



Little Pimmit Run Watershed Retrofits

Greg Hoffmann

Center for Watershed Protection



June 4, 2009
Arlington County, Virginia

The 6 W's

- What are stormwater retrofits?
- Why retrofit?
- What is the retrofitting philosophy?
- What did we do?
- What are the results?
- Where to from here?

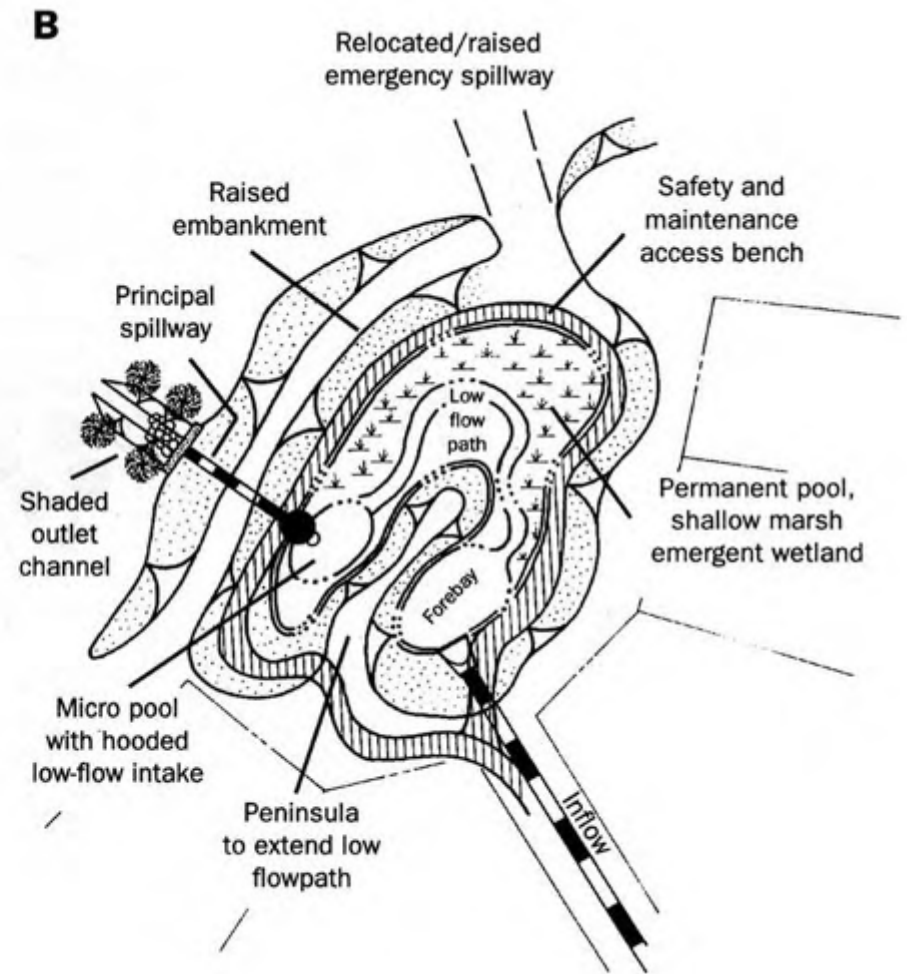
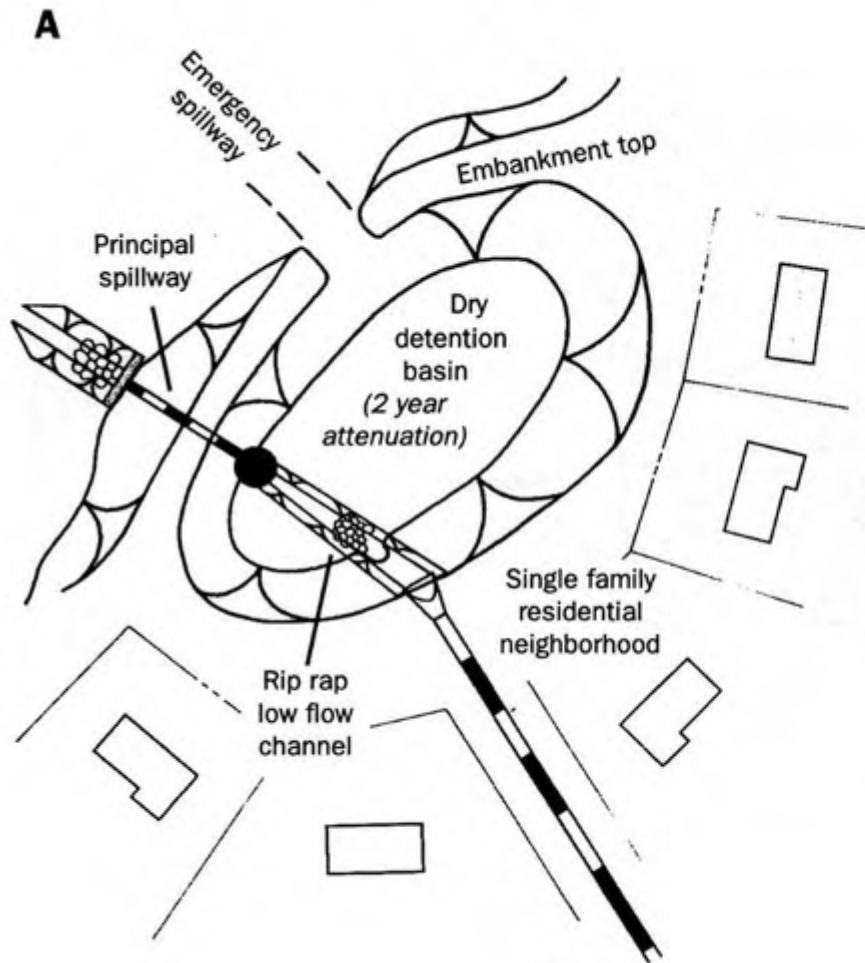
What Are Stormwater Retrofits?



