Grassed Waterways

Nebraska Conservation Planning Sheet No. 3

USDA Natural Resources Conservation Service
Lincoln, NE

reprinted June 1995

What is a grassed waterway?

Grassed waterways are areas planted to grass where water concentrates as it runs off a field. Grass in the waterway slows the water and guides it off the field. Grassed waterways are usually designed by the Natural Resources Conservation Service because many require dirt movement to reshape the land. However, in some cases, you may be able to reshape a gullied area yourself and seed it to grass.

How it helps the land

Grass or permanent vegetation established in waterways protects the soil from concentrated flow and significantly reduces gully erosion.

Where the practice applies

Grassed waterways should be used where gully erosion is a problem. The most common areas are in draws between hills and other low-lying areas on a slope where water concentrates as it runs off a field. They are also used for outleting terraces and diversions.

Where to get help

Your local NRCS staff can design waterways for large drainage areas. They can also provide guidance for controlling small gullies with grass. Ask NRCS for a short video segment, "Controlling Small Gullies with Grass." It's part of a video series called "Conservation On Your Own."

Applying the practice

This practice is considered to be applied when waterways are installed to the dimensions shown in Figure 1 and seeding is established. Before you begin establishing grass, you should know the drainage area for the waterway. Large drainage areas

that require reshaping the land should be carefully designed. Your NRCS office can tell you whether major land shaping is needed. Smaller areas can be shaped by the farmer and seeded.

Below are guidelines for constructing your own grassed waterways in small drainages. Design charts may be available in small drainage areas to allow you to design your own waterway.

- Areas with drainage of 7 acres or less where small gullies develop may be shaped and seeded.
- These areas should be shaped so they closely coincide with the original landscape and provide a defined channel for conveying runoff.
- These areas need to be seeded at least 20 feet wide.
- Begin preparing the seedbed slightly above the point the gully begins and end it where water spreads out and no longer cuts a gully. As you shape the area, keep in mind that you want water to run down the center of the grassed area.
- Apply fertilizer as recommended.

Recommended fertilizer (lbs/ac) for your waterway(s)

N	P	K
_____	_____	_____
Lime	Iron	Zinc
_____	_____	_____

Recommended seeding for your grassed waterways

Species/variety	Pure live seed lbs/ac
_____	_____
_____	_____
_____	_____

- A firm seedbed before planting will greatly increase the chances of a good grass stand. A good way to check is to step on the seedbed. If your footprint is less than a half-inch deep, you've got a firm seedbed. You may need to use a roller or cultipacker to get a firm seedbed.

- Seeding with a grass drill is recommended.
- Seed should be planted on a pure live seed (PLS) basis.
- Certified seed is recommended for best results. Common seed tested in accordance with Nebraska seed law can be planted.
- Plant grass seed 1/4 inch to 1/2 inch deep in most soils and 3/4 inch deep in sandy soil. The best seeding direction is diagonal across the waterway. If you broadcast, cover the seed lightly with a harrow. Seeding may be completed after November 1 and before May 30 for warm and/or cool season grasses. Cool season grasses may also be seeded during the late summer (August 10 to September 15).
- If construction is completed at any time other than the above seeding periods, seed 1 - 1 1/2 bushels of milo, wheat, or oats as temporary cover. Then seed grass during the next seeding period.
- Small grains may be seeded at the maximum rate of 3/4 bushel per acre during the spring as a companion crop when seeding grass. Mow small grain before it heads out.
- Using a mixture of grasses works best. Select species that are tolerant to herbicides.
- Mulch the area, if possible, to protect the area until grass is established. Anchor the mulch using a straight disk. Make only one trip over the mulch.

Requirements of grassed waterways

In Figure 1 are the requirements for grassed waterways on your farm. See your conservation plan map for locations of waterways.

Figure 1

Field # / Tract _____
Waterway # _____
Dimensions:
depth _____
bottom width _____
length _____

Field # / Tract _____
Waterway # _____
Dimensions:
depth _____
bottom width _____
length _____

Field # / Tract _____
Waterway # _____
Dimensions:
depth _____
bottom width _____
length _____

Field # / Tract _____
Waterway # _____
Dimensions:
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bottom width _____
length _____

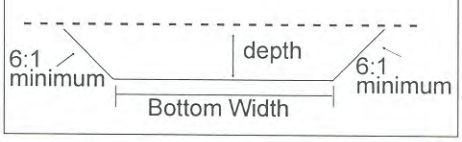
The area occupied by the waterway channel and side dikes should be cleared and grubbed of all trees, brush, and stumps prior to construction.

Fill material will normally be obtained from the sides of the existing channel. This material should be free from rocks, brush, and other objectionable material. Frozen materials will not be placed in the fill nor will materials be placed on a frozen foundation.

Saline, alkaline, or other undesirable soils uncovered during filling and shaping should be undercut and replaced with suitable compacted topsoil so that vegetation can be established.

Side slopes should be constructed at a minimum of 6 feet horizontal to every 1 foot vertical slope (Figure 2).

Figure 2. Waterway cross section



The channel and side slopes will be reasonably smooth and uniform for easier seedbed preparation.

Other considerations

- Constructing side dikes on the outside edge of waterways will keep runoff water from entering the waterway and allow the waterway to establish quicker. **Side dikes must be removed promptly when grass is established to prevent excessive gullies along the sides of the waterway.**
- Establishing grassed waterways before terraces drain into them will reduce failures.

Maintaining the practice

Proper maintenance will protect your investment in a grassed waterway. To ensure longevity of the waterway:

- Lift implements out of the ground before crossing the waterway.
- Bring row crop patterns into the waterway nearly level, or use it as the turn area. Don't plant end rows along the side of the waterway; they contribute to failure.
- Fertilize periodically.
- Inspect frequently for areas that need reseeding. Remove sediment deposits to maintain capacity. Repair any ruts, rills, gullies, or any problems.
- Maintain the width of the grass area when tilling and planting surrounding fields.
- Don't let herbicide spray continue into the waterway.
- Control weeds by mowing or spraying with herbicides that do not harm the grass.
- Mowing or haying yearly is recommended and will increase the life expectancy of waterways. To benefit wildlife nesting, mow *after* July 15 but *before* September 1.
- Don't use the waterway as a road. Vehicle tire tracks can lead to the formation of a gully.
- New seedings should be protected from livestock until established. In established waterways, reducing livestock trailing will prevent gullies from forming.

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