

15A NCAC 04B .0109 STORMWATER OUTLET PROTECTION

(a) Persons shall conduct land disturbing activity so that the post construction velocity of the ten year storm run off in the receiving watercourse to 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 velocity of the ten year storm run off in the receiving watercourse prior to development.

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

(b) Acceptable Management Measures. The commission recognizes that management of storm water run off to control downstream erosion constitutes a developing technology and consequently invites the use of innovative techniques shown to produce successful results. Alternatives include:

- (1) Compensate for increased run off from areas rendered impervious by designing measures to promote infiltration.
- (2) Avoid increases in storm water discharge velocities by using vegetated or roughened swales and waterways in place of closed drains and paved sections.
- (3) Provide energy dissipators at storm drainage outlets to reduce flow velocities to the discharge points.
- (4) Protect watercourses subject to accelerated erosion by improving cross sections and/or providing erosion-resistant lining.

(c) Exceptions. This Rule shall not apply when storm water discharge velocities will not create an erosion problem in the receiving watercourse.

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

Material	Maximum Permissible Velocities For	
	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

Source: Adapted from recommendations by Special Committee on Irrigation Research, American Society of Civil Engineers, 1926, for channels with straight alignment. 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.

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