- **Stormwater retrofits** are stormwater management practices in locations where stormwater controls did not previously exist or were ineffective

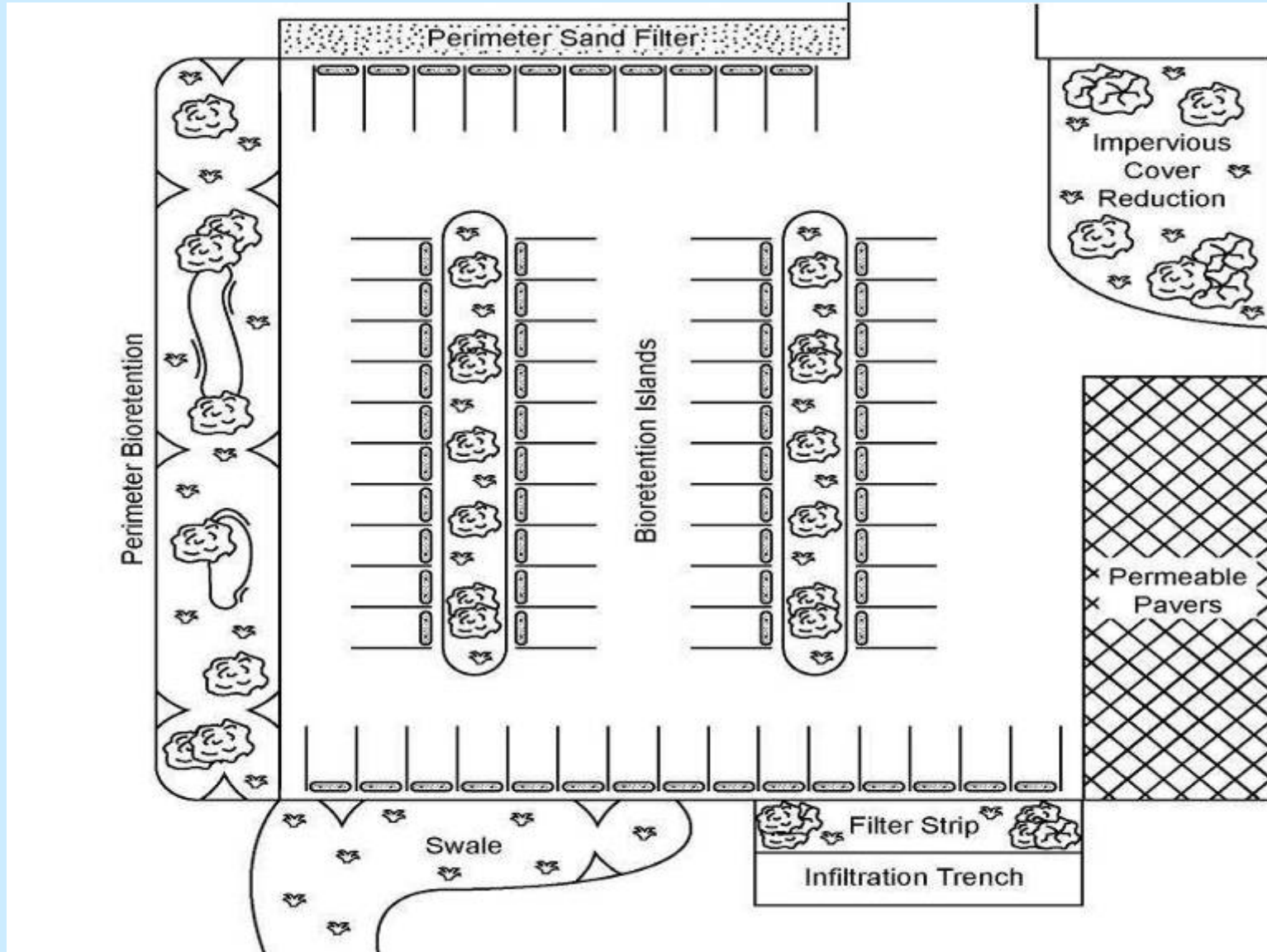
