



NORTHERN VIRGINIA STREAM RESTORATION BANK

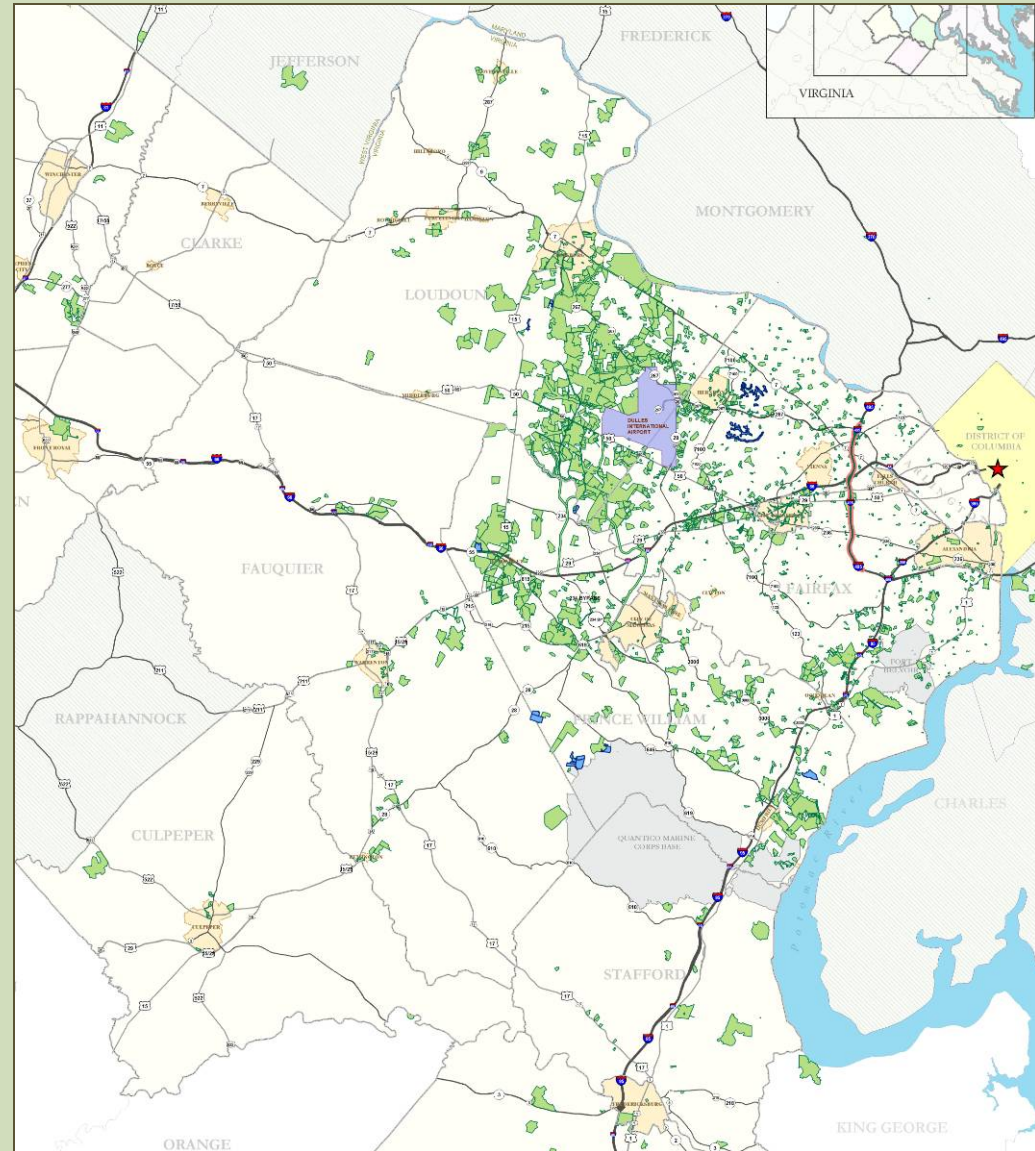
Presented by Michael S. Rolband
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WETLAND STUDIES AND SOLUTIONS, INC.

- Natural & Cultural Resource consulting firm to developers & public works
- 90 Staff
 - Archeology, Engineering, Environmental Science, Environmental Technology, GIS, Regulatory, & Surveying



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- Mitigation Banking Experience
 - 17 Banks: 540 Wetland Credits, 93,373 LF of Stream Restoration
- On & Off Projects To Date
 - Streams: 40 Sites / 37,412 LF
 - Wetlands: 80 sites / 289.58 acres

