

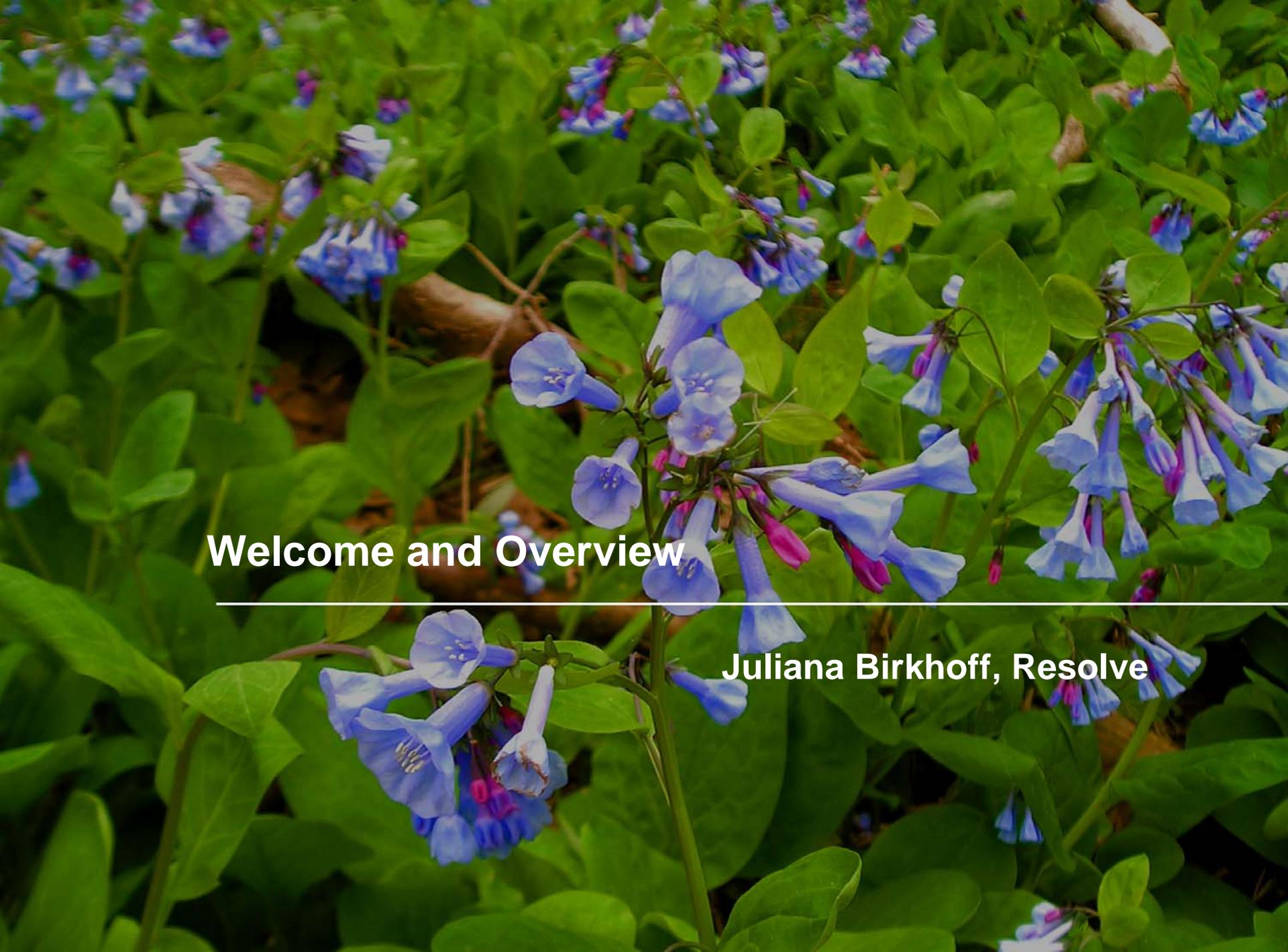
Nichol Run Pond Branch Watershed Management Plan

Watershed Advisory Group #4
April 20, 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 and Overview

Juliana Birkhoff, Resolve

Agenda

- Welcome and Introductions
- Introduction to the project prioritization process
- Break out to review and discuss any concerns with individual projects for both Sugarland Run and Horsepen Creek
- Regroup and discuss any questions about the schedule and next steps for completing the project list
- Adjourn

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

Project Prioritization Process

Melissa Taibi, F.X. Browne, Inc.