Rolling Stone Retrofit Montgomery Co., MD

Extended Detention, Wet Ponds, and Wetlands





Bioretention, Filtration, Infiltration, & Swales







Other



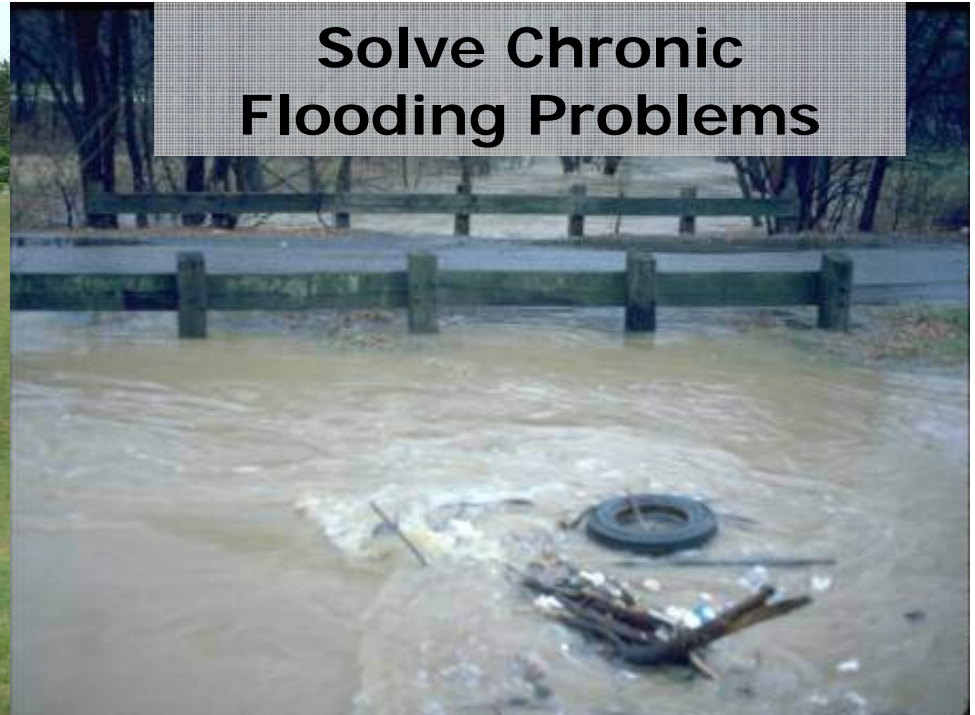
Why Retrofit?

