

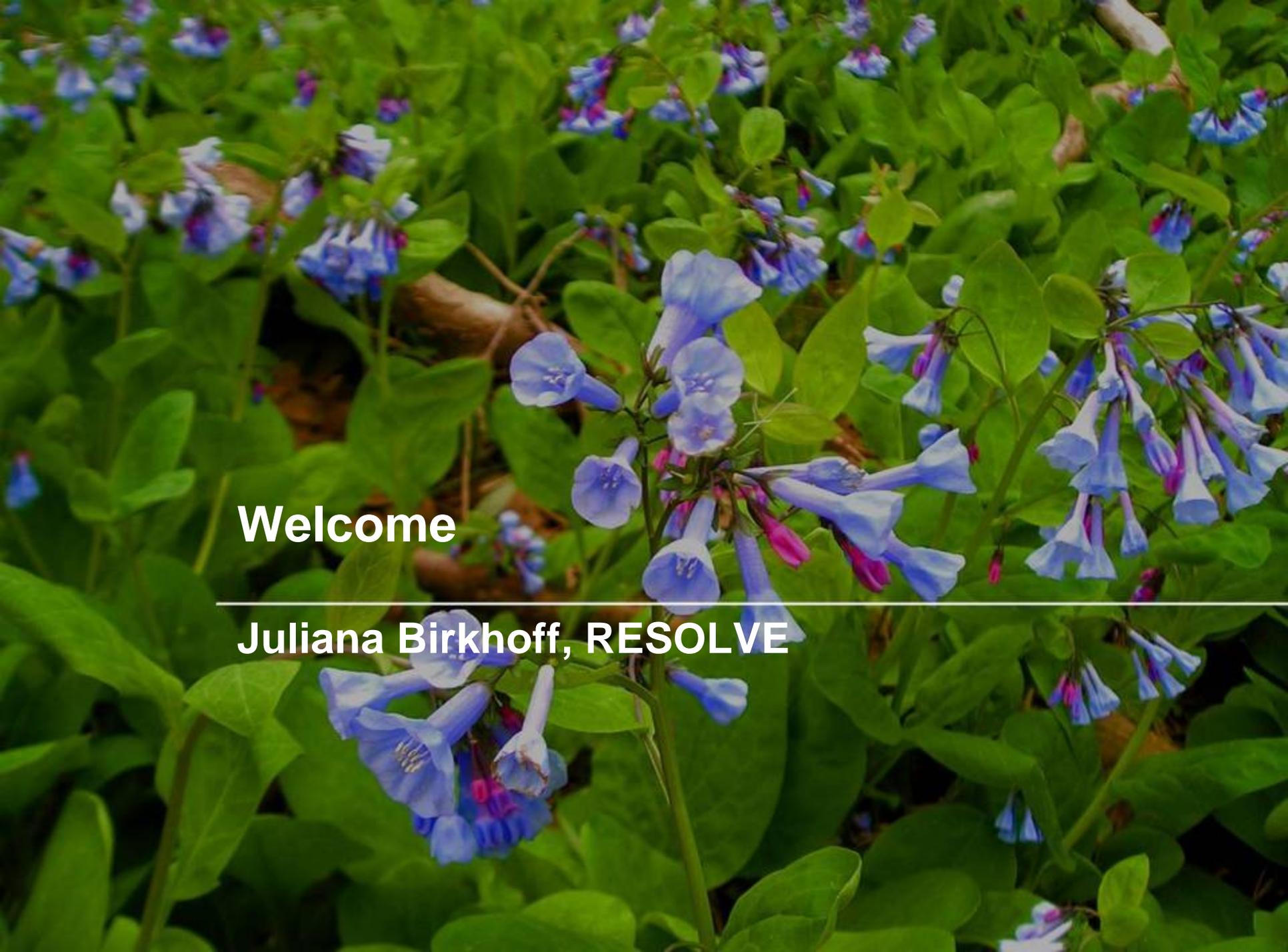
Accotink Creek Watershed Management Plan

Draft Plan Forum
September 21, 2010

**Fairfax County Department of Public Works
and Environmental Services**

Presented by Watershed Planning & Assessment Branch,
Stormwater Management



A close-up photograph of a dense field of blue and purple flowers, likely Salpiglossis, with vibrant green foliage. The flowers are bell-shaped and hang from thin stems. The background is filled with more of the same plants, creating a lush, textured appearance.

Welcome

Juliana Birkhoff, RESOLVE

Agenda

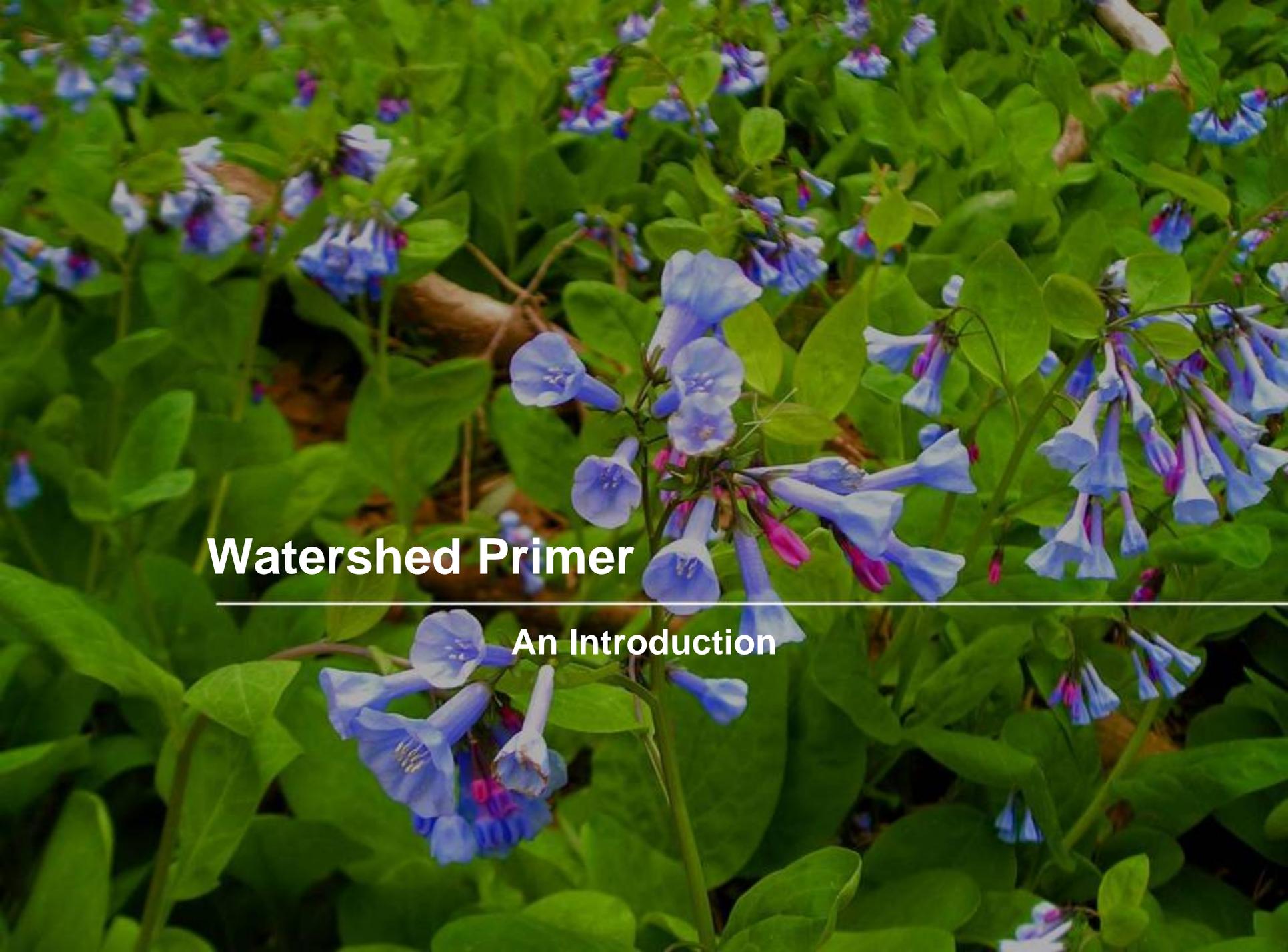
- Welcome
- Watershed Planning in Fairfax County
- Watershed Primer
- Watershed Management Plan Overview
- Plan Comment Period and Timeline
- Breakout Sessions
- Adjourn



A close-up photograph of a dense field of blue and purple flowers, likely Virginia Bluebells, with vibrant green foliage. The flowers are in various stages of bloom, some fully open and others as buds. The background is a soft-focus expanse of similar flowers and leaves.

