# Sully District Council

Dec. 15, 2010 Joe Sanchirico, Ecologist



Presented by Watershed Planning & Assessment Branch, Stormwater Management







- Watershed Primer
- Watershed Management Plan Process
- Project Types
- Plan Organization
- Next Steps



# Watershed Primer

Joe Sanchirico, Fairfax County





## What is a Watershed?





## **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.





## What Is a Watershed Management Plan?

SUGARLAND RUN AND HORSEPEN CREEK WATERSHED MANAGEMENT PLAN

NOVEMBER 2010 FAIRFAX COUNTY DEPARTMENT OF PUBLIC WORKS AND ENVIRONMENTAL SERVICES-STORMWATER PLANNING DIVISION









PREPARED BY F. X. BROWNE, INC.

- A Watershed Management
  Plan is a tool to identify and
  address the issues
  affecting our environment.
- The plan contains a 25year list of proposed projects to protect and restore our streams and other water resources.



# Watershed Management Plan

### What it is:

- A plan to address watershed-wide needs holistically
- Utilizes collected data and existing/future modeling scenarios to determine watershed needs
- Plans primarily focus on structural improvements & water quality
- Projects aimed at retrofitting areas with uncontrolled/limited stormwater management
- Conceptual and present a menu of options



# Watershed Management Plan

## What it is *not*:

- Generally does not address problems or needs on individual private lots/back yards
- Not a detailed or preliminary design of capital improvements - project scope and cost are estimates
- Will not bring streams back to pristine condition





# Watershed Planning





# Watershed Management Plan Process



# **Key Changes from Round 1**

#### Round 2 plans designed to be "user friendly"

- Developed using the same tools and methods
- All have the same structure & format
- Maps & tables have same design

#### Public Involvement (PI) Process

- Streamlined for efficiency
- Fewer and targeted meetings of WAG
- WAG roles more clearly defined (advisory vs steering)
- Began after watershed characterization completed

#### Watershed Plan development & Modeling Approach

- One consultant (Tt) prepared and guided the modeling
- Four other consultants developed plans and facilitated the PI process
- Increased communication & collaboration between consultants

# **Universe of Projects**

#### Characterization Data

- Reference Material
- Identify Current Conditions
- Field Reconnaissance

#### Subwatershed Ranking

- Impact Indicators
- Source Indicators
- Modeling

#### Public Input

- Watershed Advisory Group
- Introductory Forum

#### Best professional judgment







# **Project Selection Process**

### **Universe of Projects/Opportunities**

### **Candidate Projects**

(Evaluate technical merits & feasibility)

#### **Plan Project List**

(Ranking Process)

10-yr Projects





# **Watershed Plan Ranking Scheme**

- Project Prioritization
  - Pollutant Loads (60%)
  - Sequencing (20%)
  - Location within Priority Subwatersheds (10%)
  - Implementability (10%)
- Project Ranking
  - 0-10 yr projects
  - 11-25 yr projects
- Cost/Benefit Analysis & BPJ
  - Conducted on 0-10 yr projects



# **Project Types**

# **Typical Project Types**

- New/Retrofit Stormwater Management Pond
- Stream Restoration Projects
- Culvert Retrofits
- New/Retrofit BMP/LID
- Flood Protection
- Non-Structural
  - Buffer restoration
  - Education and Outreach
  - Rain Barrels
  - Street sweeping
  - Dump site cleanups





# **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



# Low Impact Development and Best Management Practices



#### **Benefits**

- Reduce directly connected impervious areas
- Improve nutrient removal





## **Non-Structural Projects**





#### **Buffer Restoration**

### **Rain Barrel**



# **Plan Organization**

## **Organization of Watershed Management Plan**

**Executive Summary** 

- 1. Introduction
- 2. Watershed Planning Process
- 3. Summary of Watershed Conditions
- 4. Summary of Watershed Restoration Strategies
  - Describes Strategies and Project Types
- 5. WMA Area Restoration Strategies
  - Identifies Projects in each WMA
- 6. Benefits of Plan Implementation
  - Modeling Results and Project Cost/Benefit Analysis
- 7. Glossary and Acronyms
- 8. References

Appendices FAIRFAX COUNTY STORMWATER MANAGEMENT





WATER



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

Project Design Considerations -Project Coordination & Sequencing -Permitting & Easements -Construction Issues & Tree Impacts Project Benefits: An estimated one ton/yr of total suspended solids, 75 lbs/yr of nitrogen, and 10 lbs/yr of phosphorus will be removed. This project will also generally improve water quality, reduce peak stormwater flows for storms up to a 10-year event, and provide for evapotranspiration and wildlife habitat.

**Project Design Considerations:** Minimal environmental permitting requirements are anticipated. Projects in RPAs may require exemptions or waivers. This is an existing county facility. A storm drainage easement may be necessary. Accessibility is excellent from Philmont Drive. No tree impacts or significant construction issues are anticipated.

Item	Units	Quantity	Unit Cost	Total
Organic Compost Soil Amendment	CY	158	\$40.00	\$6,320.00
Plantings	AC	0.79	\$25,000.00	\$19,750.00
Grading and Excavation	CY	2535	\$35.00	\$88,725.00
Embankment	CY	200	\$50.00	\$10,000.00
Outflow Pipe	LF	20	\$125.00	\$2,500.00
RipRap Stabilization	SY	11	\$100.00	\$1,100.00
Structural BMP Retrofit and Incidentals (Low)	LS	1	\$10,000.00	\$10,000.00
Plantings: 5% of project costs (unless incl. as line iten Ancillary Items: 5% of project cost <u>Erosion and Sediment Control: 10% of project costs</u>	n)	2014 12 100		\$0.00 \$6,919.75 \$13,839.50
	\$159,154.25 \$7,957.71			
	\$167,111.96 \$41,777.99			
Engt	neering Design,	Surveys, Land Ac Relocation an	Subtotal 2 quisition, Utility d Parmits (45%)	\$208,889.95

Estimated Project Costs

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

**Detailed** 

**Project Costs** 

Sugarland Run and Horsepen Creek Draft Watershed Management Plan 146



July 2010

\$310,000.00





# **WMP Projects in Sully District**

	All Projects in Sully District			
Watershed Plan	Total	10- year	25- year	Non- Struct
Sugarland Run & Horsepen Creek	19	7	8	4
Little Rocky Run & Johnny Moore Creek	26	10	12	4
Totals	45	17	20	8

All Projects in Plan							
Total	10- year	25- year	Non- Struct.				
139	70	50	19				
76	40	29	7				



# Next Steps

# **Countywide Prioritization**

### **Project Prioritization tool**

- Database of all recommended WMP projects & attributes
- Screen by multiple selection criteria and scenarios
- Map selected project location in GIS
- Will be completely populated after Round 2 is complete
- Potential to link to other systems to track implementation

Final selected projects to support annual work-plan and implementation budget



## Watershed Plans & Broader Issues

#### Plans are a head-start in addressing Bay restoration goals

- Complete implementation likely not enough to meet Bay goals
- Future evaluation of Bay targets vs. plan benefits is needed

#### Competing & conflicting priorities – dictated by state/EPA

- Practices and projects in plan may not completely address local stream TMDLs (i.e. Accotink Creek Flow TMDL)
- Increased requirements will impact project implementation and monitoring priorities
- Resources and timing for implementation a big challenge

### http://www.fairfaxcounty.gov/dpwes/watersheds

