

§247 - APPENDIX B

STORMWATER MANAGEMENT DESIGN CRITERIA

- Table B-1, Runoff Curve Numbers
- Table B-2, Rational Runoff Coefficients
- Table B-3, Manning Roughness Coefficients

Table B-2. Runoff Curve Numbers

Source: NRCS (SCS) TR-55

Land Use Description		Hydrologic Soil Group			
		A	B	C	D
Open space		44	65	77	82
Orchard		44	65	77	82
Meadow		30	58	71	78
Agriculture		59	71	79	83
Forest		36	60	73	79
Commercial	(85% impervious)	89	92	94	95
Industrial	(72% impervious)	81	88	91	93
Institutional	(50% impervious)	71	82	88	90
Residential					
Average lot size	% Impervious				
1/8 acre or less*	65	77	85	90	92
1/8 to 1/3 acre	34	59	74	82	87
1/3 to 1 acre	23	53	69	80	85
1 to 4 acres	12	46	66	78	82
Farmstead		59	74	82	86
Smooth surfaces (concrete, asphalt, gravel or bare compacted soil)		98	98	98	98
Water		98	98	98	98
Forest/mining mix		75	75	75	75

* Includes multifamily housing unless justified lower density can be provided.

Note: Existing site conditions of bare earth or fallow shall be considered as meadow when choosing a CN value. Existing conditions should be assumed to be meadow in good condition, unless the actual existing conditions result in a lower runoff curve number, in which case the lower number will be used.

Table B-3. Rational Runoff Coefficients (AMC II)

Land Use Description		Hydrologic Soil Group			
		A	B	C	D
Cultivated land:					
Without conservation treatment		0.49	0.67	0.81	0.88
With conservation treatment		0.27	0.43	0.61	0.67
Pasture or range land:					
Poor condition		0.38	0.63	0.78	0.84
Good conditions		—*	0.25	0.51	0.65
Meadow: good conditions		—*	—*	0.44	0.61
Wood or forest land:					
Thin stand, poor cover, no mulch		—*	0.34	0.59	0.70
Good cover		—*	—*	0.45	0.59
Open spaces, lawns, parks, golf courses, cemeteries					
Good conditions: grass cover on 75% or more of the area		—*	0.25	0.51	0.65
Fair conditions: grass cover on 50% to 75% of the area		—*	0.45	0.63	0.74
Commercial and business areas (85% impervious)		0.84	0.90	0.93	0.96
Industrial districts (72% impervious)		0.67	0.81	0.88	0.92
Residential:					
Average Lot Size	Average % Impervious				
1/8 acre or less	65	0.59	0.76	0.86	0.90
1/4 acre	38	0.25	0.49	0.67	0.78
1/3 acre	30	—*	0.49	0.67	0.78
1/2 acre	25	—*	0.45	0.65	0.76
1 acre	20	—*	0.41	0.63	0.74
Paved parking lots, roofs, driveways, etc.		0.99	0.99	0.99	0.99
Streets and roads:					
Paved with curbs and storm sewers		0.99	0.99	0.99	0.99
Gravel		0.57	0.76	0.84	0.88
Dirt		0.49	0.69	0.80	0.84

NOTES:

Values are based on S.C.S. definitions and are average values.

Values indicated by “—” should be determined by the design engineer based on site characteristics.

Source: New Jersey Department of Environmental Protection, Technical Manual for Stream Encroachment, August 1984, revised 1995.

Table B-4. Roughness Coefficients (Manning’s “n”) for Overland Flow

Source: U.S. Army Corps of Engineers, HEC-1 Users Manual

Surface Description	n
Dense growth	0.4 to 0.5
Pasture	0.3 to 0.4
Lawns	0.2 to 0.3
Bluegrass sod	0.2 to 0.5
Short grass prairie	0.1 to 0.2
Sparse vegetation	0.05 to 0.13
Bare clay-loam soil (eroded)	0.01 to 0.03
Concrete/asphalt	
Very shallow depths (less than 1/4 inch)	0.10 to 0.15
Small depths (1/4 inch to several inches)	0.05 to 0.10

Roughness Coefficients (Manning’s “n”) for Channel Flow

Reach Description	n
Natural stream, clean, straight, no rifts or pools	0.03
Natural stream, clean, winding, some pools or shoals	0.04
Natural stream, winding, pools, shoals, stony with some weeds	0.05
Natural stream, sluggish deep pools and weeds	0.07
Natural stream or swale, very weedy or with timber underbrush	0.10
Concrete pipe, culvert or channel	0.012
Corrugated metal pipe	0.012 to 0.027 ⁽¹⁾
High Density Polyethylene (HDPE) Pipe	
Corrugated	0.021 to 0.029 ⁽²⁾
Smooth-lined	0.012 to 0.020 ⁽²⁾

NOTES:

- (1) Depending upon type, coating and diameter.
- (2) Values recommended by the American Concrete Pipe Association, check manufacturer’s recommended value.