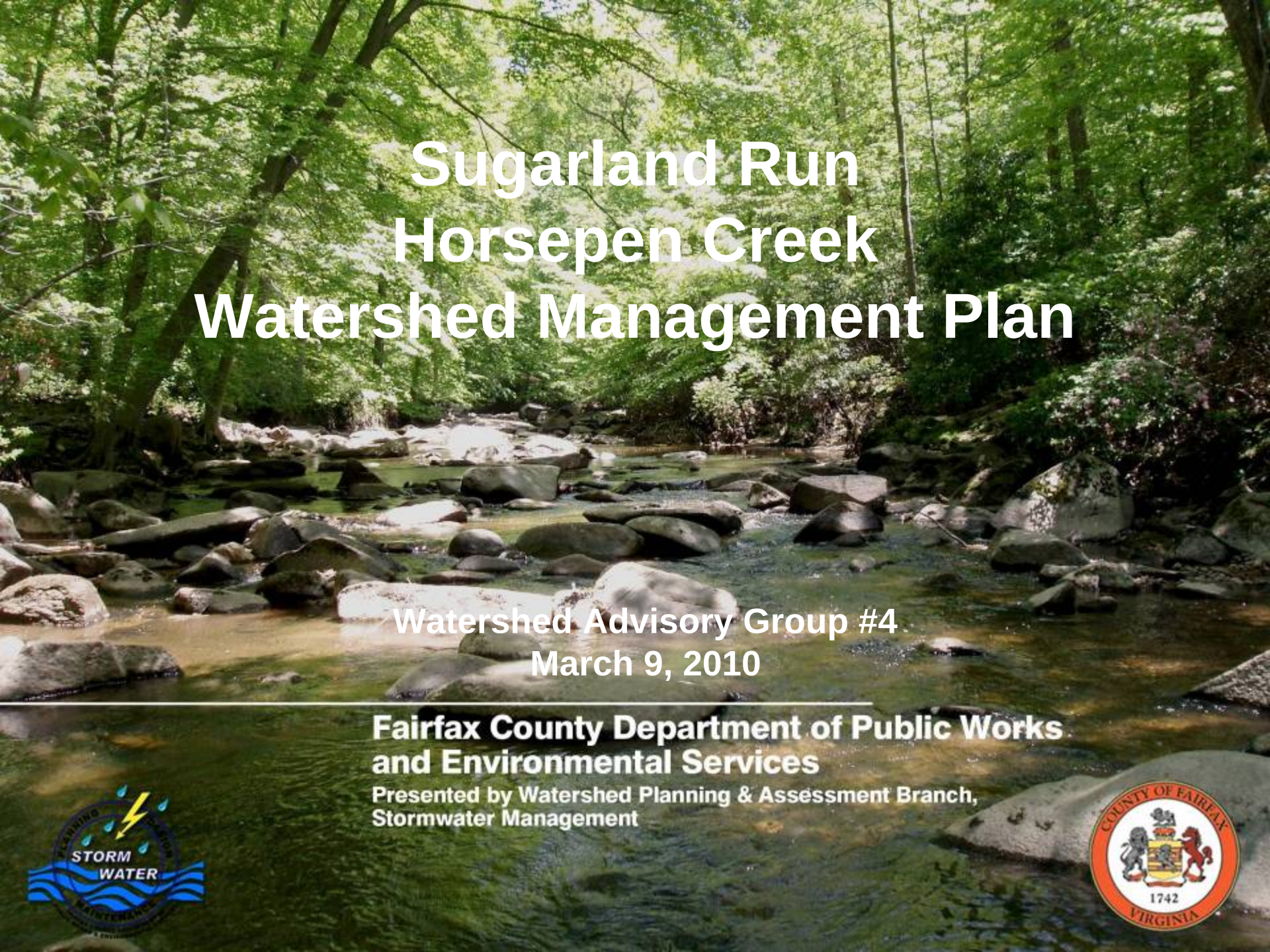
