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 which contain 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 Restoration (657), intended to rehabilitate a degraded wetland where the soils, hydrology, vegetative community, and biological habitat are returned to approximate original wetland conditions
- Wetland Enhancement (659), intended to rehabilitate a degraded wetland where specific functions and/or values are enhanced beyond original conditions

CRITERIA

General Criteria Applicable to all Purposes

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

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.

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

Establish vegetative buffers around the created wetlands to reduce the movement of sediment and soluble and sediment-attached substances carried by runoff. Use Filter Strip (393) to determine the minimum width of the vegetative buffer.

Sites suspected of containing hazardous waste shall be tested to identify appropriate remedial measures. Sites containing hazardous material shall be cleaned prior to the installation of this practice.

The water quality of the drainage area shall be suitable for the intended use of the wetland.

Avoid disturbance to ground nesting species during the primary nesting season.

Invasive species, federal/state listed noxious plant species, and nuisance species (e.g.: those whose presence or overpopulation jeopardize the practice) shall be controlled on the site. This includes, but is not limited to, the manipulation of water levels or topography to control unwanted vegetation. The establishment and/or use of non-native plant species shall be discouraged.

Criteria for Soils

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

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. An adequate source of water must be available to meet design needs. Water rights shall be assured prior to creation.

Structures to control the water level shall be installed, as needed, for the establishment of desired hydrologic conditions for management of vegetation and for optimum wildlife and fish use. These structures shall meet the requirements of Structure for Water Control (587). Water levels required and the timing of changes shall be specified. Refer to Iowa Biology Technical Note 20.

If appropriate to the planned functions and values of the wetland, micro- and macro-topography shall be created to achieve hydrologic diversity and enhance the desired effect.

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

The work associated with the wetland shall not adversely affect adjacent properties or other water users, the capacity of drainage systems on other properties, or back surface water onto an adjoining property unless agreed to by signed easement, permit, or other legal document.

Any existing surface or subsurface drainage systems that would affect or be affected by the wetland shall be located and measures taken to determine the extent of those systems. Existing drainage systems will be utilized, removed, or modified as needed to achieve the intended purpose.

Refer to Wetland Restoration (657) for design criteria for subsurface drain plugging or removal, shallow water excavation, wetland dikes, and water control structures.

Criteria for Vegetation

Adequate substrate material and site preparation necessary for proper establishment of the selected plant species shall be included in the design. Loosening of compacted soils, addition of organic matter, or other soil preparation activities shall be accomplished where necessary to establish desired vegetation.

Establish hydrophytic vegetation typical for the wetland type(s) being established. Preference shall be given to native wetland plants with localized genetic material.

Vegetative establishment shall address species, functional, and structural diversity.

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.

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

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

Applicable guidelines for hydrophytic vegetation establishment can be found in Iowa Biology Technical Note 9, Iowa Biology Job Sheet 3, Conservation Cover (327), Tree/Shrub Establishment (612), Restoration and Management of Declining Habitats (643), Wetland Wildlife Habitat Management (644), and NEH, Part 650, Chapter 13.

If uplands are planned as part of a wetland creation then native seedings shall be used for these areas as well. Refer to Conservation Cover (327) for herbaceous restorations or Tree/Shrub Establishment (612) and Upland Wildlife Habitat Management (645) if trees and/or shrubs are desired.

CONSIDERATIONS

Consider adding 1 to 2 dead snags, tree stumps, or logs per acre to provide structure and cover for wildlife. As an additional carbon source for food chain support, detrital material can be spread throughout the basin.

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 or other aquatic species to move in and out of the wetland.

Consider timing of water control to mimic the natural hydrologic 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 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 establishing herbaceous vegetation by a variety of methods over the entire site or a portion of the site, and at densities and appropriate depths.

Consider microtopography and hydroperiod when determining which species to plant.

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

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.

The following list of Construction Specifications is intended as a guide to selecting the appropriate specifications for each specific project. The list includes most, but may not contain all, of the specifications needed for a specific project:

IA-1 Site Preparation
IA-3 Structure Removal
IA-5 Pollution Control
IA-6 Seeding and Mulching for Protective Cover
IA-9 Drainage Tile Investigation and Removal
IA-11 Removal of Water
IA-21 Excavation
IA-23 Earthfill
IA-26 Topsoiling
IA-27 Diversions
IA-45 Plastic (PVC, PE) Pipe
IA-46 Tile Drains for Land Drainage
IA-51 Corrugated Metal Pipe
IA-52 Steel Pipe Conduits
IA-61 Loose Rock Riprap
IA-81 Metal Fabrication and Installation
IA-83 Timber Fabrication and Installation
IA-95 Geotextile

OPERATION AND MAINTENANCE

An operation and maintenance (O&M) plan will be prepared for each wetland site. Specified actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance). The following activities shall be addressed in the plan:

- Timing and level setting of water control structures required for establishment of desired hydrologic conditions or for management of vegetation and for optimal wildlife use. Refer to Iowa Biology Technical Note 20
- Inspection schedule of dikes and structures for damage assessment
- Depth of sediment accumulation allowed before removal is required
- Management needed to maintain vegetation, including control of unwanted vegetation in and around the wetland area
- Acceptable uses and timing (e.g.: grazing and haying)

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

Biological control of undesirable plant species and pests (e.g.: using predator or parasitic species) shall be implemented where available and feasible.

REFERENCES

Restoring Prairie Wetlands: An Ecological Approach, Iowa State University Press

Delineating Hydric Soils, in Wetland Soils – Genesis, Hydrology, Landscapes and Classification, Hurt, G.W. and V.W. Carlisle

Habitat Management Guidelines for Amphibians and Reptiles of the Midwest, Partners in Amphibian & Reptile Conservation

Functional Requirements and Design Parameters for Restocking Coarse Woody Features in Restored Wetlands, ASAE Meeting Presentation, Paper No. 012059

Aquic Conditions and Hydric Soils: The Problem Soils, Soil Science Society of America, Special Publication Number 50

USDA-NRCS, Creation of Waterfowl Nesting Islands, Iowa Biology Technical Note 19

USDA-NRCS, Wetland Vegetation and Water Management Considerations, Iowa Biology Technical Note 20

USDA-NRCS, Shallow Water Excavation for Wildlife, Iowa Biology Technical Note 24

USDA-NRCS, Field Indicators of Hydric Soils in the U.S., Version 5.0, in cooperation with the National Technical Committee for Hydric Soils

USDA-NRCS, National Engineering Handbook (NEH), Part 650, Engineering Field Handbook (EFH), Chapter 13

USDA-NRCS, Wetland Restoration, Enhancement, and Management, Wetland Science Institute

NRCS, IA

March 2008