

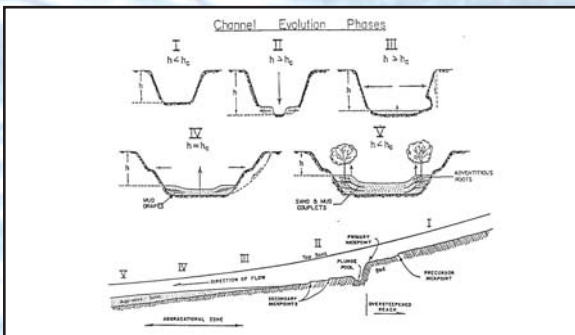
## Advantages of Installing Streambank Stabilization Practices:

- Stabilizes eroding banks and reduces down-stream sedimentation.
- Low cost, in terms of materials, installation and maintenance.
- Can be installed at any time when water levels are low enough to allow construction (willow posts are installed when they are dormant).
- Enhances self-establishment of native vegetation in a very short time after construction. Vegetation can be added at the next planting season using willow posts, grasses or other suitable vegetation.
- Will enhance or improve aquatic habitat by increasing diversity.
- Provides for minimal disturbance of existing vegetation on the streambank.

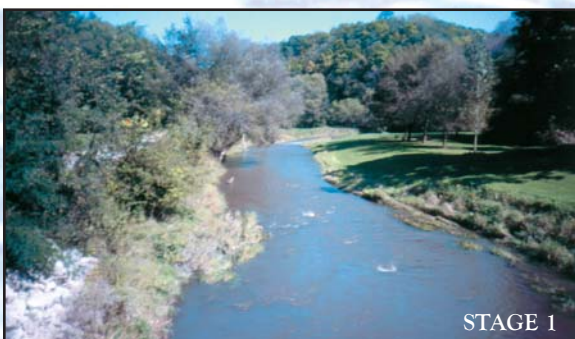
## How Do Costs Compare to “Traditional” Methods?

“Traditional” methods of controlling streambank erosion rely on large quantities of riprap and /or a variety of concrete and steel structures. These methods typically cost \$50 to \$300 per foot of linear bank treated. The “low cost” methods described in this brochure can be installed for \$15 to \$25 per linear foot with limited use of materials and maintenance.

## Channel Evolution Model



The Channel Evolution Model shows how streams naturally progress through predictable stages following bed erosion.



A channel in which stream flow, velocity, bank materials and vegetation are in a naturally balanced environment without modifications.



Channel modifications, especially channelization, are primary causes of increased velocities and eroding channel bottoms.

## Assistance with Streambank Erosion Control

The key to successful stabilization is an understanding of the natural processes that are causing destabilization at each location. Once the cause of the problem is determined, a low-cost, innovative solution may be found. Individuals interested in receiving technical assistance in the assessment and treatment of streambank erosion problems should contact one or more of the following agencies:

- Association of Illinois Soil and Water Conservation Districts  
[www.ilconservation.com](http://www.ilconservation.com)
- Local Soil and Water Conservation Districts  
[www.ilconservation.com](http://www.ilconservation.com)
- Illinois Department of Agriculture  
[www.agr.state.il.us/Environment/LandWater/index.html](http://www.agr.state.il.us/Environment/LandWater/index.html)
- University of Illinois Extension  
[www.extension.uiuc.edu/welcome.html](http://www.extension.uiuc.edu/welcome.html)
- Illinois Department of Natural Resources  
[www.dnr.state.il.us](http://www.dnr.state.il.us)

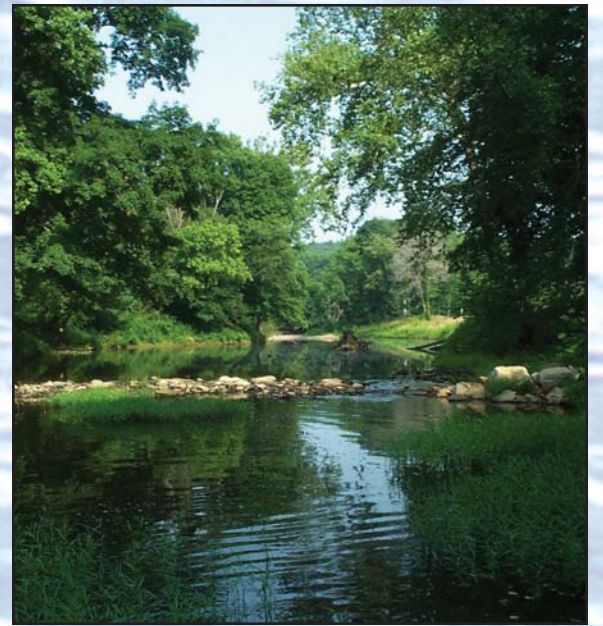
Certain types of stream work require permits. For more information, contact your U.S. Army Corps of Engineers, District Regulatory Office, and the Illinois Department of Natural Resources, Office of Water Resources.

