

Restoring Ballenger Creek

-Submitted by Shannon Moore
Project Manager, Frederick County
Watershed Management Section

Frederick County Government is about to construct a stream restoration project on Ballenger Creek. Ballenger Creek is south of the City of Frederick in one of the County's most rapidly developing regions. The stream has seen some impacts from urban development, especially instability of the stream channel in some areas. The stream was selected for restoration after Frederick County Government received public comment and completed a study called a Stream Restoration and Stormwater Management Facility Retrofit Report (R/R) to identify water body impairments and causes in the Ballenger Creek Watershed.

What is stream instability, what causes it, and why does it matter?

In urban areas, there are a lot of places where water can't percolate into the ground. These impervious surfaces, like roads, houses, parking lots, driveways, etc. change the way water gets to the stream. The changed "hydrologic regime" from development dumps water at faster speeds and higher volumes into stream channels during storm events. The stream channels have to change to accommodate the stormwater from the new hydrologic regime and the change can cause "instability" as the stream adjusts. In the case of Ballenger Creek, the stream is adjusting to the change by losing lots of sediment from some parts of the stream bed, depositing it in others, eroding banks, accumulating debris, and widening the stream overall. The widening stream is also cutting new bends called meanders. The stream is getting close to a sewer line and the County has decided it will restore a 500-foot section of the stream so that it can accommodate the new flows.

How will the County fix the stream?

The County Government hired a stream restoration design firm, Brightwater, and its subcontractors CCJM and Ecosite, to calculate what size and type of stream channel would be stable for the new hydrologic regime. The outcome was very important to the County, so it also partnered with the Fish and Wildlife Service to review designs. The engineers developed a design that would look and function like a natural stream but act like an engineering structure to provide stream stability. These types of techniques are called Natural Stream Channel Design (NSCD) and are becoming increasingly popular versus old methods that channelized streams using concrete and filled them with rip rap. Often, the old stream restoration and stabilization attempts did not work, and nowadays many of the old designs are being replaced with NSCD. In fact, the State Highway Administration has a companion project underway to remove old concrete from a

section of Ballenger Creek using NSCD techniques.

The stream restoration project will be near the Kingsbrook subdivision. It will include stabilization of the stream channel through reconstruction of meander bends, removal of sediment deposits in the channel, and replacement of stream banks in other areas. The project will also include the installation of streamside forest buffers to shade the area and restore habitat once the channel is rebuilt. The restoration project will be monitored for five years to see how well the project is meeting its goals and to make certain that the restoration techniques stay in place after large storms.

For more information about this project, contact Shannon Moore at 301.600.1413.