NATURAL RESOURCES CONSERVATION SERVICE
PACIFIC ISLANDS AREA

CONSERVATION PRACTICE STANDARD

SHALLOW WATER DEVELOPMENT AND MANAGEMENT

(Ac.)
CODE 646

DEFINITION

The inundation of lands to provide habitat for fish and/or wildlife.

PURPOSE

To provide habitat for wildlife such as shorebirds, waterfowl, wading birds, fish, reptiles and other species that require shallow water for at least a part of their life cycle.

CONDITIONS WHERE PRACTICE APPLIES

On lands where water can be impounded or regulated by diking, excavating, ditching, and/or flooding.

On floodplain areas that provide refuge habitats for native fish during high flow periods.

This practice does not apply to:

- Wetland Restoration (657) intended to rehabilitate a degraded wetland where the soils, hydrology, vegetation community, and biological habitat are returned to a close approximation of the original conditions;
- Wetland Enhancement (659) intended for modification of an existing wetland where specific attributes are targeted by management objectives, possibly at the expense of other attributes, or the rehabilitation of a degraded wetland where the result is a wetland that is different than what previously existed on the site;
- Wetland Construction (656) intended to treat point and non-point sources of water pollution;
- Wetland Creation (658) for creating a wetland on a site which historically was not a wetland; or
- Fishpond Management (399).

CRITERIA

Soils must have low permeability or seasonal high water table to inhibit subsurface drainage and allow for maintenance of proper water levels.

Site must be free of hazardous materials.

Water supply for flooding the area during periods of planned inundation must be adequate.

An adequate method for dewatering is required when water levels must be artificially lowered in order to produce desired habitat condition.

Water levels must be able to be maintained between 1 to 18 inches in depth over the majority of the area during periods of planned inundation. An exception to this criterion is made for floodplain habitats connected to stream channels where water depths of up to 6 feet provide habitat for native fish species that use these habitats during periods of inundation associated with high stream flows.

Where active habitat management is planned (such as disking or water level management) a point of access will be planned and developed to facilitate management activity.

Invasive plant species and federally/state listed noxious and nuisance species shall be controlled on the site.

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

Criteria for Waterfowl Habitat

Areas planned to provide waterfowl feeding and resting habitat shall be designed to facilitate gradual flooding of areas containing food plants to an average depth of 6 to 12 inches.

Areas containing food plants shall be flooded during seasonal periods of waterfowl use.

Criteria for Shorebird Habitat

Areas planned to provide shorebird habitat shall have exposed mudflats and areas with 1 to 4 inches of water during seasonal periods of shorebird use.

Criteria for Off-stream Stream Fish Habitat

Water control structures shall be designed to prevent native fish from being trapped as water recedes.

CONSIDERATIONS

For optimum site conditions and management considerations for shallow water impoundments see Table 1 (page4). Water volume, rates of runoff, infiltration, evaporation and transpiration will affect performance of the practice.

Nearly level sites will allow for larger units while keeping planned water depths within the optimum range over most of the unit.

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.

Consider how the timing of flooding and drawdown, as well as the type of drawdown, will affect moist soil plant species composition.

Consider tolerance of plants to flooding and salinity, as well as the composition of seed in the soil.

Nutrient and pesticide residues may affect plant species composition and the site's capability to grow desirable plants.

Consider effects on nearby wetlands, or water-related fish and wildlife habitats.

Consider movement of dissolved and suspended substances to downstream surface waters and groundwater.

The practice may affect downstream flows, or aquifers that would affect other water uses or users.

Consider disease vectors such as mosquitoes.

The practice may function as a link in a habitat corridor that aids the site's use and colonization by wetland flora and fauna.

The composition and extent of surrounding upland vegetation may influence this practice's habitat functions.

Installation of vegetated buffers on surrounding uplands may improve water quality in the shallow water area.

The practice may raise downstream water temperature, causing detrimental impacts to associated aquatic and terrestrial communities.

Soil disturbance may increase the probability of invasion by unwanted plant species.

Added water depth and duration may be used as a method to control unwanted vegetation.

Biological control of undesirable plant species and pests (e.g., using predator or parasitic species) may be the least damaging alternative for pest control.

Human and livestock activities in and surrounding the practice may disturb

wildlife, thereby decreasing habitat suitability and function. Vegetative screens, fences, or gates are means of reducing unwanted disturbance.

Other supporting or facilitating conservation practices that may be utilized in conjunction with this practice to form a conservation system include:

Dike (356)

Structure for Water Control (587)

Obstruction Removal (500)

Pumping Plant (533)

Pipeline (516)

Pond (378)

PLANS AND SPECIFICATIONS

Plans and specifications for installing structures for water control shall be in keeping with this standard and shall prescribe the requirements for applying the practice to achieve its intended purpose.

The plans and specifications shall be *prepared or* reviewed and approved by a person with appropriate training in the design and implementation of shallow water areas to benefit fish and wildlife.

The Pacific Islands Area Jobsheet for this practice shall be used to prepare and record the plans and specifications for each site and reviewed with the client.

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).

Waterfowl and shorebird feeding and resting areas that can be hydrologically controlled or have natural dry periods should be burned, disked or surface disturbed every 1-5 years to set back succession and control the growth of undesirable plants. Such burning, disking, or surface disturbance shall be scheduled to encourage desirable habitat plants.

Any use of fertilizers, mechanical treatments, prescribed burning, pesticides and other chemicals shall not compromise the capability of the practice to provide habitat for the target species.

Operation and maintenance shall include monitoring and management of structural components and habitat quality provided.

The Pacific Islands Area Jobsheet for this practice shall be used to prepare and record the plan for operation and maintenance for each site and reviewed with the client.

REFERENCES

Helmers, Doug. 1992. Shorebird Management Manual. Western Hemisphere Shorebird Reserve Network, Manomet, MA 58 pp.

T*able 1. Important considerations in evaluating wetland management potential.*

Factors	***Optimum Condition***
Water supply	• *Independent supply into each unit* • *Enters at highest elevation*
Water discharge	• *Independent discharge from each unit* • *Floor of control structure set at correct elevation for complete drainage*
Water control	• *Stoplog structure allowing 1-inch changes in water levels* • *Adequate spillway capacity to handle storm events* • *Water Control structure capable of draining at least 1 inch per day from the unit*
Optimum unit size	• *1 to 10 acres*
Optimum number of units	• *At least 5 within a 2-mile radius of units*

Adapted from Fredrickson (1991)