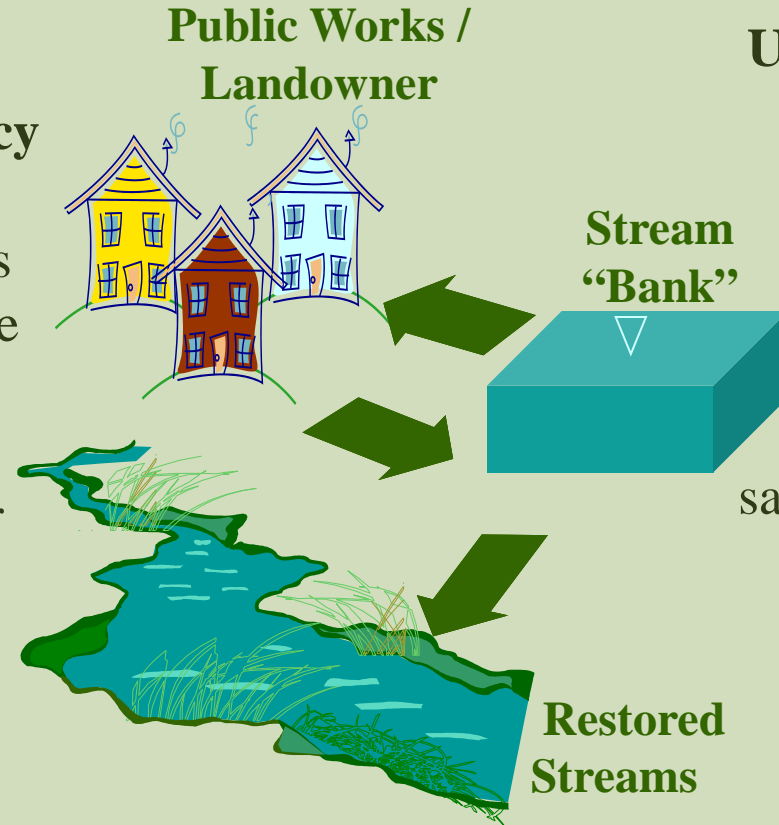
Mitigation Banking Summary

Bank Name*	Year Approved	Wetland Credits	Stream Restoration (LF)
Julie Metz Phase I	1994	19.08	---
Julie Metz Phase II	1996		---
North Fork	1999	80.27	871
Cedar Run Phase 1	1999	15.10	---
Cedar Run Phase 2	1999	23.93	---
Cedar Run Phase 2a	2002	47.58	---
Cedar Run Phase 3	1999	58.94	---
Cedar Run Phase 4	1999	81.62	---
Cedar Run Phase 6	2002	42.47	---
Cedar Run Phase 8	2002	30.35	---
Cedar Run Phase 9	2002	33.58	4,122
Cedar Run Phase 10	2005	41.34	---
Bull Run	2002	28.89	---
Loudoun County Phase 1	2007	10.65	2,092
Loudoun County Phase 2	2007	15.99	1,855
Loudoun County Phase 3	2007	9.96	5,391
NVSRB Phase I	2006	---	79,042
Totals		539.75	93,373
*Cedar Run Phases 5 & 7 determined to be not feasible			

WHAT IS MITIGATION BANKING ?

HOW IT WORKS

A Public Works Agency or private landowner needs to impact streams on their property. In the past, they would have had to restore streams as compensation, either on- or off-site.



Under the market-oriented system, they can go to a “bank” created by a Bank Sponsor who has obtained credit for restoring impaired streams elsewhere in the same portion of the rivershed & physiographic province.

By purchasing stream credits from the Bank Sponsor, the mitigation requirements of a permit for stream impacts is satisfied. Stream restorers use this pooled money to create much larger, well-designed, & ecologically valuable conservation projects.

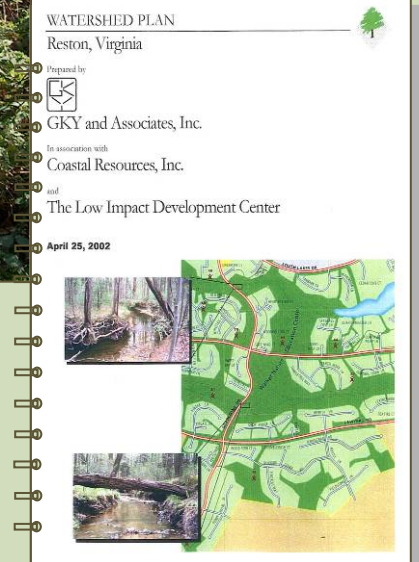
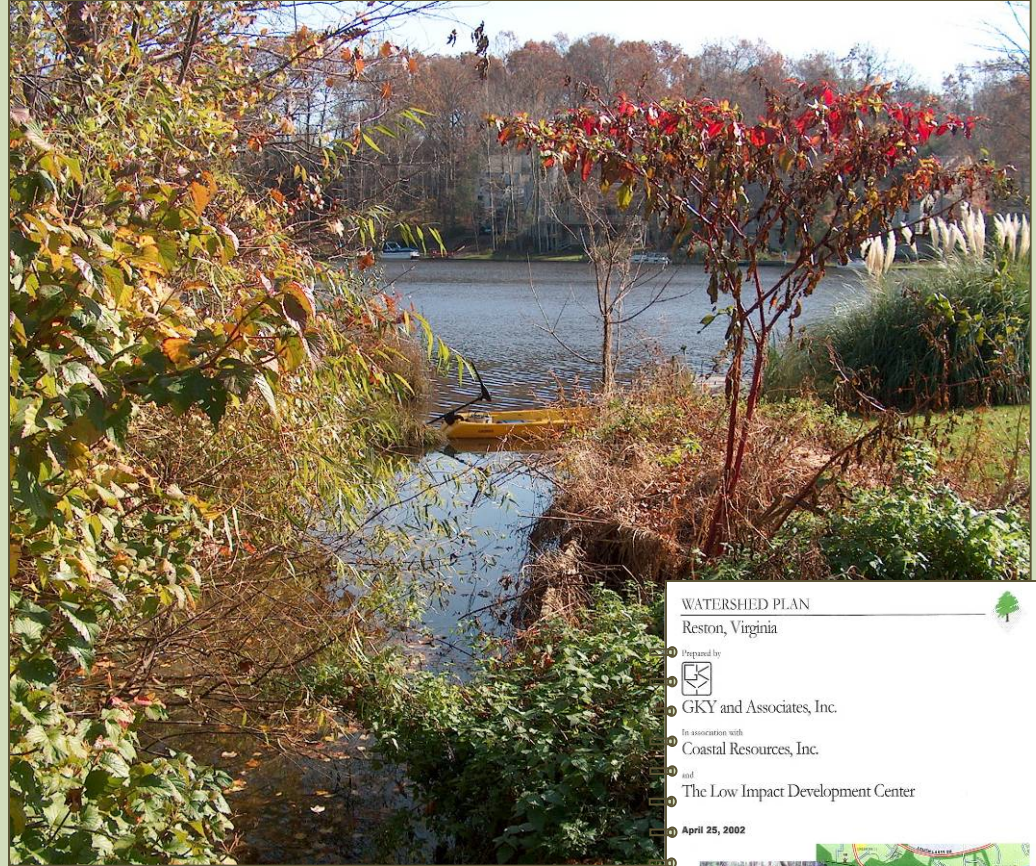
WHY A STREAM BANK IN RESTON ?

