Valley Creek Watershed and Stream Restoration

4th National Conference on Ecosystem Restoration

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Habitat Improvement on Valley Creek

- Background
- Project Summary
- Monitoring
- Lessons Learned
Valley Branch Watershed District Boundaries
Valley Creek

- One of 13 trout streams within the Twin Cities metropolitan area
- Naturally reproducing population of native brook trout and brook lamprey
- Large populations of non-native brown and rainbow trout
- Top 10% for trout production (personal communication with Tom Waters and Ray Newman)
Valley Creek

- Flows into the St. Croix River, a federally designated Wild & Scenic River
- St. Croix at Valley Creek’s mouth is listed as impaired for turbidity by the MPCA
- Estimated 1,400 tons of sediment per year enter Valley Creek from its watershed

St. Croix River
Photo: Nile Fellows
Valley Creek Watershed Land Uses
2005 Erosion Inventory

- 90 Erosion Sites in 7 Tributary Ravines
- > 60 In-Stream Erosion Sites
- 33 Road Runoff Erosion Sites
Valley Creek Repair & Rehabilitation Program

- Fall 2006 – Winter 2007/08: Developed cost-share program
- Fall 2006: Contacted landowners of priority sites
- 2007: Designed initial projects
- Spring and Summer 2008: Constructed initial projects
- 2010: Dam Removal
- 2011: Belwin/Hartwell Properties Feasibility Study
Challenges - Johnson Property

- Severely incised/widened channel
- Sand bed and banks
- Poor vegetation
- “Active” landowner
Design Included
- Excavate floodplain terraces
- 8 boulder riffles for grade control
- 45 root wads
- 7,000 feet of shoreline biolog
- Native grass, willow stakes and shrubs
June 2011
Stabilized 2,500 feet of the creek on three upstream properties

Design included:
• Bank shaping/500 feet of shoreline biolog
• 1 boulder cross vane grade control; 2 boulder vanes for bank protection/direct flow
• 3 root wads
Dam Conversion to Rapids – Blasko Property
Summer 2010
Valley Creek Protection Partnership - Easements
Fish and Aquatic Macroinvertebrate Monitoring

- Site I located upstream of CSAH 18 bridge, downstream of VBWD project
- Site II (control site) located upstream at Stagecoach Road
- Both sites also sampled by MNDNR in 2006
Valley Creek
Aquatic Macroinvertebrate - Percent EPT

EPT (Percent of All Specimens)

Sampling Year

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009

Site I - EPT (Percent of All Specimens)
Site II - EPT (Percent of All Specimens)
Trout Collected per Hour of Sampling
Valley Creek 2006 and 2009

- Brown + Tiger Trout per hour
- Brook Trout per hour
- Rainbow Trout per hour

<table>
<thead>
<tr>
<th>Site</th>
<th>2006 (Downstream Restoration)</th>
<th>2009 (Downstream Restoration)</th>
<th>2006 (Control Site)</th>
<th>2009 (Control Site)</th>
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<td>Site I</td>
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Valley Branch Watershed District
Lessons Learned:

• Artificial structures poor substitute for large woody debris (hopefully temporary)
• Projects on private property risky
  • Manage expectations of client & owner
  • Obtain landowner agreement early
  • Manage expectations continuously
  • Long-term easements critical
• Monitoring critical to evaluate project
Questions?