Steps Leading up To Project Prioritization

- Field Reconnaissance of all Candidate Structural Projects
 - First Cut – Based on Field Reconnaissance Results
- Organized Project Groups & Assigned Project Numbers
- Delineated Project Locations and Drainage Areas in GIS
- Conducted Various GIS Processing
- Water Quality Modeling with STEPL

Ready for Project Prioritization and Ranking Process

Field Reconnaissance

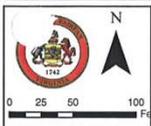
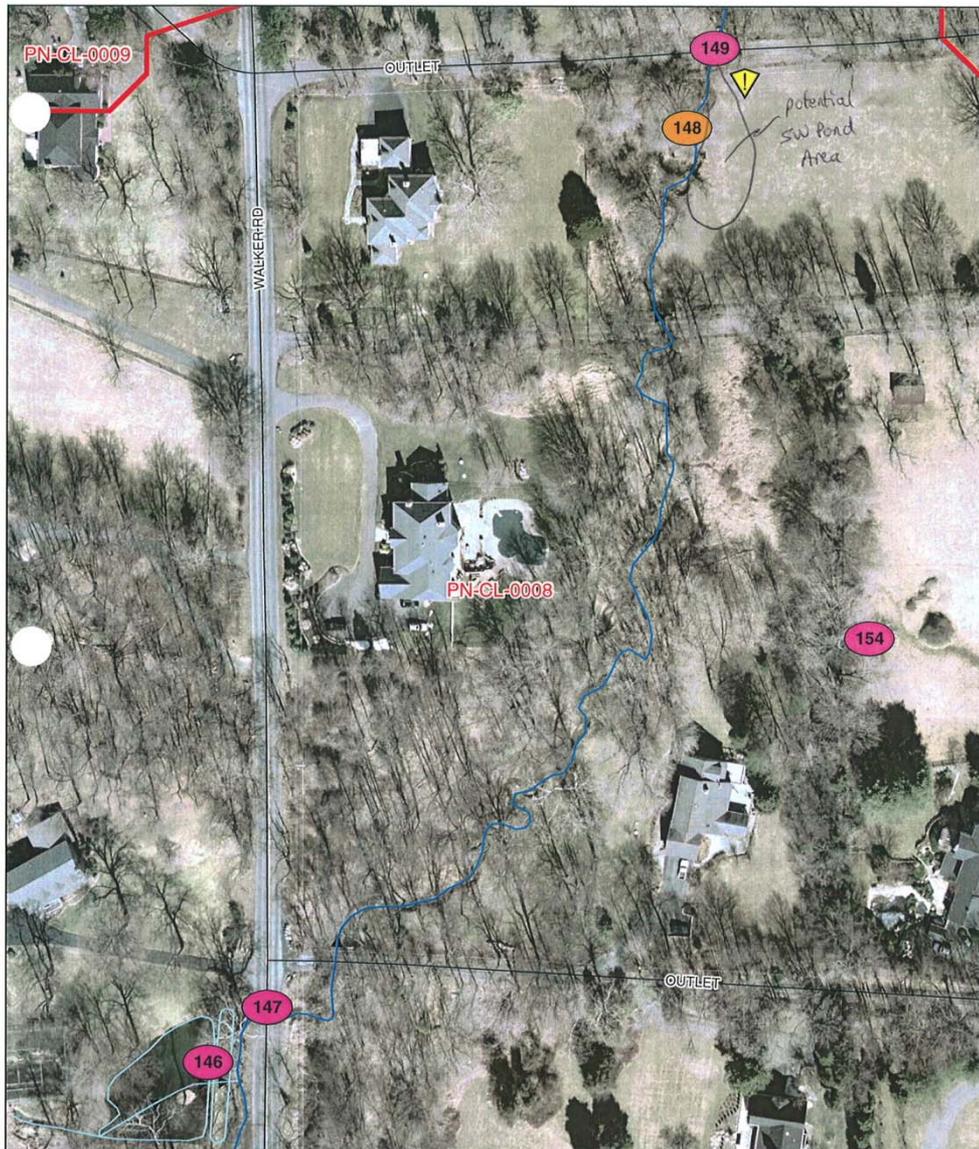
- 281 candidate structural project sites
- Notes taken on field evaluation forms and aerial photos; photos taken of each site
- Projects deemed low priority or not viable due to:
 - Favorable existing conditions
 - Functioning and appropriately sized outlet structures
 - Already naturalized basin bottoms and swales
 - Adequate energy dissipation
 - General lack of visible impacts from high velocity/high volume stormwater flows





