

## Resource Concerns

# Concentrated Flow Erosion

### Soil

#### Soil Erosion

Sheet, Rill and  
Wind Erosion

Concentrated Flow  
Erosion

Shoreline, Bank  
and Channel  
Erosion

Soil Quality  
Degradation

### Water

### Air

### Plants

### Animals

### Energy

## Soil Erosion - Concentrated Flow Erosion

Untreated classic gullies may enlarge progressively by head cutting and/or lateral widening. Ephemeral gullies occur in the same flow area and are obscured by tillage. This includes concentrated flow erosion caused by runoff from rainfall, snowmelt, or irrigation water.

### What is it?

Ephemeral and classic gully are forms of erosion created by the concentrated flow of water. They are easily identified through visual observation. An ephemeral cropland gully is larger than a rill and smaller than a classic gully. They usually result from the junction of rills that form a dendritic (branching or tree-like) pattern of channels. Ephemeral gullies usually appear on cultivated fields during the planting or growing season, but are temporarily removed by cultivation. Ephemeral gullies can reappear at or near the same location on a yearly basis because the surface topography of the field does not change appreciably. Classic gully erosion generally occurs in well defined drainage ways and generally is not obliterated by tillage. In some situations, headcuts are present and aid in advancing the gully upstream.

### Why is it important?

Concentrated flow erosion removes surface soil, which often has the highest biological activity and most soil organic matter. Nutrients removed by erosion are no longer available to support plant growth on-site, and when they accumulate in water, algal blooms, lake eutrophication, and high dissolved oxygen levels can occur. Deposition of eroded materials can obstruct roadways and fill drainage channels. Gullies can impact farm operations by creating barriers that change traffic patterns and create hazards that can damage farm equipment.

### What can be done about it?

Ephemeral erosion can be controlled using a conservation cropping system that includes residue management. High residue crops and maintaining soil cover throughout the year are effective means for controlling ephemeral erosion and aid in the control of classic gully erosion. Gully formations can be difficult to control if remedial measures are not designed and properly constructed. Correcting concentrated flow erosion involves mitigating the damage and addressing the cause. The cause of increased water flow across the landscape must be considered and the corrective action usually requires a system of conservation practices. Conservation tillage and cropping practices that increase water infiltration into the soil result in less runoff and protect land from erosion.

## Concentrated Flow Erosion at a Glance

Problems / Indicators - Branching or tree-like pattern of rills, gullies, headcuts	
Causes	Solutions
<ul style="list-style-type: none"> <li>Bare or unprotected soil</li> <li>Excess runoff</li> <li>Inadequate outlet for water</li> </ul>	<ul style="list-style-type: none"> <li>Residue management</li> <li>Cover crops</li> <li>Terraces and/or grassed waterways</li> <li>Grade stabilization structure</li> <li>Lined waterway or outlet</li> <li>Water and sediment control basin</li> </ul>