1. Degrading streams are located in preserved corridors (without stormwater management) & mostly controlled by a single entity (Reston Association)



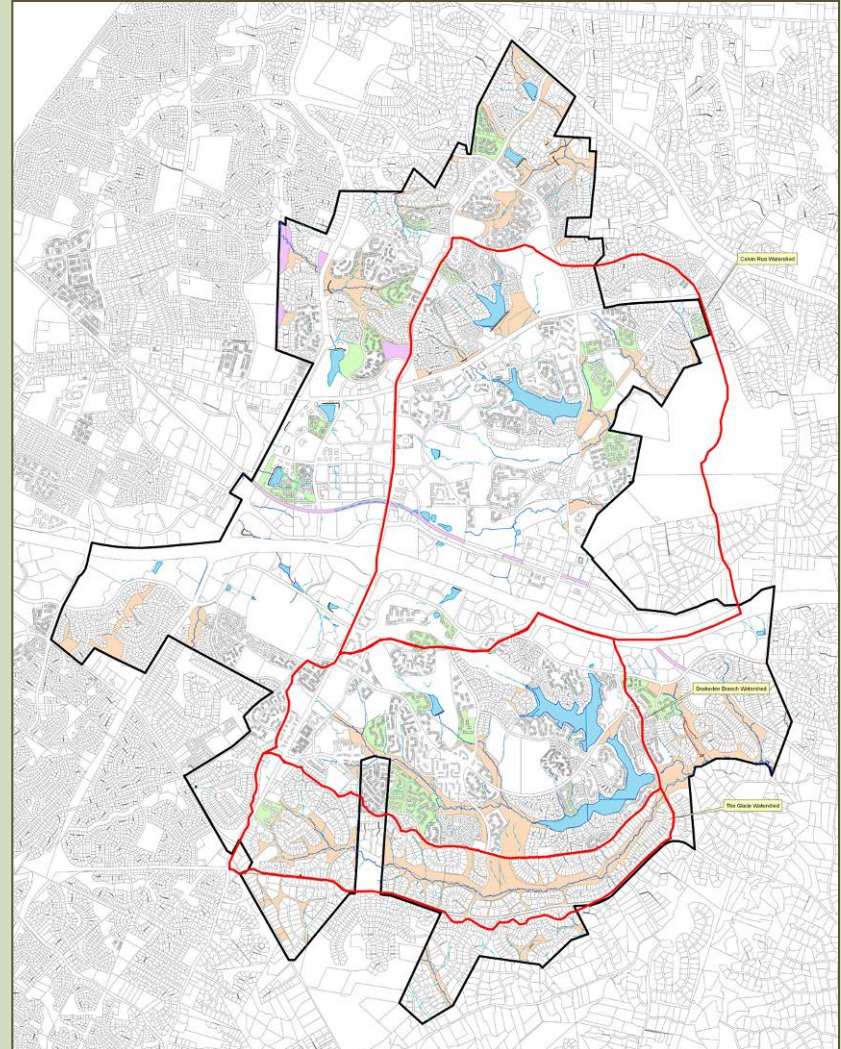
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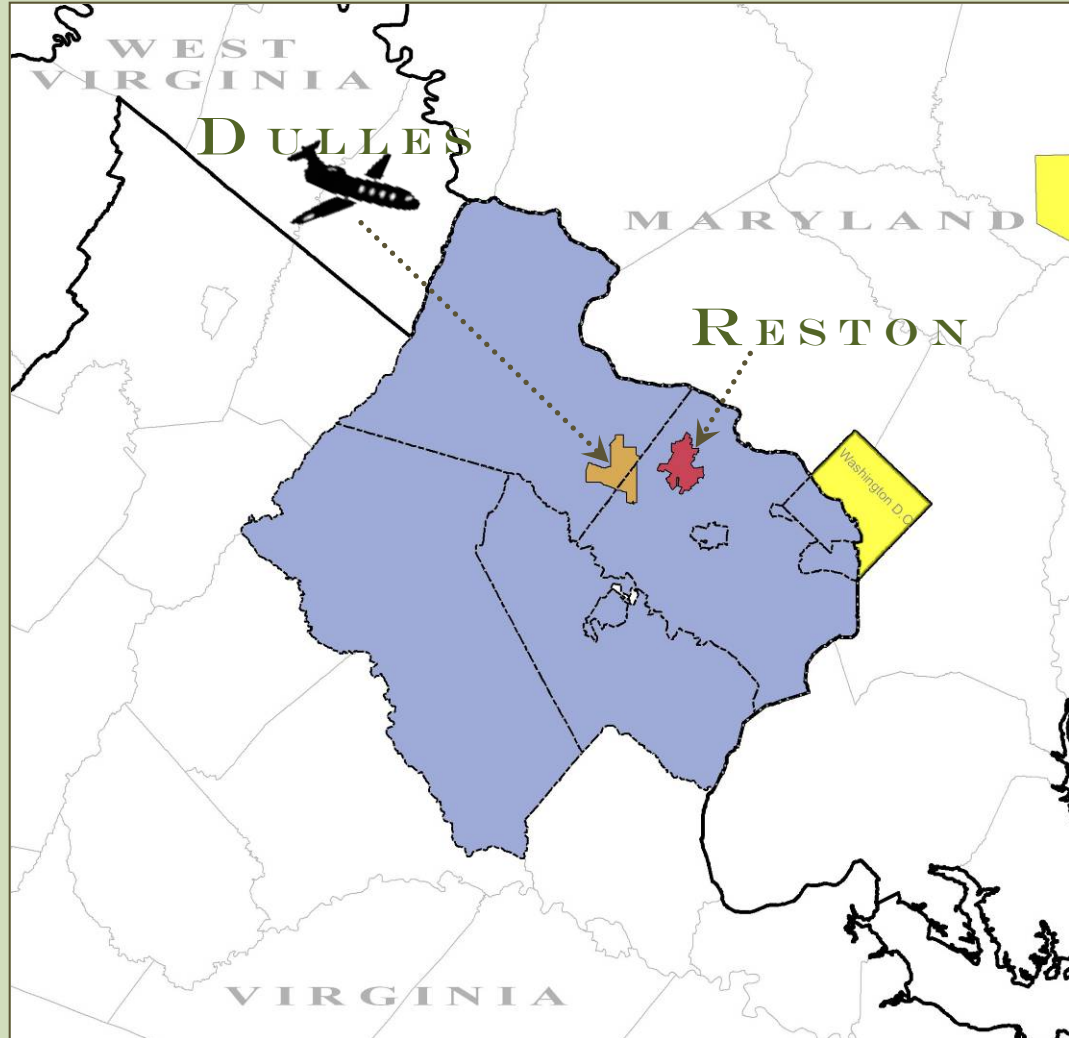
