

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
RIPARIAN HERBACEOUS COVER**

(Ac.)

CODE 390

DEFINITION

Grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats.

PURPOSE

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

1. To provide food and cover for wildlife and aquatic organisms;
2. To improve and maintain water quality;
3. To establish and maintain habitat corridors;
4. To increase water storage on floodplains;
5. To reduce erosion and improve stability on streambanks and shorelines;
6. To increase net carbon storage in the biomass and soil;
7. To enhance pollen, nectar, and nesting habitat for pollinators;
8. To restore, improve, or maintain the desired plant communities;
9. To dissipate stream energy and trap sediment;
10. To enhance streambank protection as part of streambank soil bioengineering practices.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to 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 (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 (393) or Vegetated Treatment Area (635) are applicable.

CRITERIA

General 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 needed 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.

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#) or visit the [Field Office Technical Guide](#).

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Select plant types and species based on their compatibility in growth rates, tolerance of intermittent flooding or saturated soils, shade tolerance, and other characteristics.

Select plant species that are native to Delaware or are introduced and are non-invasive (i.e., not likely to spread beyond the planted area and displace native species). Selection of native species shall be a priority when feasible. No plant listed by the state of Delaware as an invasive species shall be established in the herbaceous buffer.

Site preparation and planting to establish vegetative cover shall be done at a time and manner to ensure survival and growth 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.

Control or exclude livestock as needed to establish and maintain the buffer. Water course crossings and livestock watering facilities shall be located and sized to minimize impact to buffer vegetation and function. Refer to the Delaware conservation practice standards for Access Control (472), Fence (382), and Stream Crossing (578).

Control plant and animal pest species to the extent feasible to achieve and maintain the intended purpose of the practice. Control noxious weeds as required by state law.

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. Use native species or introduced species that provide wildlife benefits.

Mowing, harvesting, weed control, and other management activities within the herbaceous buffer shall be scheduled to accommodate reproduction and other life cycle requirements of

desired wildlife species. Do not mow during the primary nesting season (April 15 to August 15).

Additional Criteria to Improve and Maintain Water Quality

The minimum buffer width shall be 2.5 times the width of the water course (based on the horizontal distance between bank-full elevations) or a minimum of 35 feet for water bodies and wetlands.

Species selected for planting shall have stiff stems and high stem density near the ground surface to reduce water velocities and facilitate infiltration into the buffer.

Control excessive sheet-rill and concentrated flow erosion in the areas immediately adjacent to and up-gradient of the buffer site.

Additional Criteria to Reduce Erosion and Improve Stability on Streambanks and Shorelines

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.

Use the higher end of the recommended seeding rates whenever erosion is a concern. To the extent feasible, use a reduced tillage method for seedbed preparation. If a conventional tillage method is used, include a nurse crop in the planting.

Additional Criteria for Increasing Carbon Storage in Biomass and Soils

Establish plant species that are efficient at sequestering carbon (e.g., warm-season (C4) grasses) and will produce high amounts of above- and below-ground biomass (i.e., a positive soil conditioning index will be achieved). Maximize the width and length of the buffer to fit the site and increase total biomass production.

Minimize post-establishment soil disturbance to the extent feasible. Do not burn the herbaceous buffer.

Additional Criteria to Enhance Pollen, Nectar, and Nesting Habitat for Pollinators

Utilize a diverse mix of plant species that bloom at different times throughout the year. Include forbs and legumes that provide pollen and nectar for native bees.

To protect pollinators and maintain a diversity of plant structure, no more than one-third of the buffer may be disturbed (mowed, grazed, burned, etc.) each year to allow for recolonization of pollinators from surrounding habitat.

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

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 that 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.

If wildlife habitat is a concern, consider wildlife objectives such as habitat diversity, habitat linkages, daily and seasonal habitat ranges, limiting factors, and native plant communities.

Herbaceous riparian areas can function to link pollinators with adjacent fragmented habitat, and can serve as a conduit to move pollinators into areas requiring insect pollination. Different flower sizes and shapes appeal to different categories of pollinators. To support various pollinator species, consider establishing the greatest plant diversity feasible. Consider incorporating nesting habitat, including patches of unshaded bare soil, for ground nesting bees. Where bumble bee conservation is a priority, consider establishing clump forming native warm-season grasses.

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.

Existing, functional underground drains and open ditches through the riparian area will pass pollutants directly to the outlet. To filter such pollutants, drains or ditches may be plugged, removed, or replaced with perforated pipe/end plugs or water control structures to allow passage and filtration of drain water through the riparian buffer root zone. Caution is advised that saturated conditions in the riparian buffer and adjacent areas may limit existing land use and management.

Identify and evaluate any constraints such as economic feasibility, management options, and regulatory and cost-share program requirements.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be prepared in accordance with the previously listed criteria. Plans and specifications shall contain sufficient detail to ensure successful implementation of this practice and may be recorded in narrative form, on Implementation Requirements (IR) worksheets, or other approved forms.

For most sites and intended uses of the herbaceous buffer, select seed mixes in accordance with the Delaware conservation practice standard for Conservation Cover (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 Forage and Biomass Planting (512).

Follow the establishment recommendations provided in the Delaware fact sheets for warm season grass plantings and/or cool season grass plantings and complete the 390 IR worksheet. The appropriate fact sheet(s) and IR worksheet can serve as the planting plan and specifications for the practice.

The following items shall be addressed, as appropriate:

1. Method of site preparation;
2. Species and rates to be seeded/planted;
3. Seeding/planting dates;
4. Rate and type of soil amendments to be applied (if any);
5. Method(s) used to protect plantings from animal damage (e.g., fencing, repellents, etc.) or for weed control.

OPERATION AND MAINTENANCE

An Operation and Management (O&M) plan shall be prepared and is the responsibility of the client to implement. The appropriate fact sheet(s) and IR worksheet may serve as the management 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:

1. 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);
2. Inspect the herbaceous buffer at least annually. Shape and reseed areas damaged by heavy rainfall, animals, chemicals, tillage, or equipment traffic, and any other areas where the stand is not adequate;
3. Check for insects and diseases, and if an incidence threatens stand survival, take corrective action to keep the pest under control;
4. Control undesirable plants by pulling, mowing, or spraying with a selective herbicide. Control noxious weeds as required by state law;
5. Protect the buffer from wildfire and damage from livestock, wildlife, and equipment, to the extent feasible;
6. Where wildlife habitat is a concern, do not mow during the primary nesting season (April 15 to August 15);
7. Apply soil amendments periodically, if needed to maintain plant vigor. If nutrients are applied, refer to the conservation practice standard for Nutrient Management (590);
8. Do not use the herbaceous buffer for hay storage or machinery parking for an extended period of time, especially if doing so will damage or impair the function of the practice;

9. 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.*

Record Keeping

It is the responsibility of the landowner/client to maintain records as needed to document plan implementation. Records will include actual implementation details of all applicable components under Plans and Specifications.

SUPPORTING DATA AND DOCUMENTATION

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

1. Extent of planting in acres, field number where the practice located, and the location of the practice marked on the conservation plan map;
2. 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;
3. Copy of the appropriate fact sheet(s) and completed IR worksheet, or other specifications and management plans.

REFERENCES

1. Tufekcioglu, A., J.W. Raich, T.M. Isenhardt 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.
2. USDA, Natural Resources Conservation Service. *Conservation Practice Standards*. Delaware Field Office Technical Guide, Section IV.
3. U.S. Fish and Wildlife Service, Chesapeake Bay Field Office with the Natural Science Center and Adkins Arboretum. 1995. *Native Plants for Wildlife Habitat*. Annapolis, MD.