

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**DAM, MULTIPLE-PURPOSE**

(No. and acre-ft.)

**CODE 349**

**DEFINITION**

A dam constructed across a stream or a natural watercourse that has a designed reservoir storage capacity for two or more purposes, such as floodwater retardation and irrigation water supply, municipal water supply, and recreation.

**PURPOSES**

This practice may be applied as part of a resource management system to support the following purpose:

A multiple-purpose dam must provide distinct and specific storage allocations for two or more of the following purposes: (1) floodwater retardation, (2) irrigation, (3) fishing, hunting, boating, swimming, or other recreational uses, (4) improve environment or habitat for fish and wildlife, (5) municipal water supply, (6) industrial water supply, and (7) other uses. (A reservoir for which multiple use is made of the same storage allocation is not a multiple-purpose dam; however, a dam designed for joint-use storage is a multiple-purpose dam.) Sediment storage is not considered a separate purpose except as indicated under Sediment Basins (350).

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies only to sites meeting all the following criteria:

1. Topographic, geologic, hydrologic, and soil conditions at the proposed site are satisfactory for constructing a feasible dam

and reservoir.

2. The watershed is protected from erosion to the extent that the sediment yield will not shorten the planned effective life of the reservoir.

3. Water is available from a single or combined source of surface runoff base flow or from subsurface storage in sufficient quantity and adequate quality to satisfy the intended purposes.

**CRITERIA**

General Criteria Applicable To All Purposes

**Foundation, embankment, and spillway.** All dams designed under this standard shall meet or exceed the foundation, embankment, and spillway criteria called for in *NRCS* standard for Ponds (378) or in TR-60 (NEH, Part 628, Dams), as appropriate.

**Floodwater retarding pool and spillway.** Dams having a floodwater retarding purpose shall meet or exceed the requirements of *NRCS* standard for Floodwater Retarding Dams (402).

**Outlet works.** Outlet works discharging releases for several purposes shall have adequate capacity to carry the peak flow resulting from the combined demands at any time. Outlet conduits and appurtenances shall be designed according to criteria that equals or exceeds that called for in *NRCS* standard for Ponds (378) or in TR-60, as appropriate.

**Storage.** The usable storage capacity shall be adequate for all purposes. Seasonal variations in demand and the expected losses from seepage and

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

evaporation must be considered.

**Sediment storage.** The capacity, in addition to that required for all other purposes, must offset depletion by sediment accumulation for a period equal to the design life.

**Type of structures.** All dams and appurtenances shall be designed to meet applicable *NRCS* standards for the specific type and class of structure.

## CONSIDERATIONS

This practice may impact cultural resources and must comply with GM 420 Part 401 during planning prior to installation and during construction. Planning shall consider the impact to the stream resource, including fish passage as well as change to wetlands and other natural systems. This practice will impact downstream landowners and users and must be examined during planning and during maintenance.

Planning considerations include:

### Quantity

1. Effects on the water budget, especially of longer downstream flow duration, evaporation from the water surface, and infiltration in the bottom and sides of the pool area.
2. Effects of water taken from the reservoir for agricultural, industrial, or municipal use.

### Quality

1. Effects on the movement of sediments, pathogens, and soluble and sediment-attached substances carried by runoff.
2. Effects of increased downstream bank saturation resulting from longer flow duration on erosion and sediment yield.

3. Potential use of the reservoir for recreation. Factors include increased use of pesticides, human waste, and other pollutants.
4. Effects of sediments pool on temperature and dissolved oxygen on downstream waters.
5. Effects of location of the outlet structure on downstream water temperatures and dissolved oxygen.
6. Changes in ground water quality caused by increased infiltration of soluble substances.

## PLANS AND SPECIFICATIONS

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

Specifications for dams to which the criteria in TR-60 (NEH, Part 628, Dams) applies shall be in accord with the guide specifications contained in National Engineering Handbook, Part 642, Specifications for Construction Contracts.

## OPERATION AND MAINTENANCE

A site specific operation and maintenance plan shall be prepared and provided to the owner and/or operator of the facility that is consistent with the purpose of the practice, its intended life, safety requirements, and the criteria for design..

## REFERENCES

TR-46 Gated Outlet Appurtenances

TR-60 Earth Dams and Reservoirs