

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

Presented to WTWG for Review and Approval: July 9, 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 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's default nutrient and sediment reductions.

**Table 1. Pollutant Reductions Available from Each Protocol**

Protocol	Submitted Unit	Total Nitrogen (lbs per unit)	Total Phosphorus (lbs per unit)	Total Suspended Sediment (lbs per unit)
Protocol 1 - Prevented Sediment	Linear Feet	Project-Specific	Project-Specific	Project-Specific
Protocol 2 – Denitrification	Acres of re-vegetation	85	NA	NA
Protocol 3 - Sedimentation	Acres of re-vegetation	NA	5.289	6,959
Protocol 4 – Marsh Redfield Ratio	Acres of re-vegetation	6.83	0.3	NA
Non-conforming/Existing Practices	Linear Feet	0.02*	0.0025*	2*

Source: Table 1, pg. 3 of the expert panel report

\*The expert panel recommended using the existing default shoreline erosion rates for all non-conforming/existing practices.

### Q2. Is there a default credit available for jurisdictions for planning purposes and practices that do not have detailed reporting?

A2. Yes. A jurisdiction may claim the existing default pound reductions listed in Table 1 above for planning purposes or for non-conforming or existing practices.

### Q3. What types of projects are eligible to receive credit in the Phase 5.3.2 Watershed Model?

**A3.** 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 <sup>1</sup>
Living Shoreline – a) nonstructural; b) hybrid system including a sill; and c) hybrid system including a breakwater	<ol style="list-style-type: none"> <li>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.<sup>2</sup></li> </ol> <p>AND</p> <ol style="list-style-type: none"> <li>2. When a marsh fringe habitat (a or b) or beach/dune habitat (c) is created, enhanced, or maintained.</li> </ol>
Revetment AND/OR Breakwater system without a living shoreline	<ol style="list-style-type: none"> <li>1. The site is currently experiencing shoreline erosion. The site was graded, vegetated, and excess sediment was removed or used.<sup>2</sup></li> </ol> <p>AND</p> <ol style="list-style-type: none"> <li>2. A living shoreline is not technically feasible or practicable as determined by substrate, depth, or other site constraints.</li> </ol> <p>AND</p> <ol style="list-style-type: none"> <li>3. When the breakwater footprint would not cover SAV, shellfish beds, and/or wetlands.</li> </ol>
Bulkhead/Seawalls	<ol style="list-style-type: none"> <li>1. The site is currently experiencing shoreline erosion.</li> </ol> <p>AND</p> <ol style="list-style-type: none"> <li>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.</li> </ol>
<p><sup>1</sup>Projects that impact the Chesapeake Bay Preservation Act protected vegetation without mitigation receive no Chesapeake Bay TMDL pollutant load reduction.</p> <p><sup>2</sup>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.</p>	

**Q4. Can a shoreline management project qualify for multiple protocols?**

**A4.** Yes. Practices that have BOTH vegetated areas and are designed to prevent sediment erosion may qualify for reductions from all four protocols. These reductions will be added together in Scenario

Builder. Practices that do not have vegetated areas may only qualify for Protocol 1 – Prevented Sediment.

**Q5. What do jurisdictions need to submit to NEIEN in order to qualify for reductions under the protocols listed in Table 1?**

**A5.** Below is a complete list of the parameters that should be submitted to NEIEN for each project.

- BMP Name: Shoreline Management; Shoreline Non-Vegetated; Shoreline Vegetated
- Measurement Name and associated unit amount: Length Restored; Acres Planted; Protocol 1 N; Protocol 1 P; Protocol 1 TSS
- Land Use: N/A; this BMP will be simulated adjacent to or within tidal waters.
- Location: Approved NEIEN geographies: Latitude/Longitude (preferred); County; County (CBWS Only); Hydrologic Unit Code (HUC12, HUC10, HUC8, HUC6, HUC4), State (CBWS Only)
- Date of Implementation: year the project was completed

