NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

WETLAND ENHANCEMENT

(Acre)
Code 659

DEFINITION

The modification or rehabilitation of an existing or degraded wetland, where specific functions and/or values are modified for the purpose of meeting specific project objectives. Some functions may remain unchanged while others may be degraded.

PURPOSE

To modify the hydrologic condition and/or hydrophytic plant communities of a wetland for the purpose of increasing specific wetland functions or values or multiple functions and values.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on any existing degraded wetland where the objective is to specifically enhance a selected wetland function(s) and/or value(s).

Enhancement should not significantly alter the types of wetland functions provided at the site.

If the presence of hazardous materials or contaminants is suspected, soil samples will be collected and analyzed for their presence as defined by local, state, or federal authorities. Sites containing hazardous materials will not be enhanced under this standard.

This practice does not apply to: Constructed Wetland (Code 656) intended to treat point and non-point sources of water pollution; Wetland Restoration (Code 657) intended to restore a converted wetland where the soils, hydrology, vegetative community, and biological habitat are returned to the historic condition to the extent practicable; or Wetland Creation (Code 658) for creating a wetland on a site location which historically was not a wetland.

CRITERIA

General Criteria

The landowner shall obtain all applicable local, state, and federal permits before implementing enhancement measures.

Water rights and availability are assured prior to enhancement if required.

The soil, hydrology, and vegetative characteristics of the site and its contributing watershed shall be documented before enhancement of the site begins. Note relevant features of the contributing landscape such as water and sediment movement patterns, fire regime, etc.

The design will not back water or discharge water onto neighboring land without an easement or permit.

The potential for occurrence of threatened or endangered species and/or designated critical habitats shall be evaluated for each site proposed for enhancement. When planning to

enhance sites containing these species or habitats, follow normal consultation procedures with the US Fish & Wildlife Service and state/local authorities before initiating enhancement practices.

Criteria for Hydrology Enhancement

The hydrology of the site (defined as the rate and timing of inflow and outflow, source, duration, frequency, and depth of flooding, ponding or saturation) may be modified to meet the requirements to support the desired wetland conditions. If hydrology is to be increased, an adequate and reliable source of water must be available to meet designs for increased hydrology.

NRCS conservation practice standards for Dike, Code 356 and Structure for Water Control, Code 587 will be used as appropriate. Refer to the Engineering Field Handbook, Chapters 13, "Wetland Restoration, Enhancement, and Creation," and 6, "Structures," for additional design information. Existing drainage systems will be utilized, removed, or modified as needed to achieve the intended purpose. Pumping of groundwater shall not be utilized as a water supply source.

Criteria for Vegetation Enhancement

Native plant species shall be used. Preference shall be given to the use of localized plant genetic material. Plant materials collected or grown from material collected within the major land resource area (MLRA) is considered local.

In soils where seed banks realistically exist, or where natural colonization of targeted species will dominate within five years, natural regeneration may be allowed.

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

Herbaceous vegetation may be established by a variety of methods including: mechanical or aerial seeding, topsoiling, organic mat placement, wetland sod, vegetative sprigs or transplants, etc., over the entire site or a portion of the site and at densities and depths as appropriate.

Tree (and shrub) planting, planting rates and site preparation will meet the criteria of NRCS conservation practice standard Tree/Shrub Establishment, Code 612. Seed viability will be determined prior to planting.

Long term (i.e., at least five years) survival of desired species on the enhancement site shall typically be a minimum of 80% (areal coverage) of herbaceous species and 80% (stem count) of woody species. Long term allowable invasive/exotic plant species coverage shall be limited to < 15% combined areal and stem count coverage. These species shall include plant species listed on the Florida EPPC List of Florida's Most Invasive Species, Category I.

Criteria for Wetland Functions

Prior to enhancement, a functional assessment (Hydrogeomorphic Approach as outlined in the National Food Security Act Manual, Wetland Rapid Assessment Procedure published by South Florida Water Management District, or similar approved method) shall be performed on the enhancement site. This provides a start value from which to quantify the increase in functioning level(s) desired for the site. A functional assessment shall also be performed on a reference wetland in order to target desired functioning levels for the enhancement site. A reference wetland is a wetland in the same watershed and of the same type as desired on the enhancement site

Enhancement goals and objectives shall include wetland functions appropriate to the wetland type and the site location as determined by functional assessment and/or other technical references as appropriate (e.g., Wetlands Reserve Program National Handbook).

Monitoring of enhancement success shall occur at least annually during the first five years after establishment of the enhancement. Adaptive modification shall be made if necessary to achieve the stated goals of the enhancement.

A post-project evaluation will be performed to assess the degree of success of the enhancement. Functional assessments shall be performed as part of the monitoring and

post-project evaluation to help evaluate success.

Enhancement goals and objectives shall minimize adverse impacts to wetland functions not specifically targeted for enhancement.

Where possible, wetland functions not targeted for enhancement should also be maximized.

CONSIDERATIONS

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

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

Consider establishing and maintaining vegetative buffers on adjacent uplands to protect and enhance wetland functions such as water quality enhancement, floodwater storage and wildlife habitat.

Consider enhancing sites adjacent or in close proximity to existing wetlands as they may offer increased wetland system complexity and diversity, lessen habitat fragmentation, and help ensure colonization of the site by desirable wetland flora and fauna.

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

Evaluate the potential for a change in rates of plant growth and transpiration because of changes in the volume of available soil water.

Consider the effects of varying water levels in response to potential climatic events such as extreme wet or dry periods.

Consider changes in salt movement/ concentrations in the soil resulting from hydrologic alterations.

The nutrient and pesticide tolerance of the plant species planned should be considered where known nutrient and pesticide contamination potential exists. Remediation of areas contaminated by pesticides will be needed prior to enhancing wetlands that will attract wildlife.

Consider long term groundwater source availability in areas where numerous or large capacity consumptive use wells may lower regional groundwater tables.

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.

OPERATION AND MAINTENANCE

The following guidelines shall be followed to insure that this practice functions as intended throughout its expected life. These include performance of normal repetitive activities in the application and use of the practice (operation), and repair and upkeep activities for the practice (maintenance).

Any use of fertilizers, pesticides and other chemicals shall not compromise the functioning of the enhanced wetland.

Biological control of nuisance and invasive/exotic plant species and pests (e.g., using predator or parasitic species) shall be implemented where available and feasible.

Water control structure levels will be set and timed as appropriate to allow for the establishment of desired hydrologic conditions and/or for management of vegetation for the specific desired ecological communities.

An inspection schedule will be established for any embankments, berms, dikes or other structures to periodically assess for damage.

Allowable sediment accumulation depths will be determined if periodic sediment removal is required for long term viability of the site.

Management activities such as prescribed burning or mechanical treatments will be scheduled when and where needed to maintain the vegetative composition and structure of the desired wetland type(s), including control of invasive/exotic and nuisance vegetation.

REFERENCES

NRCS Conservation Practice Standards:
Dike, Code 356
Structure for Water Control, Code 587
Tree/Shrub Establishment, Code 612

NRCS Engineering Field Handbook, Chapters 6, 13.

Wetland Rapid Assessment Procedure (WRAP). Tech. Pub. REG-001, Second Edition, April 1999, South Florida Water Management District.

List of Florida's Most Invasive Species. Florida Exotic Pest Plant Council (www.fleppc.org).