What is Stream Restoration?

Stream restorations, including channel and bank stabilization, are often conducted by government, private, and non-profit organizations to mitigate for stream impacts from development activities. The restoration activities are either conducted on-site, off-site, or through the purchase of stream credits from a Stream Mitigation Bank.

The Northern Virginia Stream Restoration Bank (NVSRB) is a partnership between Wetland Studies and Solutions, Inc. (WSSI) and The Peterson Companies, working in concert with the Reston Association. The Phase 1 goal of NVSRB is to restore 14 miles of degraded streams in the Snakeden, Glade and Colvin Run Watersheds in Reston, Virginia.


Colvin Run,
East of Wiehle Avenue

Why Restore Streams in Reston?

Steep, actively eroding banks, caused by increased runoff from impervious surfaces, are prevalent through the stream channels in Reston. This bank erosion threatens adjacent trails, sanitary sewers, and trees. It also produces hundreds of tons of sediment that are deposited in Reston lakes and other receiving waters every year.

The stream valleys within Reston are an integral part of the community and are heavily utilized by residents. In addition, the geographic location allows the stream network to be restored from top to bottom, greatly enhancing the likelihood of success compared to restoring only a segment of a stream reach.

Streambank erosion threatens roads, trails, trees and utilities in Reston


Snakeden Branch,
East of Soapstone Drive

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Wetland Studies and Solutions, Inc. is the leading natural and cultural resources consultant in Northern Virginia. Our wetland scientists, engineers, regulatory specialists, surveyors, Geographic Information System specialists, and archeologists create innovative solutions to water quality issues affecting the Chesapeake Bay Region.

For more information about this project, contact Frank Graziano at Wetland Studies and Solutions, Inc. (fgraziano@wetlandstudies.com or 703-679-5651), Nicki Bellezza at Reston Association (nicki@reston.org or 703-435-6560), or visit reston.wetlandstudies.com.


Snakeden Branch, Reach 13

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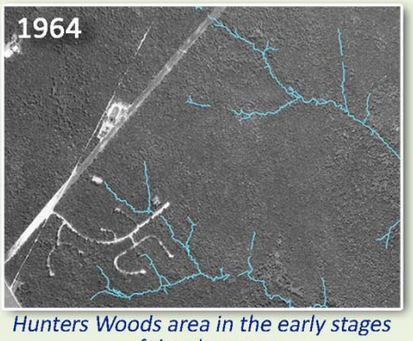
Northern Virginia Stream Restoration Bank

Snakeden Branch, Reach 3

The Urban Watershed Problem

Development of Reston resulted in forested land being converted to buildings, roads, parking lots, driveways, sidewalks, and other impervious surfaces that prevent the infiltration of stormwater. The combination of higher runoff volume resulting from developed impervious surfaces and higher peak flows resulting from outdated management techniques increases the flow energy in Reston's streams. This increase in flow energy results in severe stream erosion and downstream sediment deposition.



Hunters Woods area in the early stages of development.

