

# Watershed Restoration FACTSHEET:

## BREWOOD TRIBUTARY RESTORATION



Breewood Watershed map showing location of stream restoration area

### Breewood Watershed Facts:

**Watershed:** Breewood Tributary is a subwatershed of Sligo Creek, which drains to the Anacostia River.

**Watershed size:** 57 acres (0.09 sq. mi.)

**Watershed imperviousness:** 38%

### Property Ownership:

Maryland State Highway Administration, Maryland National Capital Parks and Planning Commission, Presbytery of Washington City, Crosswood, Inc. DBA Pathways Schools

### Restoration Goals:

The restoration goals for this project include: reduce stream channel erosion, improve water quality and habitat, both in the stream and on the floodplain.

### Restoration/Retrofit Project Facts:

**Total Linear Feet of Stream Restoration:** 1,200

**Construction start:** October 2014

**Project status:** Completed May 2015

### Other Facts:

In addition, the County is implementing innovative stormwater management practices in the Breewood Tributary watershed to further improve water quality and the ecological health in the Breewood Tributary, Sligo Creek and Anacostia River.

### Project Description

The Montgomery County Department of Environmental Protection has identified the Breewood Tributary for the implementation of an innovative, comprehensive watershed management plan. This plan includes both stream restoration/stabilization and upland stormwater source control measures.

This plan is designed to assist with the County's Municipal Separate Storm Sewer System (MS4) permit compliance by addressing major sources of water quality impacts, including uncontrolled stormwater

runoff. Restoration actions will improve water quality, stream health, and ecological function in the Breewood Tributary and downstream waters, including Sligo Creek. As part of this effort, the County has completed a stream restoration project in the Breewood Tributary that extends from Sligo Creek Parkway, upstream to University Boulevard.

### Pre-Restoration Conditions

The Breewood watershed is fully developed, with 38% impervious cover. Land cover includes medium and high density residential areas, roadways, institutional uses (school and church), and forested parcels

along the Breewood Tributary. The Breewood Tributary is typical of an urbanized stream channel. Much of the tributary has progressively down-cut, with steep, eroding banks. Upland properties have little stormwater management, with piped drainage to the stream.



Eroding stream banks in Breewood Tributary

### **Restoration/Retrofit Actions and Benefits**

To evaluate the overall condition of the Breewood tributary and its associated drainage, a detailed stream assessment, evaluation of flow data from gages located above and just below the project reach, and study of the overall watershed and valley conditions were conducted. Based on these assessments, it was determined that the Breewood Tributary and adjacent drainage features flowing into the tributary are severely degraded due to the lack of upstream stormwater management and previous channel/stream valley manipulation, including channelization, redirection of drainage patterns and placement of fill.

The existing channel is actively cutting through unconsolidated fill material down to bedrock and groundwater resources, which other than storm flow events account for the minimal flow within the channel.

Based on these evaluations, several restoration alternatives, including in-stream restoration concepts, a regenerative stormwater conveyance system, and a valley restoration approach were developed to reduce erosion and improve water quality. In all cases, impacts to large trees were avoided to the extent practical.

#### ***In-stream Restoration Concepts***

The in-stream concepts are more conventional in nature and involve using bank armor, armored riffle grade controls, brush bundles and/or channel fill to stabilize the existing bed, and where practical elevate the existing channel and reconnect it to the overbank floodplain areas.

#### ***Regenerative Stormwater Conveyance***

A regenerative stormwater conveyance system (RSC) was developed for the reaches adjacent to and upstream of the end of Tenbrook Drive. This approach would provide water

quality, habitat, and stability benefits.

#### ***Valley Restoration Approach***

The valley restoration approach most closely represents the pre-disturbance Breewood tributary conditions while providing both sediment and nutrient load reductions for flows originating in the upstream watershed. To achieve the greatest water quality benefit, this approach will incorporate floodplain reconnection into the overall flow regime of the stream valley, thereby dissipating erosive channel flows and resultant high near bank shear stresses.

Based on pre-existing watershed conditions and instability of the Breewood Tributary, a combination of stream restoration techniques were employed, including in-stream restoration, RSC, and valley restoration. These restoration techniques will improve water quality, increase habitat diversity, and reduce stream bank erosion and downstream sedimentation.



Pre-restoration condition: exposed tree roots and sewer line are imperiled by channel erosion.



Pre-restoration condition: surveying eroded stream channel



Post-Restoration condition: stable RSC stream channel with native grasses, perennials and trees planted along stream banks (taken from same location as photo to the left).

#### **For more information:**

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