

An Overview of the GSMM Stormwater Quality Site Development Review Tool

Date: _____



What is the GSMM “Tool”?

- An automated Excel spreadsheet
- Assists designers and developers incorporate runoff reduction and water quality requirements into design plans
- Assists local jurisdictions with the review of design plans
- Provides a visual to show if the runoff reduction or water quality standard was met



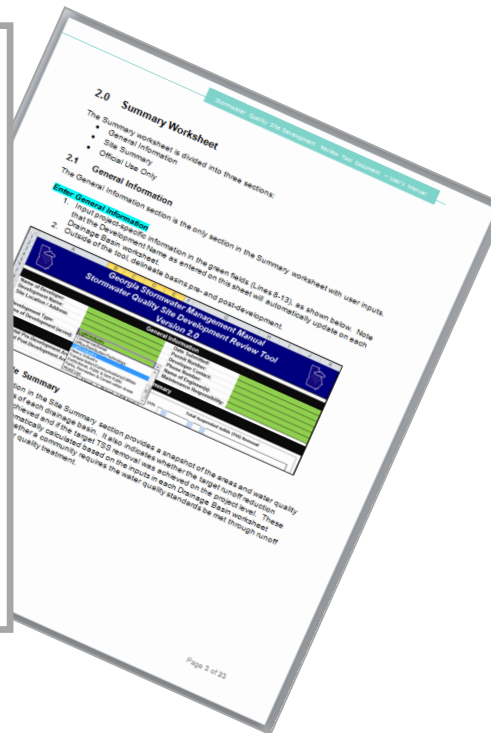
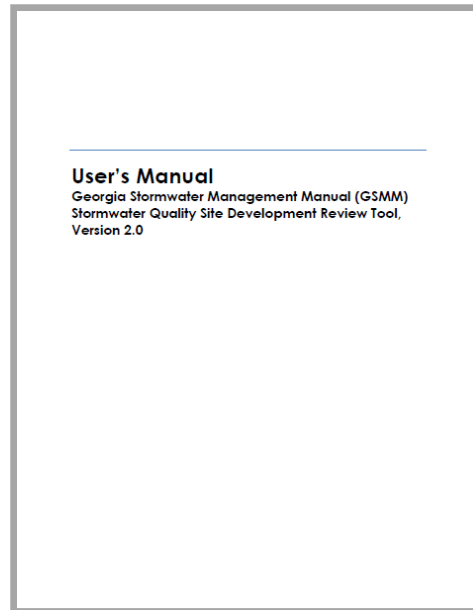
What are the Major Changes?

- New format
- Incorporates the runoff reduction standard
- Updated list of available BMPs
- Flexibility for local requirements
- Requirement to acknowledge conservation credits require a conservation easement or equivalent form of protection



User's Manual

- A User's Manual was developed that provides more detailed information about the inputs and the calculations, frequently asked questions, and example sites.



Instructions

- General overview and guidance on the inputs and how to use the Tool
- Use for quick reference when working in the Tool
- Reference the User's Manual for more detailed information

Georgia Stormwater Management Manual
Stormwater Quality Site Development Review Tool
Version 2.2

AECOM

Introduction

The Site Development Review Tool is an automated Excel spreadsheet tool that was developed to facilitate the evaluation of development projects in accordance with recommendations in the Georgia Stormwater Management Manual. This Tool allows both developers and local government review staff to evaluate the water quality performance of stormwater management plans for proposed land development projects. This Tool is not intended to replace required hydraulic modeling.

The following instructions provide a basic overview of the Tool. The User's Manual provides more detailed information about the inputs and the calculations, frequently asked questions, and example sites.

Using the Tool

The Site Development Review Tool is used to evaluate the expected stormwater runoff quality from a proposed site design. It can be used for both residential and commercial developments, and allows site designers to easily perform "what if" analyses using different design scenarios.

The goal of using the Site Development Review Tool is to prepare a stormwater management system design that achieves either runoff reduction of the first one inch of rainfall or 80% reduction in the average annual total suspended solids (TSS) loading leaving the site from the 1.2-inch storm. This can be achieved through any combination of approaches, including runoff reduction practices.

The Site Development Review Tool assumes that all of the runoff leaving the site is going to a common downstream drainage area, stream or other water body. *For a development that lies in two or more distinct watersheds, the site should be divided up and a separate copy of the Tool be run and submitted for each watershed.*

Overview of the Tool

The Site Development Review Tool has three main components:

- 1) Summary
- 2) Runoff Reduction and TSS Removal Efficiencies
- 3) Drainage Basin Worksheets

When working with the Tool, the following color shading is used:

- 1) All cells highlighted green are a user input
- 2) All cells highlighted gray are calculated values
- 3) All cells highlighted yellow are constant values
- 4) All cells highlighted orange require input from the local review staff

All other cells are password-protected and cannot be changed.