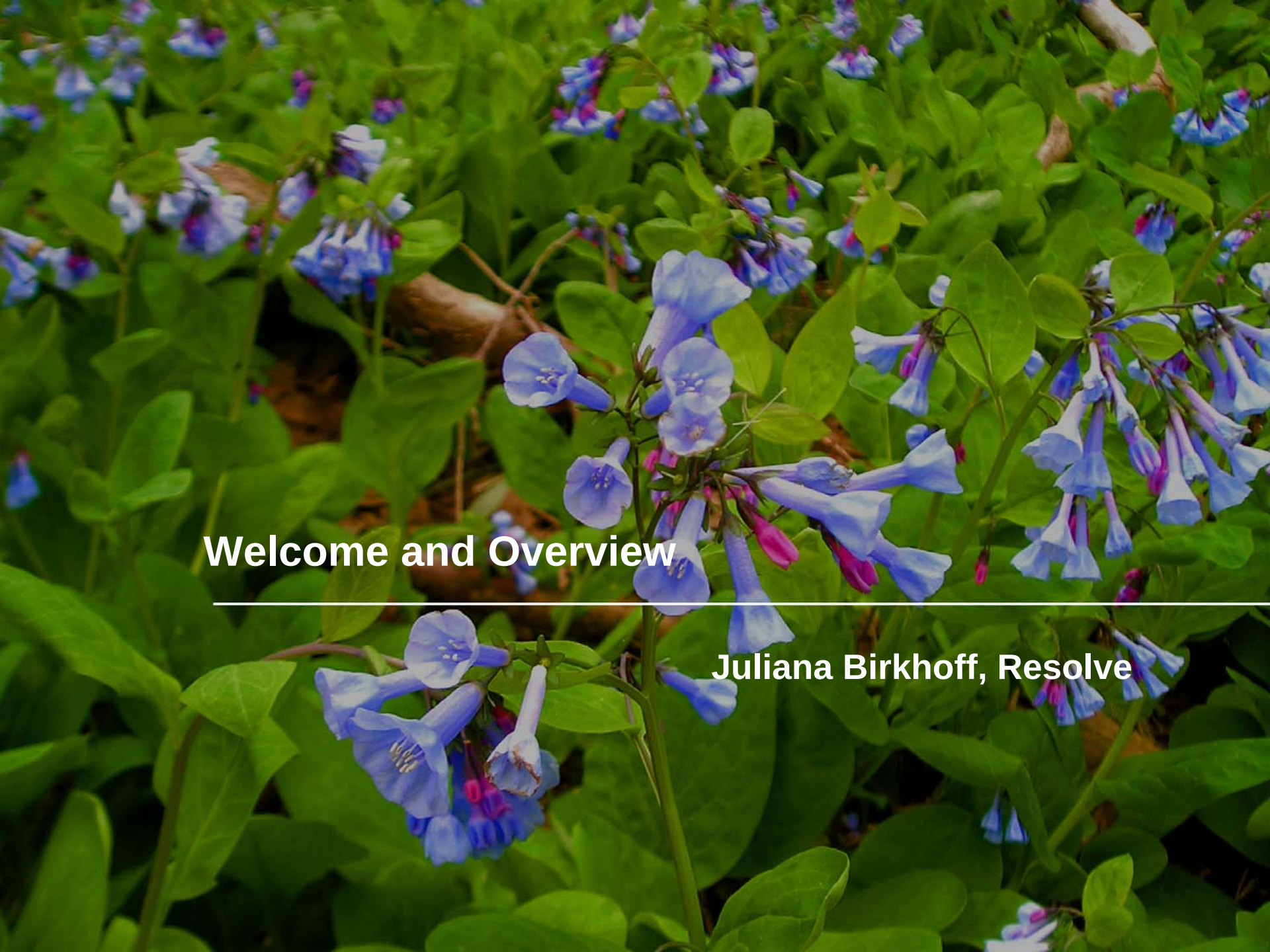