- Many of our subwatersheds were developed without effective stormwater management practices
- This has caused a number of negative impacts on our receiving waters
- Stormwater retrofitting is an important tool, in combination with stream restoration, traditional flood protection, and other measures, to help address these situations and help meet specific subwatershed restoration objectives...

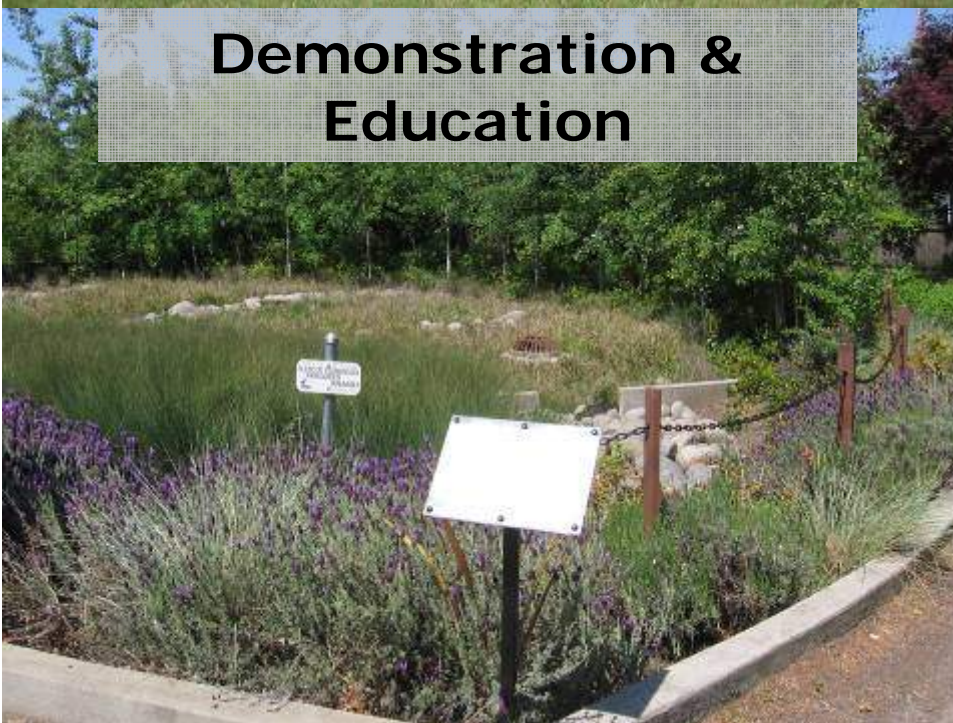
Fix Past Mistakes & Maintenance Problems



Solve Chronic Flooding Problems



Demonstration & Education



Reduce Pollutants of Concern



Reduce Stormwater Runoff Volumes



Trap Trash & Floatables



Reduce Downstream Channel Erosion



Support Stream Restoration Projects



Retrofitting is Challenging

- 50+ years of development and drainage infrastructure is not easily re-done
- The more impervious a watershed becomes, the more storage is required to meet restoration objectives and the more difficult it becomes to find retrofit sites
- It is difficult to find enough retrofit locations and storage volume to achieve large reductions in pollutant loads and stormwater volumes
- It is generally prohibitive to find enough retrofit locations and storage volume to meet flood protection and stream erosion restoration objectives

What Is the Retrofitting Philosophy?

Retrofitting urban watersheds is...

- The art of opportunity
- Cumulative and long-term in its benefits

Retrofitting urban watersheds is not about drastic changes to the surface and subsurface landscape.

This philosophy guided our retrofitting assessment.

What Did We Do?

