

**NATURAL RESOURCES CONSERVATION SERVICE
VIRGINIA CONSERVATION PRACTICE STANDARD**

WETLAND CREATION

(Ac.)

CODE 658

DEFINITION

The creation of a wetland on a site that was historically non-wetland.

PURPOSE

To create wetland functions and values.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to sites where no natural wetland occurred historically and soils are not hydric.

This practice does not apply to:

- Virginia Conservation Practice Standard *Constructed Wetland* (Code 656) intended to treat point and non-point sources of water pollution;
- Virginia Conservation Practice Standard *Wetland Enhancement* (Code 659) intended to rehabilitate a degraded wetland where specific functions and/or values are enhanced beyond original conditions; or
- Virginia Conservation Practice Standard *Wetland Restoration* (Code 657) intended to rehabilitate a degraded wetland where the soils, hydrology, vegetative community, and biological habitat are returned to approximate original wetland conditions.

CRITERIA

General Criteria Applicable to All Purposes

Permits are not required where there is no impact to existing wetlands and streams. Nationwide Permit 27 (Section 404 of the Clean Water Act) authorizes certain activities impacting wetlands where there is limited

incidental loss and creation results in a net gain of wetlands. Contact the U.S. Army Corps of Engineers and/or the Virginia Department of Environmental Quality (DEQ) if there are any wetland questions or stream impacts.

Clearly outline the purpose, goals and objectives of the creation, including the soils, hydrology and vegetation criteria that are to be met and are appropriate for the site and the project purposes.

Document the soil, hydrology and vegetative characteristics existing on the site and the contributing watershed before the wetland is created.

Where known nutrient and pesticide contamination exists, select vegetative species tolerant of these conditions.

The wetland created must meet the appropriate wetland criteria and provide wetland functions and values as defined in the project's objectives.

Test the soils on suspected hazardous waste sites to identify appropriate remedial measures. Clean sites containing hazardous material prior to the installation of this practice.

Assure water rights prior to wetland creation.

Early and ongoing control of invasive species, federal/state listed noxious plant species, and nuisance species (e.g., those whose presence or overpopulation jeopardize the practice) on the site (if applicable). This may include the manipulation of water levels to control unwanted vegetation. Discourage the establishment and/or use of non-native plant species where possible.

Do not adversely affect adjacent properties or other water users unless agreed to by signed

written letter or easement.

Minimize disturbance to ground nesting species.

Obtain input from Virginia Department of Game and Inland Fisheries Biologist if wetland is adjacent to a cold water stream to ensure that there is no effect on water temperature.

Criteria for Soils

Locate created wetlands in landscape positions and soil types capable of supporting the wetland functions and values.

Prepare the soil for plant establishment by loosening compacted soils, adding organic matter, or performing other soil preparation activities, as necessary.

Criteria for Hydrology

Design the site to create hydrologic conditions (including the timing of inflow and outflow, duration, and frequency) that provide the desired wetland functions and values.

Create hydrologic diversity using wetland micro- and macro-topography.

The Virginia Conservation Practice Standards *Dike* (Code 356), *Pumping Plant* (Code 533), and *Structure for Water Control* (Code 587) will be used as appropriate. Refer to the National Engineering Handbook, Part 650, Engineering Field Handbook, Chapter 6, "Structures," for additional design information.

Dikes used to impound 18 inches of water or less must meet the Virginia Conservation Practice *Dike* (356) and have 6 inches of freeboard. If the water impounded against the dike is greater than 18" in depth, the embankment must meet the Virginia Conservation Practice *Dike* (356).

Utilize, remove or modify existing drainage systems as needed to achieve the intended purpose.

Criteria for Vegetation

Establish hydrophytic vegetation typical for the wetland type(s) being established. Give preference to native wetland plants with localized genetic material (200-mile radius).

If natural colonization of pre-identified selected species will realistically dominate within 5

years, then allow natural revegetation. Active forms of revegetation may be required if a site has not become dominated by the targeted species within 5 years.

Determine the adequacy of the substrate material. Identify the site preparation necessary for proper establishment of the selected plant species.

To achieve habitat diversity and minimize the adverse effects of climate, disease, and other limiting factors, several species adapted to the site will be established.

- On sites that are predominantly herbaceous vegetation, establish a minimum of 4 species on projects restored to one ecological site (i.e., wet meadow, shallow marsh, or slough ecosystems, etc.). For projects where there are two or more ecological sites, establish at least three native species on each site.
- On sites that are predominantly forest or woodland community types, vegetation establishment will include a minimum of 6 species.

CONSIDERATIONS

Consider adding 1 or 2 dead snags, tree stumps, or logs per acre, where appropriate, to provide structure and cover for wildlife and a carbon source for food chain support.

Consider existing wetland and floodplain functions and/or values that may be adversely impacted.

Consider effect that wetland creation will have on disease vectors such as mosquitoes.

Consider the effects of predatory species on other species (e.g. fish and bullfrogs on other amphibians).

Consider effect of volumes and rates of runoff, infiltration, evaporation and transpiration on the water budget.

Consider effects on downstream flows or aquifers that would affect other water uses or users.

Consider the effect of water control structures on the ability of fish and other aquatic species to move in and out of the wetland.