Sugarland Run
Horsepen Creek
Watershed Management Plan

Watershed Advisory Group #4
March 9, 2010

Fairfax County Department of Public Works and Environmental Services
Presented by Watershed Planning & Assessment Branch, Stormwater Management



Welcome and Overview

Juliana Birkhoff, Resolve

Agenda

- Welcome and Introductions
- Process Update
- 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

Process Recap

Fred Rose, SWPD

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

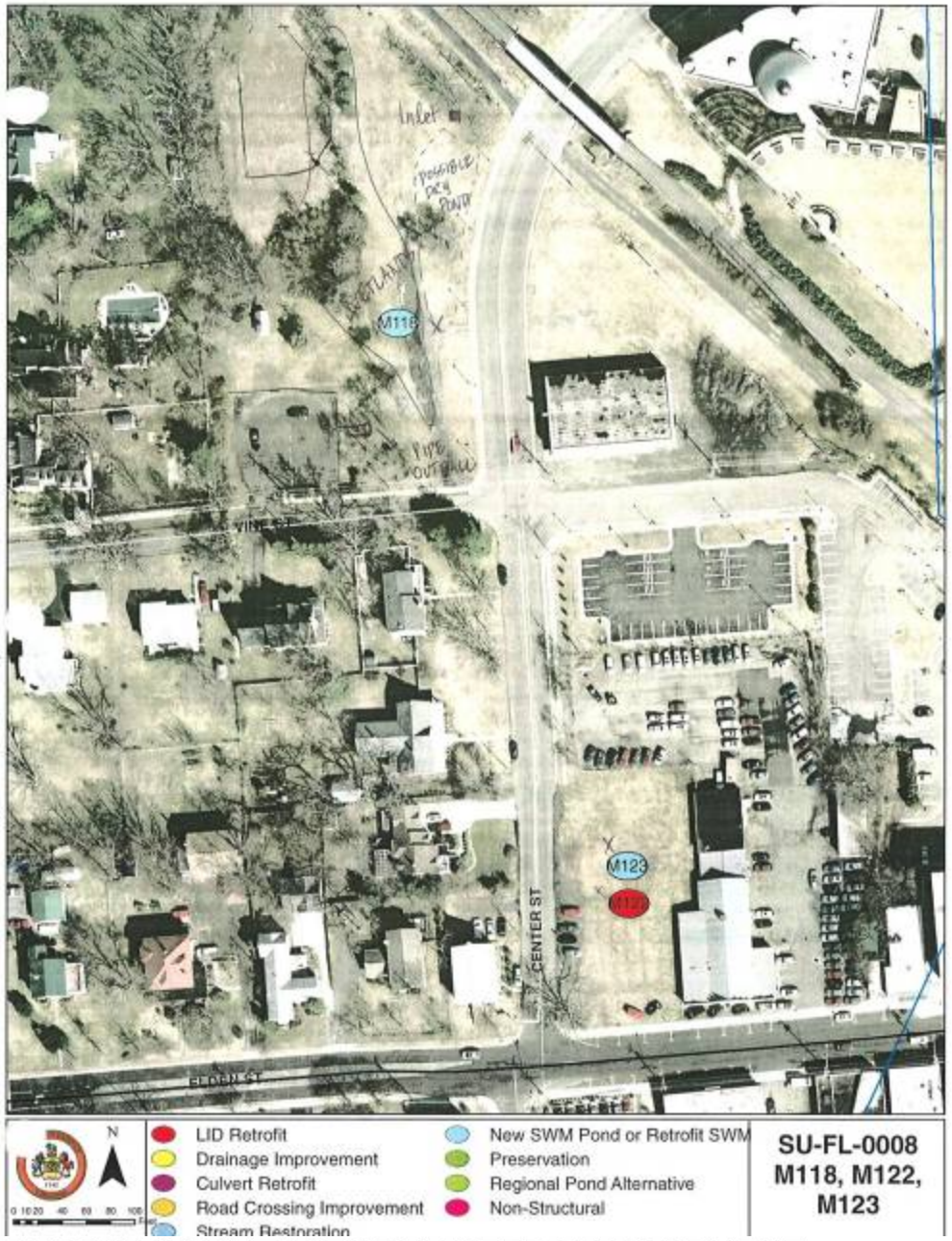
Ready for Project Prioritization and Ranking Process