Watershed Planning in Fairfax County

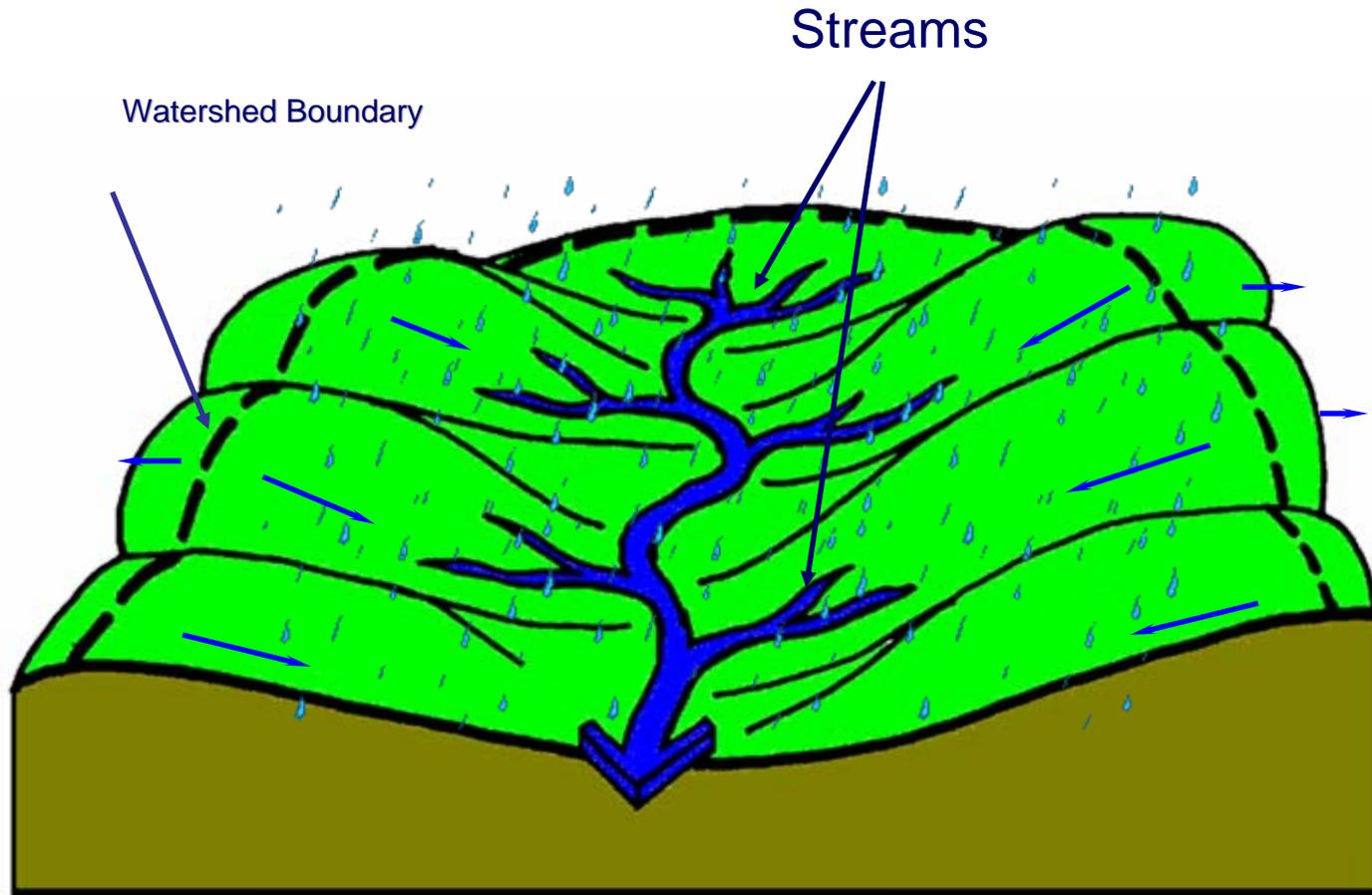
Fred Rose, Fairfax County

A close-up photograph of a dense field of blue and purple flowers, likely a species of Salpiglossis, with vibrant green foliage. The flowers are bell-shaped and arranged in clusters. The background is filled with more of the same plants, creating a lush, textured appearance.

Watershed Primer

An Introduction

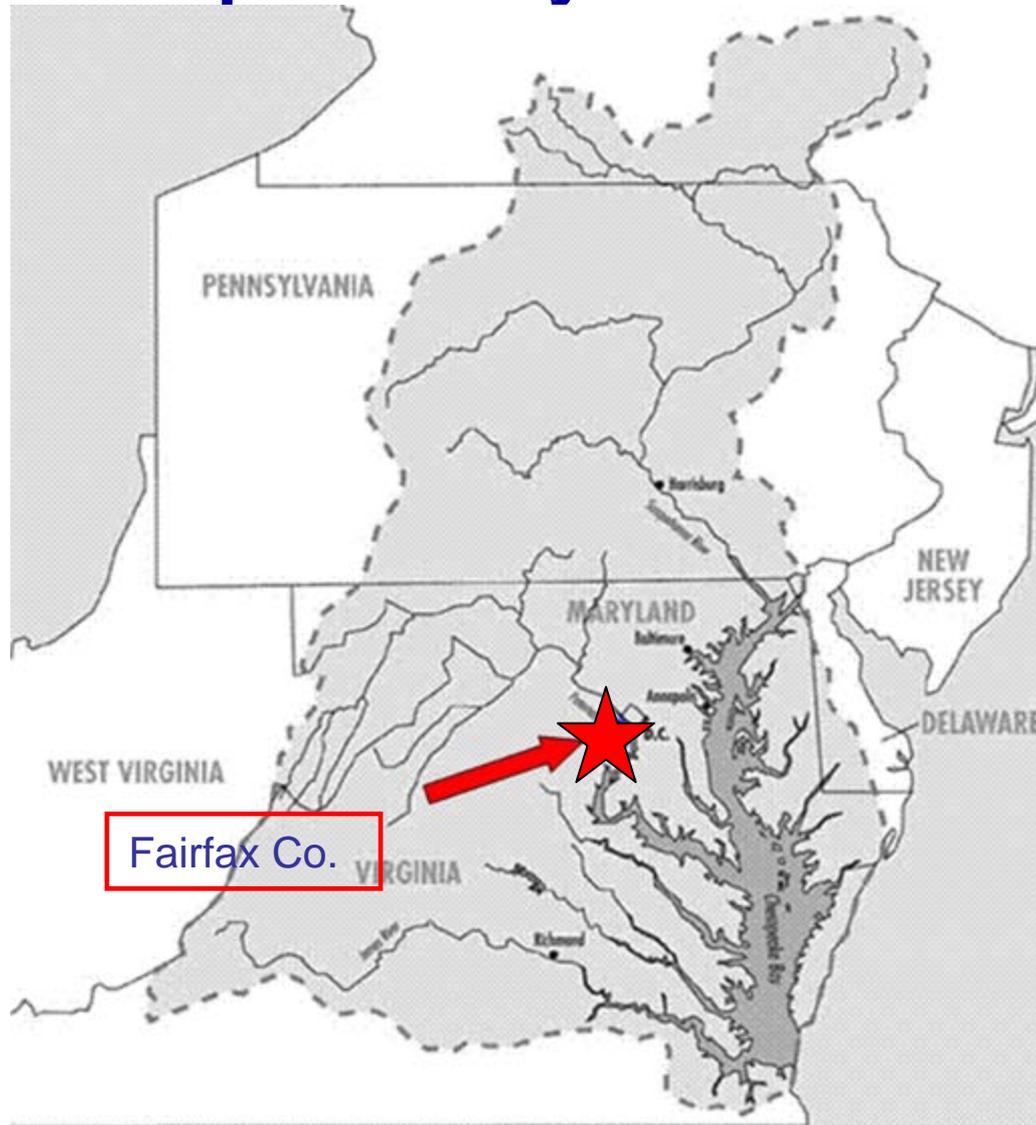
What is a Watershed?