First Cut – Based on Field Reconnaissance

- Project list reduced to 71 total structural projects
- Factors considered included:
 - Constraints identified during field reconnaissance
 - Size and scale of the projects
 - Location and distribution of projects within a subwatershed
 - Existing stormwater management within a subwatershed
 - Project drainage area
 - Specific WAG member comments



- | | |
|-----------------------|---------------------------------|
| Preservation | Road Crossing Improvement |
| Non-Structural | Culvert Retrofit |
| New/Retrofit SWM Pond | Drainage Improvement |
| Stream Restoration | Low Impact Development Retrofit |

PN-CL-0008
146, 147, 148
149, & 154

Temp ID: 148/149 – New SW Pond

- Public comment described road flooding at this culvert
- Evidence of washing out, severe erosion, recently repaired road with new pavement and rip-rap

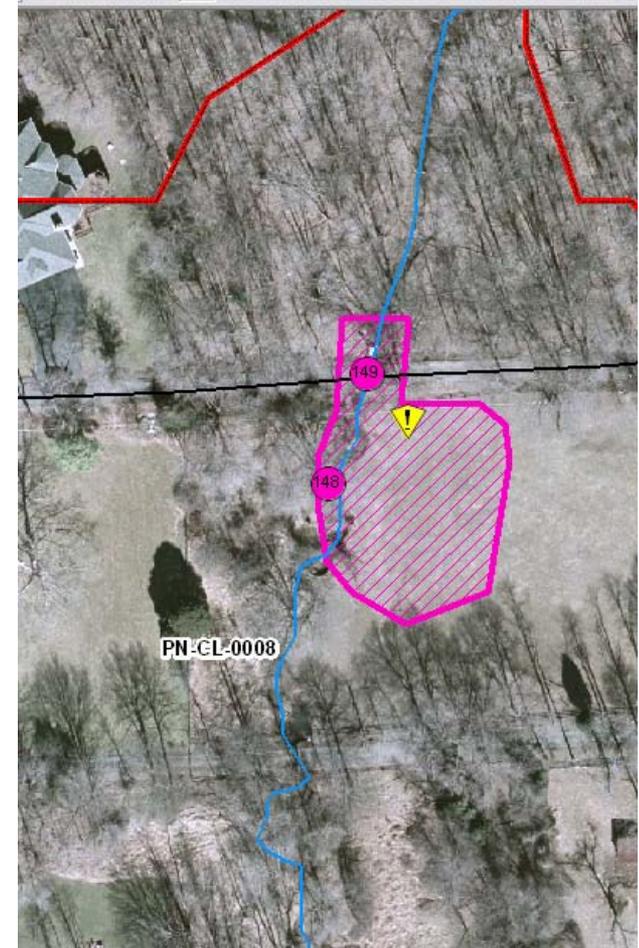
Temp ID: 154 – New SW Pond/LID

- Grass/meadow area on shallow hillside, no visible erosion
- Not viable due to good site conditions, no evidence of major drainage & lack of drainage outfall



Final Proposed Project List for Prioritization

- Nichol – 33 Structural Projects
- Pond – 38 Structural Projects
- Projects numbered according to subwatershed and project type: PN9405
- Subprojects for projects with multiple components: NI9500a, NI9500b, etc.
- Project locations and drainage areas digitized in GIS
- Various GIS processing in order to evaluate changes in stormwater management and water quality modeling



Project Prioritization Process

- Effect on Watershed Impact Indicators
- Effect on Source Indicators
- Location within Priority Subwatersheds
- Sequencing
- Implementability

