

**Chapter 32**  
**Stormwater Management and Erosion Control**  
**(Rep. & recr. #34-05)**

**32.11 Technical Standards and Specifications (Am. #14-18)**

**(a) Hydrologic and Hydraulic Computations.**

1. Models. All computations of runoff volumes and peak flow rates used in the development of erosion control and storm water management plans in accordance with this ordinance shall be based on United States Department of Agriculture - Natural Resources Conservation Service (NRCS) methodology. Models such as Source Load And Management Model (“SLAMM”), P8 or other approved models may be used to evaluate the efficiency of the design in reducing total suspended solids to meet this ordinance. Models distributed or supported and approved for use by the Wisconsin Department of Natural Resources shall be used to determine compliance with calculating soil loss on construction sites.
  
2. Rainfall depths. To determine compliance with this ordinance, the following design storm rainfall depths shall be used, which are derived from NRCS publications and extrapolated for City of Waukesha:

Table 3  
 Rainfall Depths Per Design Storm: Waukesha County

Design Storm	1-year 24-hour	2-year 24-hour	10-year 24-hour	100-year 24-hour
Rainfall Depth	2.4 inches	2.7 inches	3.81 inches	6.18 inches

3. Runoff curve numbers. All computations of predevelopment conditions as specified in this ordinance shall use those NRCS runoff curve numbers assigned for a "good" hydrologic condition for each land cover type. For lands where the pre development land use was woodland, grassland/meadow, or cropland, the following NRCS curve number values shall be used as maximums:

Soil Hydrologic Group	A	B	C	D
Woodland	30	55	70	77
Grassland	39	61	71	78
Cropland	55	69	78	83

4. Average annual rainfalls. All modeling involving average annual rainfall or runoff volumes shall use rainfall data from the Milwaukee area between March 28 and December 6, 1969 as the typical annual rainfall pattern for the City of Waukesha, unless otherwise prescribed in BMP design standards.
  
5. Rainfall distribution. All peak flow calculations shall use MSE3 rainfall

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distribution patterns, as defined in NRCS methodologies.

6. Other methods. All velocity and peak flow computations for open channels and storm sewer pipe flows shall be based on the formula commonly known as “Manning’s Formula” used to mathematically predict hydraulic flow rates through channels. Flow routing, culvert design, weir and orifice flow and other related hydraulic computations used to design storm water management facilities shall be based on standard applicable engineering formulas. Any design data or methodology proposed to be used for hydrologic or hydraulic computations other than those prescribed in this ordinance shall be approved by the Authority. Revisions or updates to the rainfall depths and distribution prescribed above may be allowed upon approval by the applicable regulatory agencies, and the Authority.

**(b) Best Management Practice (BMP) Design Standards.**

1. The design, installation and maintenance of all BMP(s) used to meet the requirements of this ordinance shall comply with the technical standards identified, developed or disseminated by the Wisconsin Department of Natural Resources under subchapter V of ch. NR 151, Wis. Adm. Code.

2. Where BMP standards have not been identified or developed under sub. 1 above, the Authority may approve the use of other available standards, such as those from other states or the USDA-Natural Resources Conservation Service.

**(c) Technical Guidelines.** The Authority may adopt technical guidelines to facilitate the consistent administration of certain provisions of this ordinance. The Authority shall seek the expertise and input from other agencies in the development and maintenance of technical guidelines under this subsection.

**(d) Construction Specifications.** The construction or installation of all BMP(s) and BMP components shall comply with all applicable manufacturers and industry standards and specifications, including but not limited to those published by ASTM and the USDA - Natural Resources Conservation Service (NRCS).

**(e) Soil Evaluations.** All soil profile evaluations and forms submitted for review by the Authority under the provisions of this ordinance shall be completed in accordance with Chapter SPS 385 Wis. Admin. Code and any applicable state standards. Where there are no specific standards for the number, location or depth of soil profile evaluations for a proposed BMP, the Authority shall determine the minimum requirements based on the design of the BMP and the likely variability of the on-site soils.

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**(f) Future Revisions or Updates.** The technical standards and specifications in this section shall be updated periodically in order to keep current with field experiences, research, technological advances and the development of related technical standards by other agencies and units of government. Any future revisions of the standards and specifications incorporated herein are also made part of this ordinance unless otherwise acted upon by the Authority.