

Table 2-2a Runoff curve numbers for urban areas ^{1/}

Cover type and hydrologic condition	Cover description	Curve numbers for hydrologic soil group				
		A	B	C	D	
<i>Fully developed urban areas (vegetation established)</i>						
Open space (lawns, parks, golf courses, cemeteries, etc.) ^{3/} :						
Poor condition (grass cover < 50%)		68	79	86	89	
Fair condition (grass cover 50% to 75%)		49	69	79	84	
Good condition (grass cover > 75%)		39	61	74	80	
Impervious areas:						
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98	
Streets and roads:						
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98	
Paved; open ditches (including right-of-way)		83	89	92	93	
Gravel (including right-of-way)		76	85	89	91	
Dirt (including right-of-way)		72	82	87	89	
Western desert urban areas:						
Natural desert landscaping (pervious areas only) ^{4/}		63	77	85	88	
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96	
Urban districts:						
Commercial and business		85	89	92	94	
Industrial		72	81	88	91	
Residential districts by average lot size:						
1/8 acre or less (town houses)		65	77	85	90	
1/4 acre		38	61	75	83	
1/3 acre		30	57	72	81	
1/2 acre		25	54	70	80	
1 acre		20	51	68	79	
2 acres		12	46	65	77	
<i>Developing urban areas</i>						
Newly graded areas (pervious areas only, no vegetation) ^{5/}						
		77	86	91	94	
Idle lands (CN's are determined using cover types similar to those in table 2-2c).						

¹ Average runoff condition, and $I_a = 0.2S$.² The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.³ CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.⁴ Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage ($CN = 98$) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.⁵ Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b Runoff curve numbers for cultivated agricultural lands ^{1/}

Cover type	Treatment ^{2/}	Cover description	Hydrologic condition ^{3/}	Curve numbers for hydrologic soil group			
				A	B	C	D
Fallow	Bare soil		—	77	86	91	94
	Crop residue cover (CR)		Poor	76	85	90	93
			Good	74	83	88	90
Row crops	Straight row (SR)		Poor	72	81	88	91
			Good	67	78	85	89
	SR + CR		Poor	71	80	87	90
			Good	64	75	82	85
	Contoured (C)		Poor	70	79	84	88
			Good	65	75	82	86
	C + CR		Poor	69	78	83	87
			Good	64	74	81	85
	Contoured & terraced (C&T)		Poor	66	74	80	82
			Good	62	71	78	81
	C&T+ CR		Poor	65	73	79	81
			Good	61	70	77	80
Small grain	SR		Poor	65	76	84	88
			Good	63	75	83	87
	SR + CR		Poor	64	75	83	86
			Good	60	72	80	84
	C		Poor	63	74	82	85
			Good	61	73	81	84
	C + CR		Poor	62	73	81	84
			Good	60	72	80	83
	C&T		Poor	61	72	79	82
			Good	59	70	78	81
Close-seeded or broadcast legumes or rotation meadow	C&T+ CR		Poor	60	71	78	81
			Good	58	69	77	80
	SR		Poor	66	77	85	89
			Good	58	72	81	85
	C		Poor	64	75	83	85
			Good	55	69	78	83
meadow	C&T		Poor	63	73	80	83
			Good	51	67	76	80

^{1/} Average runoff condition, and $I_a=0.2S$ ^{2/} Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.^{3/} Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good $\geq 20\%$), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c Runoff curve numbers for other agricultural lands^{1/}

Cover type	Cover description	Hydrologic condition	Curve numbers for hydrologic soil group			
			A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. ^{2/}	Poor	68	79	86	89	
	Fair	49	69	79	84	
	Good	39	61	74	80	
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78	
Brush—brush-weed-grass mixture with brush the major element. ^{3/}	Poor	48	67	77	83	
	Fair	35	56	70	77	
	Good	30 ^{4/}	48	65	73	
Woods—grass combination (orchard or tree farm). ^{5/}	Poor	57	73	82	86	
	Fair	43	65	76	82	
	Good	32	58	72	79	
Woods. ^{6/}	Poor	45	66	77	83	
	Fair	36	60	73	79	
	Good	30 ^{4/}	55	70	77	
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86	

¹ Average runoff condition, and $I_a = 0.2S$.² *Poor*: <50% ground cover or heavily grazed with no mulch.*Fair*: 50 to 75% ground cover and not heavily grazed.*Good*: > 75% ground cover and lightly or only occasionally grazed.³ *Poor*: <50% ground cover.*Fair*: 50 to 75% ground cover.*Good*: >75% ground cover.⁴ Actual curve number is less than 30; use CN = 30 for runoff computations.⁵ CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.⁶ *Poor*: Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.*Fair*: Woods are grazed but not burned, and some forest litter covers the soil.*Good*: Woods are protected from grazing, and litter and brush adequately cover the soil.

Table 2-2d Runoff curve numbers for arid and semiarid rangelands ^{1/}

Cover type	Cover description	Hydrologic condition ^{2/}	Curve numbers for hydrologic soil group		
			A ^{3/}	B	C
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor		63	77	85
	Fair		55	72	81
	Good		49	68	79

¹ Average runoff condition, and $I_a = 0.2S$. For range in humid regions, use table 2-2c.

² Poor: <30% ground cover (litter, grass, and brush overstory).

Fair: 30 to 70% ground cover.

Good: > 70% ground cover.

³ Curve numbers for group A have been developed only for desert shrub.