Effect on Watershed Impact Indicators

Individual Impact Indicator Scores	Stream Restoration (Type Code 2)	Outfall Improvement (Type Code 7)	Culvert Retrofit (Type Code 4)	Flood Protection/ Mitigation (Type 6)	New/Retrofit BMP/LID (Type Code 5)	New Stormwater Pond (Type Code 1)	Stormwater Pond Retrofit (Type Code 1)	Area-wide Drainage Improvement (Type 3)
Benthic Communities	X	X						X
Fish Communities	X	X						X
Aquatic Habitat	X	X	X					X
Channel Morphology (CEM)	X			X				X
Instream Sediment	X	X				X	X	X
Hydrology	X	X	X	X	X	X	X	X
Number of Road Hazards			X	X				
Magnitude of Road Hazards			X	X				
Residential Building Hazards			X	X				
Non-Residential Building Hazards			X	X				
Flood Complaints								
RPA Riparian Habitat	X							X
Headwater Riparian Habitat	X							X
Wetland Habitat	X				X	X	X	X
Terrestrial Forested Habitat								
E. coli								
TSS Concentration (STEPL)	X	X	X		X	X	X	X
TN Concentration (STEPL)		X	X		X	X	X	X
TP Concentration (STEPL)	X	X	X		X	X	X	

X – Effects on these indicators were scored and evaluated



Effect on Source Impact Indicators

Individual Impact Indicator Scores	Stream Restoration (Type Code 2)	Outfall Improvement (Type Code 7)	Culvert Retrofit (Type Code 4)	Flood Protection/ Mitigation (Type 6)	New/Retrofit BMP/LID (Type Cod5)	New Stormwater Pond (Type Code 1)	Stormwater Pond Retrofit (Type Code 1)	Area-wide Drainage Improvement (Type 3)
Channelized/Piped Streams	X	X	X	X		X		X
Directly Connected Impervious Area (DCIA)				X	X	X	X	X
Total Impervious Area				X	X			X
Stormwater Outfalls	X	X		X	X	X	X	X
Sanitary Sewer Crossings								
Streambank Buffer Deficiency	X							X
TSS Concentration (STEPL)	X	X	X		X	X	X	X
TN Concentration (STEPL)	X	X	X		X	X	X	X
TP Concentration (STEPL)	X	X	X		X	X	X	X

X – Effects on these indicators were scored and evaluated



Project Scoring: SW Ranking Indicators

- Water quality modeling – Future WITH Projects Condition
 - Modeled benefit of project
 - BPJ adjustment based on accuracy of model
- Indicators with Future WITHOUT Projects Condition Data
 - Future without projects SW Ranking score
 - Worsening condition from Existing to Future without projects condition
 - BPJ adjustment based on potential project benefit
- Indicators with only Existing Condition Data
 - Existing condition SW Ranking score
 - BPJ adjustment based on potential project benefit

Project Scoring: SW Ranking Indicators

IMPACT INDICATOR SCORES

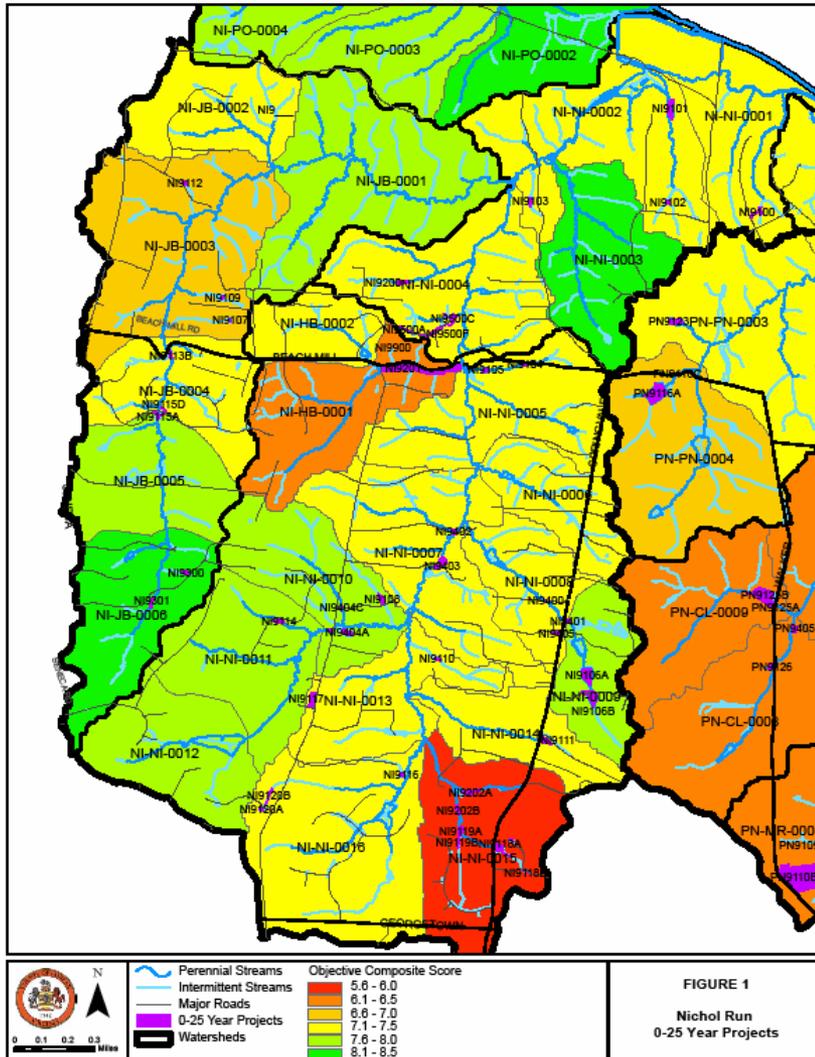
Project Number	Project Type	Subwatershed	Benthic	Fish Comm	Aquatic Habitat	Channel Morph	Instream Sediment	Hydrology	No Road Hazard	Magnitude Rd Hazard	Res. Bldg Haz	Non-Res Bldg Haz	Flood Complaints	Prot. RPA Riparian	Prot. Headwater Riparian	Prot. Wetl.	Prot. Nat Habitat	TSS	TN	TP	Ecoli	Sum	Score
PN9405	4	PN-CL-0008	-	-	5	-	-	5	2	2	1	1	-	-	-	-	-	4	4	4	-	28	3.11