What is a Watershed?



Chesapeake Bay Watershed



Fairfax Co.



Fairfax County Watersheds



Stormwater Management

The process of controlling **stormwater runoff** that drains from rooftops, driveways, roads and other hard surfaces that do not allow water to permeate into the ground.



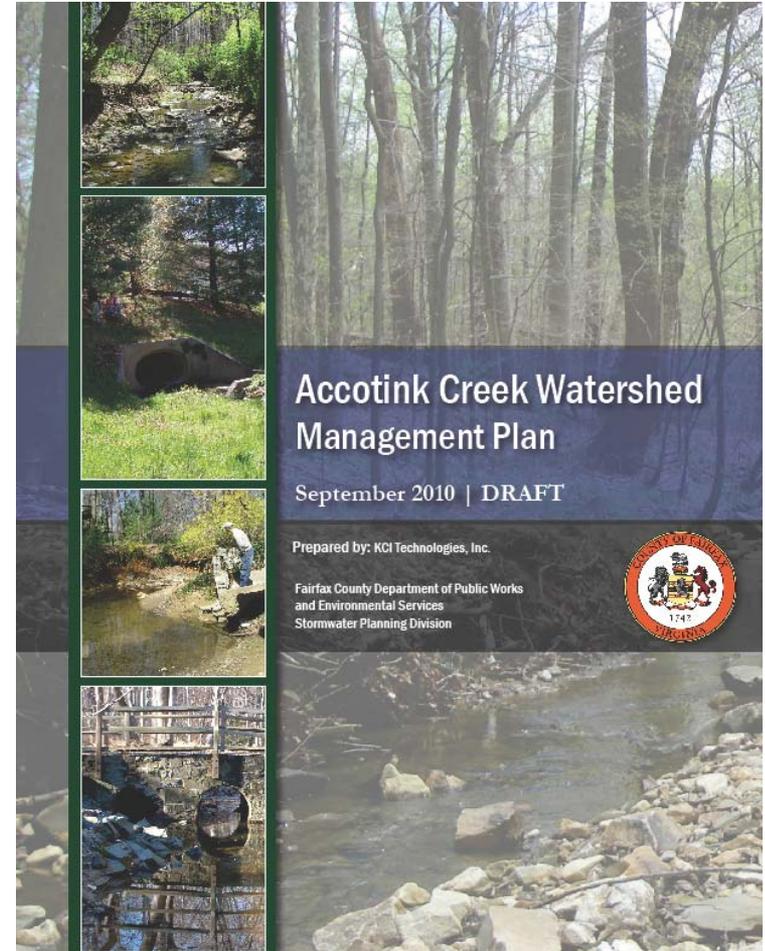
Stormwater Management



What is a Watershed Management Plan?

A Watershed Management Plan is a way for the county to assess the health and well being of our environment at a subwatershed scale.

The plans contain a 25-year list of proposed improvement projects.

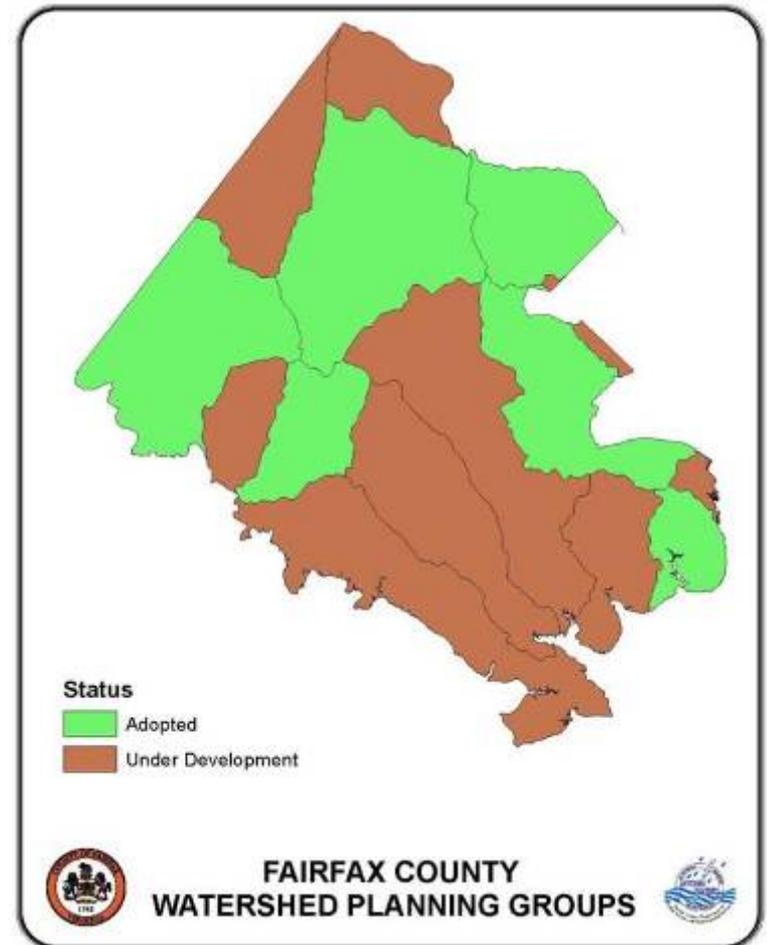


Why create watershed plans?

Healthy watersheds, healthier communities



Watershed Planning



A close-up photograph of a dense field of blue and purple flowers, likely Virginia Bluebells, with vibrant green foliage. The flowers are in various stages of bloom, some fully open and others as buds. The background is a soft-focus expanse of similar plants, creating a sense of a large, healthy meadow.

The Accotink Creek Watershed Management Plan

Bill Frost, KCI

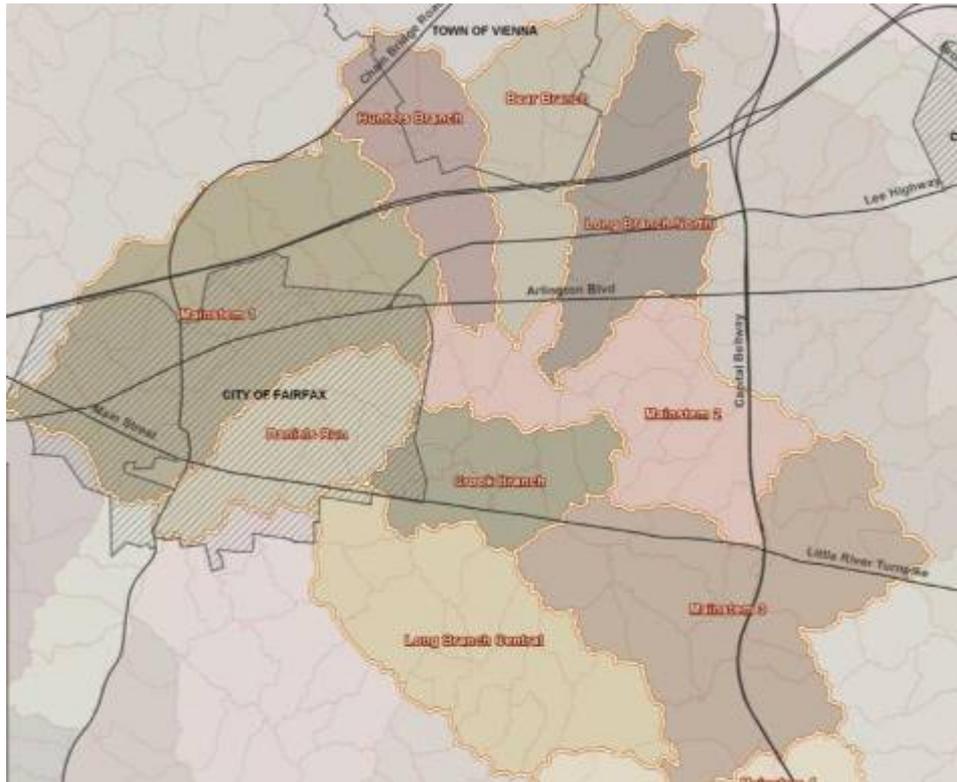
Characteristics



- 52 square miles
- Second largest watershed in Fairfax County
- 111 miles of streams
- 23% in Fairfax City, Fort Belvoir



