

STORMWATER MANAGEMENT PLAN GUIDE

This guide should assist design professionals in creating a design consistent with the codes and standards of the City of Columbia. The Stormwater Management Plan (SWMP) must be submitted for all projects receiving a Land Disturbance Permit.

This guide should be used as a general guideline and aid for the Stormwater Management Plan. For technical design criteria and procedures, consult the City of Columbia Municipal Code, the City BMP Manual(s), and approved City Technical Design and Procedure Manuals.

NARRATIVE – The narrative portion of the SWMP should provide a general overview of the site conditions and unique features that may impact the design process. The narrative should address the pre-developed and post-developed site conditions, soil conditions, any assumptions made, rationale for design decisions, and sources for information or procedures.

MAP(S) – The report shall include a reduced map(s) of the proposed project. The map(s) should show existing topography and drainage areas, soil conditions, proposed site grading and layout, structural and non-structural BMPs, drainage structures, easements, and downstream drainage structures with the possibility of being impacted.

BMPs – Any structural or non-structural BMPs used shall be referenced to their respective BMP Manual. Any specific design specifications for BMPs shall be detailed. All performance criteria and design guidelines for BMPs in the City BMP Manuals shall be strictly followed. Any proprietary BMPs shall be approved prior to submittal of the SWMP and have performance data attached in the appendix.

HYDROLOGY – Site hydrology shall be evaluated in accordance with the NRCS unit hydrograph procedures using the AMC II curve numbers and Type II rainfall distribution. All post developed conditions must be routed at appropriately small time intervals using either hand calculations or computer models that are widely accepted among engineering professionals. Other methods may be approved by the City Engineer or Designee in the design of curb inlets and small pipe systems when the final result is verified by a NRCS method.

HYDRAULICS – For the design of hydraulic structures and conveyances the City of Columbia recommends using the TDOT drainage manual or FHWA Hydraulic Engineering Circular Publications as design references. Any resulting design must also meet the requirements of the City of Columbia Municipal Code and the City BMP Manuals.

All calculations and procedures for sizing the hydraulics structures shall be detailed in the SWMP. All stormwater conveyances shall be tabulated, describing at least: ID, relevant elevations, slope, diameter or channel dimensions, lengths, material, manning's n, velocity, maximum shear stress (if applicable), flowing full capacity, and critical design storm flow.

All hydraulic structures should be detailed, including the first two downstream drainage structures offsite or a demonstration of no adverse impact on downstream drainage.

WATER QUALITY - The Water Quality Treatment Volume (WQTV) is defined as the runoff generated from impervious surfaces during the first inch of a rainfall event.

A representative storm event or a volumetric runoff coefficient (Rv) and other widely accepted methods may be used to calculate the WQTV. The WQTV may be reduced for satisfying any of the following conditions, with a maximum reduction of 50%:

- a. 20% - Water quality riparian buffer, with primarily sheet flow entering the buffer.
- b. 10% - Redevelopment with an increase in impervious area
- c. 20% - Redevelopment with a reduction in impervious area.
- d. 20% - Vertical density (floor to area ratio of at least 2, or at least 18 units per acre)

Preference for design is given to SCMs that are designed and built to infiltrate, evapotranspire, capture and/or reuse the entire WQTV. Alternative SCMs may be authorized to treat the remaining portion of the WQTV. Such alternative SCMs must at a minimum be designed to achieve 80% TSS removal.

RAIN DATA FROM NOAA ATLAS 14 COLUMBIA, TN STATION

INTENSITY DURATION FREQUENCY FOR RATIONAL METHOD (INCHES/HOUR)

Duration	Recurrence Interval (years)					
	2	5	10	25	50	100
5-min	5.77	6.74	7.55	8.64	9.48	10.4
10-min	4.61	5.41	6.04	6.88	7.55	8.24
15-min	3.87	4.56	5.09	5.82	6.37	6.94
30-min	2.67	3.24	3.69	4.31	4.80	5.32
60-min	1.68	2.08	2.40	2.87	3.25	3.66

INTENSITY DURATION FREQUENCY (INCHES)

Duration	Recurrence Interval (years)					
	2	5	10	25	50	100
24-hour	3.85	4.69	5.36	6.27	7.00	7.74