

Technical Memorandum

Significant Sediment Nonpoint Sources in the Upper Pocomoke River Watershed

The U.S. Environmental Protection Agency (EPA) requires that Total Maximum Daily Load (TMDL) allocations account for all significant sources of each impairing pollutant (CFR 2012). This technical memorandum identifies the significant nonpoint sources of sediment generated within the Maryland 8-Digit (MD 8-Digit) Upper Pocomoke River watershed. Detailed allocations are provided for those nonpoint sources included within the MD 8-Digit Upper Pocomoke River Sediment TMDL Contribution Load Allocation (LA). These are conceptual values that are designed to meet the TMDL thresholds. The State reserves the right to allocate the sediment TMDL among different sources in any manner that is reasonably calculated to protect aquatic life from sediment related impacts.

The MD 8-Digit Upper Pocomoke River Sediment TMDL is presented in terms of an average annual load established to ensure the support of aquatic life. The watershed was evaluated using two TMDL segments. TMDL Segment 1 represents the sediment loads generated in the Delaware portion of the Upper Pocomoke River watershed. TMDL Segment 2 represents the sediment loads generated in the Maryland portion of the Upper Pocomoke River watershed (i.e., the MD 8-Digit Upper Pocomoke River watershed). It has been determined that sediment is only impairing aquatic life in the 1st through 4th order tributary streams within the MD 8-Digit Upper Pocomoke River watershed and is not impairing aquatic life in the watershed's mainstem. Since the Delaware portion of the watershed drains to the Upper Pocomoke River mainstem in Maryland, the TMDL is being developed solely for the 1st through 4th order tributaries in the MD 8-Digit watershed, and no reductions are being applied to the Delaware portion of the Upper Pocomoke River watershed. Therefore, the Delaware portion of the watershed is only provided with an informational allocation equivalent to its baseline load, presented as an aggregate Upstream Delaware LA (see Sections 2.4, 4.2, and 4.5 for further details). The Upstream Delaware LA is not presented within this technical memorandum.

The computational framework chosen for the MD 8-Digit Upper Pocomoke River Sediment TMDL was the Chesapeake Bay Program Phase 5.3.2 (CBP P5.3.2) watershed model 2010 Progress Scenario *edge-of-stream* (EOS) sediment loads. Individual land-use EOS loads are calculated within the CBP P5.3.2 watershed model as a product of the land use area, land use target *edge-of-field* (EOF) loading rate, and loss from the EOF to the main channel (i.e., sediment delivery factor). For the 2010 Progress Scenario, Best Management Practice (BMP) data and reduction efficiencies are then subsequently applied to the EOS loads (US EPA 2010). Further details regarding general nonpoint source sediment load calculations can be found in Section 2.2.1 of the main report.

In order to attain the TMDL loading cap calculated for the watershed, constant reductions were applied to the predominant controllable sources (i.e., significant contributors of sediment to the stream system), independent of jurisdiction. If only these predominant sources are controlled, the

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TMDL can be achieved in the most effective, efficient, and equitable manner. Predominant sources typically include urban land, high till crops, low till crops, hay, and pasture, but additional sources could be controlled as well, in order to ensure that the TMDL is attained. High till crops, low till crops, hay, and urban land were identified as the predominant controllable sources in the MD 8-Digit Upper Pocomoke River watershed. Thus, constant reductions were applied to these sources. Forest is the only non-controllable source, as it represents the most natural condition in the watershed, and no reductions were applied to permitted process water sources, since such controls would produce no discernable water quality benefit when nonpoint sources and regulated stormwater sources comprise greater than 99% of the total watershed sediment load.

Although loads from urban land are defined as a predominant controllable source of sediment, within the MD 8-Digit Upper Pocomoke River watershed a portion of the sediment load from urban land is considered to be regulated under National Pollutant Discharge Elimination System (NPDES) Phase I and II stormwater permits. Therefore, this portion of the urban sediment is considered a point source that must be included in the Waste Load Allocation (WLA) portion of a TMDL (US EPA 2002). The remainder of the urban sediment load is assigned to the LA, and the reductions assigned to this portion of the urban sediment loading are defined in this technical memorandum. The reductions assigned to the urban stormwater sediment loads associated with the NPDES stormwater permits within the watershed are defined in the point source technical memorandum. See Sections 4.5 and 4/6 of the main TMDL report for further details.

Table 1 provides one possible scenario for the distribution of the annual nonpoint source sediment loads amongst the different nonpoint source sectors in the MD 8-Digit Upper Pocomoke River watershed. The source categories in Table 1 represents aggregates of multiple sources (e.g., crop is an aggregate of high till, low till, and hay).

Table 1: MD 8-Digit Upper Pocomoke River Sediment TMDL Allocation by Nonpoint Source Category

Nonpoint Source Category	Baseline Load (ton/yr)	LA (ton/yr)	Reduction (%)
Forest	291.3	291.3	0.0
Pasture	9.3	9.3	0.0
Crop	1,729.6	1,632.1	5.6
Extractive	6.4	6.4	0.0
Urban ¹	380.0	357.7	5.9
Total²	2,416.6	2,296.8	5.0

Notes: ¹ Nonpoint source baseline loading and LA represent the non-regulated urban sediment load (i.e., loading associated with urban areas in the watershed not regulated by an NPDES stormwater permit).

² The individual and total baseline loads and LAs are for the Maryland portion of the Upper Pocomoke River watershed only and do not include the Upstream Delaware baseline Load/LA.

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REFERENCES

CFR (Code of Federal Regulations). 2012. *40 CFR* 130.2(i).

http://edocket.access.gpo.gov/cfr_2011/julqtr/40cfr130.2.htm (Accessed April, 2012).

US EPA (U.S. Environmental Protection Agency). 2002. *Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs*. Washington, DC: U.S. Environmental Protection Agency.

_____. 2010. *Chesapeake Bay Phase 5.3 Community Watershed Model*. Annapolis, MD: U.S. Environmental Protection Agency, Chesapeake Bay Program Office. Also available at <http://ches.communitymodeling.org/models/CBPhase5/documentation.php#p5modeldoc>.