

**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 contains soils that are not hydric.

This practice does not apply to:

- 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 landowner shall obtain all necessary local, state and federal permits prior to installation of this practice.

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.

The design will insure that offsite impacts do not occur on adjacent lands without first obtaining easements or permits.

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.

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.

Native plant species shall be used where practical to establish required vegetation.

Complete the Wetland Planning Checklist, Appendix A, Chapter 13, NRCS Engineering Field Handbook.

Excessive nutrient, pesticide, or other pollutant inflows shall be controlled prior to wetland creation. Examples of excessive inflows include direct runoff from a feedlot or other obvious pollution source, an actively eroding gully emptying into the site, or a poorly treated watershed that is contributing sediment and its associated pollutants.

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.

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.

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

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

If embankments, water control structures, or diversions are needed to achieve the desired wetland hydrology, the Oklahoma NRCS standards for Pond (378), Structure for Water Control (587), or Diversion (362) will be followed as appropriate.

Criteria for Vegetation

Establish hydrophytic vegetation typical for the wetland type(s) being established. Determine typical vegetation by evaluating the vegetation on nearby reference wetland sites similar to the wetland types being created

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

Where natural colonization of selected species will realistically dominate within 5 years, sites may be left to revegetate naturally. If a site has not become dominated by the targeted species within 5 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 to establish herbaceous wetland plant communities, a minimum of two species will be planted on each wetland type. Establishment methods include mechanical or aerial seeding, topsoiling, transplanting of rootstock, organic mats, etc.

Seeding rates shall be based upon percentage of pure live seed to be tested within 6 months of planting.

Creation of forested or shrub wetland communities will require establishment of at least three species per wetland type. Where appropriate, at least two of the species will be hard mast producing species. Seedling preparation and planting will be in accordance with the Oklahoma NRCS conservation practice standard for Tree/Shrub Establishment (612).

All planting rates and selected species will be based on recommendations from the NRCS biologist, resource specialist, WRP specialist, or ODWC wetland biologist.

Criteria for Creation of Landscape and Topographic Features

Topographic features (both micro/macro-topography) should be created to achieve variation in water depths and habitat conditions.

Micro-topography is characterized by features with less than 6 inches of relative elevation change. Macro-topography consists of features with greater than 6 inches of relative elevation changes.

Macro-topographic feature designs should be installed in accordance with specifications identified in standard drawings contained in "Oklahoma Engineering Forms and Standard Drawings" which are available on the

Oklahoma NRCS website or as described in Oklahoma NRCS Conservation Practice Job Sheet 657 02 "Using Micro and Macro Topography in Wetland Restoration", or as designed on a site by site basis by the WRP project engineer.

On sites where hydrology creation will be primarily accomplished by impounding shallow water using the Oklahoma NRCS standards for Structure for Water Control (587) or Dike (356) at least one macro-topographic feature should be installed on each 20 acres of shallow water where the existing topography of the land does not provide similar variations in water depths and conditions. On sites where hydrology creation will primarily be accomplished by excavations to pond surface water or expose water tables, macro-topographic features should comprise between 30 and 50 percent of the targeted area.

Constructed islands installed in accordance with the approved standard drawings should have side slopes no steeper than 6:1. Cut slopes for associated borrow areas (swales) should not be steeper than 3:1.

Excavated swales installed in accordance with approved standard drawings will be laid out in a serpentine manner. Swales will average 2 feet in depth and 8 feet in bottom width. Cut slopes shall not be steeper than 3:1 and borrow from the excavated swale will be disposed of as specified on the standard drawing.

Islands, swales, and other features installed using designs described in Oklahoma NRCS Conservation Practice Job Sheet 657 02 "Using Micro and Macro Topography in Wetland Restoration" will have slopes, shapes, and sizes as determined by the WRP project engineer.

The shape, location, and orientation of constructed macro-topographic features should be based on existing site conditions.

Construction of "Deep Water Habitat Islands" is recommended where beaver are likely to be present. The deeper water provided by this feature may provide more attractive habitat for beaver and thereby reduce the damages caused by burrowing into dikes and obstructing water control structures. These

features should be based on the approved standard drawing for the "Kidney Shaped" island with the following dimensions: length will be 200 feet, width will be 98 feet, height will be 2 feet and the side slopes will be 6:1. The minimum depth of the borrow area will be 4 feet.

Micro-topographic features should be installed by disking, plowing, ripping, or scraping to create, ridges, furrows, and other uneven surface conditions.

Criteria for Wetland Functions

Created wetland goals and objectives should include targeted wetland functions for the wetland type and site location.

Refer to Oklahoma NRCS Wetland Wildlife Habitat Management (644) or Shallow Water Management (646) standards for specific management recommendations to achieve the targeted wetland functions and values.

CONSIDERATIONS

On sites where woody vegetation will dominate, 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.

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.

Consider timing of water control to 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 hydroperiod 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.

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

Plans and 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 projects including the NRCS biologist, engineer, resource specialist, WRP specialist, or ODWC wetland biologist.

NRCS, OK

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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

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.