area, either intentionally or unintentionally. Plantings that contain preferred wildlife foods may be used to attract nuisance wildlife away from valuable agricultural crops or ornamental plantings, but may also result in attracting additional nuisance wildlife into an area.

Take note of other constraints such as economic feasibility, access, visual aspects, and program and regulatory requirements. *State and local laws and regulations may restrict or require permits or approvals for removal of existing vegetation in riparian zones. Laws pertaining to forest conservation, wetland protection, critical area protection, stream buffers, and erosion and sediment control may be applicable.*

CRITERIA

Criteria Applicable to All Purposes

The location, layout, and density of the riparian buffer shall be selected to accomplish the intended purpose of the practice, conditions of the site, and the objectives of the land user.

The minimum width of the buffer shall be 20 feet, measured horizontally on a line perpendicular to the water body, beginning at the top of bank or wetland edge. The minimum width may be wider than 20 feet to achieve the intended purpose.

Overland flow through the riparian area shall be maintained as sheet flow as much as practical.

Excessive sheet-rill and concentrated flow erosion shall be controlled in the areas immediately adjacent and up-gradient of the buffer site.

Select plant species that are native, or are introduced and are non-invasive. Plant types and species shall be selected based on their compatibility in growth rates, tolerance of intermittent flooding or saturated soils, shade tolerance, and other characteristics. Use of locally native plant species shall be encouraged.

For most sites and intended uses of the herbaceous buffer, seed mixes shall be selected in accordance with the Maryland conservation practice standard for Conservation Cover, Code 327. Riparian buffers that will be periodically cut for hay can be planted to a pure stand of grass or a grass-legume mix as listed in the conservation practice standard for Pasture and Hay Planting, Code 512.

Site preparation and planting to establish vegetative cover shall be done at a time and manner to ensure survival and growth of selected species. Supplemental moisture shall be applied if needed to assure early survival and establishment of selected species.

Only viable, high quality seed and planting stock shall be used. The method of planting shall include hand or machine planting techniques, suited to achieving proper depths and placement for the selected plant species.

Livestock shall be controlled or excluded as necessary so that the vegetative cover can be established and maintained to meet its intended purpose.

Plant and animal pest species shall be controlled to the extent feasible to achieve and maintain the intended purpose of the vegetative cover. Noxious weeds shall be controlled as required by state law.

Note: Specific cost-sharing programs or other funding sources may impose criteria in addition to, or more restrictive than, those specified in this standard.

Additional Criteria to Provide Food and Cover for Wildlife and Aquatic Organisms

Where wildlife habitat is identified as the primary purpose, the minimum buffer width shall be 35 feet. Buffer widths and plant species shall be selected to provide wildlife food and/or cover for the desired wildlife species. Plantings shall consist of three or more species to provide greater vegetative diversity. Native species or introduced species that provide wildlife benefits shall be used.

Refer to the NRCS-Maryland Biology Technical Resources website for additional habitat considerations for upland wildlife species.

Additional Criteria to Protect or Improve Water Quality

Riparian herbaceous buffers that are planned to intercept suspended solids (e.g., sediment, organic matter particulates) in surface runoff shall be at least 20 feet wide.

Buffers shall be at least 35 feet wide if dissolved contaminants (e.g., nutrients, pesticides) in surface runoff or in shallow ground water are identified as a resource concern.

Concentrated flow erosion or mass soil movement shall be controlled in the up gradient area prior to establishment of the riparian buffer.

Species selected for planting shall have stiff stems and high stem density near the ground surface.

Additional Criteria to Reduce Erosion from Wind and Water

Select perennial species that will protect the soil surface year-round and will develop a deep, binding root system to hold the soil in place.

The higher end of the recommended seeding rates shall be used whenever erosion is a concern. A reduced tillage method shall be used to the extent feasible. If a conventional tillage method is used, a nurse crop shall be included in the planting.