SOURCE INDICATOR SCORES

Project Number	Project Type	Subwatershed	Total Imp	DCIA	Stream Bank Deficient	SW Outfalls	VPDES	Total Urban Area (%)	TSS	TN	TP	Septic	Channelized Pipes/Streams	Sum	Score
PN9405	4	PN-CL-0008	-	-	-	-	-	-	4	4	4	-	2	14	3.50

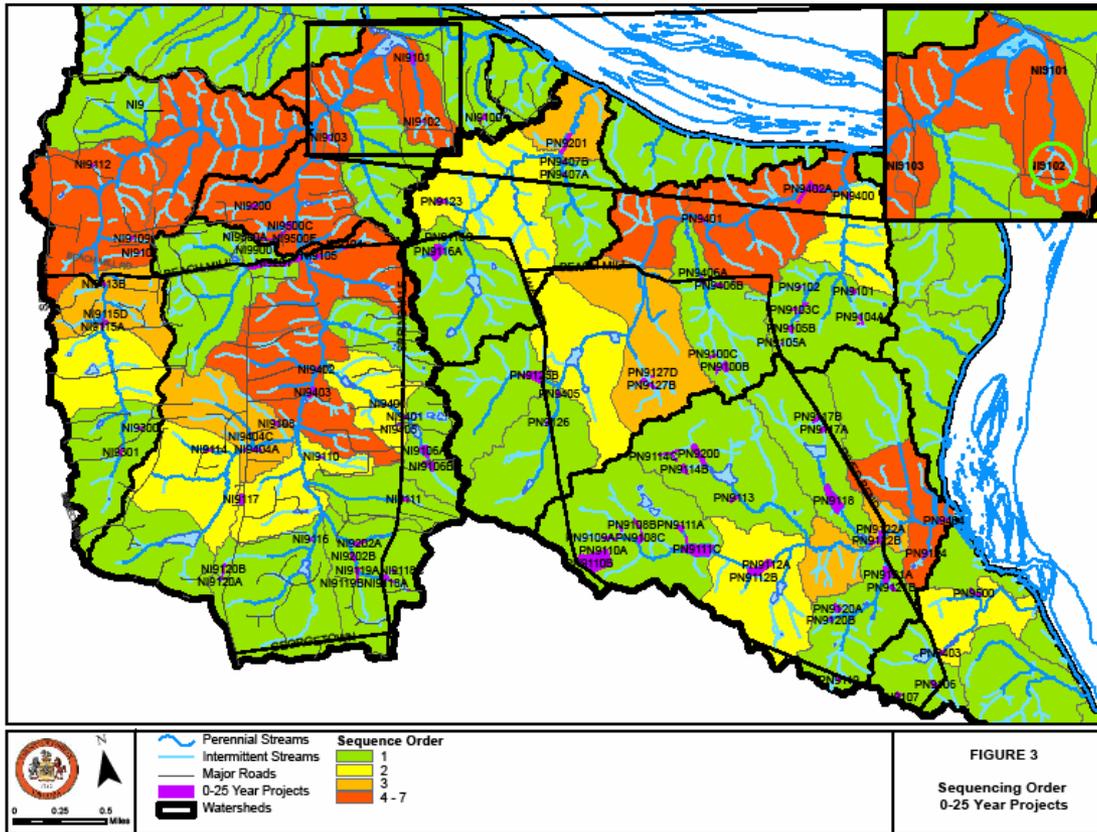
- Each applicable indicator is scored 1-5
- Indicator scores averaged for overall Watershed Impact Indicator Score and Source Indicator Score

