



# Northern Virginia Stream Restoration Bank (NVSRB) – Wetland Success??

## Case Study of an Urban Stream Priority 1 Restoration Project Restoring Riparian Wetlands

**Frank R. Graziano, P.E.**

**Vice President, Wetland Studies and Solutions, Inc.**

**[fgraziano@wetlands.com](mailto:fgraziano@wetlands.com)**

August 22, 2023



# Wetland Studies and Solutions, Inc. a DAVEY company

## Natural & Cultural Resources Consulting Firm:

- Founded in 1991
- 300+ Staff

## Acquisition by The Davey Tree Expert Company (2014):

- Founded in 1880
- Largest employee-owned service company in U.S.



Virginia's First LEED®  
Gold-Certified Office  
Gainesville, VA

### WSSI Offices

Gainesville, VA

Roanoke, VA

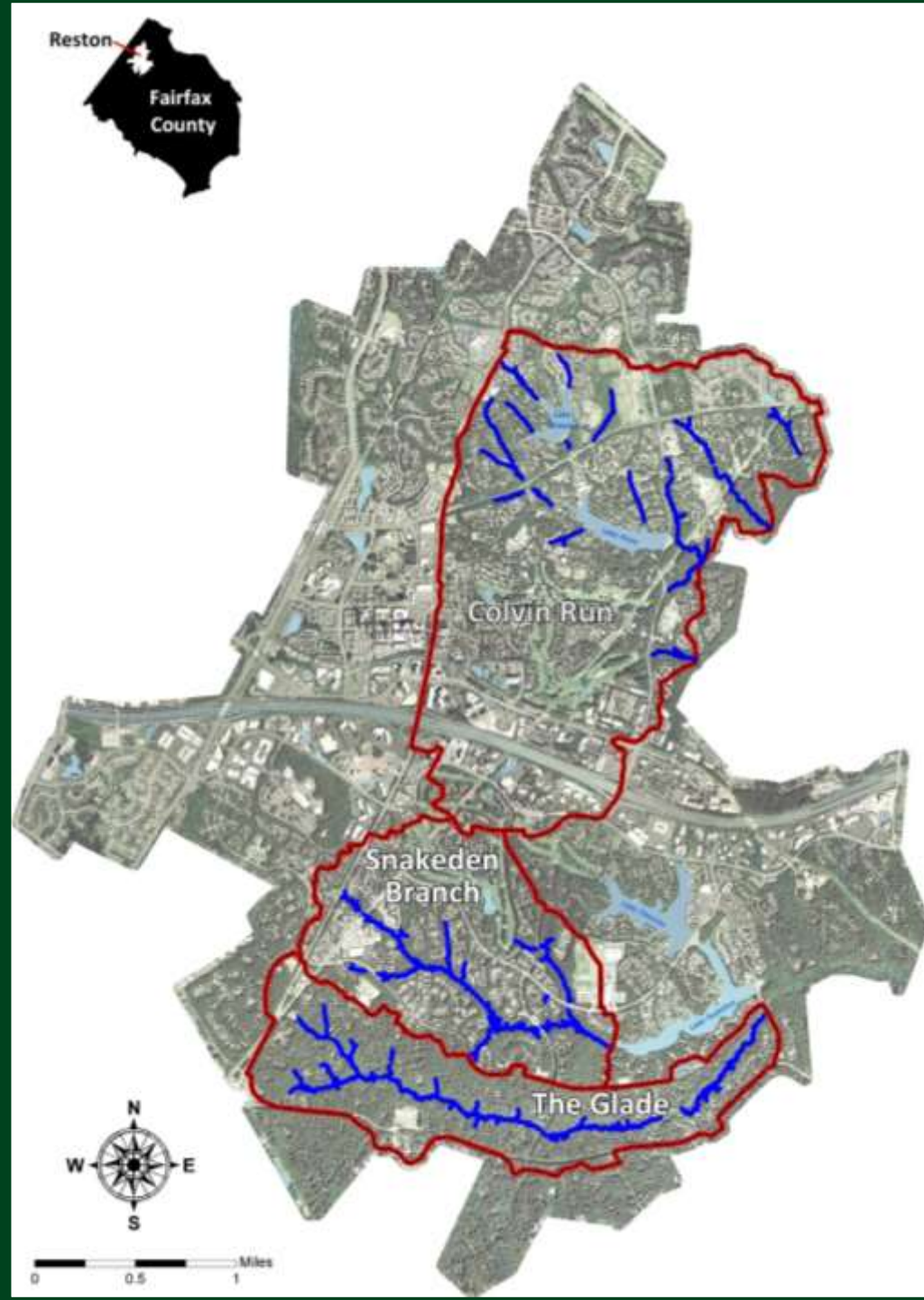
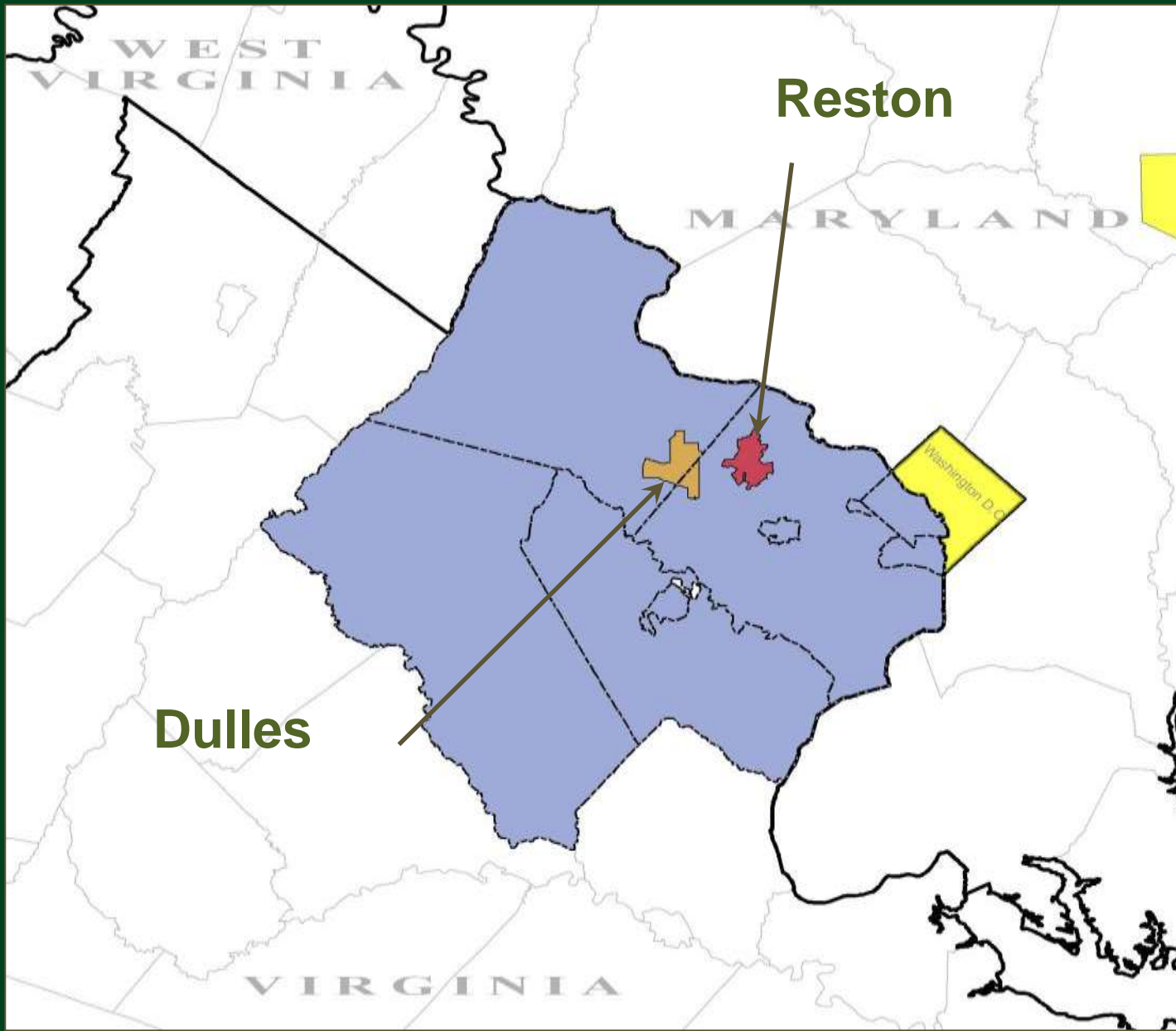
Millersville, MD