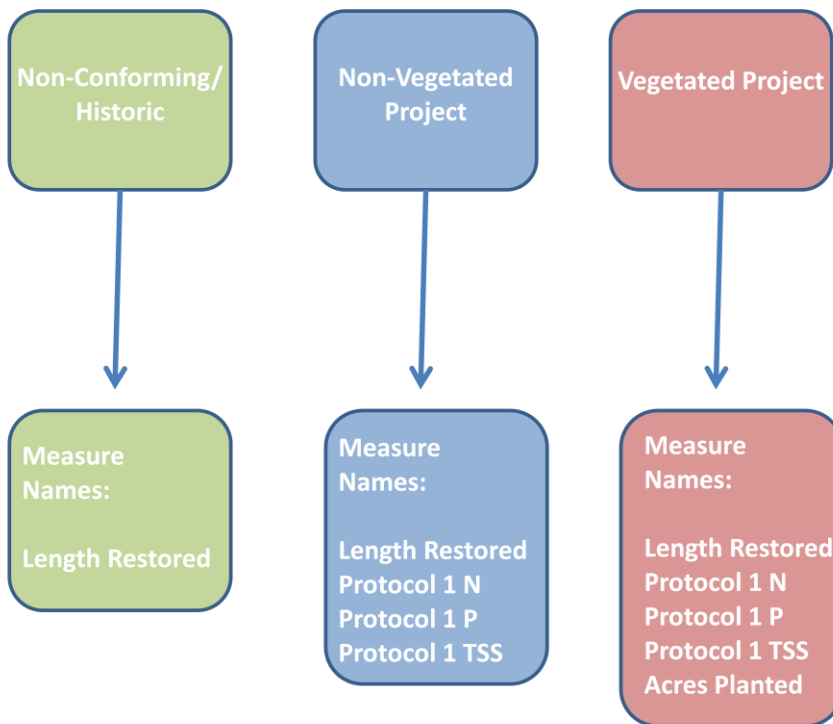
**Q6. How should a jurisdiction report a practice with no vegetation?**

**A6.** If jurisdictions wish to receive credit for non-vegetative shoreline management practices beyond the default, non-conforming rates, they should report the Length Restored AND Protocol 1 N, Protocol 1 P and Protocol 1 TSS measurement names to NEIEN. The values for each of these measurement names can be found using the equations presented in Section 5.2.1 of the expert panel report (pg. 32-35). See the flowchart below question 7 for a detailed description of NEIEN submission needs.

**Q7. How should a jurisdiction report a practice with vegetation?**

**A7.** If a jurisdiction wishes to claim credit beyond the default, non-conforming rates for vegetative shoreline management practices, they should report Length Restored, Acres Planted AND Protocol 1 N, Protocol 1 P, and Protocol 1 TSS measurement names to NEIEN. The values for each of the Protocol 1 measurement names can be found using the equations presented in Section 5.2.1 of the expert panel report (pg. 32-35). See the flowchart below question 7 for a detailed description of NEIEN submission needs.

### Flowchart of NEIEN Reporting Requirements



#### **Q8. How will the modeling tools estimate the actual load reductions from each project?**

**A8.** Scenario Builder will simulate the load reductions at the edge-of-stream, similar to those reductions simulated for point sources. These reductions will be associated with a land-river segment, but also with a water quality modeling cell so that loads may be reduced in the appropriate tidal segment.

#### **Q9. Is this BMP an annual or cumulative practice?**

**A9.** The BMP is a cumulative practice. Jurisdictions should report all measurement names only at the time of installation. The practice will continue to receive credit in the model in future years.

#### **Q10. How will the existing Shoreline Erosion Control practices be simulated in the modeling tools?**

**A10.** 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.

#### **Q11. How will the CBPO ensure that the total sediment reductions from Shoreline Management projects do not exceed the available loads within the WQSTM?**

**A11.** 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).

**Q12. Where do projects need to be located to receive credit for this BMP as opposed to for the Stream Restoration BMP?**

**A12.** 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 following the Guidelines of the Expert Panel Report for Stream Restoration projects. The panel included a map of the modeling segments adjacent to tidal water on p. 10 of the report.

**Q13. Can jurisdictions submit historic shoreline management practices for credit?**

**A13.** Jurisdictions can submit any practices that were implemented post-2008. The Water Quality Sediment Transport Model already accounts for shoreline practices in place as of 2008.