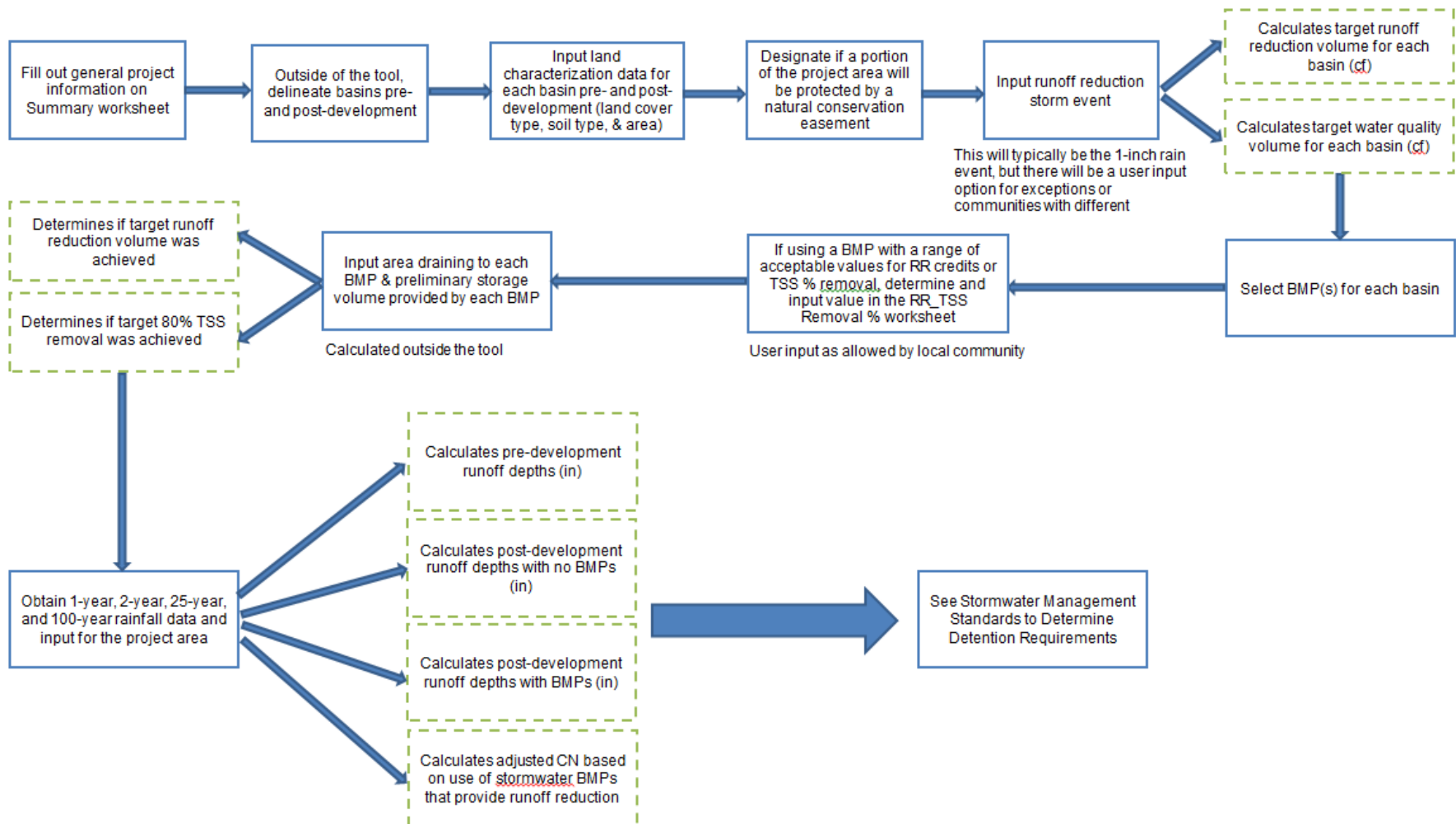
Summary

The Summary worksheet has three sections.

Section 1: General Information

The first section requires the user to fill out general site information. This includes the Name of Developer, Name of Development, Site Location and Address, Type of Development or Land Use Category (to be selected from a pull-down list), Date Submitted, Permit Number (if applicable), Contact Name and Phone Number, Name of Engineer, and Party Responsible for Long-Term Stormwater Maintenance.

