Recommendations of the Expert Panel on Shoreline Management Erosion Control

to the

Watershed Technical Work Group

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Table 1. Summary of shoreline management pollutant load reduction for individual projects.

Protocol	Name	Units	Pollutants	Reduction Rate
1	Prevented Sediment	Pounds per year	Sediment TN, TP	• Measured TSS, TN and TP content in sediment prevented. • Calculated based on shoreline erosion with reductions for sand content and bank instability
2	Denitrification	Pounds per year	TN	• Measured TN removal for denitrification rate associated with vegetated area. • 85 lbs TN/acre/yr
3	Sedimentation	Pounds per year	Sediment and TP	• Measured TSS and TP removal rates associated with vegetated area. • 6,959 lbs TSS/acre/yr • 5.289 lbs TP/acre/yr
4	Marsh Redfield Ratio	Pounds	TN, TP	• Measured TN and TP removal rates associated with vegetated area. • Note that this is a one-time credit. • 205 lbs TN/acre • 9 lbs TP/acre

Default Rate added

- In cases when the shoreline management practice parameters are unavailable for the protocols recommended by the panel, such as in some planning efforts, historic projects, and/or nonconforming projects, then a default value can be used. The default values are 0.02 TN, 0.0025 TP, and 2 TSS in lbs per foot per year (Table 5).

Alternate Default Rate Based on Stream Protocols

Table 3. Edge-of-Stream 2011 Interim Approved Removal Rates per Linear Foot of Qualifying Stream Restoration (lb/ft/yr)

Source	TN	TP	TSS*
Interim CBP Rate	0.20	0.068	310 (56.11)*
Revised Interim Rate	0.075	0.068	248 (44.88)*

Derived from six stream restoration monitoring studies: Spring Branch, Stony Run, Powder Mill Run, Moore's Run, Beaver Run, and Beaver Dam Creek located in Maryland and Pennsylvania

*The removal rate for TSS is representative of edge-of-field (EOF) rates and is subject to a sediment delivery ratio (SDR) in the CBWM to determine the edge-of-stream (EOS) removal rate. This sediment delivery ratio is approximately 0.181 for non-coastal plain streams (shown in table) and 0.061 for coastal plain streams and its application to the TSS EOF rate is noted in parentheses. Additional information about the sediment delivery ratio is provided in Section 2.5 and Appendix B.

Protocol 4. Marsh Redfield Ratio

- Tidal marsh vegetation ties up TN and TP that would otherwise enter the Bay
- Summarized studies in the Bay and other relevant areas that quantified marsh Redfield ratio and aboveground and belowground production
- Literature review over 50 studies, summarized each study took the mean aboveground and belowground biomass, and converted to pounds TN/acre/yr and TP/acre/yr
- This pollutant removal rate is based on the net vegetation area increase
- Result
  - A ONE TIME CREDIT REALIZED IN YEAR ONE ONLY
  - 205 pounds TN/acre/yr
  - 9 lbs TP/acre/yr
- See also Appendix J

Redfield Ratio credit annualized

- Instead of a one time credit, the Watershed Technical Workgroup requested the pollutant load reduction be annualized over the expected life of the marsh. Therefore, the panel estimated the shoreline management practice lifespan was 30 years. Based on the lifespan, the panel recommended protocol 4 Marsh Redfield Ratio pollutant load reduction is of 6.83 pounds nitrogen/acre/yr and 0.3 pounds/phosphorus/acre/yr.

Questions/Comments

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