Watershed Mgmt Areas and Tributaries



Bear Branch

Crook Branch

Daniels Run

Hunters Branch

Long Branch Central

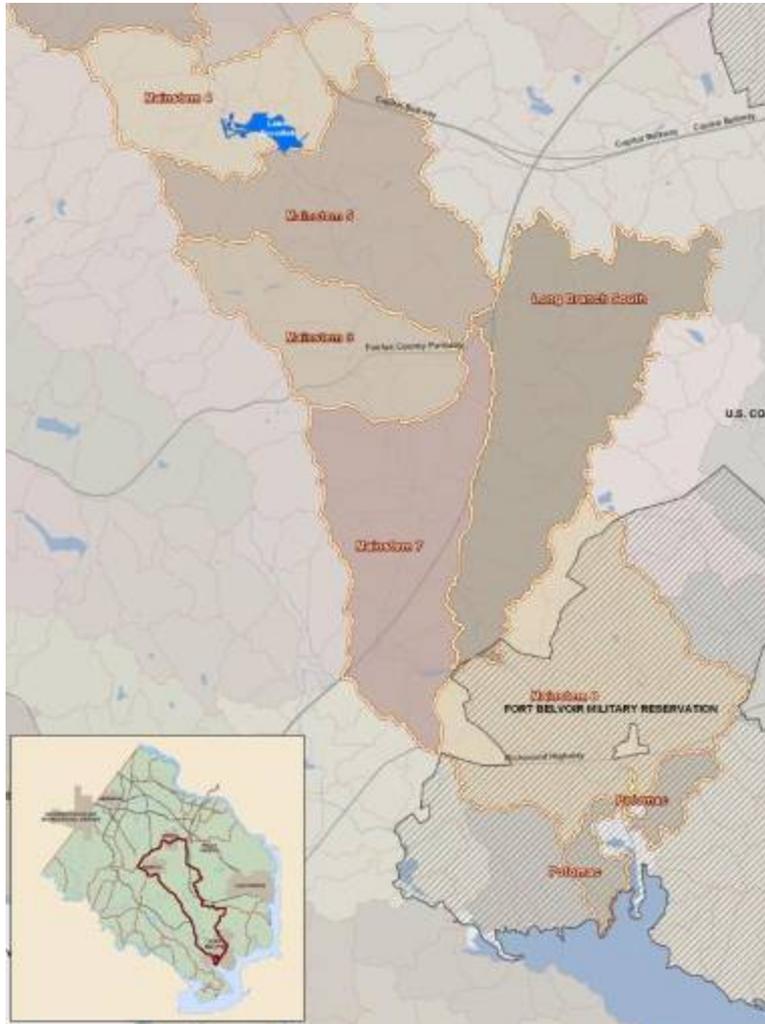
Long Branch North

Mainstem 1

Mainstem 2

Mainstem 3 (includes
Coon Branch, Turkey
Run)

Watershed Mgmt Areas and Tributaries



Long Branch South

Mainstem 4 (includes
Flag Run)

Mainstem 5 (includes
Calamo Run)

Mainstem 6

Mainstem 7 (includes
Fieldlark Branch)

Mainstem 8 (includes
Kernan Run,
Mason's Run)

Potomac

Plan Contents

- Executive Summary
- Section 1 - Introduction
- Section 2 - Watershed Planning Process
- Section 3 - Summary of Watershed Conditions
- Section 4 - Summary of Watershed Restoration Strategies
- Section 5 - WMA Restoration Strategies
- Section 6 - Benefits of Plan Implementation
- Section 7 - Glossary and Acronyms
- Appendix A – Draft Watershed Workbook
- Appendix B - Technical Documents
- Appendix C - Summary of Public Involvement



Executive Summary

- Overview of Plan
 - Watershed Planning Process
 - Previous Studies and Data Compilation
 - Public Involvement
 - Watershed Conditions and Runoff Impacts
 - Watershed Improvement Projects
 - Prioritization, Benefits and Costs of Plan Implementation
- Master Project List
 - Priority Structural Projects (Ten Year Implementation Plan)
 - Long Term Structural Projects (25 Year Implementation Plan)
 - Non-Structural Projects

Section 1 - Introduction

- Basics about watersheds
- Countywide watershed planning
 - History
 - Current Plan



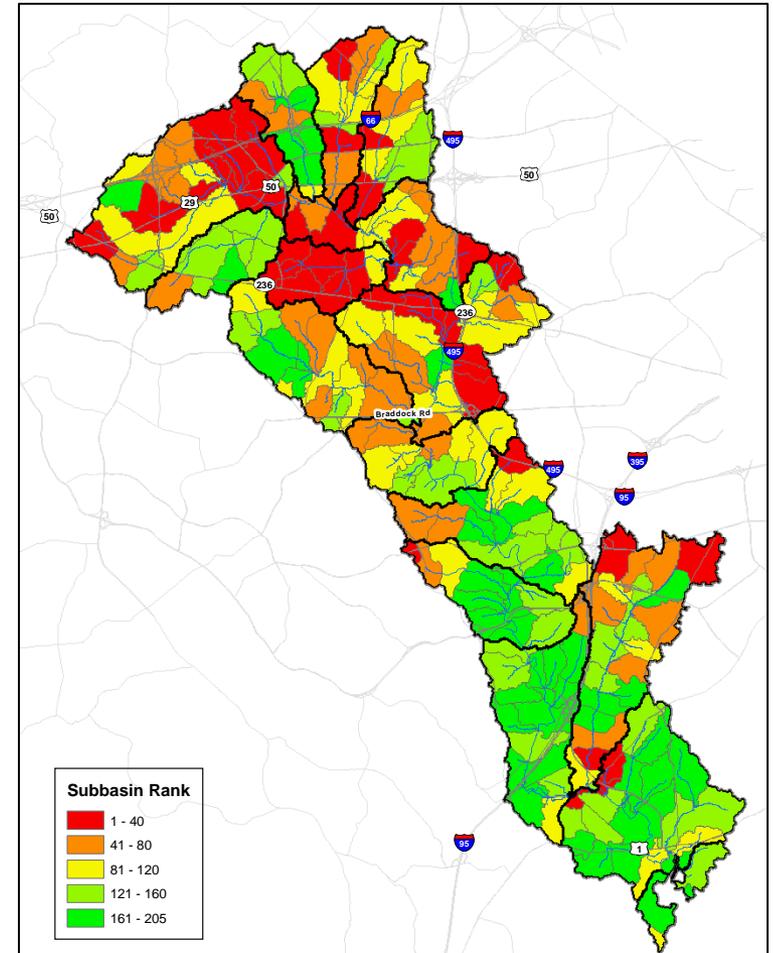
Section 2 - Watershed Planning Process

- County goals and objectives
- Indicators used for scoring
- Subwatershed Strategies
- Subwatershed ranking procedure
- Watershed modeling procedures
 - Hydrology (SWMM)
 - Hydraulics (HEC-RAS)
 - Pollutant Loading (STEPL)



