Northern Virginia Stream Restoration Bank

Presented by Michael S. Rolband
P.E., P.W.S., P.W.D.

Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive · Suite 100 · Gainesville · Virginia 20155
www.wetlandstudies.com
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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- Natural & Cultural Resource consulting firm to developers & public works
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  - Archeology, Engineering, Environmental Science, Environmental Technology, GIS, Regulatory, & Surveying
- 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

<table>
<thead>
<tr>
<th>Bank Name*</th>
<th>Year Approved</th>
<th>Wetland Credits</th>
<th>Stream Restoration (LF)</th>
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</thead>
<tbody>
<tr>
<td>Julie Metz Phase I</td>
<td>1994</td>
<td>19.08</td>
<td>---</td>
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<tr>
<td>Julie Metz Phase II</td>
<td>1996</td>
<td>19.08</td>
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<tr>
<td>North Fork</td>
<td>1999</td>
<td>80.27</td>
<td>871</td>
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<td>Cedar Run Phase 1</td>
<td>1999</td>
<td>15.10</td>
<td>---</td>
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<tr>
<td>Cedar Run Phase 2</td>
<td>1999</td>
<td>23.93</td>
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<td>Cedar Run Phase 2a</td>
<td>2002</td>
<td>47.58</td>
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<td>Cedar Run Phase 3</td>
<td>1999</td>
<td>58.94</td>
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<td>81.62</td>
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<td>42.47</td>
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<td>Cedar Run Phase 8</td>
<td>2002</td>
<td>30.35</td>
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<td>Cedar Run Phase 9</td>
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<td>33.58</td>
<td>4,122</td>
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<td>Cedar Run Phase 10</td>
<td>2005</td>
<td>41.34</td>
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<td>Bull Run</td>
<td>2002</td>
<td>28.89</td>
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<td>Loudoun County Phase 1</td>
<td>2007</td>
<td>10.65</td>
<td>2,092</td>
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<td>Loudoun County Phase 3</td>
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<td>9.96</td>
<td>5,391</td>
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<tr>
<td>NVSRB Phase I</td>
<td>2006</td>
<td>---</td>
<td>79,042</td>
</tr>
</tbody>
</table>

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 watershed & 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.

Adapted from The Washington Post, February 15, 1996
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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4. There is a demand for stream mitigation in the region.
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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
  (≥ 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 → Poor → Marginal → Suboptimal → Optimal

Severe Channel Condition → Optimal Channel Condition
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.

![Map of Watersheds](image_url)
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.