

Hydrologic Calculations

Paradise Boulevard Trail Improvements Project

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Checked By:

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Comments Incorporated:

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Subject: Estimate the design storm peak runoff discharge flow rate and volume

Purpose: Size drainage facilities to accommodate the design storm

References: City of Albuquerque Development Process Manual (1997 Revision), Chapter 22, Section 2

Assumptions:

- 1 Project location is in Precipitation Zone 1
- 2 Drainage area will ultimately be best described as a commercial area, while currently the basin is undeveloped.

Criteria / Requirements:

- 1 Use COA DPM Chapter 22 - Small Drainage Basins Hydrology Methodology
This methodology applies only to basins 40acres and smaller

Sketches: Drainage Basin Map (Attached)

Calculations:

Precipitation Zone

1

Precipitation Depth

Return Period (yr)	Storm Duration				
	P ₆₀	P ₃₆₀	P ₁₄₄₀	P _{4days}	P _{10days}
100	1.87	2.2	2.66	3.12	3.67
50	1.683	1.980	2.394	2.808	3.303
25	1.496	1.760	2.128	2.496	2.936
10	1.247	1.467	1.774	2.081	2.448
5	1.060	1.247	1.508	1.769	2.081
2	0.812	0.955	1.154	1.354	1.593

[Excerpt from Table A-2 and Extrapolated from Table A-3]

Data Key:

Reference
Input
Calc
Linked

Excess Precipitation, E (Inches)

Return Period (yr)	Treatment			
	A	B	C	D
2	0	0.01	0.12	0.72
10	0.08	0.22	0.44	1.24
100	0.44	0.67	0.99	1.97

[Excerpt from Table A-8]

Peak Discharge (cfs/acre)

Return Period (yr)	Treatment			
	A	B	C	D
2	0	0.03	0.47	1.69
10	0.24	0.76	1.49	2.89
100	1.29	2.03	2.87	4.37

[Excerpt from Table A-9]

Typical Basin Treatment Area (%)

	A	B	C	D
Existing	0	0	100	0
Proposed	0	5	5	90

Drainage Basin - Peak Discharge Volume

	Basin ID	Treatment Area (acre)				Total Area (sq ft)	Total Area (acre)	Peak Discharge Volume (acre-ft)		
		A	B	C	D			2-year	10-yr	100-yr
Existing	1	0.000	0.000	5.169	0.000	225,174.00	5.169	0.052	0.190	0.426
Proposed	1	0.000	0.258	0.258	4.652	225,174.00	5.169	0.282	0.495	0.800

Drainage Basin - Peak Discharge Flow Rate

	Basin ID	Treatment Area (acre)				Total Area (sq ft)	Total Area (acre)	Peak Discharge Flow Rate (cfs)		
		A	B	C	D			2-year	10-yr	100-yr
Existing	1	0.000	0.000	5.169	0.000	225174	5.169	2.430	7.702	14.836
Proposed	1	0.000	0.258	0.258	4.652	225174	5.169	7.992	14.027	21.597

Calculations:

Drainage infrastructure should be designed to convey existing conditions flows only. Flows from the fully developed site should be addressed in accord with COA DPM requirements. Once developed, it is unlikely that the entire development will continue to release all storm flow to the analysis point used for this analysis.