

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

**VALUES OF RUNOFF COEFFICIENTS FOR USE IN DESIGNING
STORMWATER DETENTION FACILITIES PER MWRD REQUIREMENTS**

The following runoff coefficients (“C” values) are to be used in calculating stormwater detention maximum allowable release rates, required storage volumes, and minimum upstream bypass rates, using the MWRD Modified Rational Method.

<u>Project Site Condition/Surface Type</u>	<u>Runoff Coefficient, C</u>
Natural, undeveloped state (pre-disturbed) Used in calculating maximum allowable release rate, $Q_{\text{allow}} = C I_3 A$, where I_3 is the 3-year rainfall intensity* for the time of concentration of the undeveloped site and A is the project site area.	0.15
Developed or pre-developed state (disturbed) Surface type:	
Impervious (e.g. hard roofs, pavements)	0.90
Pervious (e.g. turf, planting beds)	0.45
Gravel, loose, unbound (e.g. RR yard ballast areas)	0.75
Water surface (e.g. wet ponds/retention basins)	1.00
Used to calculate composite C** in determining 100-year stormwater detention inflow rates, $Q = C I_{100} A$ for various times of duration.	
Upstream bypass area Used to calculate upstream area bypass flow rate. Consider off-site upstream area as developed using above C values for applicable surface types. Also consider impact of upstream area detention requirements.	0.35 (minimum)

* Use rainfall intensity/duration data from *U.S. Weather Bureau Technical Paper 40*. For data and detention calculation procedure, request MWRD handout entitled “*Detailed Steps for Determining Allowable Release Rate and Required Flood Storage*”

** Composite C is calculated as a weighted average. Multiply the area of each type of surface within the project site by the respective runoff coefficient; add the results and divide the sum by the total project area.