Time the water control to mimic the natural hydrological regime of a natural wetland in the area to further enhance the habitat for aquatic species.

Consider linking wetlands by corridors of vegetation or habitat wherever appropriate to enhance the wetland's use and colonization by the native flora and fauna.

Consider the establishment of vegetative buffers on surrounding uplands to reduce the movement of sediment, and soluble and sediment-attached substances carried by runoff. Refer to Virginia Conservation Practice Standards *Riparian Herbaceous Buffer* (Code 390), *Riparian Forest Buffer* (Code 391), and *Filter Strip* (Code 393) for establishment of the buffers.

Soil disturbance associated with the installation of this practice may increase the potential for invasion by unwanted species.

Consider micro-topography, hydrology and hydroperiod when determining which species of vegetation to plant.

Consider installing complexes of vernal pools (5 acres is ideal) to provide habitat for amphibian species, that includes hardwood buffer areas.

The inclusion of microtopography can achieve changes in depth and duration of flooding without changing extent of surface area.

Where visual quality would be impacted by structures (e.g., outlet structures, dikes, etc.), consider using low profile structures, natural screening, and or colors that minimize the impact.

Consider controlling water levels to prevent oxidation of organic soils and inundated organic matter and materials.

Plan borrow areas for dikes or embankments as permanent pools or deepwater habitats. Use excess materials to create islands in water features or upland areas in flatlands.

Where possible, excavate fill for dikes and embankments away from the dike. This prevents permanent water against the structure and reduces likelihood of rodents burrowing in the dike.

Consider the impact that water surface draw-downs will have on concentrating aquatic species, such as turtles, into diminished pool area resulting in increased mortality.

Where impoundments are developed, shorelines with irregular shapes and varying side slopes from 9:1 to 20:1 along water surface margins may increase habitat diversity.

PLANS AND SPECIFICATIONS

Specifications for this practice shall be prepared for each site. Record all required information in Wetland Creation Job Sheet and in an engineering field book, on a plan sheet or design computation sheet, or in another appropriate location. Plans and specifications shall be reviewed by staff with appropriate training in design and implementation of wetland restoration.

DESIGN DATA

1. Completed Environmental Evaluation (Form VA-EE-1) and subsequent requirements.
2. Wetland Creation Job Sheet. (The Operation and Maintenance Plan is part of the Job Sheet.)
3. Survey and plot data: profile, cross-sections, topography, as needed.
4. Design computations, including purpose of practice and references used.
5. Plan view of site with existing and planned features, including dimensions, distances, etc.
6. Standard Cover Sheet (VA-SO-100A).
7. Materials and quantities needed. Identify borrow material and/or spoil area, as needed.
8. Vegetation and/or ground cover requirements.
9. Identification of needed Erosion & Sediment Control measures.
10. Supplemental practices required.
11. Virginia Conservation Practice Specifications (700 Series).

CHECK DATA

1. As-built survey.
2. As-built plans including dimensions, types and quantities of materials

- installed, and variations from design. Include justification for variations.
3. Locations of appurtenant practices.
 4. Adequacy of vegetation and/or ground cover.
 5. Complete as-built section of Cover Sheet.

OPERATION AND MAINTENANCE

The following actions shall be carried out to ensure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance):

Document the O&M requirements in the appropriate section of the Wetland Creation Job Sheet.

Any use of fertilizers, mechanical treatments, prescribed burning, pesticides and other chemicals shall assure that the intended purpose of the wetland shall not be compromised.

Management actions shall maintain vegetation, and control undesirable vegetation. Biological control of undesirable plant species and pests (e.g., using predator or parasitic species) shall be implemented where available and feasible. Management of water depth and duration may be utilized to control unwanted vegetation.

Limited and controlled haying or grazing can be used as appropriate to manage vegetation. Minimize disturbance to ground nesting species, especially during the primary nesting season.

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Measure the depth of accumulated sediment and remove the accumulations when the planned project objectives are jeopardized.

Timing and level setting of water control structures is required for the establishment of desired hydrologic conditions, for management of vegetation and for optimum wildlife and fish use.

Inspect the embankments and structures at least annually and after major storm events. Immediately repair any damage.

REFERENCES

USDA, NRCS. 2002. Field Indicators of Hydric Soils in the U.S., Version 5.0. G.W. Hurt, P.M. Whited and R.F. Pringle (eds.). USDA, NRCS in cooperation with the National Technical Committee for Hydric Soils, Fort Worth, TX.

USDA-Natural Resources Conservation Service. Electronic Field Office Technical Guide (eFOTG), Section IV. Available at <http://www.nrcs.usda.gov/technical/eFOTG>.

USDA-Natural Resources Conservation Service. Virginia Biology Technical Note – Aquatic Systems #1. Available at <http://www.nrcs.usda.gov/technical/eFOTG>

USDA, NRCS. National Engineering Handbook, Part 650, Engineering Field Handbook Chapter 13, Wetland Restoration, Enhancement or Creation, pp. 3, 24, 77, 78.

USDA, NRCS, 2003. Wetland Science Institute, Wetland Restoration, Enhancement and Management. Available at: <ftp://ftp-fc.sc.egov.usda.gov/WLI/wre&m.pdf>