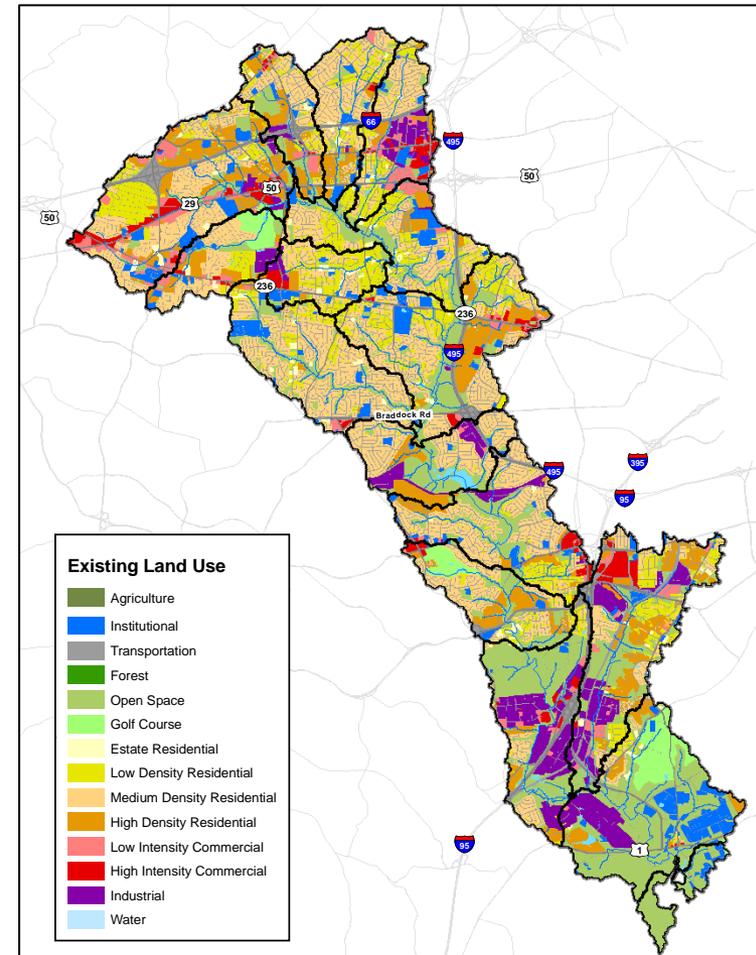
Subwatershed Ranking

- Compile and compare available watershed information across different areas
- Consistent method for identifying problems for all watersheds in the County
- Allows for estimating future conditions with "predictive" indicators
- How it's used in the WMP
 - Priority areas for retrofits
 - Evaluating potential improvements



Section 3 - Summary of Watershed Conditions

- Existing watershed conditions
 - WMA Characteristics
 - Land use
 - Existing stormwater treatment areas
 - Stream Physical Assessment
 - Upland reconnaissance
 - Overall condition based on subwatershed ranking
- WMAs organized alphabetically



Restoration Strategies

- Reduce Stream Erosion
 - Stream Restoration
 - Streambank Stabilization
- Reduce Flooding
 - Reduce runoff volume & peak runoff using infiltration
 - Reduce peak runoff using detention basins
 - Improve road crossings
- Improve Water Quality
 - Best Management Practices (BMPs) that provide quality and quantity control
 - BMPs that provide only quality control
 - Non-Structural Measures
- Improve Habitat
 - Stream Buffer/Riparian Zone Restoration
 - Wetland Mitigation

Stormwater Pond Retrofit

Benefits

- Existing facility
- Increase detention time
- Improve water quality

Before



After

Dry Pond Retrofit

Benefits

- Reduces stormwater velocity
- Improves nutrient removal



Before



After

Stream Restoration

- **Benefits**

- Reduced erosion
- Improved nutrient removal
- Restore riparian habitat

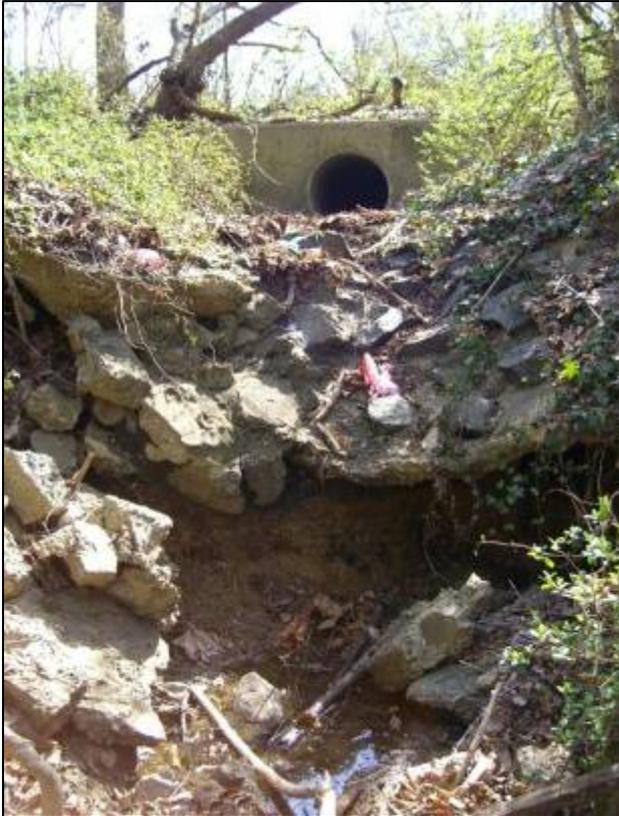
Before



After After

Outfall improvement

Before



After



Benefits

- Reduce erosion
- Decrease velocity
- Nutrient removal

Low Impact Development and Best Management Practices



Benefits

- Reduce directly connected impervious areas
- Improve nutrient removal



Non-Structural Projects

- Buffer Restoration
- Impervious Disconnection / Rain Barrels
- Dumpsite and Obstruction Removal
- Community Outreach / Public Education
 - Tree Planting
 - Lawn Care Outreach
 - Storm Drain Marking
- Inspection and Enforcement Projects
 - Litter / Trash Enforcement
 - Vehicle Maintenance
 - Outdoor Material Storage
 - Dumpster Maintenance

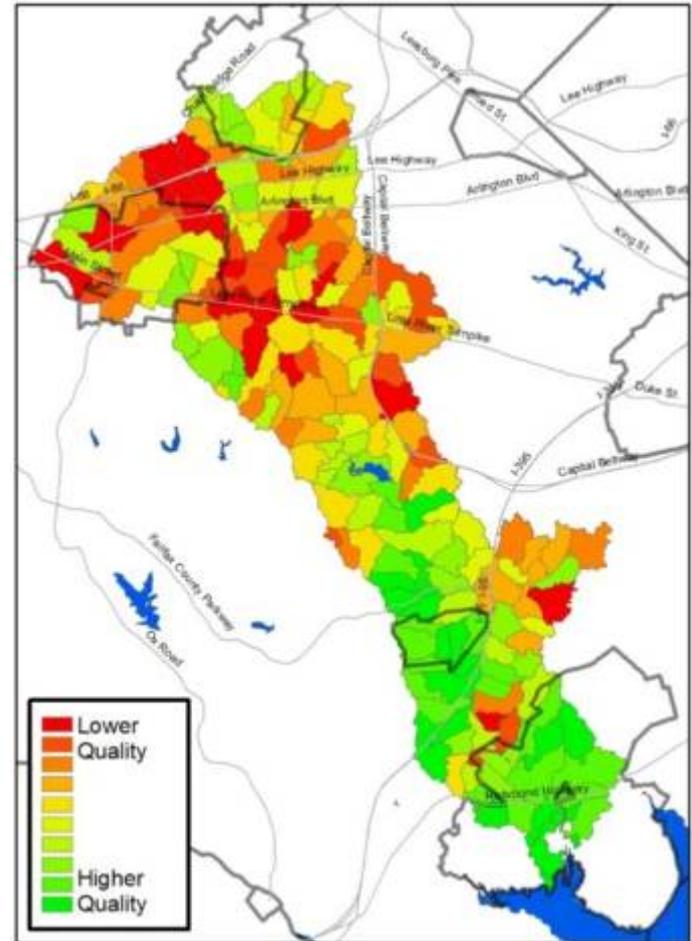


Prioritization Procedure

- Purpose
 - Identify 120 most effective projects
- Process
 - Quantifiable
 - Use indicators and water quality modeling
 - Consistent methodology throughout latest set of Watershed Management Plans
- Metrics
 - Impact and source indicators
 - Location within priority subwatersheds
 - Sequencing in upstream-downstream order
 - Implementability