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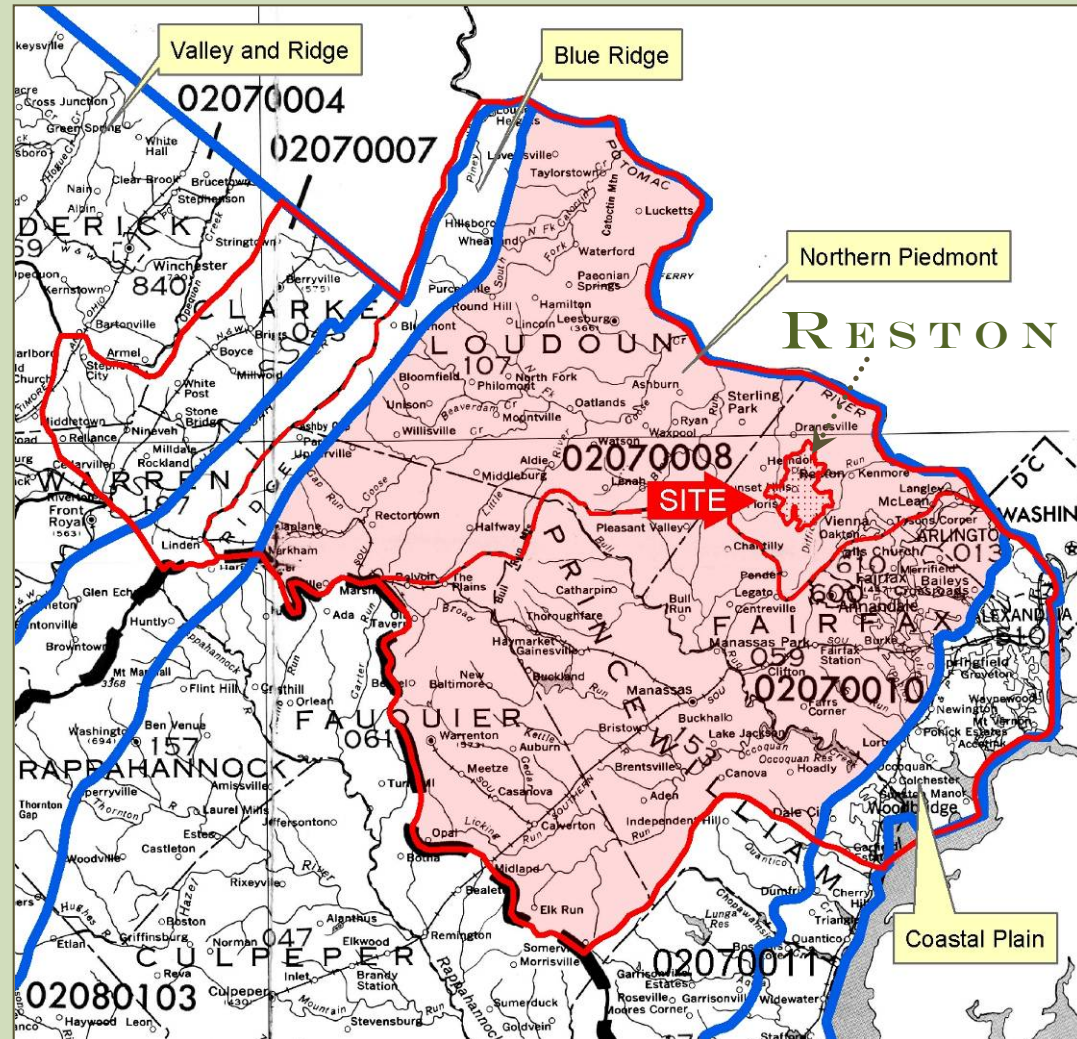
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4. There is a demand for stream mitigation in the region.
5. Bank service area is determined by HUC & Physiographic Province