Field Reconnaissance

- 540 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 128 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



Temp ID: M118 – New SW Pond

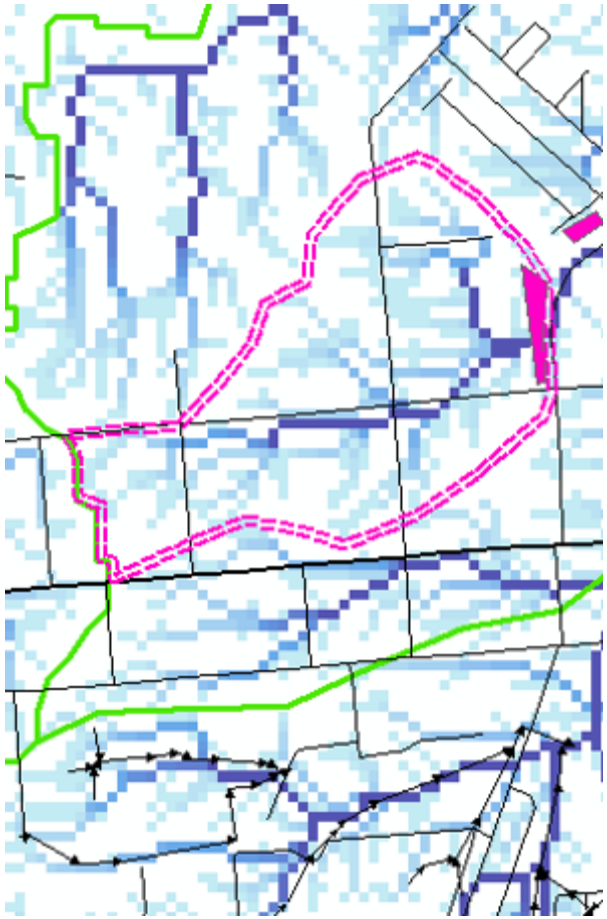
- After WAG 3 meeting, visible flooding onto Center Street
- Standing water, wetlands, existing inlet has no drainage area

Temp ID: M122/3 – New SW Pond/LID

- Topography slopes toward building; small drainage area; no drainage outfall
- Not viable due to topography & lack of drainage outfall

Final Proposed Project List for Prioritization

- Horsepen – 59 Structural Projects
- Sugarland – 69 Structural Projects
- Projects numbered according to subwatershed and project type: SU9122
- Subprojects for projects with multiple components: SU9511a, SU9511b, 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