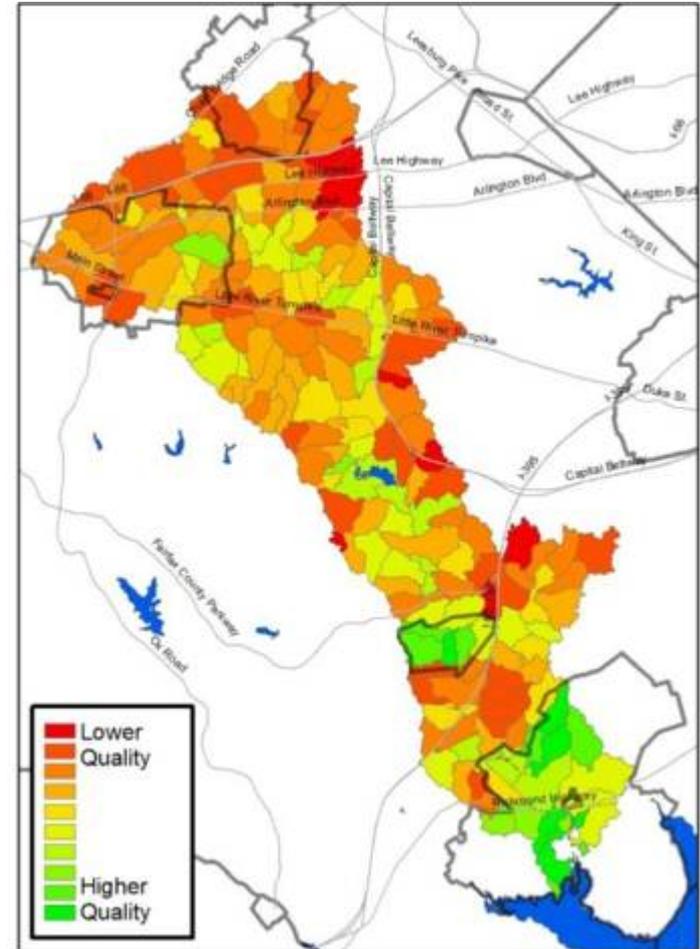
Impact Indicators: Watershed Condition

- Benthic Communities
- Fish Communities
- Aquatic Habitat
- Channel Morphology
- Instream Sediment
- Building Hazards (floodplain)
- Flood Complaints
- Riparian Habitat
- Wetland Habitat
- Forested Habitat
- *E. coli* Concentration
- Sediment & Nutrient Runoff



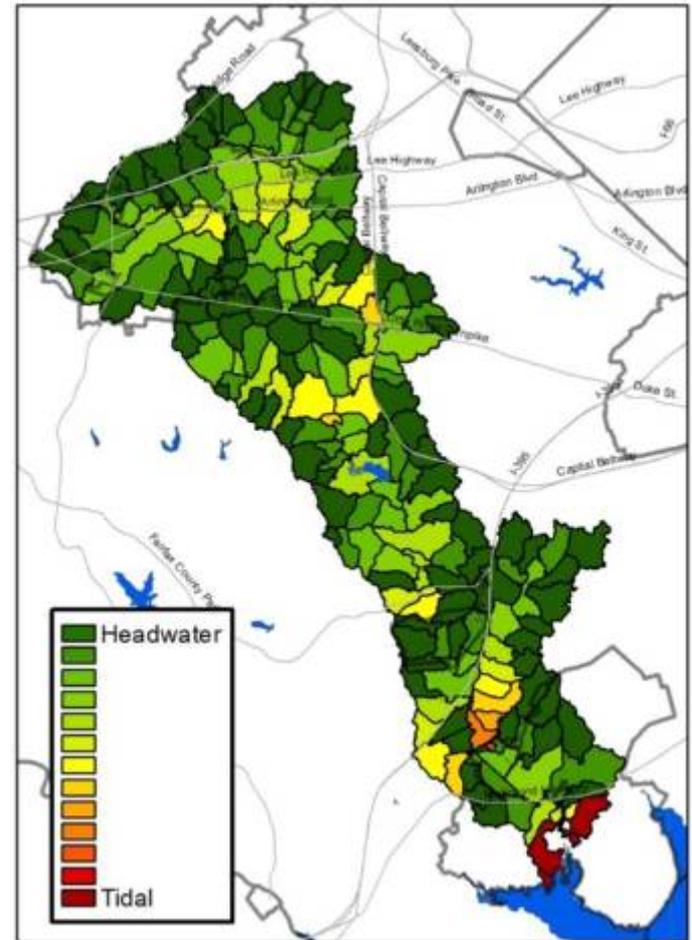
Source Indicators: Sources of Watershed Stressors

- Channelized Streams
- Impervious Area
- Stormwater Outfalls
- Onsite Sewage Disposal
- Streambank Buffer Deficiency
- Sediment & Nutrient Runoff
- Percent Urban Land Cover
- Industrial Discharges



Sequencing

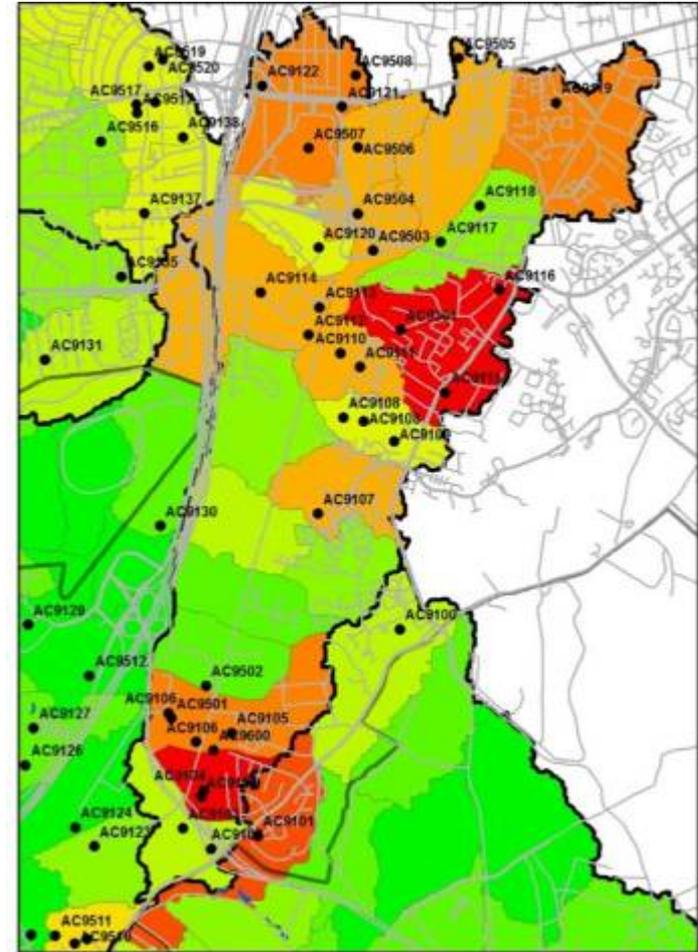
- Projects were scored based on their location upstream or downstream
- Projects in headwater areas should be completed first and considered higher priority.