Location within Priority Subwatersheds



- Projects in poor quality subwatersheds may have the potential to provide a greater impact than projects located within a high quality subwatershed
- Project assigned scores 1-5 based on existing condition SW Ranking Watershed Impact Composite Score

Sequencing



- Projects in headwater areas should be completed first and considered higher priority
- Subwatersheds numbered according to relative stream order

- Project assigned scores 1-5 based on stream order
- BPJ adjustments to account for projects in headwater areas of main stem subwatersheds

Implementability

- Less complex projects and projects without land acquisition requirements will be easier to implement and were given higher scores
- Implementability determined in three steps:
 - Analysis of property owner(s)
 - Quintiles established to produce a project score (1-5) based on parcel ownership
 - Final BPJ adjustments made based on overall complexity and implementability of the project.

Initial Project Ranking Composite Score

- Based on weighted average of the 5 prioritization factors
- Used to determine the overall rank of each project
- Nichol Run and Pond Branch Structural Projects Ranked 1-71

COMPOSITE SCORES

Project Number	Impact (30%)		Source (30%)		Priority Subwatershed (10%)		Sequencing (20%)		Implementability (10%)		Composite Score	Project Rank
	Indicator Score	Adjusted Score	Indicator Score	Adjusted Score	Indicator Score	Adjusted Score	Indicator Score	Adjusted Score	Indicator Score	Adjusted Score		
PN9405	3.11	0.93	3.50	1.05	1.00	0.10	4.00	0.80	2.00	0.20	3.08	47

10 and 25-Year Implementation Plans

- 10-Year Implementation Plan
 - 35 highest ranked projects in Nichol and Pond
- 25-Year Implementation Plan
 - Next 30 projects in ranking order
- Projects ranked lowest will be dropped from plan
- WAG input will be important in refining final 10 and 25-year implementation plans.

Non-Structural Project Evaluation

- Evaluated after structural projects to better determine areas in need of additional non-structural alternatives
- Various project types including:
 - Targeted rain barrel programs
 - Buffer restoration
 - Improving vegetation in existing stormwater facilities
 - Riparian zone preservation through conservation easements, deed restrictions, or zoning changes

Non-Structural Project Evaluation

- Some projects/project groups are WMA - wide
- Not ranked due to difficulty in determining quantitative benefits
- Projects may be initiated by existing County policy (i.e. expanding the buffer restoration program)
- Evaluation based on:
 - Existing need for additional stormwater management with no/few opportunities for structural projects
 - Areas with deficient riparian buffer
 - Riparian zones vulnerable to future development

Proposed Projects Lists

Nichol Run - Pond Branch Project List

(Sorted by Project Plan)

10yr - Project Plan

Plan Rank: 01

NI9119

NI9119A	NI-NI-0015	Retrofit existing dry pond to enhanced extended detention dry pond
NI9119B	NI-NI-0015	Repair eroded banks and restore riparian buffers

Plan Rank: 02

PN9127

PN9127A	PN-CL-0006	Retrofit Dry Pond 0892DP to enhanced extended detention dry ponds
PN9127B	PN-CL-0006	Retrofit Dry Pond 0086DP to enhanced extended detention dry ponds
PN9127C	PN-CL-0006	Create rg in depression w/ inlet east of 0086DP and daylight pipe into pasture
PN9127D	PN-CL-0006	Swale into 0892DP, potential for small wetland @ outfall

