Date: March 14, 2018

From: Tom Schueler and David Wood, CSN

To: Urban Stormwater Work Group

Re: Request for Clarification on crediting of "Nested" BMPs

Participants at the February Washington Metro Area Stormwater Forum requested that the Urban Stormwater Workgroup clarify the crediting mechanisms for "nested" BMPs within the Phase 6 watershed model.

1. Definition of "Nested" BMPs:

For the purposes of this memo, a "nested" BMP refers to any Chesapeake Bay Program approved BMP that is implemented within the contributing drainage area of another Bay Program approved BMP.

Both BMPs may have been implemented at the same time as part of a new or redevelopment project. Both the nested BMP or downstream BMP could also be an older practice that may or may not already be receiving nutrient and sediment reductions in the Chesapeake Bay Watershed Model.

2. The Issue with "Nested" BMPs:

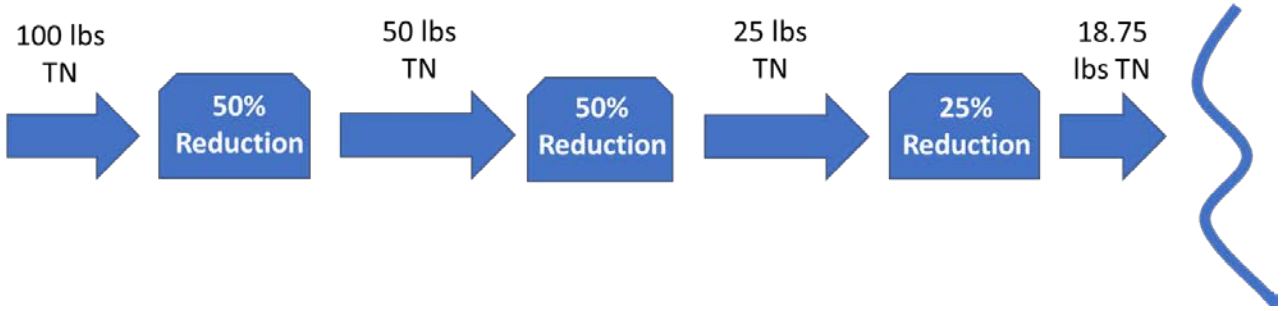
The most common issue with "nested" BMPs is that old stormwater BMPs, such as legacy ponds, are still reported to the Chesapeake Bay Program, even though better performing practices are available and being installed within the same land-river segment. If a new LID practice is installed within the contributing drainage area of an existing stormwater pond, the effectiveness of the LID practice is reduced within the Model.

With significant nutrient reductions, particularly TN, needed by all jurisdictions by 2025, it is important that every BMP be counted and its efficiency maximized. BMP verification requirements are also forcing many communities to make decisions about which BMPs to inspect, and which to allow to expire. Better understanding how "nested" BMPs are credited, will help with each of these planning decisions.

3. Current Model Simulation of "Nested" BMPs:

In the Phase 6 Chesapeake Bay Watershed Model, all BMPs are applied at the land-river segment scale. This means that within the Model, all BMPs implemented within the same land-river scale are technically "nested". If a BMP is nested, its reduction efficiency is multiplicative with the other BMPs in the same land-river segment. For example, if three BMPs that earn TN reductions of 50%, 50%, and 25% are nested, those reductions will be multiplied by each other, as illustrated in Figure 1.

Figure 1. Reductions from nested BMPs are multiplicative.



The alternative to reporting each nested BMP separately, is to report all nested BMPs using the Stormwater Performance Standards method. Using the stormwater performance standards, you can select the curve for the type of practice (ST or RR) that comprise the majority of the runoff capture volume for the project site as a whole. This reduces the multiplicative nature of the BMPs, because only one practice is being reported for a large amount of treatment volume. More information on using the stormwater performance standards can be found in this Frequently Asked Questions Document.