Location: Watershed Condition

- Projects were scored based on the priority ranking of the subwatershed in which they were located.
- Projects in poor quality subwatersheds may have the potential to provide a greater impact than projects located within a high quality subwatershed.



Accotink Creek
Long Branch South WMA



Implementability

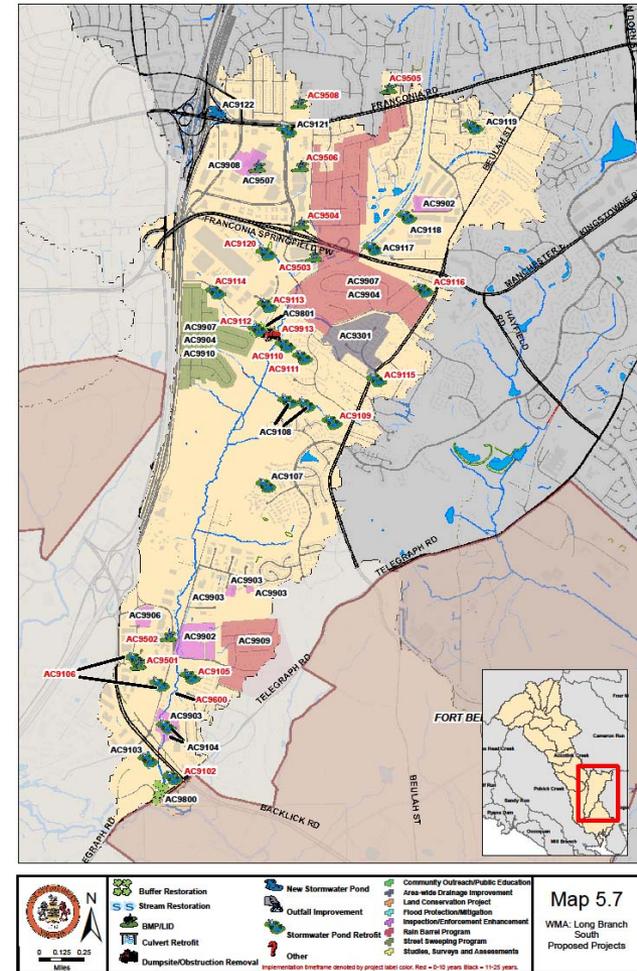
- Less complex projects and projects without land acquisition requirements will be easier to implement and were given higher scores.
- Two qualitative metrics were used to identify which projects would be easier to implement
 - Whether or not they were on County-owned or maintained property
 - Whether or not upstream quantity controls were required for them to be successfully implemented

Score Calculation

- Weighted Average of Five Factors
 - Effect on Impact Indicators 30%
 - Effect on Source Indicators 30%
 - Location within Priority Subwatersheds 10%
 - Sequencing 20%
 - Implementability 10%
- Adjustments (Best Professional Judgment)

Section 5 - WMA Restoration Strategies

- Lists projects by WMA
- Includes
 - Description of 10-year projects
 - Description of non-structural projects
 - Map of project locations by WMA
 - Project fact sheets for 10-year projects
 - Overview of project, benefits, and constraints
 - Schematic of project
 - Cost estimate



How to read the fact sheet (front)

Project Number and Type

AC9210 - Stream Restoration

Watershed and WMA

ACCOTINK CREEK Watershed
Accotink - Mainstem 3 Watershed Management Area

Vicinity Map



Address: Behind 8000 Brook Braddock Rd
Location: Wake Field Park
Land Owner: County-FCFA
PN: 0704-01-0002
Control Type: Water Quality
Drainage Area: N/A
Receiving Waters: Unknown Tributary of Accotink Creek

Project Info

Project Description

Description: This project entails restoring two existing stream channels located within Wakefield Park that drain commercial areas along Braddock Road as well as the Braddock Road interchange with the Capital Beltway (I-495). In particular, one of these channels drains from a storm drain outfall along Braddock Road and flows downstream to a culvert under the entrance road leading to Wakefield Park. The other channel starts at the downstream end of a cross culvert under I-495 and extends downstream to the same culvert under the entrance road leading to Wakefield Park. These channels are currently incised and over-sidewed with moderate to severe erosion occurring on meander banks and along straight sections. Restoration of these channels will focus on reducing the channel dimensions and raising the bed elevations to reconnect each channel to the floodplain. The bed elevation of the downstream channel is several feet lower than the invert of the culvert that flows under I-495. Reconnection to the floodplain along with installing grade controls will help to prevent further incision and over-widening. In areas where the existing channel will be maintained, regrading and stabilization may need to occur with armor-in-place or bioengineering techniques. Since this project is located in Wakefield Park, the floodplain and project limits are all within forested conditions.

Address
Location
Land Owner
Control Type
Drainage Area
Receiving Water



Project Area Map: Conceptual plan showing potential project location

Detailed Project Area Map



How to read the fact sheet (back)

**Project Benefits
Qualitative &
Quantitative
(Modeling)**

Project Benefits: Restoration of these channels will help to reduce sediment loads that could be transported to downstream portions of this watershed. Stabilization of existing banks and new channel geometry will allow for reduced sediment loads to these channels. Reconnecting these channels to the floodplain will also reduce downstream sediment loads by depositing suspended sediment on the floodplain. By reducing sedimentation within the channels and providing stable habitat along restored banks, overall instream water quality and habitat may be improved with this project. This project is entirely contained within park property, which alleviates the need for land purchase or acquisition. An existing sanitary sewer utility and clearing may be utilized for access near this channel that may reduce the amount of tree removal needed for construction. This project could provide an educational opportunity for residents using Wakefield Park.

Project Design Considerations: Since this stream is buffered by forest, access and construction for this project will cause a significant amount of tree loss; however, in similar projects, experience has shown that restoration benefits will outweigh overall construction impacts. This project will require environmental permitting due to construction and modifications to perennial stream channels. An existing sanitary sewer line parallels the stream channel originating from I-495, but is not within close proximity to the existing banks. The culvert under West Braddock Road and I-495 should be analyzed during the channel design to determine if modifications to the channel or floodplain will cause and adverse impacts this infrastructure.

**Project Design
Considerations**
-Project
Coordination
-Permitting
-Construction
Issues
-Environmental
Impacts
-Other Features

Costs:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	1741	LF	\$200	\$348,200
Clear and Grub	6.00	AC	\$10,000	\$60,000
Plantings	6.00	AC	\$25,000	\$150,000
Additional Cost, First 500 LF	500	LF	\$200	\$100,000
			Initial Project Cost	\$658,200
Ancillary Items	1	LS	5% of project	\$32,910
Erosion and Sediment Control	1	LS	10% of project	\$65,820
			Base Construction Cost	\$756,930
			Mobilization (5%)	\$37,837
			Subtotal 1	\$794,767
			Contingency (25%)	\$198,642
			Subtotal 2	\$993,409
Engineering Design, Surveys, Land Acquisition, Utility Relocations, and Permits (45%)			\$446,947	
			Estimated Project Cost	\$1,440,356

**Detailed
Project Costs**

**Total Project Cost
Rounded up to
nearest \$10,000**



Section 6 - Benefits of Plan Implementation

- The overall benefits of the plan includes:
 - Eliminate overtopping of one road crossing
 - Restore over five and one-half miles of streams
 - Restore one mile of forested buffer
 - Reduce pollutant loads by:

	TSS (tons/yr)	TN (lbs/yr)	TP (lbs/yr)	Cost (lbs/yr)
10-yr	192	3,921	654	\$48 mil
10- and 25-yr	305	6,209	1,307	\$75 mil

Appendixes

- Appendix A - Draft Watershed Workbook
 - Details on existing conditions, organized by WMA
 - Previous studies and GIS analysis
 - Upland reconnaissance
 - Stream Physical Assessment
 - Existing SWM facilities
 - Subwatershed ranking
- Appendix B - Technical Documents
 - Project selection
 - Prioritization and ranking
 - Modeling
- Appendix C - Public Involvement
 - Minutes from Issues Scoping Forum
 - Meeting summaries from each WAG meeting

A close-up photograph of a dense field of blue and purple flowers, likely Virginia Bluebells, with vibrant green foliage. The flowers are bell-shaped and hang from thin stems. The background is filled with more of the same plants, creating a lush, textured appearance.

