

STRUCTURE FOR WATER CONTROL

(No.)
Code 587

Natural Resources Conservation Service
Conservation Practice Standard

I. Definition

A structure in a water management system that conveys water, controls the direction or rate of flow, or maintains a desired water surface elevation or measures water.

II. Purpose

The practice may be applied as a management component of a water management system to control the stage, discharge, distribution, delivery, or direction of water flow.

III. Conditions Where Practice Applies

This practice applies wherever a permanent structure is needed as an integral part of a water-control system to serve one or more of the following functions.

- Convey water from one elevation to a lower elevation within, to or from a water conveyance system such as a ditch, channel, canal, or pipeline designed to operate under open channel conditions. Typical structures include drops, chutes, turnouts, surface water inlets, head gates, pump boxes, and stilling basins.
- Control the elevation of water in drainage or irrigation ditches. Typical structures include checks, flashboard risers, and check dams.
- Control the division or measurement of irrigation water. Typical structures include division boxes and water measurement devices.
- Keep trash, debris or weed seeds from entering pipelines. A typical structure is a debris screen.
- Control the direction of channel flow resulting from tides and high water or back-flow from flooding. Typical structures include tide and water management gates.
- Control the water table level, remove surface or subsurface water from adjoining land, flood land for frost protection, or manage water levels for wildlife or recreation. Typical structures include water level control structures, flashboard risers, pipe drop inlets, and box inlets.

- Convey water over, under or along a ditch, canal, road, railroad or other barriers. Typical structures include bridges, culverts, flumes, inverted siphons, and long span pipes.
- Modify water flow to provide habitat for fish, wildlife, and other aquatic animals. Typical structures include chutes, cold water release structures, and flashboard risers.
- Provide silt management in ditches or canals. A typical structure is a sluice.
- Supplement a resource management system on land where organic waste or commercial fertilizer is applied.
- Create, restore, or enhance wetland hydrology.
- This practice does not apply to Wisconsin NRCS Field Office Technical Guide (FOTG), Section IV, Standards 606, Subsurface Drain, or 410, Grade Stabilization Structure.

IV. Federal, Tribal, State, and Local Laws

Users of this standard should be aware of potentially applicable federal, tribal, state, and local laws, rules, regulations, or permit requirements governing structures for water control. This standard does not contain the text of federal, tribal, state, or local laws.

V. Criteria

The following criteria apply to all purposes.

A. General

Structures shall be designed on an individual job basis, or applicable NRCS standard drawings shall be adapted to meet site conditions and functional requirements. They shall be part of an approved and overall engineering plan for irrigation, drainage, wildlife, recreation, channel improvement, or similar purposes.

Embankments constructed in conjunction with structures covered in this standard which create water impoundments shall meet the design requirements for NRCS FOTG Standard 378,

Pond, or NRCS Technical Release 60, (TR-60), Earth Dams and Reservoirs, as applicable.

The ungated capacity of lake outlet water control structures located in channels shall be equal to or greater than the design or bank-full capacity of the channel.

B. Lake Outlet Control Structures

Lake outlet structures shall provide an equal or greater capacity than was present prior to installation of the water control structure.

Auxiliary spillway and freeboard capacity shall conform to criteria in TR-60 or FOTG Standard 378, Pond, as applicable.

C. Protection of Earth Surfaces

If soil and climatic conditions permit, a protective cover of vegetation shall be established on all disturbed earth surfaces. Seeding, fertilizing, and mulching shall comply with NRCS FOTG Standard 342, Critical Area Planting.

If soil or climatic conditions preclude the use of vegetation and protection is needed, nonvegetative means, such as mulches or gravel, may be used.

VI. Considerations

When planning, designing, and installing this practice, the following items should be considered.

- Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
- Potential for a change in the rate of plant growth and transpiration because of changes in the volume of soil water.
- Effects on downstream flows or aquifers that would affect other water uses or users.
- Effects on the field water table to ensure that it will provide a suitable rooting depth for the anticipated crop.
- Potential use for irrigation management to conserve water.
- Effect of construction on aquatic life.
- Effects on stream system channel morphology and stability as it relates to erosion and the movement of sediment, solutes and sediment-attached substances carried by runoff.

- Effects on the movement of dissolved substances below the root zone and to ground water.
- Effects of field water table on salt content in the root zone.
- Short term and construction-related effects of this practice on the quality of downstream water.
- Effects of water level control on the temperatures of downstream waters and their effects on aquatic and wildlife communities.
- Effects on wetlands or water-related wildlife habitats.
- Effects on the turbidity of downstream water resources.
- Existence of cultural resources in the project area and any project impacts on such resources.
- Conservation and stabilization of archeological, historic, structural and traditional cultural properties when appropriate.

VII. Plans and Specifications

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

The plans shall include the location, grades, dimensions, material, hydraulic requirements, and structural components for the individual structure.

VIII. Operation and Maintenance

An Operation and Maintenance Plan shall be developed with the landowner or operator that is consistent with the purposes of this practice, intended life of the components, and criteria for design.

The plan shall be site specific and include but not be limited to the following:

- Structures will be checked and necessary maintenance, including removal of debris, shall be performed after major storms and at least semi-annually.
- Water level management and timing shall be adequately described wherever applicable.

IX. References

USDA, NRCS Wisconsin Field Office Technical Guide, Section IV, Conservation Practice Standards and Specifications.

USDA, NRCS Technical Release 60, Earth Dams and Reservoirs.