

15A NCAC 04B .0109 STORMWATER OUTLET PROTECTION

(a) Persons shall provide a design for the land-disturbing activity so that the post-construction velocity of the ten-year storm runoff in the receiving stormwater conveyance to, and including, the discharge point, does not exceed the greater of:

- (1) the velocity established by the table in Paragraph (d) of this Rule; or
- (2) the projected velocity of the ten-year storm runoff in the receiving stormwater conveyance prior to development.

If the projected conditions in Subparagraphs (1) or (2) of this Paragraph cannot be met, then the receiving stormwater conveyance to, and including, the discharge point shall be designed and constructed to withstand the expected velocity anywhere the velocity exceeds the velocity prior to development by ten percent.

(b) When conditions of this Rule can be met, the Commission shall allow alternative measures to control downstream erosion, including:

- (1) compensation for increased runoff from areas rendered impervious by designing measures to promote infiltration;
- (2) avoiding increases in stormwater discharge velocities by using vegetated or roughened swales and waterways in place of closed drains and paved sections;
- (3) providing energy dissipators at storm drainage outlets to reduce flow velocities to the discharge points; or
- (4) protecting stormwater conveyances subject to accelerated erosion by improving cross sections or providing erosion-resistant lining.

(c) This Rule shall not apply when stormwater discharge velocities will not result in accelerated erosion in the receiving stormwater conveyance or discharge point.

(d) The following table sets maximum permissible velocity for storm water discharges:

Material	Maximum Permissible Velocities in feet and Meters Per Second*	
	F.P.S.	M.P.S.
Fine Sand (noncolloidal)	2.5	.8
Sandy Loam (noncolloidal)	2.5	.8
Silt Loam (noncolloidal)	3.0	.9
Ordinary Firm Loam	3.5	1.1
Fine Gravel	5.0	1.5
Stiff Clay (very colloidal)	5.0	1.5
Graded, Loam to Cobbles (noncolloidal)	5.0	1.5
Graded, Silt to Cobbles (colloidal)	5.5	1.7
Alluvial Silts (noncolloidal)	3.5	1.1
Alluvial Silts (colloidal)	5.0	1.5
Coarse Gravel (noncolloidal)	6.0	1.8
Cobbles and Shingles	5.5	1.7
Shales and Hard Pans	6.0	1.8

*For sinuous channels, multiply allowable velocity by 0.95 for slightly sinuous, by 0.9 for moderately sinuous channels, and by 0.8 for highly sinuous channels. Source: Adapted from recommendations by Special Committee on Irrigation Research, American Society of Civil Engineers, 1926, for channels with straight alignment.

History Note: Authority G.S. 113A-54(b); 113A-54(c);
Eff. February 1, 1976;
Amended Eff. February 1, 1992; May 1, 1990; November 1, 1984; July 1, 1978;
Readopted Eff. April 1, 2020.