Streambank Erosion: Know the Law

Stream erosion issues are not easy to fix and should take time and careful consideration before deciding the best course of action, including understanding the law.

Under Ohio common law, the landowner of a stream owns the land underneath the water, not the water running through it. Landowners of a stream have reasonable use to the water flowing through the stream as long as they do not cause harm to up or downstream neighbors. On navigable streams, boaters have the right to navigate on the stream, regardless of who owns the land beside it.

While you may own the land, there are still other considerations before addressing streambank erosion. Any in-stream work may require permits from the U.S. Army Corp of Engineers and the Ohio EPA depending upon the size of the stream and the project. You also need to check with the local Floodplain Manager and the Zoning department to determine if there are any other requirements.

Natural Stream Processes

Streams are dynamic systems that transport water and sediment. Sediment is carried into the stream from the surrounding drainage area, and this is balanced by the stream transporting and discharging this sediment downstream. A natural stream exists in a dynamic equilibrium, maintaining itself through annual floods that clear the channel of sediments, debris, and vegetation that may have accumulated. With an increase in development, such as roads, driveways, parking lots, buildings, etc., it has become harder for water to soak into the ground. More and more of this water is directed towards our streams, increasing the volume of water during these storm events. Due to this, our streams can experience more erosion as they are no longer in equilibrium.

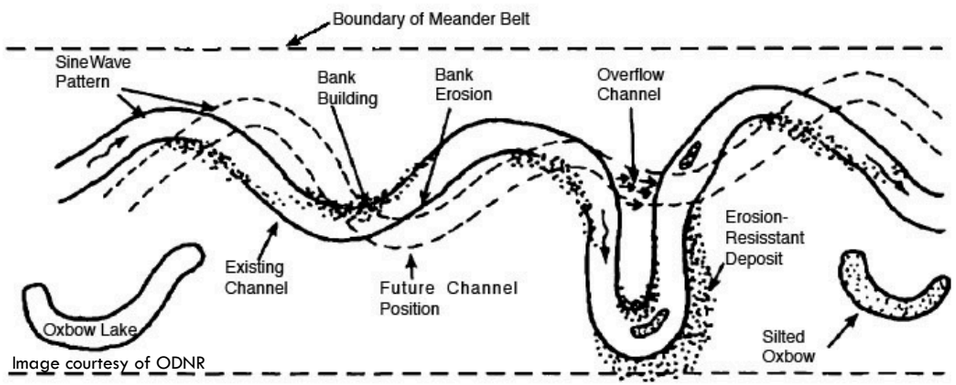

Image courtesy of ODNR

Occasionally, this dynamic nature can cause concerns with streambanks eroding and impacting residential homes and infrastructure. When we look at streambank erosion, we must remember that erosion is a natural process. Streambanks naturally move over time, with some areas being built up with sediments and others eroding away. It is not always necessary to address streambank erosion, but when infrastructure or homes are threatened, it may be time to take action.

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Visit our streams page to view our updated Stream Maintenance Guide!

You can also contact the Butler Soil & Water Conservation District for technical assistance with:

- Ponds
- Trees
- Rain gardens
- Drainage
- Erosion problems
- And much more

STREAMBANK STABILIZATION:

ENGINEERING

BUTLER
SOIL & WATER
CONSERVATION DISTRICT

What is Causing your Erosion?

Streambank erosion can be caused from many different issues - an increase in the speed or amount of water, in-stream obstructions, a lack of streambank management, and more can play a role.

In-Channel Obstructions:

Downed trees and other obstructions can change the flow of the water, which can then lead to streambank erosion and eventually channel evolution.

Increase in Impervious Surfaces:

An impervious surface is one that does not allow water to pass through it. With rapid urbanization, we have expanded the number of roads, driveways, buildings and parking lots. Due to this, the speed and volume of water arriving in our streams has increased.

Poor Streambank Management:

A reduction in the amount of vegetation along a stream edge, commonly known as the riparian zone, leads to erosion. A well developed riparian zone and roots of diverse vegetation bind the soil together, greatly reducing erosion. Non-native plants and lawn grasses typically do not have the extensive root systems found in native vegetation.

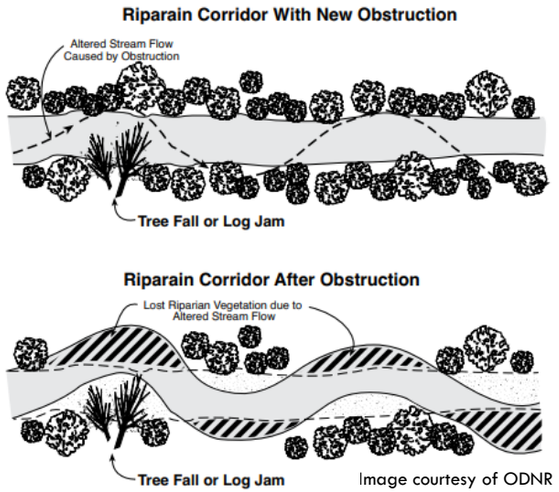

Image courtesy of ODNR

Traditional Methods

Many people assume that dumping asphalt, railroad ties, concrete slabs, or cinder blocks over an eroding bank will help, but this tends to worsen the problem. The velocity of the stream tends to increase as water runs off of the hard surfaces like concrete slabs. This can cause erosion to occur downstream. Water can easily erode underneath slabs and bricks as well. These materials can also impair important habitats and narrow stream channels as they fall off the banks. Inappropriate solutions may cause more long-term damage than doing nothing at all.

Rip-rap tends to be used commonly in stream stabilization projects but should be sized and installed properly in order to be effective. Rip-rap also needs to be maintained long term and installation needs to follow Ohio EPA and U.S. Army Corp of Engineers permitting.

Soft Engineering Techniques

While common stabilization methods involve rip-rap, concrete, or other hard armoring techniques, the techniques listed below involve soft or vegetative techniques. Hard armoring techniques can be used in locations where the banks can't be sloped back, but provide little habitat benefits and most hard armoring needs permitted.

Soft planting techniques provide more of a natural approach and provide habitat and shade to a stream. Planting native plants with large root systems can help hold soils together, preventing erosion. It is important to keep in mind that all of these techniques need to be incorporated correctly and should not be used on banks that have immediate stabilization needs.

Live Stake Planting

The installation of woody plant and tree cuttings on a graded streambank. These stakes are usually water tolerant species like willows and are usually harvested during the dormant season. See our streambank plantings brochure for more information.

Live willow stake

Live Fascines

The placement of bundles of branches in trenches dug out along the sloped back streambank. This technique can help protect the bank from erosion following vegetation establishment.

Brushmattress

A combination of live fascines, live stakes, and brush along the sloped back streambank. Toe rock protection can also be incorporated. The vegetation acts as a "mattress" to protect the bank while vegetation establishes.

Riparian Plantings

If space allows, keep a vegetated riparian buffer directly along the stream. Planting vegetation with deep root structures helps stabilize soils and protect against erosion. Trees, shrubs, and even grasses can do well along a streambank, including Black Willow and Buttonbush. Check out our streambank plantings brochure for more information.

Invasive Species Removal

It would also be ideal to properly remove invasive species, like honeysuckle, and replace with natives. Roots on honeysuckle trees are shallow and brittle and do not help prevent against erosion as much as deep rooted native plants. Removal of invasives should be paired with native plantings as soon as possible to protect streambanks.