Richmond, VA

Virginia Beach, VA

Mechanicsville, VA

Blacksburg, VA





**Snakeden Branch Watershed**

Lake Thoreau

Lake Audubon

Parkway

Glade Drive

South Lakes Drive

Reston

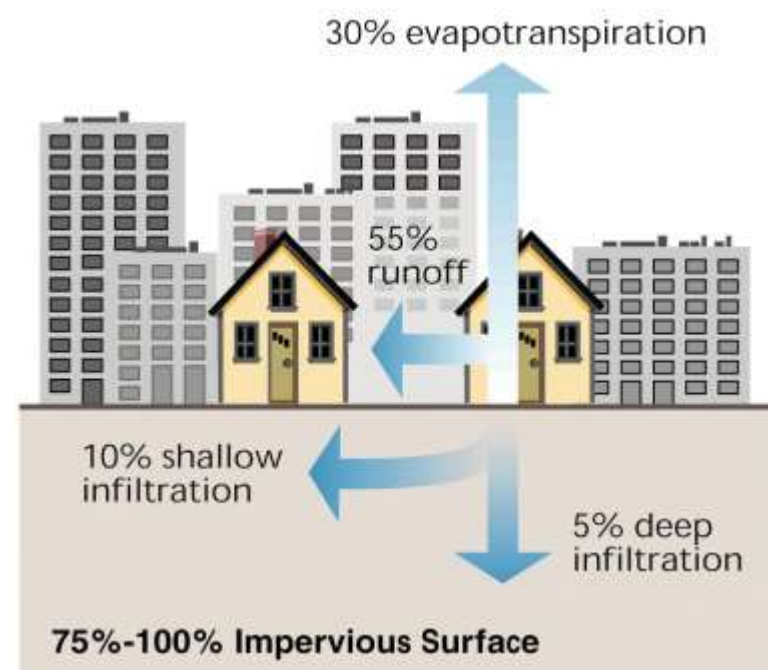
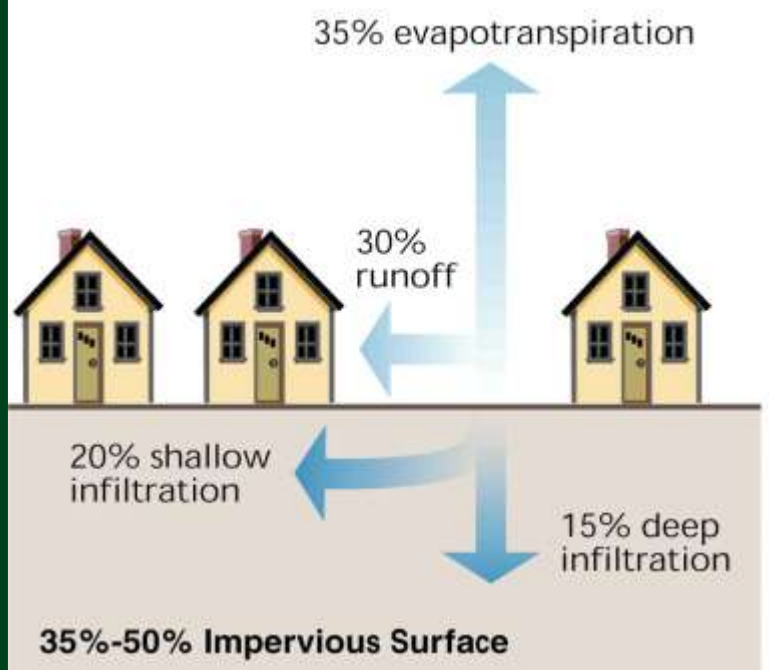
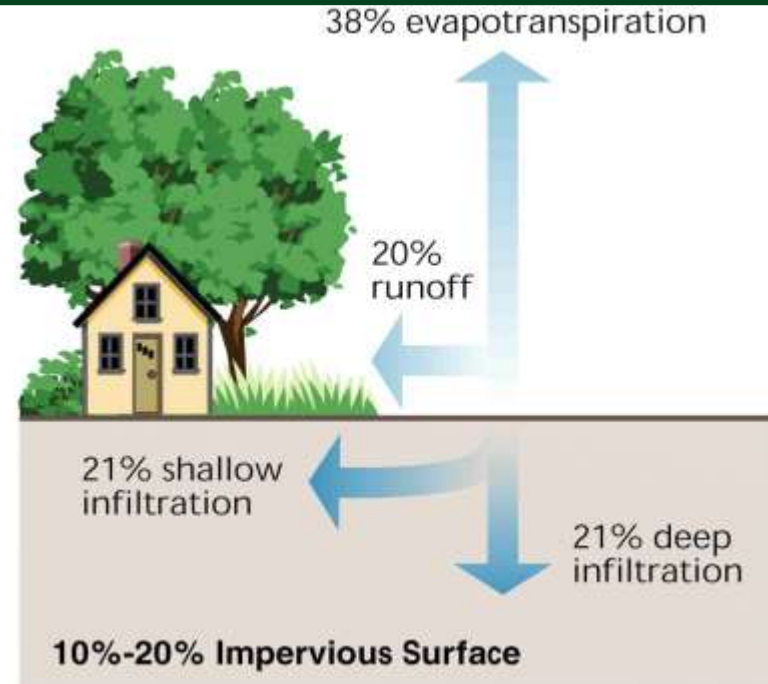
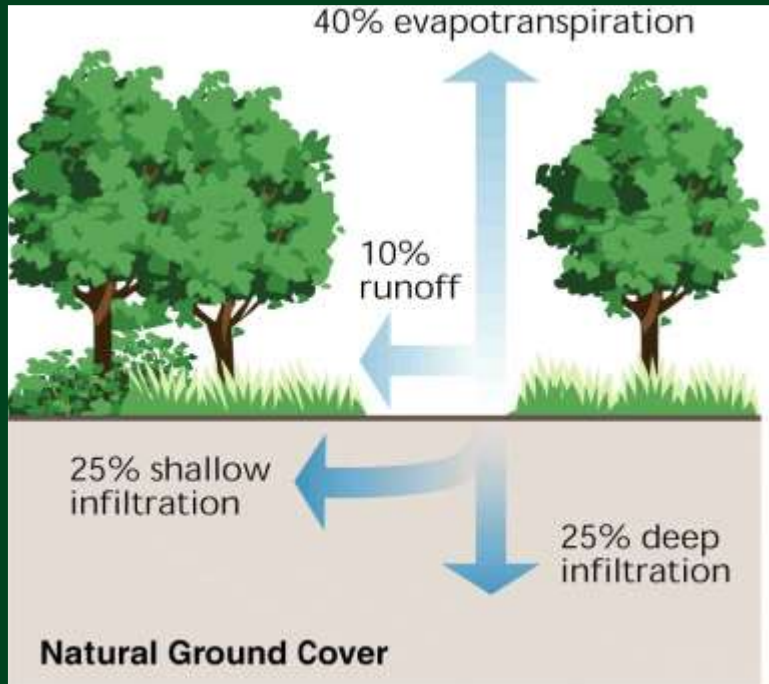
Soapstone Drive

