

**NATURAL RESOURCES CONSERVATION SERVICE
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 contain soils that are not hydric.

This practice does not apply to:

A Constructed Wetland (656) intended to treat point and non-point sources of water pollution;

Wetland Enhancement (659) intended to rehabilitate a degraded wetland where specific functions and/or values are enhanced beyond original conditions; or

Wetland Restoration (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

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

The soil, hydrology, and vegetative characteristics existing on the site and the contributing watershed shall be documented before the wetland is created.

Where known nutrient and pesticide contamination exists, the species selected will be tolerant of these conditions.

Upon completion, the site shall meet the appropriate wetland criteria and provide wetland functions and values as defined in the project's objectives.

Sites containing hazardous material shall be cleaned prior to the installation of this practice. Soil testing shall be used to determine appropriate actions to clean sites suspected of containing hazardous wastes. If hazardous wastes are identified on the site, planning for the practice will proceed only after the site has been cleaned and the clean up approved by the responsible regulatory agency and the state conservationist has agreed to provide technical assistance for planning.

Water rights shall be assured prior to creation.

Disturbance to ground nesting species shall be minimized.

Invasive species, federal/state listed noxious plant species, and nuisance species (e.g., those whose presence or overpopulation jeopardize the effectiveness of the practice) shall be controlled on the site. The establishment and/or use of non-native plant species shall be discouraged, and where possible, controlled.

Criteria for Soils

Created wetlands shall be located in landscape positions and soil types capable of supporting the wetland functions and values.

Loosening of compacted soils, addition of organic matter, or other soil preparation activities, shall be accomplished where necessary to establish desired vegetation.

Criteria for Hydrology

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

Wetland micro- and macro-topography shall be created to achieve hydrologic diversity and enhance the desired effect.

The work associated with the wetland shall not adversely affect adjacent properties or other water users unless agreed to by signed written letter, easement or permit. Detailed surveys shall be conducted upstream of the wetland to determine planned surface and subsurface water levels near property lines.

If permission is not obtained to impound water on adjacent properties, the full pool level shall be a minimum of 12 inches below the adjacent property boundary elevation to prevent saturation unless a detailed hydrologic evaluation shows there will be no negative impacts at higher water levels .

In addition, a signed written letter, easement or permit by the adjacent landowner must be obtained if temporary water storage will occur on adjacent properties due to the wetland creation.

Engineering structures constructed for wetland creation shall approximate or mimic existing natural topography and micro- and macro-topography.

Existing drainage systems will be utilized, removed or modified as needed to achieve the intended purpose.

Hydrologic manipulations shall follow the Criteria for Hydrologic Enhancement of the Wetland Enhancement Standard (659) except in instances where the extent of hydrology manipulation is limited to enhancement by the Wetland Enhancement Standard. For this standard, the extent of manipulation shall be determined by the purposes, goals, and objectives of the creation.

Criteria for Vegetation

Establish hydrophytic vegetation typical for the wetland type(s) being established.

Preference shall be given to native wetland plants with localized genetic material.

The appropriate plant community to be created will be determined using one of the following:

- a. Establish at least two plant species from the plant community corresponding to the water regime and salinity of the created wetland area using the plant communities described by Stewart and Kantrud (1971 and 1972).
- b. Establish at least two plant species from the plant community corresponding to the water regime of the created wetland area using the plant lists included in SD Biology Technical Note10 (1987).

Where natural colonization of selected species will realistically dominate within five years, sites may be left to revegetate naturally. If a site has not become dominated by the targeted species within five years, active forms of revegetation may be required.

Adequate substrate material and site preparation necessary for proper establishment of the selected plant species shall be included in the design.

Where planting and/or seeding is necessary, the minimum number of native species to be established shall be based upon the types of vegetative communities present and the vegetation type planned. 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.

Seeding rates shall be based upon percentage of pure live seed to be tested within six months of planting.

CONSIDERATIONS

On sites where woody vegetation will dominate, consider adding one or two 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.

The potential for occurrence of threatened or endangered species shall be evaluated for each site proposed for wetland creation.

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 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.

The manipulation of water levels should mimic the natural hydrological regime of a natural wetland in the area, further enhancing 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 establishing vegetative buffers on surrounding uplands to reduce sediment and soluble and sediment-attached substance carried by runoff and/or wind.

Consider effects on temperature of water resources to prevent undesired effects on aquatic and wildlife communities.

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

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

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. Constructed embankments should be curvilinear whenever possible.

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

Consider the effects that location, installation and management may have on subsurface cultural resources.

PLANS AND SPECIFICATIONS

Specifications for this practice shall be prepared for each site. Specifications shall be recorded using approved specifications sheets, job sheets, narrative statements in the conservation plan, or other documentation. Requirements for the operation and maintenance of the practice shall be incorporated into site specifications. Plans and specifications should be reviewed by staff with appropriate training in design and implementation of wetland restoration.

OPERATION AND MAINTENANCE

The following actions shall be carried out to insure 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):

Any use of fertilizers, mechanical treatments, prescribed burning, pesticides, and other chemicals to assure the wetland enhancement function shall not compromise the intended purpose.

Control of undesirable plant species and pests using biological means (e.g., use of predator or parasitic species), or by manipulation of water levels shall be implemented where available and feasible.

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.

An inspection schedule shall be established for embankments and structures for damage assessment.

Management actions shall maintain vegetation and control unwanted vegetation.

Haying and grazing will be used as appropriate to manage vegetation.

The control of water depth and duration may be utilized to control unwanted vegetation.

REFERENCES

Endangered Species Act of 1973, as amended, Section 7, p. 19–28.

Executive Order 13112, Invasive Species, February 3, 1999. Federal Register: vol.64, no.25. Feb. 8, 1999.

Galatowitsch, Susan, et al, 1994. Restoring Prairie Wetlands: an ecological approach. Iowa State University Press, Ames IA. 246 pp.

Hurt, G.W. and V.W. Carlisle, 2001. Delineating Hydric Soils, in Wetland Soils – Genesis, Hydrology, Landscapes and Classification. Edited by J.L. Richardson and M.J Vepraskas. CRC Press, Boca Raton, FL pp. 183–206.

Kingsbury, Bruce & Joanne Gibson, 2002. Habitat Management Guidelines for Amphibians and Reptiles of the Midwest. Partners in Amphibian & Reptile Conservation, Ft Wayne IN, 57 pp.

Maschhoff, Justin T & James H. Dooley, 2001. Functional Requirements and Design Parameters for Restocking Coarse Woody Features in Restored Wetlands, ASAE Meeting Presentation, Paper No: 012059.

Stewart, R. E. and H. A. Kantrud. 1972. Vegetation of prairie potholes, North Dakota, in relation to quality of water and other environmental factors. U.S. Geological Survey, Professional Paper 585-D. 35pp.

Stewart, Robert E. and Harold A. Kantrud. 1971. Classification of Natural Ponds and Lakes in the Glaciated Prairie Region. Resource Publication 92. U.S. Fish and Wildlife Service. 57 pp.

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

USDA, NRCS, 2003. ECS 190-15 Wetland Restoration, Enhancement, Management & Monitoring. 425 pp.
<http://msa.ars.usda.gov/ms/oxford/nsl/projects/restoration/RestorationManual.html>.

Vepraskas, M.J., and S. W. Sprecher (eds), 1997. Aquic Conditions and Hydric Soils: The Problem Soils. Soil Science Society of America Special Publication Number 50. SSSA, Inc. Madison, WI.