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

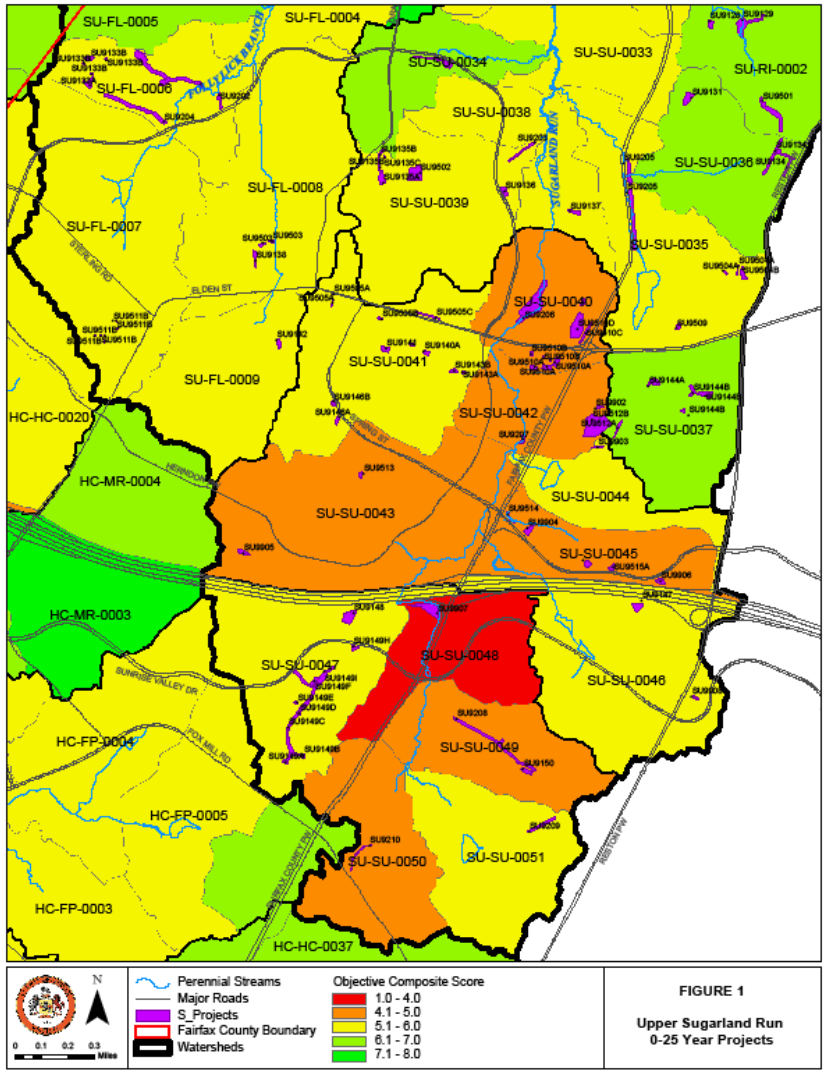
Project Number	Project Type	Subwatershed	Benthic	Fish Comm	Aquatic Habitat	Channel Morph	Instream Sediment	Hydrology	No Road Hazard	Magnitude Rd Hazard	Res. Bldg Haz	Non-Res Bldg Haz	Flood Complaints	Prot. RPA Riparian	Prot. Headwater Riparian	Prot. Wetl.	Prot. Nat Habitat	TSS	TN	TP	Ecoli	Sum	Score
SU9138	1	SU-FL-0008	-	-	-	-	2	5	-	-	-	-	-	-	-	5	-	2	2	2	-	18	3.00

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
SU9138	1	SU-FL-0008	5	5	-	3	-	-	2	2	2	-	3	22	3.14

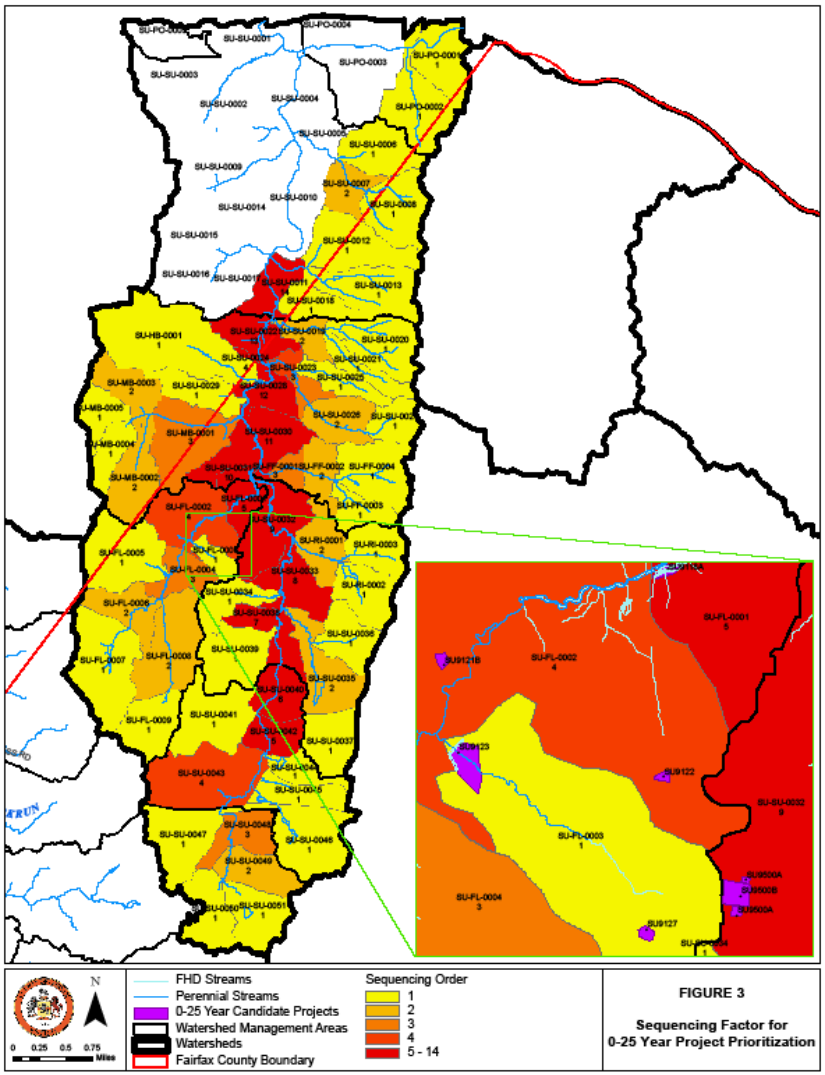
- Each applicable indicator is scored 1-5
- Indicator scores averaged for overall Watershed Impact Indicator Score and Source Indicator Score