25yr - Project Plan

Plan Rank: 47

PN9405

PN9405	PN-CL-0008	Room for SW pond upstream or micropool/wetland complex, repair erosion on all banks.
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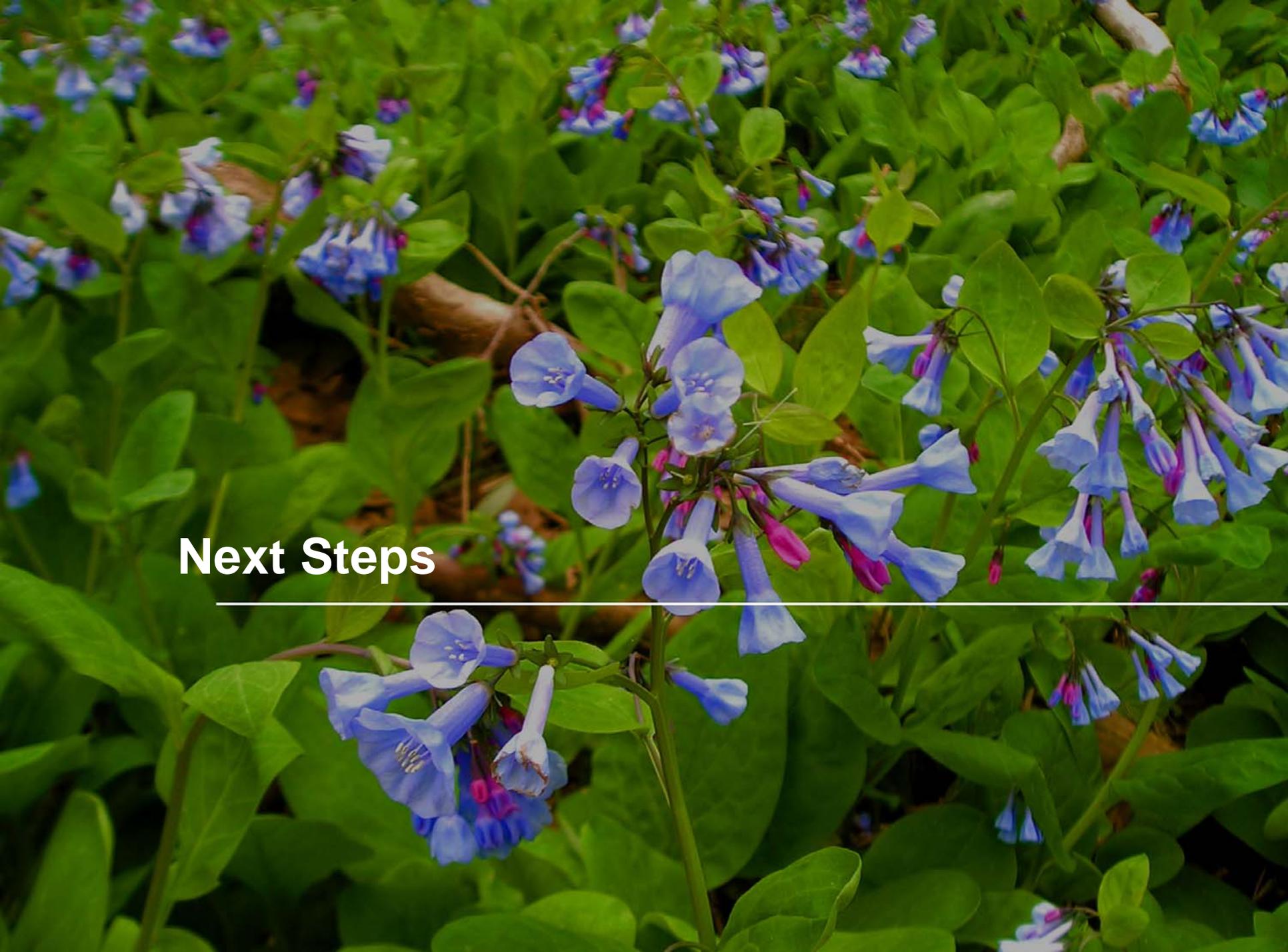
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Project Comments: Breakout Groups



Project Comments

- Do you agree with the project ranking? Why or why not?
- Do you know of any conflicts that would prohibit certain projects?
- Do you and your community support the projects listed and if not, why not?

