

RULE NO.: R161-19.01**POSTING DATE: January 8, 2019****NOTICE OF PROPOSED RULE**

The Director of the Watershed Protection Department proposes to adopt the following rule after February 9, 2019.

Comments on the proposed rule are requested from the public. Comments should be submitted to Dana Lappin, 505 Barton Springs Road, Suite 1100, Austin Texas, 78704, 974-2634, or via email at dana.lappin@austintexas.gov. To be considered, comments must be submitted before February 9, 2019, the 32nd day after the date this notice is posted. A summary of the written comments received will be included in the notice of rule adoption that must be posted for the rule to become effective.

An affordability impact statement regarding the proposed rule has been obtained and is available for inspection or copying at the address noted in the preceding paragraph.

EFFECTIVE DATE OF PROPOSED RULE

A rule proposed in this notice may not become effective before the effective date established by a separate notice of rule adoption. A notice of rule adoption may not be posted before February 9, 2019 (the 32nd day after the date of this notice) nor after March 19, 2019 (the 70th day after the date of this notice).

If a proposed rule is not adopted on or before March 19, 2019, it is automatically withdrawn and cannot be adopted without first posting a new notice of a proposed rule.

TEXT OF PROPOSED RULE

A copy of the complete text of the proposed rule is available for public inspection and copying at the following locations. Copies may be purchased at the locations at a cost of ten cents per page:

Watershed Protection Department, located at 505 Barton Springs Road, Suite 1200, Austin, TX, 78704; and

Office of the City Clerk, City Hall, located at 301 West 2nd Street, Austin, Texas.

BRIEF EXPLANATION OF PROPOSED RULE

R161-19.01: Revises the Drainage Criteria Manual as follows:

- Section 2.6.0, *Probable Maximum Flood Development* – Updated to comply with revised TCEQ guidance for Probable Maximum Flood determination.
- Section 2.6.1, *Probable Maximum Precipitation (PMP)* – Updated to comply with revised TCEQ guidance for PMP determination.
- Section 2.6.2, *Probable Maximum Flood (PMF)* – Updated to comply with revised TCEQ guidance for PMF determination.
- Section 8.3.3, *Safety Criteria for SWM Ponds* – The proposed changes to section 8.3.3 align City of Austin dam safety requirements with the revised State of Texas dam safety requirements regarding the percentage of the probable maximum flood that must be safely passed.
- Section 8.3.4, *Outlet Structure Design* – Updated V-notch weir formula.

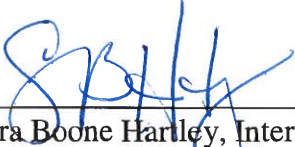
AUTHORITY FOR ADOPTION OF PROPOSED RULE

The authority and procedure for the adoption of a rule to assist in the implementation, administration, or enforcement of a provision of the City Code is established in Chapter 1-2 of the City Code. The authority to regulate design and construction of drainage facilities and improvements is established in Section 25-7-151 of the City Code.

CERTIFICATION BY CITY ATTORNEY

By signing this Notice of Proposed Rule (R161-19.01), the City Attorney certifies the City Attorney has reviewed the rule and finds that adoption of the rule is a valid exercise of the Director's administrative authority.

REVIEW AND APPROVED



Sara Boone Hartley, Interim Director
Watershed Protection Department

Date: 12/17/18



Anne Morgan
City Attorney

Date: 12/20/18

This Notice of Proposed Rule was posted on a central bulletin board at City Hall by the City Clerk. Date and time stamp is on the front of the notice.

2.6.0 - PROBABLE MAXIMUM STORM/FLOOD DEVELOPMENT

The purpose of this section is to describe a method for developing the Probable Maximum Flood (PMF) within the City of Austin jurisdiction. The PMF is calculated by obtaining the Probable Maximum Precipitation (PMP) for a specific storm duration and drainage area. ~~The PMP rainfall depths presented in this section were derived for the Austin area and are only applicable for designing and managing dams within City of Austin's full purpose, limited purpose and extraterritorial jurisdictions.~~ Typically, a PMF runoff model requires both a temporal and spatial distribution of the PMP. However, if the drainage area is less than 10 square miles, the spatial distribution is not required (i.e. the drainage area is considered small enough that the PMP values can reasonably be considered point rainfall values). ~~The PMP values shown in this section are valid only for drainage areas less than 10 square miles.~~

The State of Texas has the primary regulatory authority for dams in Texas. The State's Dam Safety Program is under the purview of the TCEQ and Title 30, Chapter 299 of the Texas Administrative Code contains applicable rules. The primary guidance for the analysis of dam performance during a PMF event can be found in the Hydrologic and Hydraulic Guidelines for Dams in Texas. This manual and other dam safety and maintenance manuals are available on the TCEQ's web site at <https://www.tceq.texas.gov/>

2.6.1 - Probable Maximum Precipitation (PMP)

~~The PMP values were derived using Hydrometeorological Report No. 52 (HMR-52) and Hydrometeorological Report No. 51 (HMR-51) per the guidance provided in the Hydrologic and Hydraulic Guidelines for Dams in Texas (January 2007) available from the Dam Safety Program at the Texas Commission on Environmental Quality (TCEQ). Table 2-8 contains a summary of PMP depths and intensities for various storm durations for drainage areas less than 10 square miles.~~

Table 2-8 Probable Maximum Precipitation Depths for the City of Austin	
Storm Duration	Depth (in)
1 hr	17.4
2 hr	21.6
3 hr	24.9
6 hr	31.1
12 hr	37.6
24 hr	44.7
48 hr	50.0
72 hr	53.4

8.3.3 - Safety Criteria For SWM Ponds

All ponds shall meet or exceed all specified safety criteria. Use of these criteria shall in no way relieve the engineer of the responsibility for the adequacy and safety of all aspects of the design of the SWM pond.