Desktop Analysis

- Purpose
 - Rapidly search for and identify potential retrofit sites across the subwatershed
 - Save time in the field
- Result
 - 64 potential locations identified.



Retrofit Reconnaissance Inventory (RRI)

- Purpose

- Verify feasibility of candidate retrofit sites
- Collect information

- Key tasks

- Evaluate potential retrofit sites, collect pertinent site information, and produce a basic concept design sketch

- Results

- 40 sites selected as potential retrofits



Williamsburg Median (at Powhatan)



John Marshall Median



Williamsburg Blvd.



George Mason Dr.



Jamestown Elementary School



Marymount College



George Mason Median



Knights of Columbus



100-Point Scoring System For Little Pimmit Run Retrofits

Site: LPW61A & LWP61B

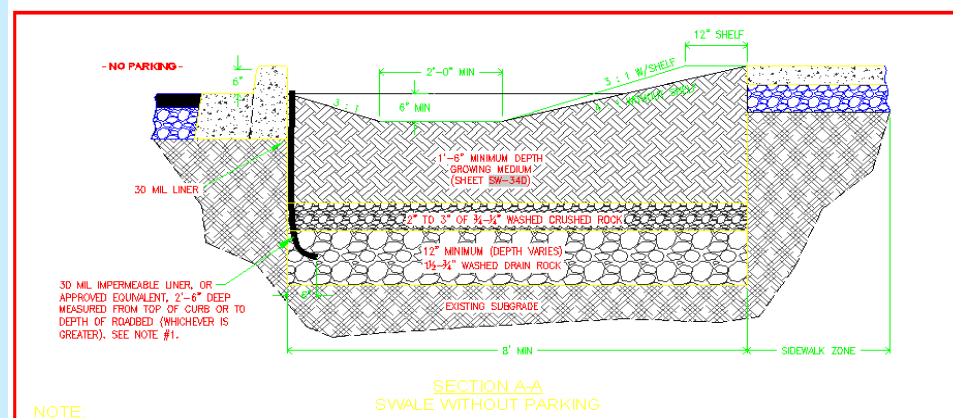
Screening Factor	Weight	Score	Weighted Score	Notes
		(0-10)		
PRIMARY SCREENING FACTORS				
% of Water Quality Volume Treated (0% = 0 pts; 100% = 10 pts)	1.5	17.39	26.085	
Size of Contributing Drainage Area (0 acres = 0 pts; 5 acres = 10 pts)	1.5	5.38	8.07	2.69 acres
Cost/cubic foot treated (>\$40 = 0 pts; \$20-\$40 = 5 pts; <\$20 = 10 pts)	1.5	10	15	\$10.50/cubic foot
% Impervious Cover in Drainage Area (0% = 0 pts; 100% = 10 pts)	1	1.64	1.64	
Public Land (Private = 0 pts; School = 4 pts; Street ROW = 7 pts; Park or gov't land = 10 pts)	1	4	4	
Potential for Quick Implementation or Coincides with Planned Construction (No = 0 pts; Yes = 10 pts)	1	0	0	School property
County Maintenance Burden (High = 0 pts; Med = 5 pts Low = 10 pts)	1	10	10	School to maintain
SECONDARY SCREENING FACTORS				
Potential Utility or Site Constraints (Yes = 0 pts; No = 10 pts)	0.5	10	5	
Existing Drainage Problem (No = 0 pts; Yes = 10 pts)	0.5	0	0	
Educational Opportunity (Opportunity for signage = 5 pts; Parks = 8 pts; Schools = 10 pts)	0.5	10	5	
TOTAL			74.795	

What Are the Results?

- 40 potential retrofit sites receive runoff from 9% of west branch and 5% of east branch
- Stormwater volume target for each retrofit is 1" of runoff from impervious surfaces
- 55% of the 40 sites meet this target

Where To From Here?

- Calculate pollutant and volume reduction results
- Concept designs
 - standard details
 - specific sites
- Implementation
 - High priority sites already being evaluated for near-term implementation
 - Further evaluation of other potential sites
 - Other opportunities may emerge based upon ideas in this study



Questions?