THE APPROVAL PROCESS

March 2002

- Reston Watershed Plan published (*identifies need to improve watershed*)

Oct 2003

- Letter of Intent signed with Reston
- Mitigation Banking Review Team (MBRT) Meeting requested

Dec 2003

- MOA signed
- \$250,000 Donation for Reston



June 2004:

- Public Notice for Prospectus for the Northern Virginia Stream Restoration Bank (NVRSB)

Oct 2004 – Feb 2006:

- 5 MBI drafts submitted to agencies
(*DEQ signed drafts 3 & 4, but local COE rep was vetoed*)

February 2006:

- DEQ & COE sign 5th draft! - *Bank limited to Phase I to 14 miles*

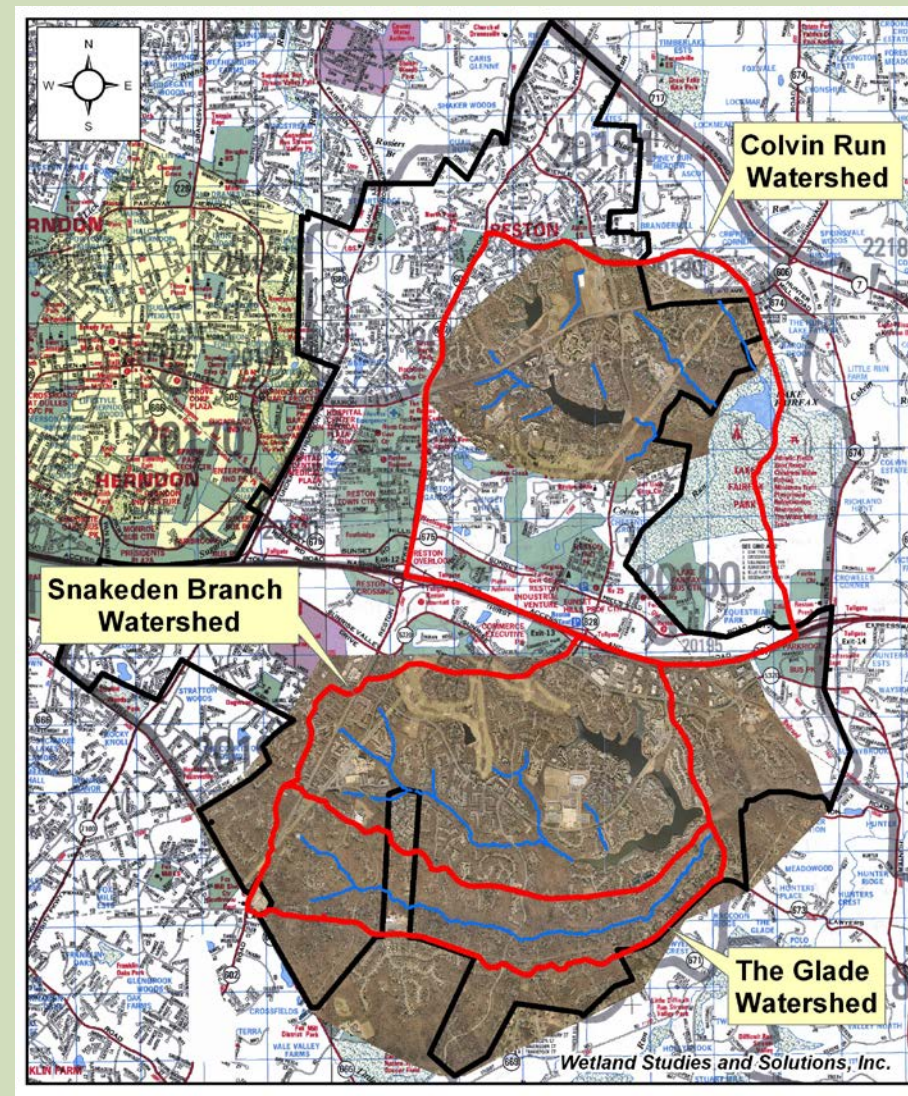
June 2006:

- Concept Plan Approved by DEQ & COE on June 2, 2006



ACCOMPLISHMENTS TO DATE

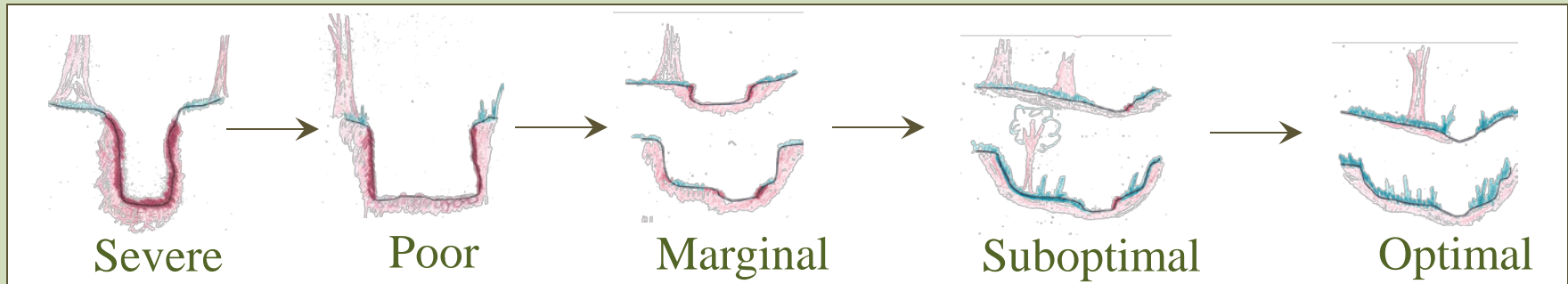
- Aerial photography and topography for Phase I Watershed (Snakeden, Colvin Run, The Glade)
- Investigated for potential archeological sites
 - 100% Snakeden, Colvin Run & The Glade
- Survey located & tagged over 29,000 trees
 - ($\geq 4''$ dbh) *and more to go!*
- Surveyed channel profile and cross-sections
 - 100% Snakeden
 - 85% Colvin Run (*complete by winter 2007*)
 - 90% The Glade (*complete by winter 2007*)
- Performed wetland delineations
 - 100% Snakeden, Colvin Run & The Glade
- Installed water level gauges to confirm flow rates
 - 9 in Snakeden (*Feb 2005*)
 - 4 in The Glade (*Nov 2006*)
 - 5 in Colvin Run (*Nov 2006*)
 - 3 rain gauges (*Feb 2005 and Mar 2007*)
- Completed hydrologic model of Snakeden
- Design has commenced in Snakeden
 - Reach 1 completed/submitted May 2007
 - Reach 2 completed/pending access approval
 - Reaches 3, 4, 5 & 9 currently being designed
- Section 404/401 Permitting
 - Reach 1 NWP #27 submitted to June 2007
 - Reach 2 NWP #27 to be submitted July 2007



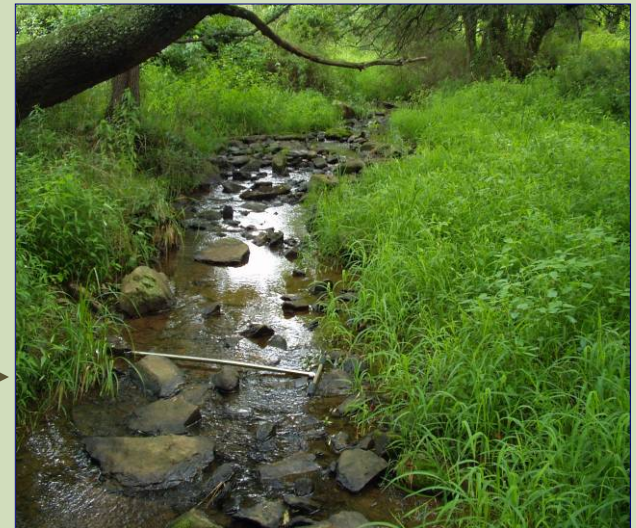
DESIGN METHODOLOGY FOR URBAN STREAMS

- NATURAL CHANNEL EVOLUTION -

Evolutionary process considers the channel's incision, bank stability, & sedimentation load (aggrading or degrading)