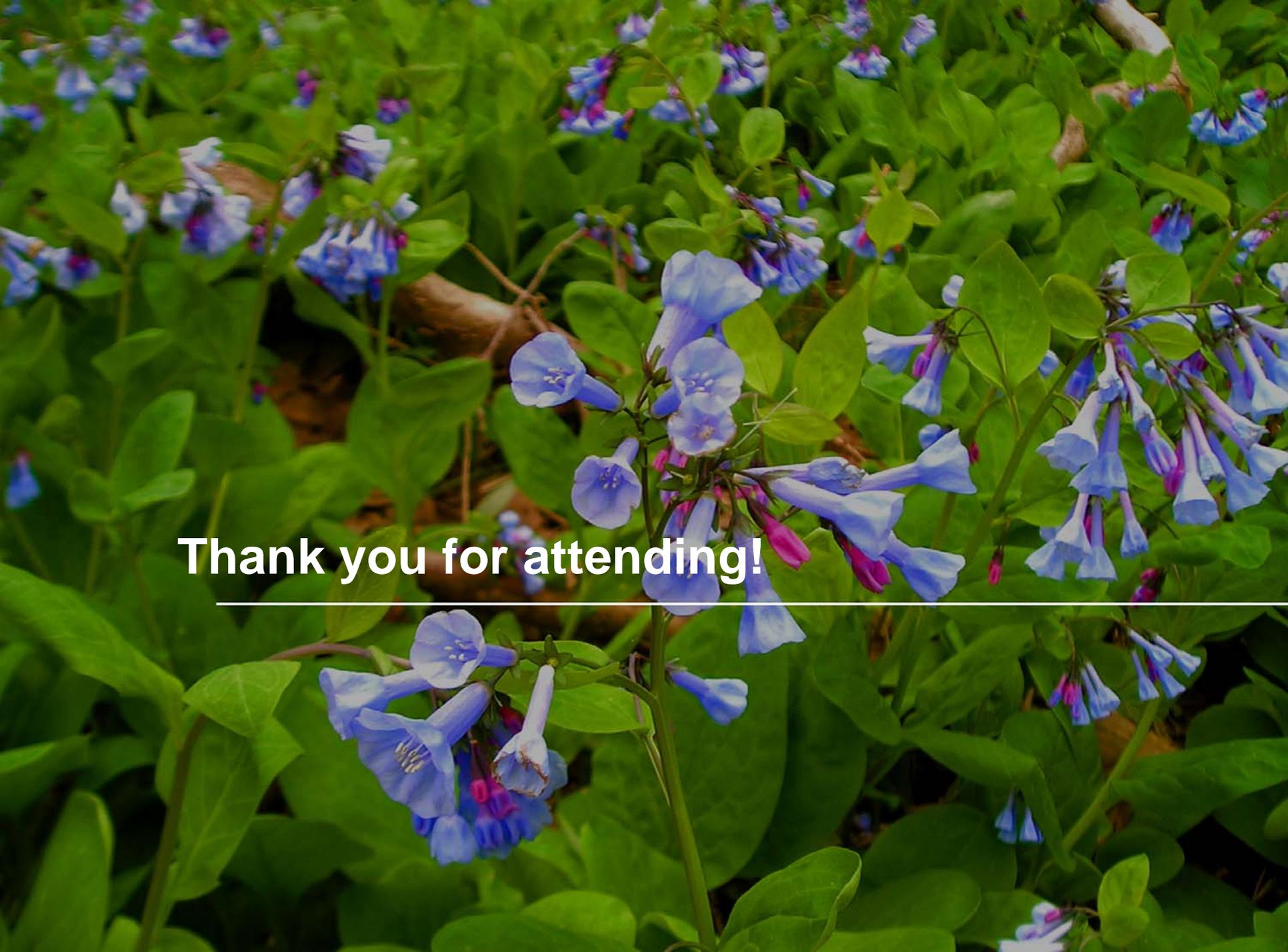
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Next Steps



Next Steps

- Comments due to F.X. Browne by May 4th
 - Please send to Melissa Taibi or Joe Sanchirico
- F.X. Browne will prepare the draft watershed management plan
- Next meeting proposed for May or June to discuss the draft plan and to make plans for the Draft Watershed Management Plan forum

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Thank you for attending!