Updated BMP Calculator Tool



Summary Worksheet

Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool Version 2.2				
General Information				
Name of Developer:		Date Submitted:		
Development Name:		Permit Number:		
Site Location / Address:		Developer Contact:		
		Phone Number:		
Development Type:		Name of Engineer(s):		
		Maintenance Responsibility:		
Agricultural Rural Residential Low Density Residential Medium Density Residential High Density Residential Office/Professional Commercial/Retail Office/Distribution/Technology		Site Summary		
Total Pre-Development Area				
Total Post-Development Area				
Total Treated Area				
Total Untreated Area				
		I (ac)	P (ac)	CA (ac)
Drainage Basin 1	DB 1	0.00	0.00	0.00
Drainage Basin 2	DB 2	0.00	0.00	0.00
Drainage Basin 3	DB 3	0.00	0.00	0.00
Drainage Basin 4	DB 4	0.00	0.00	0.00
Drainage Basin 5	DB 5	0.00	0.00	0.00
Drainage Basin 6	DB 6	0.00	0.00	0.00
Drainage Basin 7	DB 7	0.00	0.00	0.00
Drainage Basin 8	DB 8	0.00	0.00	0.00
Drainage Basin 9	DB 9	0.00	0.00	0.00
Drainage Basin 10	DB 10	0.00	0.00	0.00
	TOTAL	0.00	0.00	0.00
I - Impervious Area, P - Permeable Area, CA - Conservation Area				
Target Runoff Reduction Volume Achieved?		N/A		
Target TSS Removal Achieved?		No		
Total Target Runoff Reduction Volume (cf)		0		
Runoff Reduction Volume Achieved (cf)		0		
Total Target Water Quality Volume (cf)		0		
% TSS Removal Achieved		0%		
		<p>Total Suspended Solids (TSS) Removal</p> <p>The chart shows TSS Reduction on the y-axis (0% to 100%) and basins DB 1 through DB 10 on the x-axis. All basins show 0% reduction.</p>		
		<p>Runoff Reduction (RR)</p> <p>The chart shows % RR Target Met on the y-axis (0% to 100%) and basins DB 1 through DB 10 on the x-axis. All basins show 0% reduction.</p>		
Official Use Only				
Tracking #:		Conditions of Approval:		
Reviewed By:				
Date Approved:				

Complete the General Information Section

The Site Summary Section will automatically populate

To be completed by the plan reviewer

Runoff Reduction and TSS Removal Efficiencies Worksheet

Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool, v2.2 Runoff Reduction and TSS Removal Efficiencies						
data input cells		constant values				
	Runoff Reduction %	Effective TSS Removal %	Runoff Reduction Method	Drainage Area Restrictions	Units	Min/Max
Bioretention Basin (w/ underdrain)	50%	85%	Storage	5	acres	Max
Bioretention Basin (w/ upturned underdrain)	75%	85%	Storage	5	acres	Max
Bioretention Basin (w/o underdrain)	100%	100%	Storage		acres	Max
Bioslope (A & B hydrologic soils)	50%	85%	Storage	--	--	--
Bioslope (C & D hydrologic soils)	25%	85%	Storage	--	--	--
Downspout Disconnect (A & B hydrologic soils)	50%	80%	Convey	2500	ft ²	Max
Downspout Disconnect (C & D hydrologic soils)	25%	80%	Convey	2500	ft ²	Max
Dry Detention Basin	0%	60%	Storage	75	acres	--
Dry Extended Detention Basin	0%	60%	Storage	--	--	--
Dry Well	100%	100%	Storage	2500	ft ²	Max
Enhanced Dry Swale (w/ underdrain)	50%	80%	Storage	5	acres	Max
Enhanced Dry Swale (w/o underdrain)	100%	100%	Storage	5	acres	Max
Enhanced Wet Swale	0%	80%	Storage	5	acres	Max
Grass Channel (A & B hydrologic soils)	25%	50%	Convey	5	acres	Max
Grass Channel (C & D hydrologic soils)	10%	50%	Convey	5	acres	Max
Gravity (oil-grit) Separator	0%	40%	Convey	5	acres	Max
Green Roof	60%	80%	Storage	--	--	--
Infiltration Trench	100%	100%	Storage	5	acres	Max
Multi-Purpose Detention Basin	0%		Storage	--	--	--
Organic Filter	0%	80%	Storage	10	acres	Max
Permeable Paver System (w/ underdrain)	50%	80%	Storage	--	--	--
Permeable Paver System (w/ upturned underdrain)	75%	80%	Storage	--	--	--
Permeable Paver System (w/o underdrain)	100%	100%	Storage	--	--	--
Pervious Concrete (w/ underdrain)	50%	80%	Storage	--	--	--
Pervious Concrete (w/ upturned underdrain)	75%	80%	Storage	--	--	--
Pervious Concrete (w/o underdrain)	100%	100%	Storage	--	--	--
Porous Asphalt (w/ underdrain)	50%	50%	Storage	--	--	--
Porous Asphalt (w/ upturned underdrain)	75%	50%	Storage	--	--	--
Porous Asphalt (w/o underdrain)	100%	100%	Storage	--	--	--
Porous Asphalt (OGFC, PEM)	0%	50%	Convey	--	--	--
Proprietary System						
Rainwater Harvesting			Storage			
Regenerative Stormwater Conveyance	0%	80%	Storage	50	acres	Max
Sand Filter	0%	80%	Storage	10	acres	Max
Site Reforestation/Revegetation	0%	0%	Convey	--	--	--
Soil Restoration (can be used to remediate C & D soils)	0%	0%	Convey	--	--	--
Stormwater Planter / Tree Box	50%	80%	Storage	2500	ft ²	Max
Stormwater Pond	0%	80%	Storage	10-25	acres	Min
Stormwater Wetlands - Level 1	0%	80%	Convey	5	acres	Min
Stormwater Wetlands - Level 2	0%	85%	Convey	5	acres	Min
Submerged Gravel Wetlands	0%	80%	Convey	5	acres	Min
Underground Detention	0%	0%	Convey	--	--	--
Vegetated Filter Strip (A & B hydrologic soils)	50%	60%	Convey	--	--	--
Vegetated Filter Strip (C & D hydrologic soils)	25%	60%	Convey	--	--	--
User Input 1						
User Input 2						
User Input 3						