**The Glade Watershed**

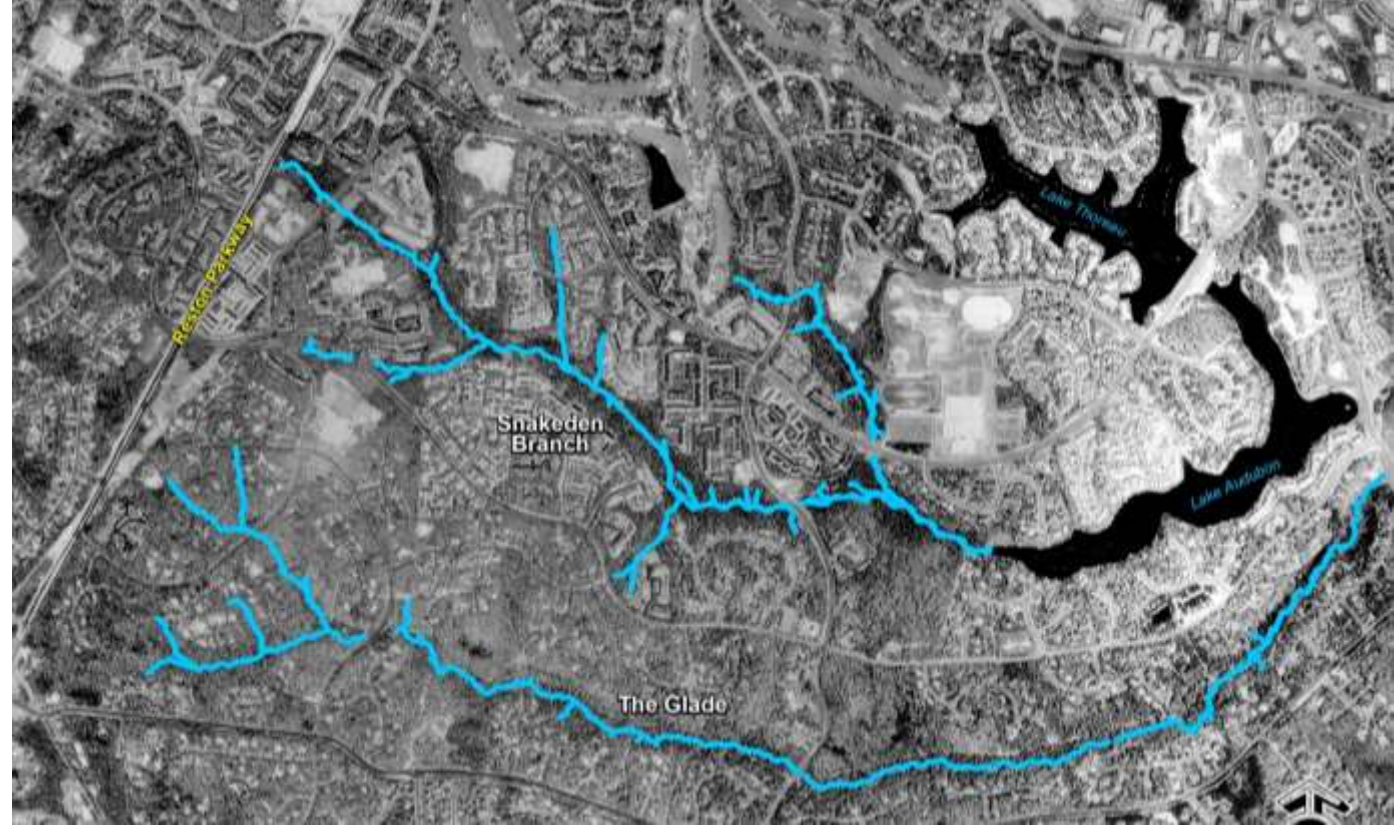