Minimize post-establishment soil disturbance in the first 10 to 15 feet of the buffer nearest to the water.

Additional Criteria for Increasing Carbon Storage in Biomass and Soils

Carbon sequestration (storage) is the process through which carbon dioxide (CO_2) from the atmosphere is absorbed by plants and converted during photosynthesis into plant material. Carbon is stored in plant (stems, foliage and roots) and in soils (as leaf litter and other plant debris). Carbon sequestration rates vary by plant species and age, soil type, and climatic conditions.

Select appropriate species and planting rates for site conditions, and maximize the width and length of the buffer to fit the site. Use species that are efficient at sequestering carbon (e.g., warm season (C4) grasses) and produce high amounts of above- and below-ground biomass. Minimize post-establishment soil disturbance to the extent feasible. Prediction of carbon sequestration rates shall be made using current, approved carbon sequestration modeling technology.

Note: Specific cost-sharing programs or other funding sources may impose criteria in addition to, or more restrictive than, those specified in this standard.

PLANS AND SPECIFICATIONS

Plans and specifications for establishment of the herbaceous buffer shall be prepared in accordance with the previously listed criteria. Plans and specifications shall contain sufficient detail concerning site preparation and establishment to ensure successful installation of the practice. Documentation shall be in accordance with the section "Supporting Data and Documentation" in this standard.

OPERATION AND MAINTENANCE

Job Sheet(s) or site specific management plans shall be developed and provided to the client to assure performance of the practice as intended. At a minimum, the following components shall be addressed:

Vegetation in the Herbaceous Buffer

Describe what inspections are required to determine whether the desired vegetation is present in suitable quantity, quality, and distribution to meet objectives of the project.

Describe the extent of management needed to maintain vegetation in the desired species composition or age class (if applicable), or no management required (e.g., natural area).

Nuisance Plants and Animals

Describe the extent to which plant and animal pest species, including noxious weeds, will need to be controlled.

Acceptable Uses

Describe the acceptable uses (e.g., grazing, hunting, nature preserve, etc.) and time of year/frequency of use restrictions, if any. Pay particular attention to cost-sharing program requirements as they relate to acceptable vs. restricted uses, and other management restrictions.

Frequency of Inspections

At a minimum, require annual inspections of the buffer.

SUPPORTING DATA AND DOCUMENTATION

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

1. Field location, extent of the herbaceous buffer in length & width, and assistance notes. Also note the location of the planting on the conservation plan map;

2. Species selected for establishment, seeding/planting rates, and planting dates;

3. Completed copy of the appropriate Job Sheet(s) or other specifications, and management plans.

REFERENCES

1. Brown, Melvin L. and Russell G. Brown, 1984. *Herbaceous Plants of Maryland.* University of Maryland, Port City Press, Baltimore.

2. Brown, Russell G. and Melvin L. Brown, 1972. *Woody Plants of Maryland.* University of Maryland, Port City Press, Baltimore.

3. Fish and Wildlife Service, Chesapeake Bay Field Office with the Natural Science Center and Adkins Arboretum, 1995. *Native Plants for Wildlife Habitat.* Annapolis, MD.

4. Tufekcioglu, A., J.W. Raich, T.M. Isenhart and R.C. Schultz. 2003. *Biomass, Carbon and Nitrogen Dynamics of Multi-Species Riparian Buffers within an Agricultural Watershed in Iowa, USA.* Agroforestry Systems 57(3):187-198.

5. USDA, Natural Resources Conservation Service. *Conservation Practice Standards.* Maryland Field Office Technical Guide, Section IV.

6. USDA, Natural Resources Conservation Service, Maryland Biology Technical Resources website: http://www.md.nrcs.usda.gov/technical/biology/biology.html.

7. USDA, Natural Resources Conservation Service, 2006. *Technical Note: Effects of Herbaceous Field Borders on Farmland Birds in the Mississippi Alluvial Valley.*