- A. The spillway, outfall, embankment, and appurtenant structures shall be designed to safely pass the design storm hydrograph with the freeboard shown in the table below. All contributing on-site drainage areas, and off-site areas which are routed through the SWM pond, shall be assumed to be fully developed in order to properly size the spillway, outfall, embankment and appurtenant structures. Any orifice with a dimension smaller than or equal to 12 inches shall be assumed to be fully developed in order to properly size the spillway, outfall, embankment and appurtenant structures. For all spillways (especially enclosed conduits), the ability to adequately convey the design flows must take into account any submergence of the outlet, any existing or potential obstructions in the system and the capacity of the downstream system.

DETENTION POND CLASS	DESIGN STORM EVENT	FREEBOARD ON TOP OF ENBANKMENT, FT
On-site/Off-site		
Small (DA < 25 ac)	100-year	0
Large (25 ≤ DA ≤ 64 ac)	100-year	1.0
Regional DA ≥ 64 ac	100-year	2.0

- B. Any hydraulic structure designed to impound storm water that has a height greater than or equal to six (6) feet at any point along the perimeter of the SWM pond is a dam and must be designed to safely pass the minimum design flood hydrograph expressed as a percentage of the probable maximum flood (PMF) as described in DCM 8.3.3.B.3 ~~75 percent of the probable maximum flood (PMF)~~ and as evidenced by certification using the statement provided in DCM 8.3.3.B.3 by an engineer licensed in the State of Texas. The certification statement may be divided into the four disciplines of hydrology, hydraulics, structural and geotechnical and independently certified.

- The height of the hydraulic structure (dam) is measured from the top of the structure to the downstream intersection of the structure and the natural or excavated ground, whichever is lower.
- The PMF is computed by using the probable maximum precipitation (PMP) values as described in Section 2-6 of the Drainage Criteria Manual.
- A dam as defined in DCM 8.3.3.B must be designed to pass the minimum design flood hydrograph which is the greater of:
 - 75 percent of the PMF
 - The percentage of the PMF as defined in Texas Administrative Code Chapter 299 Dams and Reservoirs. (Figure: 30 TAC §299.15(a)(1)(A))

3.4. Dam Safety Certification Statement:

I [name of professional engineer] Texas license number [number] certify that the design of the dam in this set of plans can safely pass the minimum design flood hydrograph as

Drainage Criteria Manual

- F. Earthen embankment side slopes shall be no steeper than 3 horizontal to 1 vertical. Slopes must be designed to resist erosion to be stable in all conditions, and to be easily maintained. Earthen side slopes for regional facilities shall be designed on the basis of appropriate geotechnical analyses.
- G. Detailed hydraulic design calculations shall be provided for all SWM ponds. Stage-discharge rating data shall be presented in tabular form with all discharge components, such as orifice, weir, and outlet conduit flows, clearly indicated. A stage-storage table shall also be provided. In all cases the effects of tailwater or other outlet control considerations should be included in the rating table calculations.
- H. When designing ponds in series (i.e., when the discharge of one becomes the inflow of another), a licensed engineer in the State of Texas engineer must submit a hydrologic analysis, which demonstrates the system's adequacy. This analysis must incorporate the construction of hydrographs for all inflow and outflow components.
- I. Storm runoff may be detained within parking lots. However, the engineer should be aware of the inconvenience to both pedestrians and traffic. The location of ponding areas in a parking lot should be planned so that this condition is minimized. Stormwater ponding depths (for the 100 year storm) in parking lots are limited to an average of eight (8) inches with a maximum of twelve (12 inches).
- J. All pipes discharging into a public storm drain system shall have a minimum diameter of 18 inches and shall be constructed of reinforced concrete. In all cases, ease of maintenance and/or repair must be assured.
- K. All concentrated flows into a SWM pond shall be collected and conveyed into the pond in such a way as to prevent erosion of the side slopes. All outfalls into the pond shall be designed to be stable and non-erosive.

Drainage Criteria Manual

Where

Q = Orifice Flow, cubic feet per second

C_o = Orifice Coefficient (use 0.6)

A = Orifice Area, square feet

g = Gravitation constant, 32.2 feet/sec²

H = Head on orifice measured from centerline, feet

Analytical methods and equations for other types of structures shall be approved by the Watershed Protection Department prior to use.

In all cases the effects of tailwater or other outlet control considerations should be included in the rating table calculations.