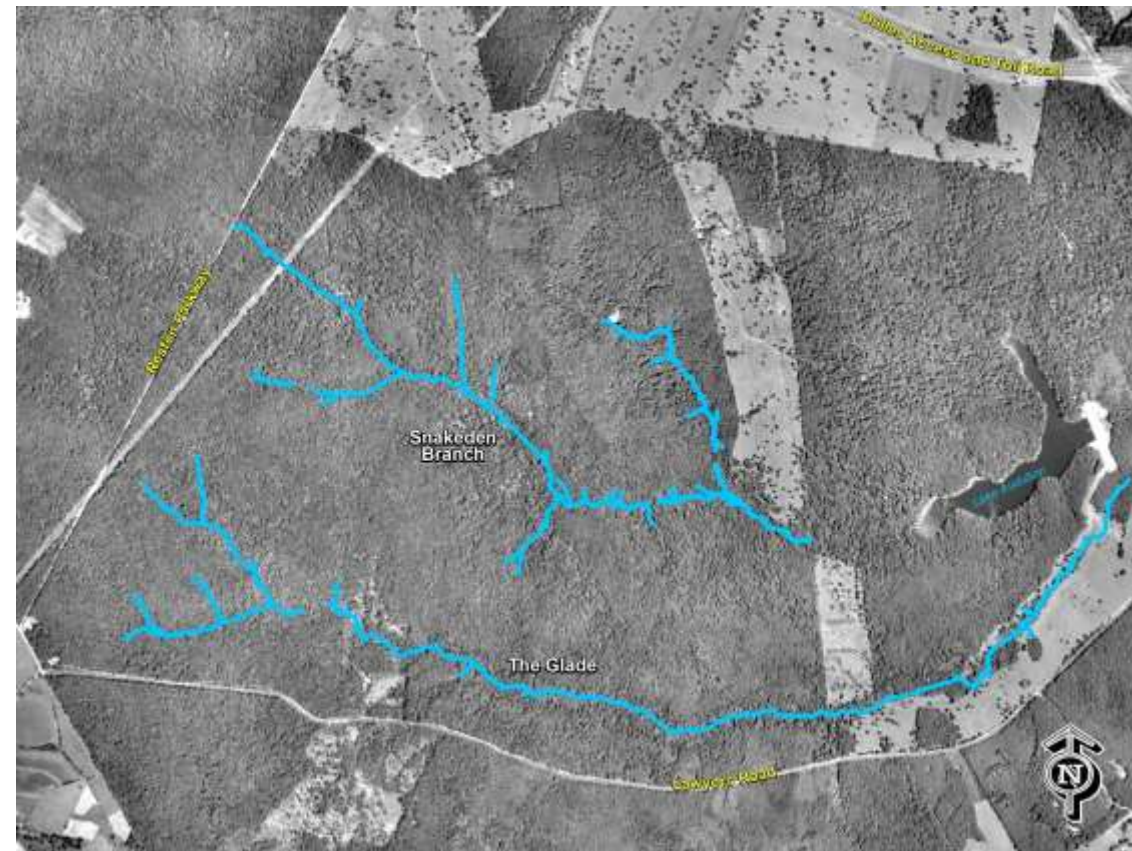
Lawyers Road



