

FACT SHEET: Streambank Restoration and Stabilization

Municipalities that are required to obtain MS4 permits in 2018 have submitted their pollutant reduction plans to PA DEP. When implemented, these plans include a variety of stormwater best management practices (BMPs) and projects to reduce the existing sediment and nutrient loads to local streams. Projects may include streambank stabilization, converting existing dry detention basins to dry extended detention basins or bioretention basins, converting grass swales to vegetated swales or bioswales, or installing underground stone infiltration trenches. Each of these stormwater BMPs reduces stormwater pollutants and improves water quality by decreasing the volume and/or velocity of stormwater discharge. One of the best projects to reduce sediment pollution is streambank stabilization.

► Why are Streambanks Unstable?

- Past practices of removing trees and shrubs along the stream corridor, or riparian area, accelerates erosion because an intricate network of roots is no longer present to stabilize the streambank.
- High volumes of stormwater runoff from impervious areas like roads, homes, and businesses discharge into streams causing excessive streambank scouring and flooding.
- Pastured livestock with direct access to streams degrades the structural stability of streambanks.
- Past practices of straightening stream channels increased the speed of flow causing excessive scouring of streambanks.



Severely-eroding banks along the Big Beaver Creek in Strasburg Township were an issue prior to restoration.



After construction, the streambanks are gradual. After this photo was taken, more than 2,000 native trees and shrubs were planted.

► How are Streambanks Stabilized?

- Earthwork: Regrading the streambanks to a more gradual slope minimizes the slumping of soil into the stream and provides a more suitable area for planting.
- Instream Structures: Constructing log vanes, mud sills, channel blocks, and other structures protects the streambank and/or diverts flows toward the center of the stream. Generally, these structures are made from natural materials such as tree trunks, root wads, and rocks.
- Vegetation: Planting native trees, shrubs, and perennial grasses in the riparian corridor provides stability and protects the streambank from excessive erosion.
- Streambank Fencing and Livestock Crossings: Installing fencing and designated areas for grazing animals to move from one side of a stream to the other minimizes streambank degradation.

► What are the Benefits of Stabilized Streambanks?

The following benefits are a byproduct of adopting and implementing BMPs to protect and preserve our water quality:

- Improved water quality by reducing the amount of soil erosion and sediment pollution.
- Protected land use and property loss from actively-eroding stream channels.
- Increased fish populations resulting from instream fish habitat structures such as log vanes, mud sills, and root wads.
- Better-quality streams because vegetated riparian buffers filter sediment, nutrients, and debris from overland stormwater runoff. These buffers also provide food and habitat for native wildlife populations.
- Nicer landscaping, which is more visually appealing.

Before you decide on a specific streambank restoration technique, identify the cause of the problem you wish to address and consider the most appropriate stabilization approach.



DID YOU KNOW?

- ▶ According to PA DEP, more than 50 percent of Lancaster County's 1,400 miles of streams are impaired.
- ▶ Currently, watershed groups, the Lancaster County Conservation District, and private developers are working to stabilize Lancaster County streambanks.

WE CAN HELP!

- ▶ Jim Caldwell
1-800-RETTEW-5, ext. 3203
jcaldwell@rettew.com
- ▶ Kara Kalupson, RLA, ASLA, CPMSM
1-800-RETTEW-5, ext. 3706
kara.kalupson@rettew.com