



Bowling Green, KY Stormwater Best Management Practices

July 2010

Residential Pollution Prevention		RHP-09 Slope and Streambank Stabilization
<i>No Symbol</i>		
<i>Symbol</i>		
Description	<p>Property owners who stabilize eroding slopes and streambanks in order to protect ditches, swales, storm drains, creeks, lakes and natural waterways will not only improve the appearance of private property but will also substantially reduce sedimentation and flood damage. Streambank stabilization may require a permit from the Kentucky Division of Water (KDOW) prior to grading.</p> <p>See the KDOW website for more information at www.water.ky.gov.</p>	
Design	<p>Homeowners and private property owners can make a big difference in controlling erosion and sediment. The benefits of controlling erosion substantially outweigh the costs involved. Contrary to popular opinion, vegetation does not just grow by itself on disturbed areas and steep slopes. There is a large potential for eroding slopes wherever land is developed or landscaped in Bowling Green due to hilly topography and native clay soils.</p> <p>"Green" methods (with permanent vegetation) are the preferable means to fix steep slopes and erosion problems. Green methods help to capture rainfall, thus reducing the amount of runoff and flooding. Green methods are more attractive (and usually more durable) than structure stabilization methods such as gabion walls and riprap.</p>	



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Overview of Slope Stabilization First, determine the reason that a slope is unstable. If the slope tends to slide, collapse or slough, then the soil itself is unstable and typically needs a permanent solution. Possible remedies may include:

- Planting hardier and more durable types of vegetation (native trees and vines)
- Regrading the slope so that it is less steep.
- Constructing a retaining wall, crib wall or other structural feature.
- Divert surface water (and possibly groundwater) that tends to saturate soils and makes them heavier.

If a slope tends to erode or washout in certain spots then the problem may be a combination of inadequate ground cover, poor drainage, no topsoil, wrong plant or some other problem.

- Divert surface water around the slope if possible.
- Improve ground surface by adding topsoil, lime, fertilizer, or mulch.
- Plant long grass, trees, shrubs, vines or another type of ground cover. Select plants that meet sunlight, drainage, and maintenance requirements.

Green methods involving permanent vegetation are preferable to non-green solutions. A common misconception is that gabions and riprap need to be inspected frequently for loose and misplaced stones, vegetation trimming and removal, settlement, etc. Green methods are more likely to be stable and self-maintaining. Specific aspects of slope stabilization are addressed in the following related BMPs:

- EPP-13 Terracing
- EPP-08 Surface Roughening
- SMP-06 Bank Stabilization
- SMP-07 Riprap
- EPP-09 Topsoil
- EPP-10 Mulching
- EPP-05 Temporary Seeding

Retaining walls, crib walls and prefabricated structural walls must be designed by a professional or other qualified expert for specific site conditions. Walls which have a maximum height of at least 4 feet must be reviewed as part of a site development permit issued by either the City County Planning Commission or City of Bowling Green.

Overview of Streambank Stabilization KDOW will require a property owner to obtain a Water Quality Certificate and/or a Floodplain Construction Permit for any grading in or near waters of the State. Here are two quick definitions used to specify waters of the State:

- Bowling Green Engineering Department defines this as a blue-line stream on a USGS quadrangle map, or any point downstream from where a blue-line stream begins.
- The KDOW typically defines a channel as carrying water for longer than one week after a heavy rainfall. The local KDOW office can send a field inspector to make difficult judgments when requested.



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Overview of Streambank Stabilization (cont'd)

The KDOW allows a property owner to clear downed trees and brush from a stream. The property owner should also unblock any culverts or pipes to prevent flooding. Live trees, shrubs, brush and other vegetation (when adjacent to channel) are usually necessary to anchor and protect streambanks. To complete this type of construction a property owner may be required to get a Floodplain Construction Permit and a Water Quality Certificate to ensure that Kentucky's water quality standards will not be violated. See the KDOW website for further information on permits, channelization, streambank protection, and allowable activities.

It is important not to alter the hydraulic stream cross sections. Changing the channel hydraulics at one location (flow width, flow depth, velocity, channel roughness) will affect the channel hydraulics elsewhere. Specific aspects of streambank stabilization are addressed in these related BMPs:

- SMP-06 Bank Stabilization
- SMP-08 Channel Linings