Severe
Channel Condition



Optimal
Channel Condition

DESIGN METHODOLOGY FOR URBAN STREAMS

1. Significantly more flow than rural streams
2. Significantly more “*bankfull*” events than in rural watersheds



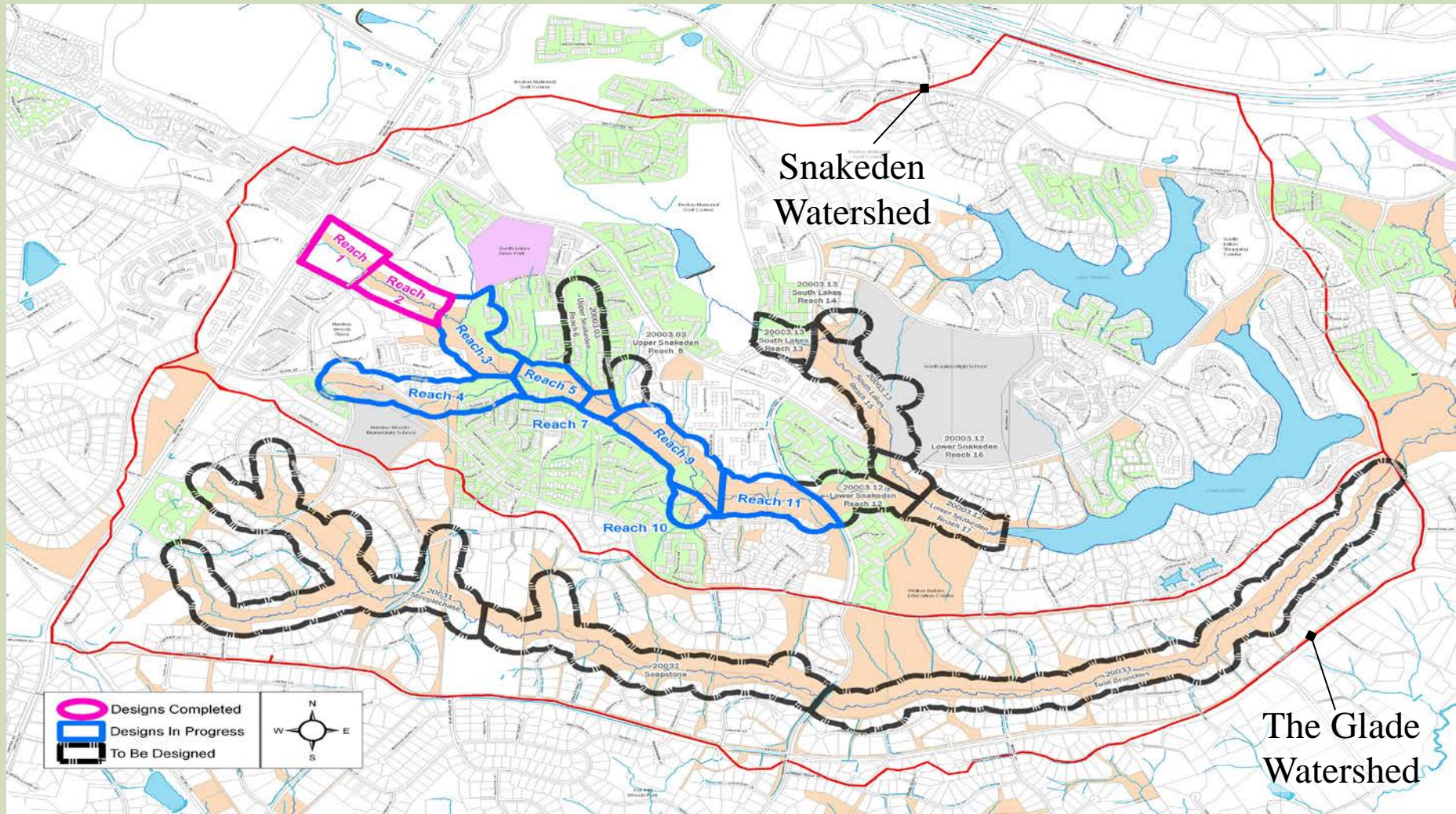
DESIGN METHODOLOGY FOR URBAN STREAMS

1. Significantly more flow than rural streams
2. Significantly more “*bankfull*” events than in rural watersheds
3. Given site constraints, reinforcement will be necessary
 - Rock structures
 - Reinforced bed
 - Heavy planting densities