Runoff Reduction and TSS Removal Efficiencies based on published data. References are included in Volume 2, Chapter 4 of the GSMM

Indicates how the Tool calculates the runoff reduction achieved

Allows flexibility for local requirements

Runoff Reduction and TSS Removal Efficiencies Worksheet

8		Runoff Reduction %	Effective TSS Removal %	Runoff Reduction Method	Drainage Area Restrictions	Units	Min/Max
25	Gravity (oil-grit) Separator	0%	40%	Convey	5	acres	Max
26	Green Roof	60%	80%	Storage	--	--	--
27	Infiltration Trench	100%	100%	Storage	5	acres	Max
28	Multi-Purpose Detention Basin	0%		Storage	--	--	--
29	Organic Filter	0%	80%	Storage	10	acres	Max
30	Permeable Paver System (w/ underdrain)	50%	80%	Storage	--	--	--
31	Permeable Paver System (w/ upturned underdrain)	75%	80%	Storage	--	--	--
32	Permeable Paver System (w/o underdrain)	100%	100%	Storage			
33	Pervious Concrete (w/ underdrain)	50%	80%	Storage	--	--	--
34	Pervious Concrete (w/ upturned underdrain)	75%	80%	Storage			
35	Pervious Concrete (w/o underdrain)	100%	100%	Storage	--	--	--
36	Porous Asphalt (w/ underdrain)	50%	50%	Storage	--	--	--
37	Porous Asphalt (w/ upturned underdrain)	75%	50%	Storage			
38	Porous Asphalt (w/o underdrain)	100%	100%	Storage	--	--	--
39	Porous Asphalt (OGFC, PEM)	0%	50%	Convey	--	--	--
40	Proprietary System						
41	Rainwater Harvesting			Storage			
42	Regenerative Stormwater Conveyance	0%	80%	Storage		acres	Max
43	Sand Filter	0%	80%	Storage		acres	Max

Some BMPs require user input because the values can vary. Provide supporting documentation to justify inputs.






Drainage Basin Worksheet

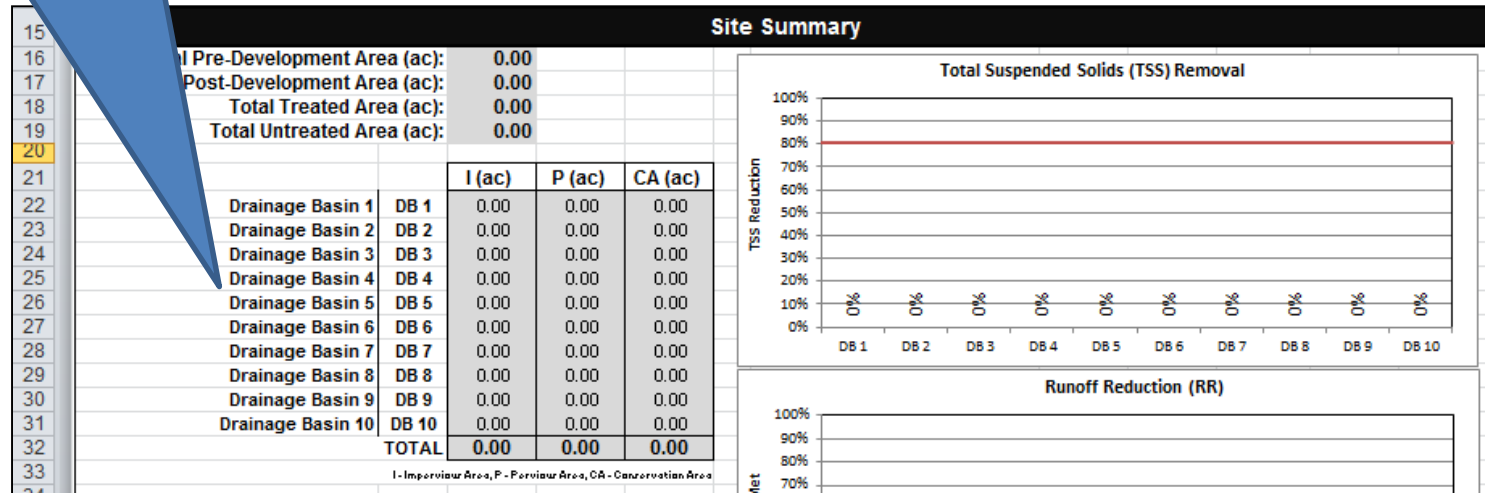
Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool, v2.2

Development Name:

Drainage Basin Name:

 data input cells
 calculation cells
 constant values

Enter the Drainage Basin name. This name will be populated in *column A*, rows 22-31 of the Summary worksheet.



