NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

HILLSIDE DITCH

(feet)
CODE 423

DEFINITION

A channel that has a supporting ridge on the lower side constructed across the slope at defined vertical interval and gradient, with or without a vegetative barrier.

PURPOSE

To reduce erosion by shortening the flow path length on a hillside. To safely control the flow of water by diverting runoff into a stable outlet.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to sloping sites where surface flow is damaging sloping upland, and there is sufficient soil depth for constructing a hillside ditch system.

CRITERIA

Location. Hillside ditch systems shall be designed to fit land conditions such as soil texture, and field slope. They shall drain to a stable outlet.

Outlets. Adequate outlets with enough capacity to dispose of discharge water without creating an erosion hazard shall be provided before beginning construction. Such outlets may be a natural or constructed waterway, a stable watercourse, or a stable disposal area, such as well-established pasture.

Length. Maximum length draining in one direction should be 400 feet. This length may be extended if necessary to reach a stable outlet. In no case shall the maximum length exceed 500 feet.

Permissible velocities. Velocity in the channel shall be compatible with the soil and shall not exceed the limits shown in Table 1 *or Table 2*.

TABLE 1: MAXIMUM VELOCITIES (fps)

Soil Erosion Resistance Group

I	*II*	*III*	*IV*
5.5	*4.5*	*3.5*	*2.5*

TABLE 2 MAXIMUM VELOCITIES (fps)

Soil Texture	*Bare Channel*
Sand and sandy loam	*2.5*
Silty loam	*3.0*
Sandy clay loam	*3.5*
Clay loam	*4.0*
Stiff clay and fine gravel	*5.0*

Grade. *The ditch grade may be either constant or variable. Grade shall not exceed two percent.*

Side Slopes. *Side slopes shall be stable for the soil in which the ditch is constructed.*

Horizontal spacing and cross-section area. The maximum horizontal spacing and minimum cross-sectional area per 100 ft of ditch shall be as specified in Table *3.*

Table *3*

Average	Maximum	Minimum cross-sectional area

Slope (percent)	Spacing (feet)	per 100-ft length (square feet)
12 or less	40	0.35
13-25	35	*0*.3
26-40	25	*0*.2

Establishment of vegetative barriers will be required in areas where average slopes exceed 25%. *Vegetative barriers shall be located upslope of the hillside ditch.* Follow guidance of vegetative barrier installation found in Conservation Practice Standard 601 - Vegetative Barrier.

CONSIDERATIONS

When planning this practice, consider the following as applicable:

Effects upon components of the water budget, especially effects on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.

Filtering effects of vegetation on movement of sediment and dissolved and sediment-attached substances.

Short-term and construction-related effects of this practice on the quality of downstream water.

Potential for development of saline seeps or other salinity problems resulting from increased infiltration in the presence of restrictive layers.

Potential to affect significant cultural resources.

PLANS AND SPECIFICATIONS

Plans and specifications for constructing hillside ditches shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

Plans (design drawings) should include:

a. Location in the field

b. Land slopes

c. Horizontal spacing

d. length,

e. cross section width, depth, and side slopes, and

f. channel slope

g. type of outlet

OPERATION AND MAINTENANCE

The Pacific Islands Area Operation and Maintenance Plan for Hillside Ditch shall be completed and provided to and reviewed with landowner/operator. The plan shall include provisions to address the following, as a minimum:

Maintaining hillside ditch capacity (cross sectional area and grade), ridge height and the outlets by removal of sediment;

Removing vegetative growth and/or debris interfering with the proper functioning of the ditch;

Removing debris interfering with the outlet operation;

Maintaining vigorous and dense vegetation in the outlet;

Maintenance and repairs should be made on a routine basis and especially after heavy rainfall events.