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
- Sugarland Structural Projects Ranked 1-72
- Horsepen Structural Projects Ranked 1-62

COMPOSITE SCORES

Project Number	Impact (30%)		Source (30%)		Priority Subwatershed (10%)		Sequencing (20%)		Implementability (10%)		Composite Prioritization Score	Project Rank
	Indicator Score	Adjusted Score	Indicator Score	Adjusted Score	Indicator Score	Adjusted Score	Indicator Score	Adjusted Score	Indicator Score	Adjusted Score		
SU9138	3.00	*0.90*	3.14	*0.94*	3.00	*0.30*	3.00	*0.60*	4.00	*0.40*	3.14	26

10 and 25-Year Implementation Plans

- 10-Year Implementation Plan
  - 70 highest ranked projects in Sugarland and Horsepen
- 25-Year Implementation Plan
  - Next 50 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.

10 and 25-Year Implementation Plans

- Current Project Lists include preliminary project ranking
- Initial 10-year implementation plan
  - Sugarland projects ranked 37-72
  - Horsepen projects ranked 30-62
- Initial 25-year implementation plan
  - Sugarland projects ranked 9-36
  - Horsepen projects ranked 8-29
- Project Lists need some work before final project ranking
  - Combine Sugarland and Horsepen prioritization tables
  - Work through kinks with water quality (STEPL) model for regional ponds

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
- 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

