



What to do about....

Streambank Erosion

Investigation & Decision Making

Since you have picked up this information sheet it can be presumed that you have an area on your property where streambank erosion is causing a concern. All streams erode, cutting on one side and depositing on the other. It is nature's way of making a stream meander, slowing the water down, and thus minimizing some of the flooding occurring downstream. Consequently, straightening a stream is not usually recommended.

First, you will want to identify whether this erosion is extensive enough to warrant the funds and time it will take to intervene by installing erosion control measures. If left unchecked, will the erosion eventually cause major loss of property or affect structures? Once affirmed, installation of erosion control measures can be chosen based on the financial, physical and ecological limits for the site. The following is a typical outline for assessing a site for best management of a streambank in an urban area and the first steps of beginning an erosion control project.

The size of the watershed above the critical area is important in determining the best erosion control options. A watershed is the entire land area that drains to a certain point. You can get a general idea of how much water drains to your area by looking at the size of the first culverts upstream from the site. More precise calculations can be done by studying a topographic map. Knowing the size of the watershed will help you determine what types of erosion control will more likely hold in large storm events and will also help ascertain which permits are required.

Analyze the present and possible future use of land in your watershed. How much of the watershed is currently intensively developed (with buildings, streets, sidewalks, and other impervious surfaces)? The more impervious surfaces and lawn areas found in the watershed, the more likely is the need for extensive streambank erosion control, protection and/or restoration. If much of the land is presently undeveloped, assess how future development may affect your site. Plan erosion control measures accordingly.

Marion County has 17 distinctly different mapped soil types with varying amounts of sand, silt and clay which can affect how easily erodible the soil is. Soil maps are available online from the USDA Department of Natural Resources at <http://soils.usda.gov/survey/> or a digital copy of the Marion County Soil Survey can be purchased from the Soil & Water Conservation District. Soil maps will give a general idea of soil types in your area but may not show inclusions for small areas.

(Over)

**For more information contact the Marion County Soil & Water Conservation District
(317)786-1776 www.marionswcd.org**

Related to soil type is the steepness of the slope of the eroded area and the area draining to the critical area. Steep slopes create instability of the streambanks and sometimes the creation of rills and gullies as water drains quickly off the landscape. Check the steepness of the slope by comparing the run over the rise. For instance a 4:1 slope would have one foot of fall for every four feet you move back. Gentle slopes allow for more erosion control options, often which are much less expensive. Evaluate your site to determine whether steep slopes can be pulled back to a less erosive angle.

Look at the immediate area above the critical slope. If possible, divert surface water away so that it drains off to a safe or less critical area. If structures are near the top edge of the bank, add gutters and downspouts and divert the downspout water to a non-erosive area.

Check the availability of access. If a truck or machinery can not easily reach the site, materials may need to be brought in by wheelbarrows, increasing the cost of labor tremendously. You may need to request access to the property through a neighboring landowner. Be sure to include restoration of the neighbors' property to its original or improved condition in your job specifications.

Evaluate the amount of sun that the critical area receives. The number of hours of sun and the orientation of the slope and the protection or lack of protection from structures and landforms in the area determine the microclimate of the critical area. This information will help you choose appropriate plants for your site. Also, evaluate the types and condition of the existing vegetation. Plant varieties should be well suited to the soil type, water and light availability. Perennial plants with deep, strong root systems that are cold hardy are best for erosion control. If the slope is wooded, continually monitor the condition of the trees. If they show signs of stress, disease or damage, remove them. Also, remove any trees which have half of their root systems exposed. These trees are a hazard; if they fall in a storm they will most likely uproot a large portion of the bank. In most instances you will want to keep the tree stumps in place so the remaining roots can continue to hold the bank. If existing vegetation is in fair shape, evaluate whether adding additional vegetation or hard armor along the streamflow zone will be sufficient to hold the bank.

Personal preference, short and long term maintenance issues and aesthetics can often play a part in choosing an erosion control method. Hard armoring, such as appropriately sized rock rip-rap, gabion baskets or retaining walls have traditionally been chosen for critical, steeply sloped areas because of their minimal maintenance and durability. Bioengineering has produced good options for those who would rather use plant and natural materials to control erosion. These options may be ecologically friendlier and possibly less expensive. In the last few years the benefits of using native species has become evident. They are now often listed as primary choices for erosion control in these areas.

With the above information gathered you will be well prepared for analyzing the various erosion control options available for your site. For more information and examples check out our [Stream Steward Guide](#).

The above are merely common, general suggestions. Each site should be evaluated extensively before any land alteration begins. Professional advice may be necessary on critical areas. Be sure to have utilities marked and check on all possible permitting requirements. (See "What To Do About Obtaining Permits for a Residential Streambank Restoration Project") The Marion County Soil & Water Conservation District has a listing of websites and publications, available through internet downloads, that will provide extensive information on how streambank erosion can be prevented and solved under the title "What to do About Streambank Restoration - A List of Helpful Websites" (S6).