

City of Columbia BMP Manual

Project Overview and Goals

December 19, 2012



Goals

- Address:
 - NPDES MS4 Requirements
 - SWMP Ordinance
 - BMP Manual Requirements
 - Watercourse Protection: special protection areas/impaired waters
 - Credits
 - CoC Engineering Regulations
 - Drainage Ordinance, Storm Sewer Design → H&H analysis
 - Sediment and Erosion Control
 - Planning, Land Development and Zoning Ordinances



Goals

- Construction & Post-Construction
 - Promote use of LID design techniques

- Ease of use
 - Accessible links and references

- Efficient

- Communication with YOU

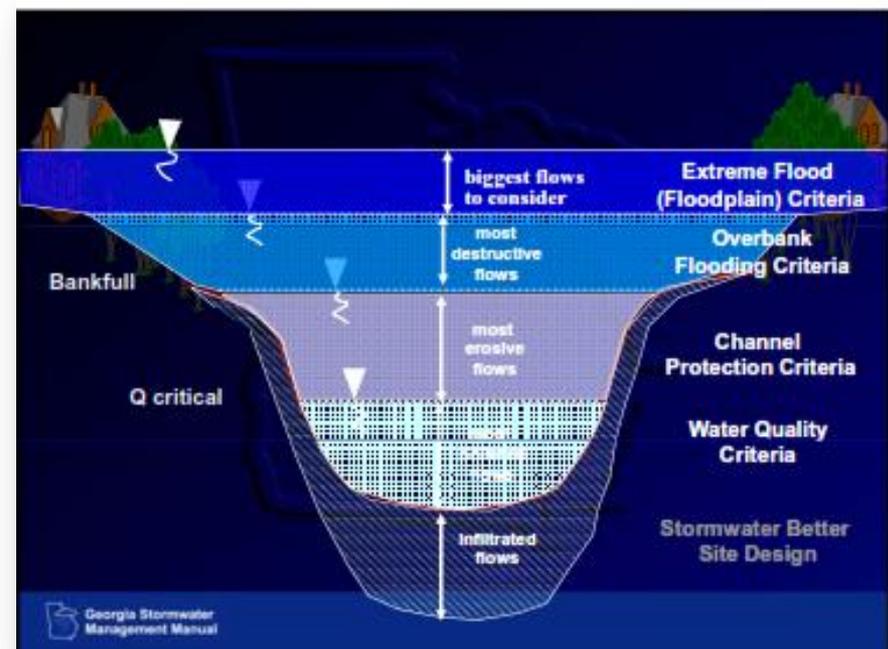


AMEC's Scope



■ Base Information

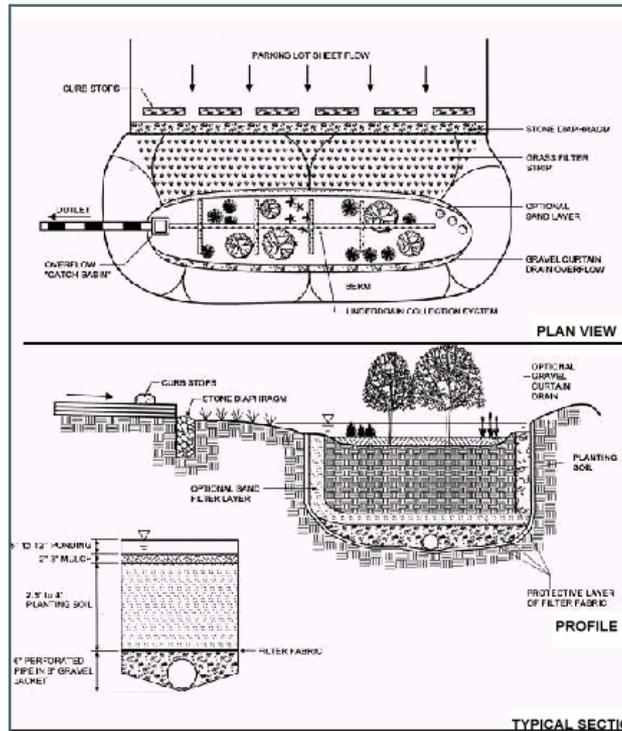
- SCDHEC
 - Post construction water quality and LID BMPs
- Lexington County LDM
 - Regional consistency
- GSMM
 - Better Site Design (BSD) Practices
 - Unified Sizing Criteria (USC)
 - Design Aids and Crediting Tools