Sugarland Run Project List

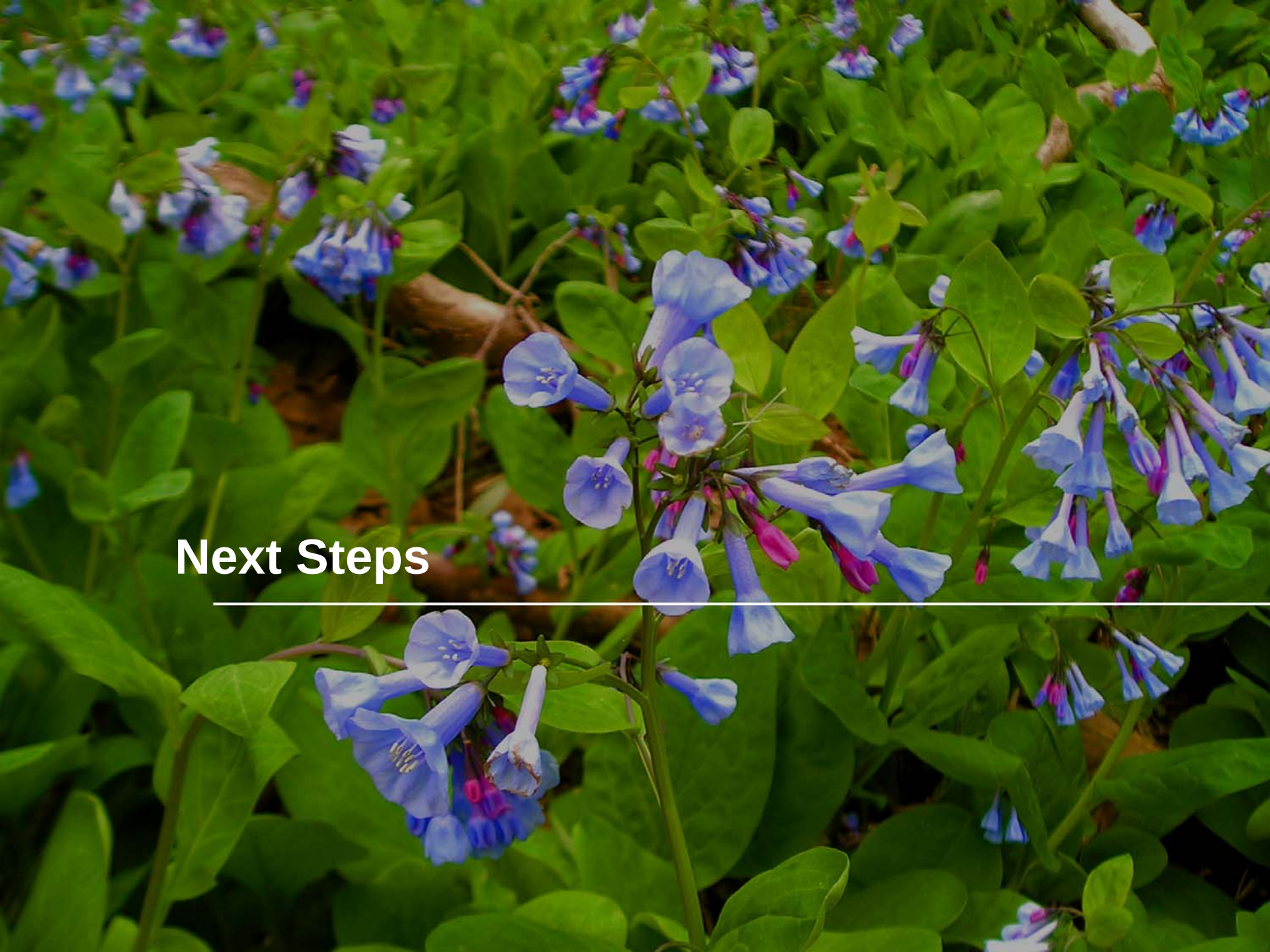
Watershed Management Area: Sugarland- Folly Lick

SU9138			***Rank: 26***
SU9138	SU-FL-0008	New enhanced extended-detention basin, drainage area approx 34 acres	
SU9142			***Rank: 17***
SU9142	SU-FL-0009	Retrofit existing dry pond (no StormNet ID) into enhanced extended-detention basin	
SU9503			***Rank: 9***
SU9503A	SU-FL-0008	Rain garden at entrance courtyard to Fortnightly Square	
SU9503B	SU-FL-0008	Rain garden at entrance courtyard to Fortnightly Square	
SU9900			***Rank: N/A***
SU9900A	SU-FL-0007	Targeted rain barrel program at Westfield subdv	
SU9900B	SU-FL-0008	Targeted rain barrel program at Fortnightly Square, Haloyon of Herndon Sect 5, Van Vlecks subdv, Ballou subdv, Saubers subdv, Herndon Station, & Herndon Park Station	
SU9900C	SU-FL-0009	Targeted rain barrel program at Chandon subdv	

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?



Next Steps

Next Steps

- Comments due to F.X. Browne by March 29
- 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


Thank you for attending!