Constructing a Worm Ditch above a headcut on Holman Wet Meadow, September 2003

WORM DITCH

Headcut Treatments

The higher the falls, the more power is available for eroding soil substrates at the base of the cut and the more difficult it is to repair the headcut. Turbulence at the base of the falls undercuts the headwall, which leads to cracking and sloughing. Exposure to sun and air during no-flow periods further dehydrates the soil.

Headcuts are characterized by:

- a waterfall or abrupt change in slope of a streambed;
- a fragile, cracked, or crumbling lip of the falls;
- a bowl-shaped pool at the base of the falls (plunge pool);
- undercutting; and
- rapid head-ward erosion during flood flows; followed by drying, cracking, and sloughing during low-flow or no-flow periods.

Healing Principles:

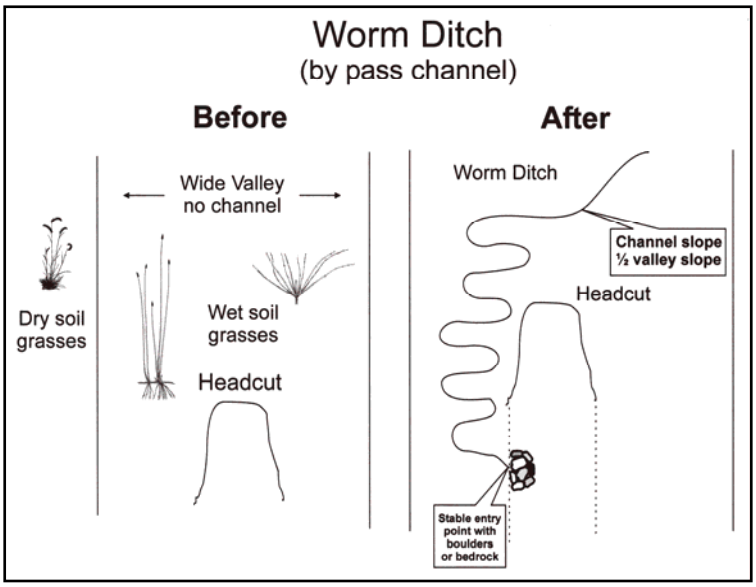
- Lower the height of the falls to reduce the force of falling water.
- Widen the lip of the falls to disperse the flow.
- Harden the base of the falls to protect substrates.
- Conserve soil moisture to enhance plant growth and develop an erosion-resistant root mass.

Successful headcut control depends on the successful application of the above principles. These are some techniques that have been shown to be effective:

•Worm Ditches **•Log and Fabric Step Falls** **•Rock Bowls**

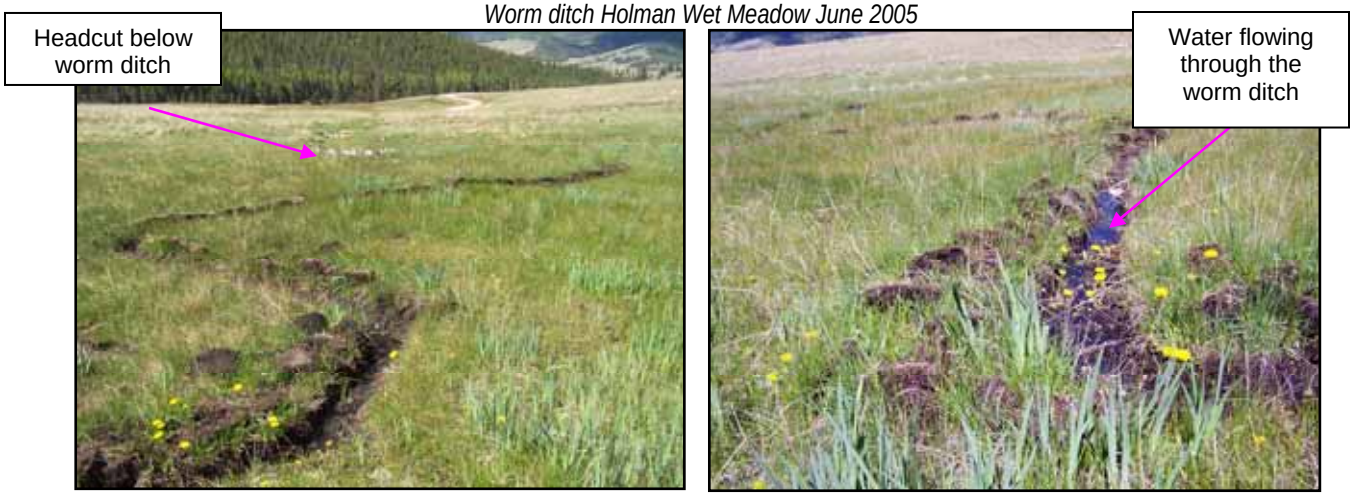
Worm Ditch (Bypass Channel). One way to stop a headcut is to starve it for water. Accomplish this by digging a bypass ditch around the headcut. A successful bypass will require: (1) a broad valley with sufficient space between the gully and the hill slope for the worm ditch; (2) a well armored re-entry point downstream of the falls, and (3) wetland soils capable of supporting a dense growth of wetland plants such as sedges.

Select a starting point above the headcut that will collect most of the concentrated runoff. A point 50 to 100 feet upstream should suffice. Select the re-entry point downstream. Measure the straight line distance (the "valley length") between those two points. The constructed worm ditch should have a channel length about two times the valley length and a constant slope of about 1%.



Tip: Use a length of rope twice the valley length. On a trial and error basis, lay out the rope in a series of evenly spaced meander loops connecting starting and ending points. This will be the course of the new channel. Using a sharp spade or shovel, dig a meandering channel next to the rope. Make it to 12 to 18 inches wide and 6 to 12 inches deep. Scatter the soil. Do not build a levee along the downstream edge of the ditch except to plug any low spots. Flood flows will follow the channel but some water will spill over to irrigate the wetland plants and heal the cut.

Worm ditch Holman Wet Meadow June 2005



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