Technical Requirements for Entering the Shoreline Management Practice into Scenario Builder and the Watershed Model

Presented to WTWG for Review and Approval: June, 2014

Background: In June, 2013 the Water Quality Goal Implementation Team (WQGIT) agreed that each BMP expert panel would work with CBPO staff and the Watershed Technical Workgroup (WTWG) to develop a technical appendix for each expert panel report. The purpose of this technical appendix is to describe how the Shoreline Management Expert Panel's recommendations will be integrated into the modeling tools including NEIEN, Scenario Builder and the Watershed Model.

Q1. What are the reductions a jurisdiction can claim for Shoreline Management practices implemented after the calibration period (post-2005) in the Phase 5.3.2 Watershed Model?

A1. The panel recommended that all new shoreline management projects could receive credit for reducing nutrients and sediment through four distinct protocols which target different aspects of typical shoreline management designs. The table below lists each protocol and the categories of pollutants that can be reduced by each protocol. A single project can qualify for reductions through multiple protocols. The specific nutrient reductions for each protocol are not provided in this table because they vary from site to site (p. 32-36).

Table 1. Pollutant Reductions Available from Each Protocol

Protocol	Total Nitrogen	Total Phosphorus	Total Suspended Sediment
Protocol 1 - Prevented Sediment	Y	Y	Y
Protocol 2 - Denitrification	Y	N	N
Protocol 3 - Sedimentation	N	Y	Y
Protocol 4 - Marshfield Ratios	Y	Y	N

Q2. What types of projects are eligible to receive credit in the Phase 5.3.2 Watershed Model?

A2. The panel defined Shoreline Management as "any tidal shoreline practice that prevents and/or reduces tidal sediments to the Bay." (p. 8) Shoreline Management practices can include living shorelines, revetments and/or breakwater systems and bulkheads and seawalls. Additionally, only practices with vegetative surface areas can receive credit for Protocol 2, Protocol 3 and Protocol 4. Regardless of the design, all practices must meet the qualifying conditions described in the Table 2 below (p.25).

Table 2. Shoreline Management Criteria to Receive Pollutant Load Reductions

Shoreline Management Practice	The Practice Must Meet these Criteria for TMDL Pollutant Load Reduction[1]
Living Shoreline – a) nonstructural; b) hybrid system including a sill; and c) hybrid system including a breakwater	1. The site is currently experiencing shoreline erosion or is replacing existing armor. The site was graded, vegetated, and excess sediment was removed or used.[2] AND 2. When a marsh fringe habitat (a or b) or beach/dune habitat (c) is created, enhanced, or maintained.
Revetment AND/OR Breakwater system without a living shoreline	1. The site is currently experiencing shoreline erosion. The site was graded, vegetated, and excess sediment was removed or used.[2] AND 2. A living shoreline is not technically feasible or practicable as determined by substrate, depth, or other site constraints. AND 3. When the breakwater footprint would not cover SAV, shellfish beds, and/or wetlands.
Bulkhead/Seawalls	1. The site is currently experiencing shoreline erosion. AND 2. The site consists of port facilities, marine industrial facilities, or other marine commercial areas where immediate offshore depth (e.g., depths deeper than 10 feet 35 feet from shore) precludes living shoreline stabilization or the use of a breakwater or revetment.

[1]Projects that impact the Chesapeake Bay Preservation Act protected vegetation without mitigation receive no Chesapeake Bay TMDL pollutant load reduction.

[2]Bank analysis that demonstrates the site has bank stability and does not have erosion can serve to meet this qualifying condition. This should be coordinated with the local reporting authority to ensure proper methods, reporting, and requirements are done and are accepted by that authority so that the project meets this basic qualifying condition.

Q3. What do jurisdictions need to submit to NEIEN in order to qualify for reductions under the protocols listed in table 1?

A3. Jurisdictions need to submit estimated pounds of pollutants reduced through each protocol. Section 5.2 of the report provides detailed calculation steps to estimate pollutants reduced by each protocol, and Section 5.3 provides detailed examples of calculations. Please note that while jurisdictions will only report total reductions for each protocol to NEIEN, they will need to collect many more site-specific parameters to calculate load reductions for each project.

Below is a complete list of the parameters that should be submitted to NEIEN for each project.

- BMP Name: Shoreline Management
- Measurement Name and associated unit amount: Length Restored; Acres Planted; Protocol 1 TN; Protocol 1 TP; Protocol 1 TSS; Protocol 2 TN; Protocol 3 TP; Protocol 3 TSS; Protocol 4 TN; Protocol 4 TP
- Land Use: N/A; this BMP will be placed in the tidal receiving waters and be attributed as such.
- Location: Approved NEIEN geographies: County; County (CBWS Only); Hydrologic Unit Code (HUC12, HUC10, HUC8, HUC6, HUC4), State (CBWS Only)
- Date of Implementation: year the project was completed

Q4. How will the modeling tools estimate the actual load reductions from each project?

A4. The modeling tools will simulate all delivered loads to the Bay from upland sources. Reductions for TN, TP and TSS submitted under each project will be deducted from the delivered loads to the Bay. This will have the effect of reducing the loads delivered from the Watershed Model to the WQSTM.

Q5. Is this BMP an annual or cumulative practice?

A5. Protocols 1, 2 and 3 are all cumulative practices. Protocol 4 will be an annual practice. The panel recommended that the planting of vegetation at these sites be given a one-time credit for uptake of TN and TP (p. 31). Jurisdictions should report all four protocols only at the time of implementation (and at times of subsequent maintenance).

Q6. How will the additional parameters needed to calculate the reductions from stream restoration be used by CBPO Staff?

A6. These additional parameters will not be submitted to NEIEN, and will not be used to calculate load reductions. However, CBPO Staff may request additional parameters for a project on a case-by-case basis if reported reductions vary significantly from those described within the report using default values.

Q7. How will the existing Shoreline Erosion Control practices be simulated in the modeling tools?

A7. To date, no jurisdiction has submitted Shoreline Erosion Control in a progress or planning scenario. This BMP will be removed. All new Shoreline Management projects should be reported under the new BMP name.

Q8. Is there a default reduction for Shoreline Erosion Control practices that can be applied if jurisdictions cannot report the individual protocols described within the report?

A8. No. All new Shoreline Management projects should be reported with site-specific pollutant reductions using the equations provided in section 5.3 of the report. Jurisdictions can take advantage of the default values for some of the parameters when calculating the pollutant reductions.

Q9. How will the CBPO ensure that the total sediment reductions from Shoreline Management projects do not exceed the available loads within the WQSTM?

A9. While the panel stated it was unlikely that sediment reductions could ever exceed available loads within the WQSTM, they recommended that the combined sediment reductions from all projects should not exceed 33% of the WQSTM fine sediment shore erosion load from a state basin. The CBPO will monitor projects as they are submitted to ensure that reductions do not exceed this threshold. If the sum of reductions exceeds the threshold, then reductions will be held at 33% of the WQSTM loads for a state basin (p. 144).

Q10. Where do projects need to be located to receive credit for this BMP as opposed to for the Stream Restoration BMP?

A10. Jurisdictions should only submit projects that are adjacent to tidal waters. All restoration activities which limit sediment erosion on non-tidal waters should be submitted as Stream Restoration. The panel included a map of the modeling segments adjacent to tidal water on p. 10 of the report.