Drainage Basin Worksheet – Site Summary

Use the drop-down box to select the land cover type(s) and condition for the pre- and post-developed site.

Indicate Pre-Development Land Cover and Runoff Curve Numbers in the Site's Disturbed Area										
Cover Type	HSG* A (acres)	CN	HSG B (acres)	CN	HSG C (acres)	CN	HSG D (acres)	CN	Total	% Cover
Woods - Good Condition		30		55	3.00	70		77	3.00	100%
Select a land cover type...		0		0		0		0	0.00	0%
Select a land cover type...		0		0		0		0	0.00	0%
Select a land cover type...		0		0		0		0	0.00	0%
Select a land cover type...		0		0		0		0	0.00	0%
Local Jurisdiction Input									0.00	0%
Other									0.00	0%
Total	0.00		0.00		3.00		0.00		3.00	100%

*HSG = hydrologic soil group

Impervious (ac)	0.00
Weighted CN	70
Potential Max Soil Retention, S_{pre} (in)	4.29

Indicate Post-Development Land Cover and Runoff Curve Numbers in the Site's Disturbed Area										
Cover Type	HSG A (acres)	CN	HSG B (acres)	CN	HSG C (acres)	CN	HSG D (acres)	CN	Total	% Cover
Impervious		98		98	1.90	98		98	1.90	63%
Meadow - continuous grass, protected from grazing and generally mowed for hay		30		58	1.10	71		78	1.10	37%
Select a land cover type...		0		0		0		0	0.00	0%
Select a land cover type...		0		0		0		0	0.00	0%
Select a land cover type...		0		0		0		0	0.00	0%
Local Jurisdiction Input									0.00	0%
Other									0.00	0%
Total	0.00		0.00		3.00		0.00		3.00	100%

Impervious (ac)	1.90
Rv	0.62
Weighted CN	88
Potential Max Soil Retention, S_{post} (in)	1.35

Allows flexibility for local requirements

Volumetric Runoff Coefficient is used to calculate the water quality and runoff reduction volume

$$R_v = 0.009(I) + 0.05$$

Drainage Basin Worksheet – Conservation Area Credits

If a conservation area credit is being claimed, the user must check the box acknowledging that a conservation easement or equivalent form of protection is required.

See the referenced GSMM Volume 2 sections for more information

Conservation Area Credits	
<p>Scenario 1: Natural Conservation Area <i>*See the GSMM Volume 2, Section 2.3.3.3 for more information.</i></p> <p><input checked="" type="checkbox"/> Check the box if a portion of the post-developed area is protected by a conservation easement or equivalent form of protection.</p> <p>0.5 Area (ac) of development protected by a conservation easement or equivalent form of protection. Note: The green cell will unlock if the Scenario 1 box above is checked</p>	<p>Scenario 3: Soil Restoration <i>*See the GSMM Volume 2, Section 4.23 for more information.</i></p> <p><input type="checkbox"/> Check the box if a portion of the post-developed area employs <u>soil restoration</u> and is protected by a conservation easement or equivalent form of protection.</p> <p>Area (ac) of development with restored soils and protected by a conservation easement or equivalent form of protection. Note: The green cell will unlock if the Scenario 3 box above is checked</p>
<p>Scenario 2: Site Reforestation/Revegetation <i>*See the GSMM Volume 2, Section 4.22 for more information.</i></p> <p><input type="checkbox"/> Check the box if a portion of the post-developed area employs <u>site reforestation/revegetation</u> and is protected by a conservation easement or equivalent form of protection.</p> <p>Area (ac) of development reforested/revegetated and protected by a conservation easement or equivalent form of protection. Note: The green cell will unlock if the Scenario 2 box above is checked</p>	<p>Scenario 4: Site Reforestation/Revegetation & Soil Restoration <i>*See the GSMM Volume 2, Section 4.22 and 4.23 for more information.</i></p> <p><input type="checkbox"/> Check the box if the same portion of the post-developed area employs <u>site reforestation/revegetation and soil restoration</u>, and is protected by a conservation easement or equivalent form of protection.</p> <p>Area (ac) with restored soils in a reforested & revegetated area and protected by a conservation easement or equivalent form of protection. Note: The green cell will unlock if the Scenario 4 box above is checked</p>
<p>Total Conservation Area Credit (acres) 0.50</p>	

If a box is checked, the associated user input box will unlock.