Comment Period and Timeline

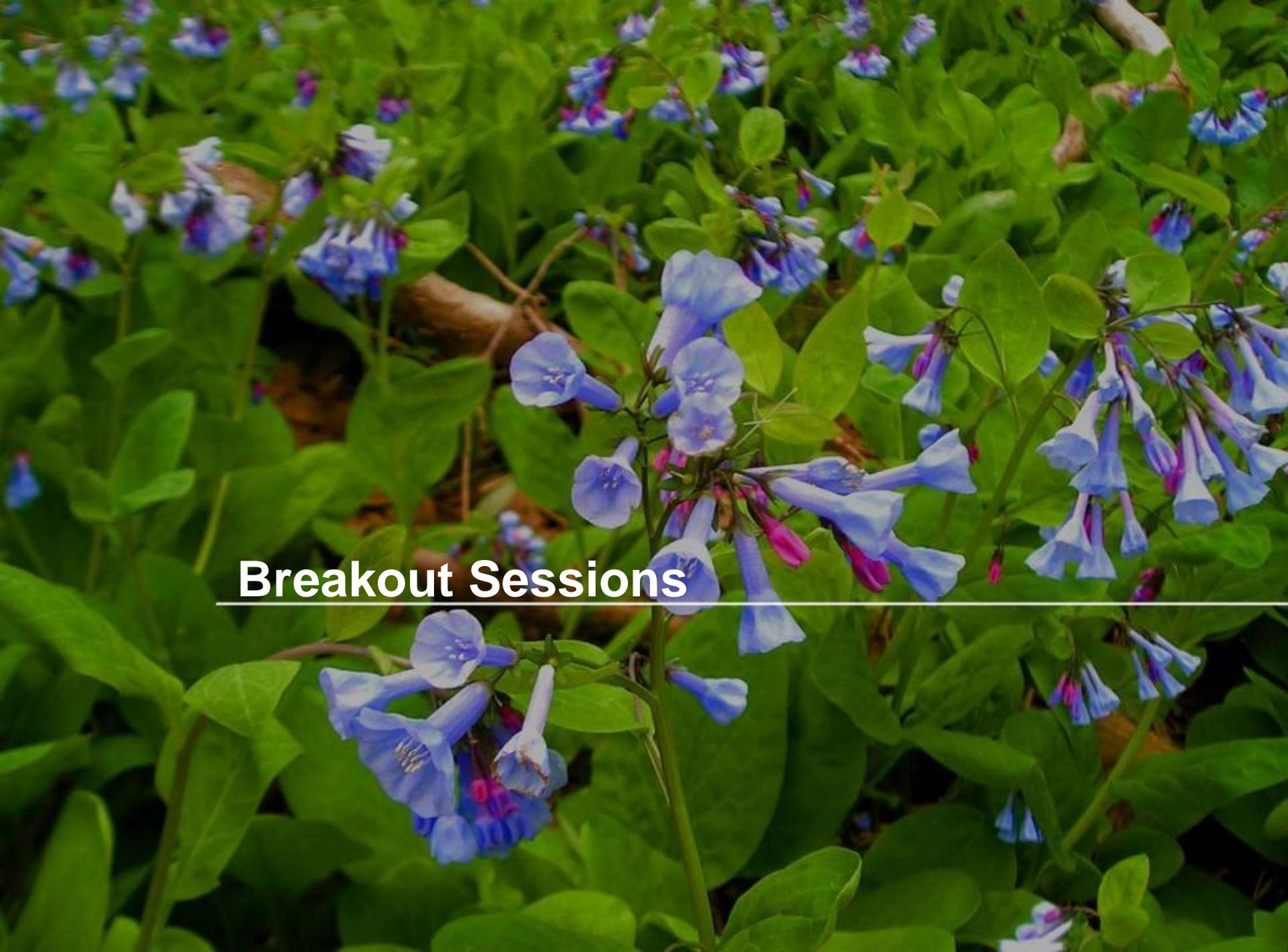
Danielle Wynne, Fairfax County

How to Provide Comments (Comments Due October 21)

- Tonight: in breakout groups, use Comment Form
- On-line Online Comment Form
www.fairfaxcounty.gov/watersheds
Select Accotink Creek
- Email: watersheds@fairfaxcounty.gov
- Phone: 703-324-5500, TTY 711
- Mail: Stormwater Planning Division
12000 Government Center Parkway
Suite 449
Fairfax, VA 22035

Timeline

- 30-day Review and Comment Period (ends 10/21/2010)
 - General public
 - County agencies
 - External organization
- Next steps
 - Evaluate and incorporate comments
 - Finalize Plan
 - Present to County Board of Supervisors
 - Submit for Adoption (late 2010 - early 2011)

A close-up photograph of a dense field of blue and purple flowers, likely Salpiglossis, with vibrant green foliage. The flowers are bell-shaped and hang from thin stems. The background is filled with more of the same plants, creating a lush, textured appearance. The lighting is bright, highlighting the colors of the flowers and leaves.

Breakout Sessions

Project List from Executive Summary

Table Example: First 15 of 120 projects

Priority Structural Projects (Ten Year Implementation Plan)						
Project #	Project Type	WMA	Location	Watershed Benefit	Land Owner	Cost
AC9101	Stormwater Pond Retrofit	Mainstem 8	Village of Mount Air	Water Quality and Quantity	Private - HOA	\$89,000
AC9102	Stormwater Pond Retrofit	Long Branch South	Intersection of Telegraph Rd and Fairfax County Pkwy	Water Quality	State - VDOT	\$317,000
AC9105	Stormwater Pond Retrofit	Long Branch South	Pinewood Station	Water Quality and Quantity	Private - HOA	\$168,000
AC9106	Stormwater Pond Retrofit	Long Branch South	Backlick and Cinderbed Roads	Water Quality and Quantity	State - VDOT, Private - Comm	\$234,000
AC9109	Stormwater Pond Retrofit	Long Branch South	Island Creek	Water Quality and Quantity	County - FCPA	\$169,000
AC9110	Stormwater Pond Retrofit	Long Branch South	Amberleigh	Water Quality and Quantity	Private - HOA	\$226,000
AC9111	Stormwater Pond Retrofit	Long Branch South	Amberleigh	Water Quality and Quantity	Private - HOA	\$74,000
AC9112	Stormwater Pond Retrofit	Long Branch South	Springfield Industrial Park	Water Quality and Quantity	Private - Commercial	\$305,000
AC9113	Stormwater Pond Retrofit	Long Branch South	Springfield Industrial Park	Water Quality and Quantity	Private - Commercial	\$186,000
AC9114	Stormwater Pond Retrofit	Long Branch South	Springfield Industrial Park	Water Quality and Quantity	State - VDOT	\$731,000
AC9115	Stormwater Pond Retrofit	Long Branch South	Assembly of God Church	Water Quality and Quantity	State - VDOT	\$105,000
AC9116	Stormwater Pond Retrofit	Long Branch South	Devonshire Townhomes	Water Quality and Quantity	Private - HOA	\$193,000
AC9120	Stormwater Pond Retrofit	Long Branch South	Metropolitan Center Drive	Water Quality and Quantity	Private	\$1,858,000
AC9123	Stormwater Pond Retrofit	Mainstem 7	Gateway 95 Business Park	Water Quality	Private - Commercial	\$61,000
AC9125	Stormwater Pond Retrofit	Mainstem 7	Terra Grande	Water Quality and Quantity	Private - HOA	\$91,000



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**Thank You for Attending the
Accotink Creek
Draft Plan Forum!**