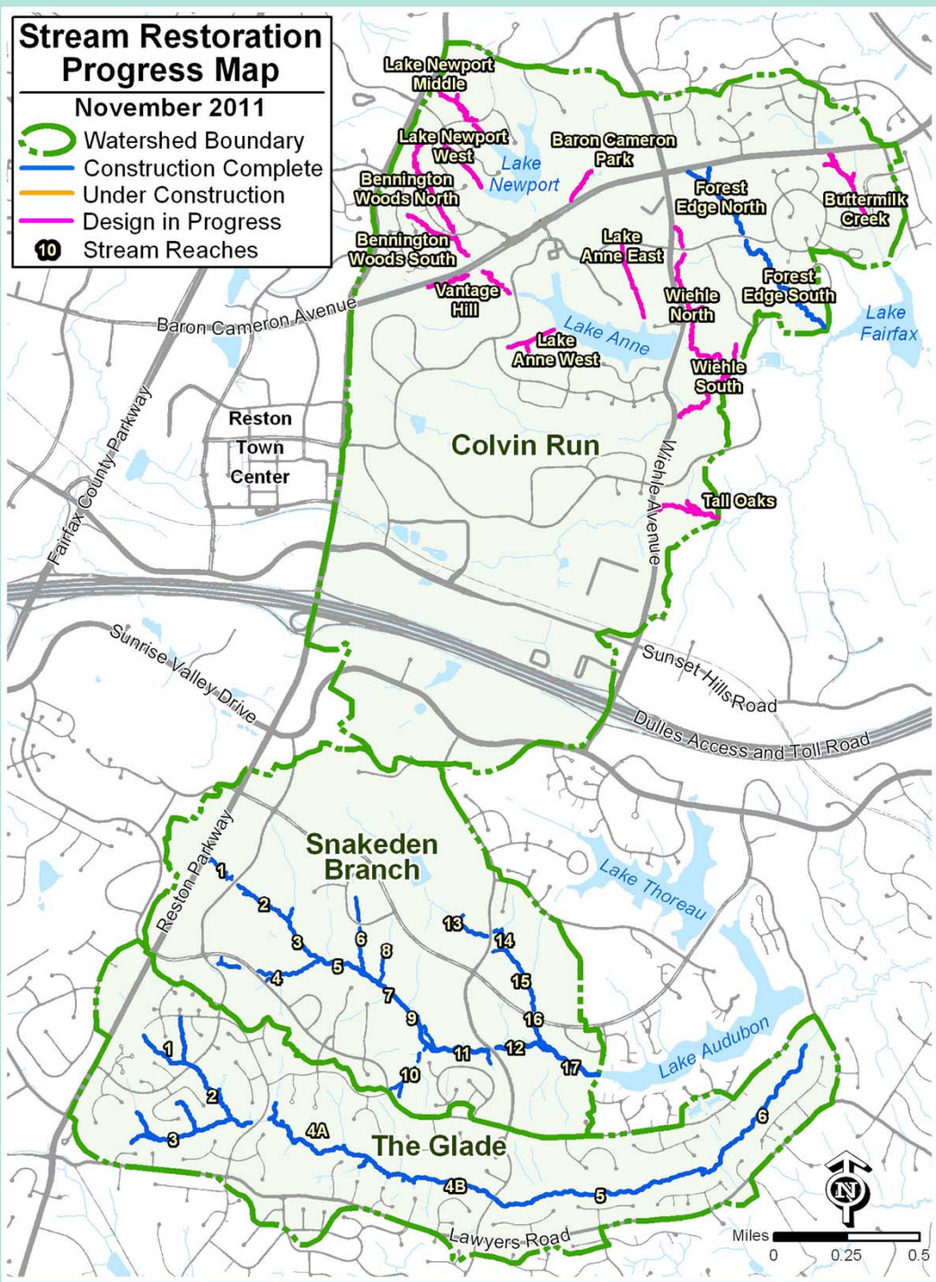
Major development near completion in the late 1970's.

Restoration: An Urban Watershed Solution

The Reston streams are being restored using Natural Channel Design (NCD) techniques that include raising the bed to reconnect higher storm flows with the floodplain; placement of a reinforced bed comprised of crushed stone, sand, gravel, and topsoil; and placement of rock and log structures to direct flow away from channel banks and create riffle/pool features within the bed of the stream. These techniques help the stream bed and banks withstand the high urban flow rates.

Stream Restoration Progress Map

Construction of NVSRB began with the Snakeden Branch watershed in February, 2008. As of November 2011, over 45,000 linear feet have been completed - including all of the Snakeden Branch watershed, the neighboring Glade watershed, and Forest Edge North and South in the Colvin Run watershed. Design work on the remaining reaches in the Colvin Run watershed is in progress. Following construction of each reach, a 10-year monitoring and maintenance program begins that includes streambed, structure, vegetation, and biological surveys.



Stream Restoration Progress Photographs

Snakeden Branch - Reach 3

Pre-Construction

16 Months Post-Construction

Snakeden Branch - Reach 17

Pre-Construction

2.5 Years Post-Construction

The Glade - Reach 1

Pre-Construction

4 Months Post-Construction