

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

REGULATING WATER IN DRAINAGE SYSTEMS

(acre)
CODE 554

DEFINITION

Controlling the removal of surface or subsurface runoff, primarily through the operation of water-control structures.

Scope

This standard applies to the regulation of surface and subsurface water outflow through drainage systems. This frequently required other allied practices, (see "Design Criteria").

PURPOSES

To conserve surface or subsurface water by controlling the outflow from drainage systems to maintain optimum soil moisture conditions. Such conservation of water will make it possible to:

1. Establish and encourage the growth of desired field or forest plants,
2. Reduce subsidence and wind erosion of organic soils,
3. Hold water in channels in forest areas to act as ground-fire breaks and provide drinking water for wildlife and a resting and feeding place for waterfowl.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to where drainage is needed during certain periods and where it is advantageous to limit the outflow or pumping rate at other times. This practice is especially applicable in organic soils and in highly permeable soils of low available water capacity.

Regulation of outflow shall be undertaken only if soil water salinity or alkalinity is not likely to be a problem.

CRITERIA

The water management system must have the depth, spacing, and capacity to provide the necessary drainage

relief for the plants when controls are open. Control of outflow shall be by structures or pumps capable of removing the design flow or if regulating water stages in the drainage system. The outflow controls shall be related to the amount of water available and the degree of control necessary for soil and plant requirements.

The design of related water management practices will need to be coordinated with this practice for it to achieve its intended purpose.

For crops that are highly sensitive to excessive and inadequate soil water conditions, the field surface must be smooth, and the distance between the soil water level and the ground surface must be as uniform as practical. Fields shall be smoothed or graded, as required, to achieve this uniformity. Structures and pumps shall be located where they are accessible and subject to convenient control.

CONSIDERATIONS

Water Quantity

1. Effects of the water budget variations on the water supply either above or below the point of control.
2. Effects of changes in the flow of downstream water courses.

Water Quality

1. Effects of outflow on erosion in downstream water courses.
2. Effects of possible changes in the yields of sediment and sediment-attached substances.
3. Potential for changes in dissolved chemical loading from nitrates and other salts including managing denitrification.
4. Salinity of soils and of ground and surface waters.
5. Effects on downstream temperatures.

6. Effects of the planned drainage outflow on the visual quality of discharge or downstream water.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

PLANS AND SPECIFICATIONS

Plans and specifications for regulating water in drainage systems shall be in keeping with this standard and shall describe the requirements for properly installing and operating the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

A plan of operation shall be prepared for the system that will insure that the objectives are met. The plan of operation shall include such information as time and stage to hold water in ditched, pumping, schedules, and coordination of water management operations in the system with rainfall, season, and crop and soil moisture needs.