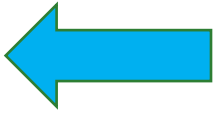
# The urban watershed problem



1954



2000



# NVSRB Approval Process

## Wetland Studies – Reston Association



Oct. 2003

Letter of Intent  
Signed with Reston

June 2004

Public Notice for  
Prospectus

Feb. 2006

DEQ & COE Sign MBI

Feb. 2008

**Groundbreaking!**



# NVSRB Construction

## Wetland Studies – Reston Association

Snakeden Branch  
(± 20,000 lf)

Feb. 2008 to March 2009

The Glade (±20,000 lf)

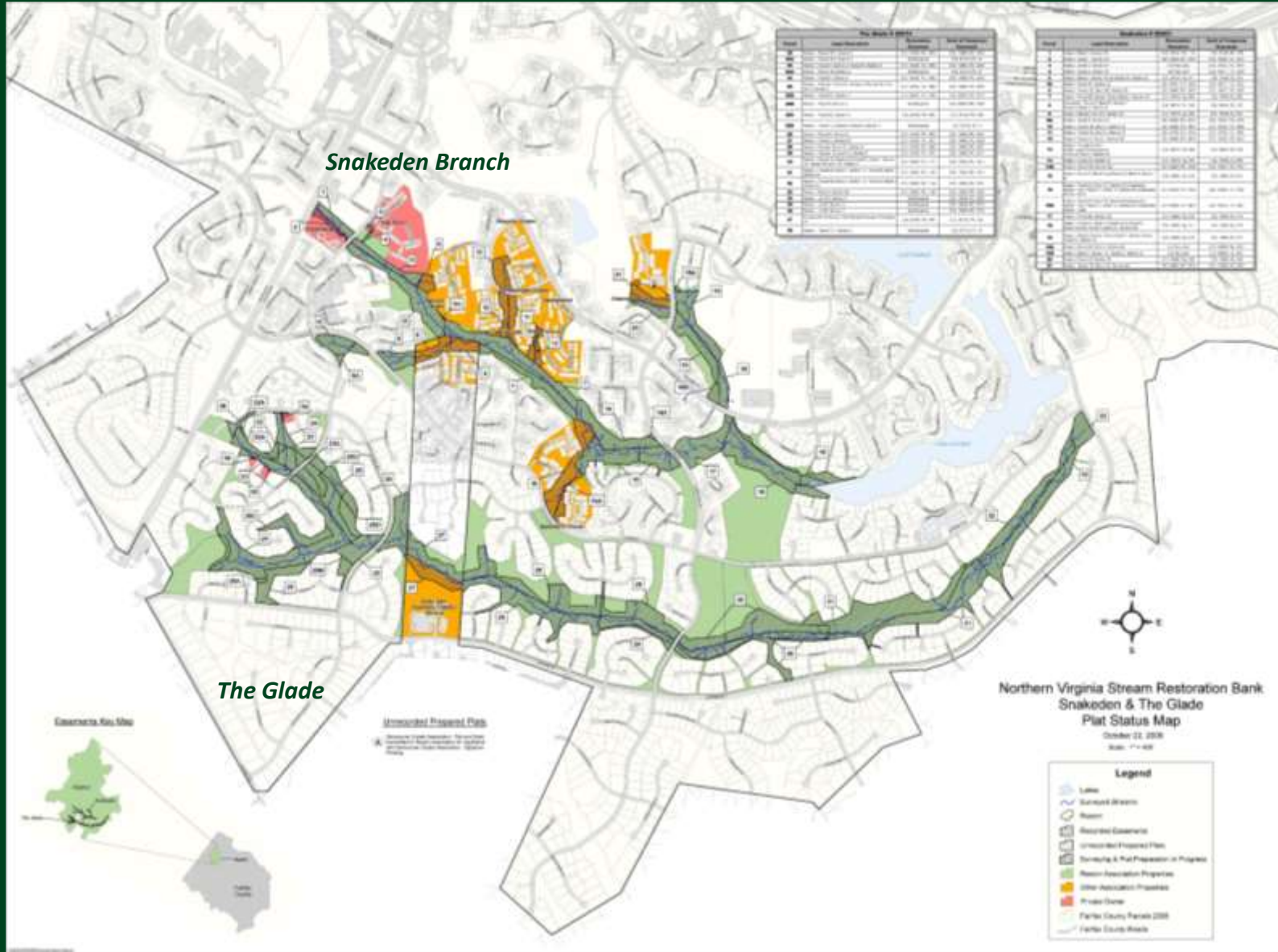
Jan. 2009 to Dec. 2010

Colvin Run (±16,000 lf)

Dec. 2011 to Aug. 2019

# Data Collection

- Aerial and Field Run Survey
- Cultural Resource Review
- Wetland Delineations
- Tree Surveys
- Geomorphic Assessments
- Easement Preparation



# Tree Survey : ± 35,000 ( 4" DBH)

<b>Common Name</b>	<b>Genus &amp; species</b>	<b>%</b>
Yellow Poplar	Liriodendron tulipifera	40
Red Maple	Acer rubrum	25
White Oak	Quercus alba	7
Black Gum	Nyssa sylvatica	7
American Holly	Ilex opaca	3
Black Cherry	Prunus serotina	2
Northern Red Oak	Quercus rubra	2
Mountain Chestnut Oak	Quercus montana	2
Black Oak	Quercus velutina	2
Remainder		<1

# Tropical Storm Hanna (9/06/08)

## 100-yr event (6.22" in 9 hours)



# Tropical Storm Hanna

## 2 days later



# Non-Meteorological Storm

RESTON ASSO.  
WILL  
CUT DOWN  
OUR  
WOODS  
IN DECEMBER

(Walk on Soapstone  
by 711 & Terraset)



# Public Relations Blitz

- Stream Walks
  - Pre-Design, Concept, Final
- Individual Walks, Kitchen Table Plan Reviews
- Presentations to HOA's
- All Project Materials on Project Website
- Plant Saves



***Critical for Meeting Success – Food!***





**9 Months**





**2.5 Years**



**6 Months**



**5 Years**



**6 Months**



**2.5 Years**

# Canopy Coverage



# Canopy Coverage



# Widespread Support

- Chesapeake Bay Foundation
- Northern Virginia Soil and Water Conservation District
- Trout Unlimited (NoVA Chapter)
- Potomac Conservancy
- Friends of Reston for Community Projects
- The Nature Conservancy
- VA Department of Forestry



# Annual Kids Trout Fishing Day



# Overbank Wetland Creation??

## The Glade – 0.48 ac Impact

- Mitigation required
- Confident overbank wetlands would be created
- Prove it and refund could be obtained → 2020 Pilot Study
- Wetlands created, refund received, funds used for re-delineation of entire watersheds



