

**Chapter 15**

**FLOOD DAMAGE PREVENTION**

**Articles:**

- 15-1 Floodplain Regulations**
- 15-2 Storm Drainage Requirements**

**Article 15-1 Floodplain Regulations**

**Sections:**

- 15-1-1 Designation of Authority**
- 15-1-2 Adoption of Floodplain Regulations**

**Section 15-1-1 Designation of Authority**

The city engineer is designated as the floodplain manager for the city and will serve as the city’s point of contact on national flood insurance program issues for county, state and federal officials. (Ord. 07-129 § 1; Ord. 05-103 § 1)

**Section 15-1-2 Adoption of Floodplain Regulations**

A. Those public records entitled “Flood Insurance Study for Maricopa County, Arizona, and Incorporated Areas dated September 30, 2005” and “Flood Insurance Rate Maps dated September 30, 2005” and all subsequent amendments and/or revisions, three copies of which shall be kept on file in the office of the city clerk, are hereby adopted by reference, as the basis for establishing the special flood hazard areas for floodplain management in the city of Litchfield Park. The special flood hazard areas documented in the flood insurance study and flood insurance rate maps are the minimum area of applicability of the floodplain management regulations and may be supplemented by studies for other areas as allowed in the regulations.

B. That public record in the Floodplain Management Regulations for Maricopa County (2006 Revision), three copies of which shall be kept on file in the office of the city clerk, is hereby adopted as the legal basis for implementing floodplain management in this community. (Ord. 07-129 § 1; Ord. 05-103 § 1)

**Article 15-2 Storm Drainage Requirements**

**Sections:**

- 15-2-1 Purpose**
- 15-2-2 Conceptual Drainage Map and Report**
- 15-2-3 Storm Drainage**

**Section 15-2-1 Purpose**

A. The purpose of these requirements is to ensure that developments in the city are not subject to flooding nor will they contribute to the flooding potential of properties both upstream and downstream, during construction and after full development has occurred.

B. It is not the intent of these stipulations to abrogate sound engineering judgment, but to establish some guidelines and criteria. In general, unless modified herein, the criteria and calculations shall be as specified in the “Hydraulic Design Manual for Maricopa County, Arizona.”

**Section 15-2-2 Conceptual Drainage Map and Report**

The purpose of the map and report is to define the runoff, both before and after development, and indicate provisions proposed to handle on-site and off-site flows. In general, the plan is to accept off-site flows, handle these flows and the water that falls on the site in such a way that flows leaving the site shall exist in the same manner and with less velocity and quantity than occurred prior to development. In lieu of this channel, detention/retention structures or other methods could be constructed downstream, providing the developer has control over the downstream property and makes provisions to conduct the waters to a proper disposal site, such as a natural stream or a government-controlled drainage structure, and obtains written permission of the governmental agency having jurisdiction.

**Section 15-2-3 Storm Drainage**

A. Design Frequency. All developments must provide retention of the storm runoff generated by the one-hundred-year, six-hour storm (three inches).

B. Drainage Area. The area to be considered as generating runoffs to be retained shall be the development itself and the contributing adjacent streets.

C. Street Capacity. Streets will be designed to carry runoff from a five-year peak storm between the curbs. Arterial and major collectors (roads with four lanes for traffic or greater) shall be designed to concentrate the five-year storm runoff such that one lane in each direction is free from runoff. The peak flows from the one-hundred-year storm shall be carried within the cross-section between right-of-way lines and must not exceed four inches above top of curb. Inverted crown streets are not permitted.

D. Storm Sewer. In cases where the street flow from the design storm exceeds the street capacity, underground pipes or aesthetically pleasing channels, of sufficient size, shall be installed.

E. Retention. The right-of-way areas shall not be used for retention purposes. The retention areas shall be landscaped and shall have a maximum water depth of 3 feet and a maximum side slope of 4:1. Storm water shall not be retained in the basins longer than thirty-six hours. The basins must be drained by a gravity line.

F. Floor Elevations. Finished floor elevations for houses or other buildings shall be elevated above the runoff expected from a 100-year storm. Minimum floor elevations shall be 14 inches above the top of the low curb and a minimum of 6 inches above the top of the high curb. Basements may be approved if they are flood-proofed to a point above finish floor elevation. A registered professional engineer or architect shall certify the means of flood-proofing.

G. Culverts and Bridges. Culverts or bridges for street and alley crossings of drainageways shall be sized to carry the 100-year storm.

Farm Land	0.10
Bare Ground (vacant lots)	0.25
Undeveloped Desert	0.40
Commercial, Industrial Area	0.80
Residential Area	
Ranch Area 18,000 SF or Larger	0.35
Single Family Areas Less than 18,000 SF	0.40
Multi-unit Area	
Townhouses, Mobile Home Park	0.50
Apartments	0.60

H. Compliance. It is the responsibility of the developer and his engineer to comply with these provisions and to design a project which will comply with high engineering standards. City review is not to be construed as endorsement or assurance that the plans comply with these standards. The responsibility for the proper drainage of the developer's property and the protection of adjacent property from flooding remains with the developer and his engineer.

Retention Calculations.

$$V = \frac{AC}{4}$$

V = Volume to be retained (acre feet or cubic feet)

A = Drainage Area (acres or square feet)

C = Runoff Factor (see below)

Runoff Coefficient (for retention and rational formula use)

General

Pavement (asphalt, concrete, brick, etc.)	0.95
Roof	0.95
Grass Lawns (less than 7% slope)	0.20
Grass Lawns (more than 7% slope)	0.35
Desert Lawn or rock Lawn	0.70