Drainage Basin Worksheet – Conservation Area Credits

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Stormwater Quality Site Development Review Tool
Version 2.0

General Information

Name of Developer: Date Submitted:
 Development Name: Permit Number:
 Site Location / Address: Developer Contact:
 Phone Number:
 Development Type: Name of Engineer(s):
 Maintenance Responsibility:

Site Summary

Total Pre-Development Area (ac):	11.00
Total Post-Development Area (ac):	11.00
Total Treated Area (ac):	11.00
Total Untreated Area (ac):	0.00

	I (ac)	P (ac)	CA (ac)
Drainage Basin 1	DB 1	1.50	0.60
Drainage Basin 2	DB 2	1.50	1.10
Drainage Basin 3	DB 3	0.00	5.00
Drainage Basin 4	DB 4	0.00	0.00
Drainage Basin 5	DB 5	0.00	0.00
Drainage Basin 6	DB 6	0.00	0.00
Drainage Basin 7	DB 7	0.00	0.00
Drainage Basin 8	DB 8	0.00	0.00
Drainage Basin 9	DB 9	0.00	0.00
Drainage Basin 10	DB 10	0.00	0.00
TOTAL	3.80	6.70	0.50

1: Impermeable Area, P: Permeable Area, CA: Conservation Area

Target Runoff Reduction Volume Achieved?	No
Target TSS Removal Achieved?	Yes

Total Target Runoff Reduction Volume (cf)	13,286
Runoff Reduction Volume Achieved (cf)	6,225
Total Target Water Quality Volume (cf)	15,943
% TSS Removal Achieved	95%

Total Suspended Solids (TSS) Removal

Runoff Reduction (RR)

Official Use Only

Tracking #: Conditions of Approval:
 Reviewed By:
 Date Approved:

A RECORDED CONSERVATION EASEMENT OR SIMILAR FORM OF PROTECTION IS REQUIRED FOR THIS PROJECT

Georgia Stormwater Management Manual
Stormwater Quality Site Development Review Tool, v2.0

Development Name:
 Drainage Basin Name:

data input cells
 calculation cells
 constant values

Channel and Flood Protection Calculations

Target Rainfall Event (in)	1-yr, 24-hr storm	2-yr, 24-hr storm	25-yr, 24-hr storm	100-yr, 24-hr storm
	3.28	3.63	5.95	7.32

	1-yr, 24-hr storm	2-yr, 24-hr storm	25-yr, 24-hr storm	100-yr, 24-hr storm
Pre-Development Runoff Volume (cu ft)	0.00	0.00	0.00	0.00
Post-Development Runoff Volume (cu ft) with no BMPs	0.00	0.00	0.00	0.00
Post-Development Runoff Volume (cu ft) with BMPs	0	0	0	0
Adjusted CV	0	0	0	0

See Stormwater Management Standards to Determine Detention Requirements.

Comments

A RECORDED CONSERVATION EASEMENT OR SIMILAR FORM OF PROTECTION IS REQUIRED FOR THIS PROJECT

A warning will be printed on the bottom of the Summary Worksheet and Drainage Basin Worksheet if a conservation credit is applied.

Drainage Basin Worksheet – Water Quality Goals

Water Quality Goals	
Target Runoff Reduction Storm (in)	1.00
Total Site Area for Water Quality Volume (acres)	4.50
Target Runoff Reduction Volume (cf)	6,697
Target Water Quality Volume (cf)	8,037

Default value of 1 inch,
but it can be edited

Takes into account
conservation area
credits

$$RR_v = \frac{P \times R_v \times A \times 43,560 \text{ ft}^2/\text{acre}}{12 \text{ in}/\text{ft}}$$

P = target runoff reduction storm (in)
 R_v = volumetric runoff coefficient
 A = total site area (ac) for water quality volume

$$WQ_v = \frac{1.2 \times R_v \times A \times 43,560 \text{ ft}^2/\text{acre}}{12 \text{ in}/\text{ft}}$$

1.2 = 85% storm event (in)
 R_v = volumetric runoff coefficient
 A = total site area (ac) for water quality volume