*This publication was printed by authority of the State of Illinois and produced by the Illinois Department of Agriculture, Association of Illinois Soil and Water Conservation Districts and the University of Illinois Extension.*

Streambank erosion is a natural process that occurs in all streams as water flows through the channel and wears away soil and rock. This is a common resource concern seen in waterways throughout the state resulting in degraded water quality, unstable structures, and increased flood risks impacting landowners, communities and watersheds both environmentally and economically. Streambank erosion has become a serious threat to land, water, plant and animal resources. Leaving eroding streambanks untreated can cause loss or damage to buildings, roads, wildlife habitat, farmland and other property.

Understanding stream behavior is crucial in order to stabilize and maintain Illinois’ streambanks. By utilizing the Channel Evolution Model to identify what stage of erosion a stream is going through (deepening, widening or building floodplain) it is possible to select the appropriate treatment option to correct the problem.

# Streambank Stabilization in Illinois



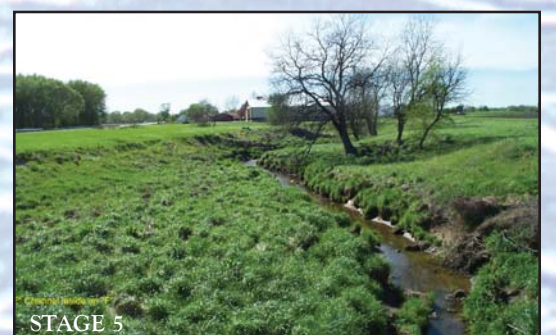
## Protecting Land, Property and Water Quality



After channel bottoms have eroded deeper, they begin the widening phase.



After channels have widened, they begin to stabilize and build a new floodplain at a lower elevation.



After channels have completed the formation of a new floodplain they return to a stable condition, although at a lower elevation.



# Discover How to Work With Streams Naturally

## Choosing the Right Method of Stabilization

### Preferred Treatment for Stage 1 and 5 Channels

If your streambank is in Stage 1 or 5, it is practically stable and may only require minor spot treatments.

- Willow Posts – Dormant Willow Posts are inserted into the streambank with the bottoms submerged below water level. Posts regenerate into willow trees while roots and branches armor the stream bank.
- Vegetation – Other types of vegetation can be used, ie: prairie grasses, shrubs, etc. along with erosion netting.



### Preferred Treatment for Stage 2 and 3 Channels

Streams that are in Stage 2 or 3 have eroding (or eroded) channel bottoms and if left untreated, the problem will continue to move upstream.

- Rock Riffles are a series of low rock dams that slow the velocity and “stair step” water down a steep grade so that bank and bottom erosion are controlled.



Choosing the right method of stream stabilization that most effectively addresses the concern involves matching the problem with the treatment method. Before selecting a treatment, identify the underlying cause of bank erosion by determining the Channel Evolution Model Stage. By utilizing the Channel Evolution Model, you can determine which treatments will address the erosion problem at any specific site. Installation of the wrong practice will not solve the problem and could lead to failure of the treatment.

*By utilizing the Channel Evolution Model, you can determine which treatments will address the erosion problem at any specific site.*

More than one treatment method can be combined to effectively return the stream to a stable condition. Typical combinations are:

- Rock Riffle/Stone Toe Protection
- Bendway Weirs/Stone Toe Protection
- Willow Posts/Stone Toe Protection

It is also important to identify how one segment of stream is affected by the surrounding watershed and other stream segments. When evaluating your stream for erosion problems, you must look at more than just one eroding section. Often, controlling channel erosion requires two or more landowners working together to find a satisfactory solution. Some streams have been disrupted so badly that it is nearly impossible to solve the problem without a watershed planning approach involving many landowners. Contact a qualified stream specialist at one of the agencies listed in this brochure for assistance in evaluating the stream before attempting to install a streambank stabilization project.

### Preferred Treatment for Stage 3 and 4 Channels

Streams in Stage 3 or 4 have stopped getting deeper, but are widening and/or meandering trying to establish and build a new floodplain.

- Bendway Weirs are a series of low rock structures angled upstream on the outside bend. As water passes over the top of the bendway weir, it is directed at right angles to the crest of the weir. By using a series of bendway weirs, water flow is redirected through the eroding bend by each weir.



- Stream Barbs are different from bendway weirs in that they are angled more aggressively upstream and have a sloped crest diverting stream flow away from highly erodible streambank areas.



### Preferred Treatment for Stage 4 Channels

If the stream is in Stage 4 (removed stage 5) the channel is beginning to stabilize and floodplain development is near completion. Minimal protection may need to be installed to aid the establishment of vegetation that will prevent excessive widening and/or meandering of the stream.

- Stone Toe Protection is the placement of stone (peaked), parallel to the bank, providing protection for the toe and stabilizing the lower portion of the bank allowing vegetation to establish above the stone.

