

NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD

**DAM, DIVERSION**

(No. or Ft.)

Code 348



**DEFINITION**

A structure built to divert all or part of the water from a waterway or a stream.

**PURPOSE**

- To divert all or part of the water from a waterway in such a manner that it can be controlled and used beneficially such as irrigation or livestock supply, fire control, municipal or industrial uses, develop renewable energy systems, or recreational.
- To divert periodic damaging flows from one watercourse to another watercourse thereby reducing the damage potential of the flows.

**CONDITIONS WHERE PRACTICE APPLIES**

This standard applies to structures of a permanent nature, constructed of materials having an expected life span consistent with the purpose for which the structure is designed. It does not apply where Florida conservation practice standards Diversion, Code 362; Dam, Code 402; or Grade Stabilization Structure, Code 410 would be used.

This practice applies where:

- A diversion dam is needed as an integral part of an irrigation system or a water-spreading

system designed to facilitate the conservation use of soil and water resources.

- Diversion of water from an unstable watercourse to a stable watercourse is desirable.
- The water supply available is adequate for the purpose for which it is to be diverted.
- Adverse environmental impacts resulting from the installation of the practice can be overcome.

**CRITERIA**

The installation and operation of this practice shall comply with all federal, state and local laws, rules, and regulations.

Chapter 40A-44, Florida Administrative Code, regulates the construction of dams that impound or divert water for agricultural purposes. The appropriate Florida Water Management District must be contacted to determine if a permit is required.

Impact to cultural resources, wetlands and Federal and state protected species shall be evaluated and avoided or minimized to the extent practicable during planning, design and implementation of this conservation practice in accordance with established National and Florida policy, General Manual (GM) Title 420-Part 401; Title 450-Part 401, Title 190-Parts 410.22 and 410.26, National Planning Procedures Handbook (NPPH) Florida Supplements to Parts 600.1 and 600.6, National Cultural Resources Procedures Handbook (NCRPH), National Food Security Act Manual (NFSAM), and the National Environmental Compliance Handbook (NECH).

**Environmental Impacts.** Evaluate the impact of a proposed dam on water quality, fish and wildlife habitat, forest, and visual resources and identify and address the techniques and measures

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

necessary to overcome the undesirable effects.

**Materials.** All materials to be used in constructing the diversion dam and appurtenances shall have the strength, durability, and workability required to meet the installation and service conditions of the site.

**Structural design.** Design the appurtenant structures to withstand all anticipated loads.

**Outlet works.** If part of the flow is to be diverted, the outlet works must provide for positive control of both maximum and minimum flow rates consistent with the purpose for which the diversion is made. The outlet works must provide for safe diversion of all expected flows, considering such hazards as the potential for erosion, cavitation, and reduction in flow capacity due to the buildup of debris and sediment.

**Bypass works.** The bypass works must be capable of passing all flows needed to satisfy downstream priorities and all flows in excess of diversion requirements, including expected flood flows. This may require a combination of orifices, weirs, and gates designed to meet the requirements of the site. The bypass works must provide for safe bypass of all expected flows, considering such hazards as the potential for erosion, cavitation, and reduction in flow capacity due to the buildup of debris.

**Special-purpose works.** If debris, bed load materials, or sediments are present under flow conditions subject to diversion, provision shall be made to bypass or remove materials that may be detrimental to the functioning of the outlet works, to other parts of the works, or to areas to which diversion is made. This may require the use of settling basins, debris traps, trash guards, or sluiceways, depending on site conditions.

**Vegetation.** Vegetate all disturbed areas, not otherwise covered or protected, as soon as practical after construction. If soil or climatic conditions preclude the use of vegetation, and protection is needed, non-vegetative materials, such as mulches, gravel, and rock riprap may be used. Follow Florida NRCS conservation practice standard, Critical Area Planting, Code 342 for vegetation requirements. The vegetation shall be maintained and undesirable species controlled.

**Renewable Energy.** Renewable energy systems shall meet applicable industry design standards and shall be in accordance with manufacturer's recommendations. Hydropower systems shall be

operated and maintained in accordance with manufacturer's recommendations.

## CONSIDERATIONS

The effects of this practice on water quantity, water quality, and the environment should be considered during the planning process. Effects to be considered are:

- Effects on the water budget, on volume and rate of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
- Effects of the use of diverted waters for irrigation.
- Effects on the original watercourse, on the newly constructed watercourse, and on the area where the water is being diverted to and from.
- Effects on erosion and the movement of sediment, pathogens, and soluble and sediment-attached substances carried by runoff.
- Potential temperature changes in downstream waters resulting from differences in bank shading in different watercourses.
- Potential changes in the amount of soluble substances infiltrating and available for ground water recharge as well as the potential for salt pick-up.
- Potential for introducing new plant or animal species to either the upstream or downstream waters.
- Effects on the natural migration of fish.

## PLANS AND SPECIFICATIONS

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

As a minimum, the plans and specifications shall include:

- Location of the dam.
- Plan, profile and cross-sections of the dam.
- Profile of the outlet structure.
- Structural details as appropriate.
- Vegetative requirements.

### OPERATION AND MAINTENANCE

An operation and maintenance (O&M) plan shall be provided to and reviewed with the landowner. Typical maintenance requirements may include, but are not limited to, the following items:

- removal of accumulated trash and debris from the structure,
- repair of gates, screens, and other appurtenances,
- repair of any erosion around or downstream of the structure.

### REFERENCES

Florida Administrative Code, Chapter 40A-44  
Florida NRCS Conservation Practice Standard,  
Critical Area Planting, Code 342  
Diversion, Code 362  
Dam, Code 402  
Grade Stabilization Structure, Code 410  
General Manual  
Title 420-Part 401  
Title 450-Part 401  
Title 190-Parts 410.22 and 410.26  
Microhydropower Handbook, Sections 4 and 5.  
National Cultural Resources Handbook  
National Environmental Compliance Handbook  
National Food Security Act Manual  
National Planning Procedures Handbook  
Florida Supplements to Parts 600.1 and 600.6