Drainage Basin Worksheet – Select BMPs

Select BMPs for Runoff Reduction and Water Quality															
	Area Draining to Each BMP	Runoff Reduction Calculations											WQ Calculations		
		On-site Pervious Area (acres)	On-site Impervious Area (acres)	Offsite Area (acres)	Storage Volume Provided by BMP (cf)	RR Conveyance Volume Provided by BMP (cf)	Down-stream BMP	RR Volume from Direct Drainage (cf)	RR Volume from Upstream Practices (cf)	Total RR Volume Received by BMP (cf)	Runoff Reduction %	RR Achieved (cf)	Remaining RR Volume (cf)	WQ, from Direct Drainage (cf)	Effective TSS Removal %
BMP 1	Downspout Disconnect (C & D hydrologic soils)	0.00	0.30	0.00		1,035	BMP 2	1,035	0	1,035	25%	259	776	1,241	80%
BMP 2	Bioretention Basin (w/ underdrain)	1.10	1.37		5,000			4,924	1,490	6,414	50%	2,500	3,914	5,909	85%
BMP 3	Grass Channel (C & D hydrologic soils)		0.23			793	BMP	793	0	793	10%	79	714	952	50%
BMP 4	Select a BMP_							0	0	0	N/A	0	0	0	N/A
BMP 5	Select a BMP_							0	0	0	N/A	0	0	0	N/A
BMP 6	Select a BMP_							0	0	0	N/A	0	0	0	N/A
BMP 7	Select a BMP_							0	0	0	N/A	0	0	0	N/A
BMP 8	Select a BMP_							0	0	0	N/A	0	0	0	N/A
BMP 9	Select a BMP_							0	0	0	N/A	0	0	0	N/A
BMP 10	Select a BMP_							0	0	0	N/A	0	0	0	N/A
TOTAL		1.10	1.90	0.00				6,752				2,838		8,102	
UNTREATED AREA (acres)		0.00	0.00												

Target Runoff Reduction Volume (cf)	6,752
Target Achieved?	No
Remaining Runoff Reduction Volume (cf)	3,914

Target Water Quality Volume (cf)	8,102
% TSS Removal Achieved	88%
Target Achieved?	Yes!
Remaining TSS Removal %	0%

Allows treatment trains or individual BMPs

Automatically calculates runoff reduction and TSS removal achieved

Indicates Untreated Area (ac)

Drainage Basin Worksheet – Select BMPs

Runoff Reduction
Conveyance Volume
Provided by BMP is
automatically calculated

Select BMPs for Runoff Reduction and Water Quality

	Area Draining to Each BMP			Storage Volume Provided by BMP (cf)	RR Conveyance Volume Provided by BMP (cf)	Down-stream BMP	Runoff Reduction Calculations						WQ Calculations	
	On-site Pervious Area (acres)	On-site Impervious Area (acres)	Offsite Area (acres)				RR Volume from Direct Drainage (cf)	RR Volume from Upstream Practices (cf)	Total RR Volume Received by BMP (cf)	Runoff Reduction %	RR Achieved (cf)	Remaining RR Volume (cf)	WQ ₁ from Direct Drainage (cf)	Effective TSS Removal %
BMP 1	Downspout Disconnect (C & D hydrologic soils)	0.00	0.30	0.00	1,035	BMP 2	1,035	0	1,035	25%	259	776	1,241	80%
BMP 2	Bioretention Basin (w/ underdrain)	1.10	1.37	5,000			4,924	1,490	6,414	50%	2,500	3,914	5,909	85%
BMP 3	Grass Channel (C & D hydrologic soils)		0.23		793	BMP 2	793	0	793	10%	79	714	952	50%
BMP 4	Select a BMP_						0	0	0	N/A	0	0	0	N/A
BMP 5	Select a BMP_						0	0	0	N/A	0	0	0	N/A
BMP 6	Select a BMP_						0	0	0	N/A	0	0	0	N/A
BMP 7	Select a BMP_						0	0	0	N/A	0	0	0	N/A
BMP 8	Select a BMP_						0	0	0	N/A	0	0	0	N/A
BMP 9	Select a BMP_						0	0	0	N/A	0	0	0	N/A
BMP 10	Select a BMP_						0	0	0	N/A	0	0	0	N/A
TOTAL		1.10	1.90	0.00			6,752				2,838		8,102	
UNTREATED AREA (acres)		0.00	0.00											

Target Runoff Reduction Volume (cf)	6,752
Target Achieved?	No
Remaining Runoff Reduction Volume (cf)	3,914

Target Water Quality Volume (cf)	8,102
% TSS Removal Achieved	88%
Target Achieved?	Yes!
Remaining TSS Removal %	0%

No water quality credit is given for treating offsite area; only on-site area routed to a BMP will be used in the runoff reduction and TSS calculations

Storage volumes must be calculated outside the Tool

Drainage Basin Worksheet – Treatment Trains

- The user may indicate a treatment train by designating downstream BMPs.
- Multiple BMPs may be used in a drainage basin without being part of a treatment train.
- If the outflow from one drainage basin or a portion of one drainage basin flows to another drainage basin, the basins should be modeled in one worksheet. Name the basin accordingly and provide any comments necessary to communicate the drainage path.

Drainage Basin Worksheet – Channel and Flood Protection

Channel and Flood Protection Calculations

	1-yr, 24-hr storm	2-yr, 24-hr storm	25-yr, 24-hr storm	100-yr, 24-hr storm
Target Rainfall Event (in)	3.40	4.20	7.90	9.80

	1-yr, 24-hr storm	2-yr, 24-hr storm	25-yr, 24-hr storm	100-yr, 24-hr storm
Pre-Development Runoff Volume (in)	0.95	1.46	4.38	6.05
Post-Development Runoff Volume (in) with no BMPs	2.19	2.92	6.48	8.35
Post-Development Runoff Volume (in) with BMPs	1.93	2.66	6.22	8.09
Adjusted CN	85	85	86	86

*See Stormwater Management Standards to Determine Detention Requirements.