# Overbank Wetland Creation??

±25 acres



# Snakeden Branch

Additional  
10.64 ac



# The Glade

Additional  
13.83 ac



# RPG's Stream Research Initiative

Assessing physical improvements to a restored urban stream to improve function/condition with methods such as:

- Fresh water mussel introduction (2,000 placed 7/27)
- Habi Tubes
- Leaf pack/organic filter dams
- Bioengineered outfalls
- X-section modifications to increase OB flow
- Invasive species
- Monitoring urban hydrology



[www.resourceprotectiongroup.org](http://www.resourceprotectiongroup.org)



# RPG's Stream Research Initiative

Link to USGS project page:  
<https://www.usgs.gov/projects/restonstreams>

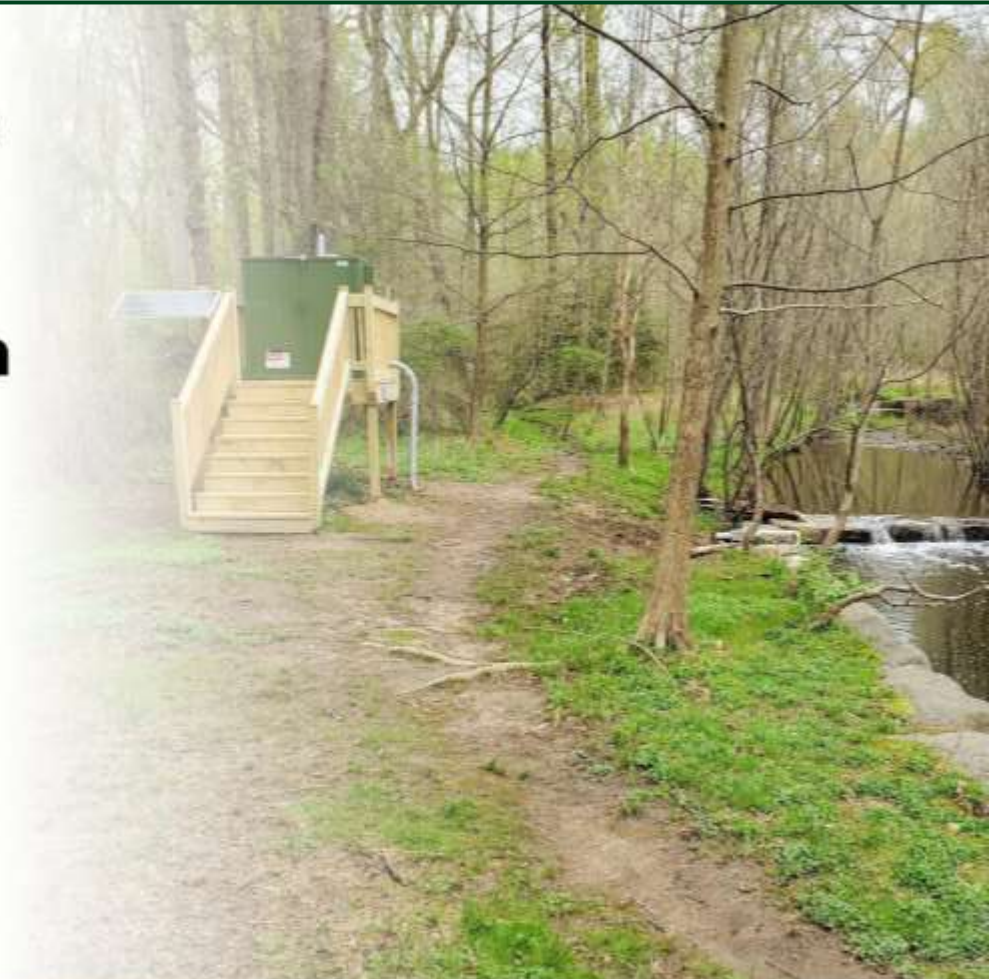
## Science to Support Stream Restoration Research in Reston, Virginia

April 2022

Brendan Foster

[bfoster@usgs.gov](mailto:bfoster@usgs.gov)

858-245-3276



There's no  
one better  
in the field!