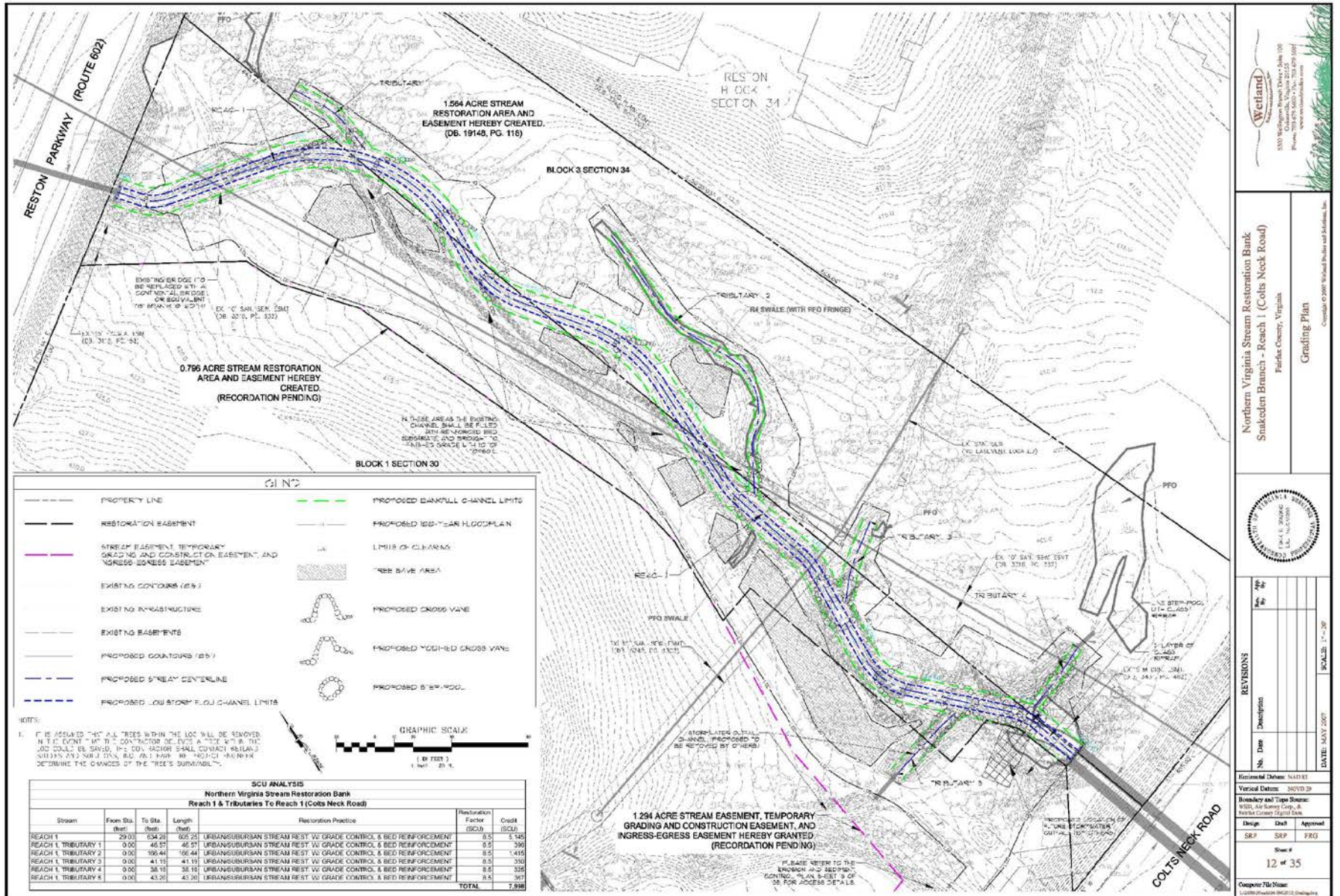


DESIGN PROCESS

- Watersheds have been divided into manageable design reaches.
- Design & Construction starts in upper reaches & continues in stages downstream.



DESIGN PLANS



PROJECT SCHEDULE

- Design underway
- Construction Plan approvals required from
 - Reston DRB
 - COE
 - DEQ
 - Fairfax County
- Construction begins fall 2007/spring 2008
 - Continues sequentially for several years – depending upon market
 - Starting in Upper Snakeden
 - Full-time management by WSSI staff



EXAMPLE PROJECTS – FAIRFAX COUNTY

Stringfellow Road: Re-Vegetation



Planting.....



1-Year Later

EXAMPLE PROJECTS – FAIRFAX COUNTY

Northfork Research Park:



Planting.....



1-Year Later

EXAMPLE PROJECTS – FAIRFAX COUNTY

Chesterbrook:



Pre-Construction Conditions

EXAMPLE PROJECTS – FAIRFAX COUNTY

CONSTRUCTION: October – November 2006



EXAMPLE PROJECTS – FAIRFAX COUNTY

First growing season...June 2007



EXAMPLE PROJECTS – FAIRFAX COUNTY

Tyson's Chase at Suncrest:



Pre-Construction Conditions

EXAMPLE PROJECTS – FAIRFAX COUNTY

CONSTRUCTION – Aug 2006



EXAMPLE PROJECTS – FAIRFAX COUNTY

First growing season...March 2007



EXAMPLE PROJECTS – FAIRFAX COUNTY

McLean Place:



Pre-Construction Conditions

EXAMPLE PROJECTS – FAIRFAX COUNTY

CONSTRUCTION – Jan 2003



EXAMPLE PROJECTS – FAIRFAX COUNTY

July 2006



MONITORING AND MAINTENANCE



10-year monitoring program

- Streambed surveys
- Structure surveys
- Vegetation surveys
- Biological Surveys

*Must meet success criteria outlined
in MBI – or fix!*



CONCLUSION

1. Reston Streams are degrading and adversely affecting
 - Water quality
 - Habitat
 - Reston's balance sheet – dredging is expensive!
2. Fully restored streams will provide long-term stability & financial benefits to the community
 - Phase I: \$60 million Restoration
 - \$400,000 to Reston Association
 - \$650,000 to Friends of Reston
3. Construction disturbance will provide long-term, ecological benefits.