Calculates adjusted CN based on the runoff reduction achieved

Drainage Basin Worksheet

Notes are provided in the Tool to provide direction to users

Scenario 2: Site Reforestation/Revegetation

Check the box if a portion of the post-development impervious area is covered by a conservation easement or equivalent.

Area (ac) of development reforested/revegetated or covered by a conservation easement or equivalent:

Reforested/revegetated areas should at least be 10,000 square feet (0.23 acres) in size in order to be eligible for the stormwater management credits.

Area Draining to Each	
On-site Pervious Area (acres)	On-site Impervious Area (acres)

If using a permeable pavement system or green roof, the area of the permeable pavement or green roof should be included in the impervious cover area.

Area Draining to Each		(acres)	(cf)
On-site Pervious Area (acres)	On-site Impervious Area (acres)		

Offsite Area
Runoff from offsite areas can be routed through a BMP, but no runoff reduction or TSS removal credits will be given for the offsite area.

TOTAL	0.00	0.00	0.00
UNTREATED AREA (acres)	3.00	2.00	
Target Runoff Reduction Volume (cf)	6,697		
Target Achieved?	No		
Remaining Runoff Reduction Volume (cf)	6,697		
Target Water Quality Volume (cf)	8,037		
% TSS Removal Achieved	0%		

Impervious Cover
The total impervious area draining to a BMP must be less than or equal to the total post-development impervious area.

Summary Worksheet

Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool Version 2.2

General Information

Name of Developer:		Date Submitted:	
Development Name:		Permit Number:	
Site Location / Address:		Developer Contact:	
		Phone Number:	
		Name of Engineer(s):	
Development Type:		Maintenance Responsibility:	

Site Summary

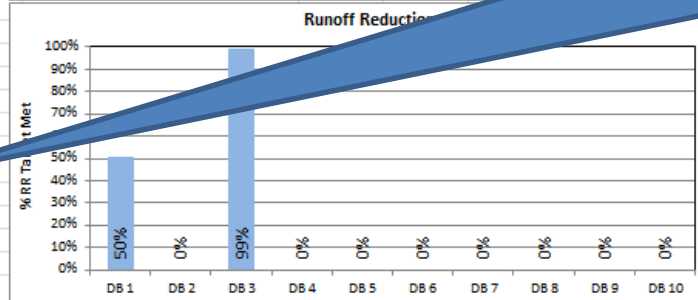
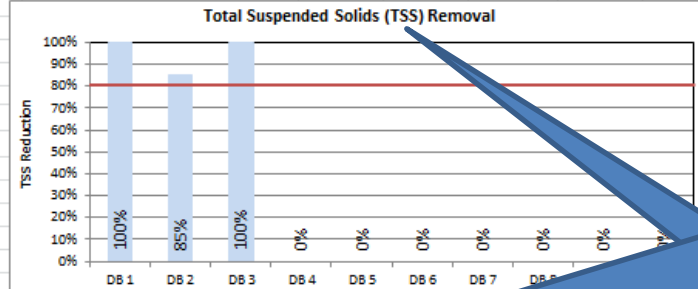
Total Pre-Development Area (ac): 11.00
 Total Post-Development Area (ac): 11.00
 Total Treated Area (ac): 11.00
 Total Untreated Area (ac): 0.00

		I (ac)	P (ac)	CA (ac)
Drainage Basin 1	DB 1	1.90	0.60	0.50
Drainage Basin 2	DB 2	1.90	1.10	0.00
Drainage Basin 3	DB 3	0.00	5.00	0.00
Drainage Basin 4	DB 4	0.00	0.00	0.00
Drainage Basin 5	DB 5	0.00	0.00	0.00
Drainage Basin 6	DB 6	0.00	0.00	0.00
Drainage Basin 7	DB 7	0.00	0.00	0.00
Drainage Basin 8	DB 8	0.00	0.00	0.00
Drainage Basin 9	DB 9	0.00	0.00	0.00
Drainage Basin 10	DB 10	0.00	0.00	0.00
TOTAL		3.80	6.70	0.50

I - Impervious Area, P - Pavement Area, CA - Conservation Area

Target Runoff Reduction Volume Achieved? **No**
 Target TSS Removal Achieved? **Yes**

Total Target Runoff Reduction Volume (cf) 13,286
 Runoff Reduction Volume Achieved (cf) 8,804
 Total Target Water Quality Volume (cf) 15,943
 % TSS Removal Achieved 95%



After inputting drainage basin information, shows water quality & runoff reduction achievements on the basin and project level

Official Use Only

Tracking #:		Conditions of Approval:	
Reviewed By:			
Date Approved:			

A RECORDED CONSERVATION EASEMENT OR SIMILAR FORM OF PROTECTION IS REQUIRED FOR THIS PROJECT

QUESTIONS?
