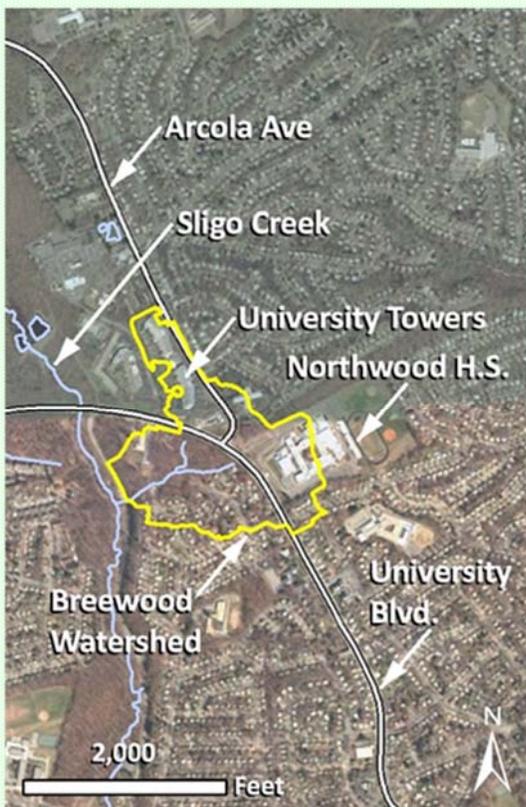


Watershed Restoration FACTSHEET:

BREWOOD TRIBUTARY RESTORATION



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 the restoration of the Breewood tributary to reduce erosion and improve water quality.

Restoration/Retrofit Project Facts:

Total Linear Feet of Stream Restoration anticipated: 1,200

Project status: In construction

Construction start: October 2014

Estimate completion date: May 2015

Other Facts:

In addition, the implementation of innovative stormwater management practices in the Breewood Tributary watershed to improve water quality and the health of receiving waters.

(left) Breewood Watershed vicinity map showing location in Silver Spring, MD.

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, stream assessment and design as well as stormwater retrofit planning and design is underway for public and private properties in the watershed.

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.



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 study 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.



Existing condition: eroded stream banks along existing channel within project area

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) option was developed for the reaches adjacent to and upstream of the end of Tenbrook Drive. This approach will provide water quality, habitat, and stability benefits.



Existing condition: exposed roots of trees imperiled by bank erosion along channel

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 the current watershed conditions and the instability of the Breewood Tributary, a combination of alternatives will be employed in the channel's restoration. This selected approach is a combination of in-stream restoration, RSC, and valley restoration. These design techniques will improve water quality, increase habitat diversity, and reduce stream bank erosion and downstream sedimentation.



Example: stable Regenerative Stormwater Conveyance System (RSC)

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