AMEC's Scope



- Design Aids
 - Volume Calculation Sheets
 - Crediting Methods
 - BMP Sizing, Details and Notes



WATER QUALITY VOLUME			
Area	155.97 acres		
Impervious	20 %		
R	0.23	$R = 0.05 + 0.009 * I$	
Wq	3.58731 ac-ft	$Wq = 1.2 * R * A / 12$	
Wq	156263.22 cuft		

CHANNEL PROTECTION VOLUME			
CN	68		
1yr P	3.36 in		
S	4.706	$S = 1000 / CN - 10$	
Q	0.821 in	$Q = (9 - 0.2 * S)^2 / (P + 0.8 * S)$	
Tc	0.39 hrs		
Ia	0.941 in		
Ia/P	0.28		
Qu	524 csm/in		
Qu/Qi	0.033		
Vs/Vr	0.637	$Vs/Vr = 0.682 - 1.43(Qu/Qi) + 1.64(Qu/Qi)^2 - 0.804(Qu/Qi)^3$	
Cp	6.79431 ac-ft	$Cp = (Vs/Vr) * Q * A / 12$	
Cp	295960.19 cuft		
H	ft		
V	295960.19 cuft		
t	86400 sec		
A	sqft	$A = (V/t) / 0.6 * (64.4 * H / 2)^2$	
D	ft	$D = (4 * A / \pi)^{0.5}$	
D	0.00 inches		

25-YEAR STORAGE VOLUME			
25yr P	6.48 in		
Q	2.99 in	$Q = (P - 0.2 * S)^2 / (P + 0.8 * S)$	
Vr	38.92 ac-ft	$Vr = Q (A/640) 53.33$	
Qo	339.74 cfs	From Hydrograph	
Qi	494.11 cfs	From Hydrograph	
Qo/Qi	0.69	Peak Discharge Ratio	
Vs/Vr	0.21	$Vs/Vr = 0.682 - 1.43(Qo/Qi) + 1.64(Qo/Qi)^2 - 0.804(Qo/Qi)^3$	
Vs	8.27996 ac-ft	$Vs = Vr (Vs/Vr)$	
Vs	360675.21 cu. ft		

- Exclusions
 - Buffers & ordinances
 - Floodplain and FEMA requirements
 - Language on H&H analysis

- Document Development
 - First Draft : December
 - General Content & Format
 - Second Draft : March
 - Full Content; Initial Design Aids
 - Final Draft: June
 - Final Design aids
 - Final BMP Manual: August

■ Meetings & Facilitation

- Monthly topics
 - **Jan 16:** Unified Sizing Criteria and Suite of Structural BMPs
 - **Feb 20:** Better Site Planning/Design & Volume Reduction Credits
 - **Mar 20:** Applying Better Site Crediting and BMP Sizing
 - **Apr 17:** Detailed USC Exercise & Wet Pond Example
 - **May 15:** Bioretention & Vegetated Filters
 - **Jun 19:** Maintenance of BMPs and LID features
 - **Jul 17:** Review/Volume Crediting Tools and Examples
 - **Aug 21:** User Fee Credits
- Flexibility to address special issues...

Key Issues

- Designer's Consistency vs. Creativity
- City Guidance vs. Designer's Freedom
- Balancing Design, Function & Maintenance
- Available Credits: Volume vs. User Fee
- Public Communication Forum(s)

- Water Quality vs. Quantity

- How much text?
 - Provide more links and references instead ?
 - Create supporting appendices with additional information?

- Content and Format
 - Simple & efficient

- Tools provided
 - New and existing
 - Supporting guidance on proper use

Questions?

