

Surface Description		n ¹
Smooth Surfaces (concrete, asphalt, gravel, bare soil)		0.011
Fallow (no residue)		0.05
Cultivated Soils	Residue cover ≤ 20%	0.06
	Residue cover > 20%	0.17
Grass	Short grass prairie	0.15
	Dense grasses ²	0.24
	Bermuda grass	0.41
Range (natural)		0.13
Woods ³	Light underbrush	0.40
	Dense underbrush	0.80

¹ *The n values are a composite of information compiled by Engman (1986).*

² *Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass and native grass mixtures.*

³ *When selecting n, consider cover to a height of about 300 mm. This is the only part of the plant cover that will obstruct sheet flow.*

ROUGHNESS COEFFICIENTS (MANNING'S n) FOR SHEET FLOW

Figure 29-7B