
**Options for Meeting Diffuse Flow Provisions of the
Stormwater and Riparian Buffer Protection Programs**

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	<u>Initials</u>	<u>Date</u>
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Effective immediately, the Division of Energy, Mineral and Land Resources and the Division of Water Resources will consider Options 1-4 as meeting the diffuse flow provisions of the BOTH the stormwater rules AND the various riparian buffer rules. Option 5 will be allowed for meeting the diffuse flow provisions of the stormwater rules but is not currently allowed for meeting the diffuse flow provisions of the buffer rules

The water quality design storm intensity for diffuse flow is the one inch/hour storm for stormwater conveyed directly from the drainage area. If a diffuse flow device receives flow from an upslope BMP, then it should be designed based on the peak discharge from the BMP during the water quality design storm depth.

Flows in excess of the discharge rate from either the drainage area or the BMP should not be directed to the diffuse flow device. Instead, excess flows should be discharged through the buffer provided that the flows are non-erosive for the 10-year storm. Please note that any new stormwater bypasses from a level spreader through a protected riparian buffer require a buffer authorization from the Division of Water Resources or the local buffer protection authority.

Please see the options listed in the table below.

Any questions regarding the use of these diffuse flow options can be directed to Annette Lucas at (919) 807-6381.

Option	Explanation
1	Design a Level Spreader-Vegetated Filter Strip (LS-VFS) in accordance with Chapter 8 of the BMP Manual. Per the BMP Manual, the LS-VFS may be designed to handle the one inch/hour storm intensity and larger storms may be discharged non-erosively. Also per the BMP Manual, alternate designs that create uniform shallow flow across a vegetated filter strip in an equivalent or better manner will be approved.
2	Provide a BMP that removes a minimum of 30% of TN removal outside of the vegetated or riparian buffer to treat the design storm before it is discharged through the buffer.
3	(For lower SHWT and soils with good infiltration rates) Design the vegetated conveyance to infiltrate the design storm.
4	(For high SHWT and/or soils with poor infiltration rates) Design the vegetated conveyance as a wetland swale with an appropriately designed outlet system.
5	Swales that discharge less than 0.5 cfs during the design storm shall be allowed to discharge through a stormwater buffer outside of SA waters without any further requirements. This option is NOT currently allowed if the buffer is protected by a state riparian buffer rule (Neuse, Tar-Pamlico, Jordan, Randleman, Catawba, and Goose Creek).

Explanation

Diffuse flow is not defined in the 2H .1000 rules; however, the following explanation of diffuse flow is provided in each of the Riparian Buffer Protection rules found in 15A NCAC 2B .0233 (Neuse River Basin), .0259 (Tar-Pamlico River Basin), .0243 (Catawba Mainstem), .0250 (Randleman Lake), .0605 (Goose Creek), .0267 (Jordan Lake).

- (5) DIFFUSE FLOW REQUIREMENT. Diffuse flow of runoff shall be maintained in the riparian buffer by dispersing concentrated flow and reestablishing vegetation.
 - (a) Concentrated runoff from new ditches or manmade conveyances shall be converted to diffuse flow before the runoff enters the Zone 2 of the riparian buffer.
 - (b) Periodic corrective action to restore diffuse flow shall be taken if necessary to impede the formation of erosion gullies.

- (6) TABLE OF USES. The following chart sets out the uses and their designation under this Rule as exempt, allowable, allowable with mitigation, or prohibited. The requirements for each category are given in Item (7) of this Rule.

	Exempt	Allowable	Allowable with Mitigation	Prohibited
Drainage ditches, roadside ditches and stormwater outfalls through riparian buffers: <ul style="list-style-type: none"> • Existing drainage ditches, roadside ditches, and stormwater outfalls provided that they are managed to minimize the sediment, nutrients and other pollution that convey to waterbodies • New drainage ditches, roadside ditches and stormwater outfalls provided that a stormwater management facility is installed to control nitrogen and attenuate flow before the conveyance discharges through the riparian buffer • New drainage ditches, roadside ditches and stormwater outfalls that do not provide control for nitrogen before discharging through the riparian buffer • Excavation of the streambed in order to bring it to the same elevation as the invert of a ditch 	X	X		X X

In the past, the state has interpreted the diffuse flow language in the buffer rules to mean that designers have two primary options to provide diffuse flow:

- Provide a Level Spreader-Vegetated Filter Strip (LS-VFS) in accordance with Chapter 8 of the BMP Manual. Per the BMP Manual, the LS-VFS may be designed to handle the one inch/hour storm and larger storms may be discharged non-erosively. (Option 1 above)
- Provide a BMP that removes a minimum of 30% of TN removal outside of the vegetated or riparian buffer to treat the design storm before it is discharged through the buffer. (Option 2 above)

The above table provides three additional options. Options 3 and 4 are intended to provide relatively low-cost approaches to providing treatment in the swale prior to discharge through a buffer. Option 5 provides an exemption to the diffuse flow provision in the stormwater rules for very low flows. As stated previously, the current wording in the riparian buffer rules does not allow the Division of Water Resources to provide an exemption to the diffuse flow requirements, even for low flows.