

Technical Memorandum

Point Sources of Sediment in the Non-Tidal Baltimore Harbor Watershed

The U.S. Environmental Protection Agency (USEPA) requires that Total Maximum Daily Load (TMDL) allocations account for all sources of each impairing pollutant (CFR 2012). This technical memorandum identifies the point sources of sediment in the Maryland 8-Digit (MD-02130903) Baltimore Harbor watershed. Wasteload allocations (WLA) are provided for National Pollutant Discharge Elimination System (NPDES) permitted wastewater and stormwater point sources. The State reserves the right to allocate the TMDLs among different sources in any manner that is reasonably calculated to protect aquatic life from sediment related impacts.

The wastewater category includes those loads generated by continuous discharge sources whose permits have total suspended solids (TSS) limits (i.e., contributors to the watershed sediment load). Wastewater permits that do not meet these conditions are considered *de minimis* in terms of the total watershed sediment load. There is one industrial wastewater facility within the non-tidal Baltimore Harbor watershed that has TSS limits in its permit. The WLA for the wastewater permit is calculated based on its TSS limit and corresponding flow information (See Sections 2.2.2 and 4.6 of the main report for further details). Sediment loads from both the Cox Creek Water Reclamation Facility (WRF) and Patapsco Wastewater Treatment Plant (WWTP) are not included in this analysis because they discharge into the tidal portion of the watershed, which is not included in this TMDL. Sediment loads from these facilities were addressed in the 2010 Chesapeake Bay TMDL for sediment in the PATMH segment.

Stormwater loads that are regulated under the National Pollutant Discharge Elimination System (NPDES) and are considered a point source that must be included in the Waste Load Allocation (WLA) portion of a TMDL (USEPA 2002). Stormwater permits are regulated based on Best Management Practices (BMPs) and do not include TSS limits. In the absence of TSS limits, the baseline loads for these NPDES regulated stormwater discharges are calculated using the loads from the urban land use within the watershed. The associated WLAs are calculated by applying reductions to the urban land use loads. These calculations are described in more detail below. The stormwater category in the Baltimore Harbor watershed includes Phase I and Phase II Municipal Separate Storm Sewer systems (MS4) permits as well as Other NPDES Regulated Stormwater. Other NPDES Regulated Stormwater permits include general stormwater discharges from industrial facilities and construction sites. All permits included in the WLA calculations are listed in Table 1.

Stormwater WLAs are estimated using a watershed model. The watershed model chosen for the non-tidal Baltimore Harbor Sediment TMDL was the Chesapeake Bay Program Phase 5.3.2 (CBP P5.3.2) watershed model 2009 Progress Scenario *edge-of-stream* (EOS) sediment loads. Within this TMDL, the NPDES regulated stormwater baseline sediment loads are represented by the urban land-use EOS loads associated with the NPDES stormwater permits within the

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watershed. Urban 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). BMP data and reduction efficiencies are then subsequently applied to calculate the final EOS loads (USEPA 2010). Further details regarding general sediment load calculations can be found in Section 2.2.1 of the main report.

In order to calculate the NPDES stormwater WLA, MDE further refined the CBP P5.3.2 urban land-use. For any given watershed, the refined CBP P5.3.2 land-use contains the specific level of detail needed to determine individual WLAs for Phase I jurisdictional MS4s, the State Highway Administration (SHA) Phase I MS4, and Phase II jurisdictional MS4s, and an aggregate WLA for “Other NPDES Regulated Stormwater” entities. The methods used by MDE to refine the CBP P5.3.2 urban land-use are described within MDE’s documentation, *CBP P5.3.2 Land-Use and MDE Urban Source Sector Delineation - Development Methodology* (MDE 2011).

Table 1 identifies the individual wastewater facilities that contribute to the watershed sediment load and provides the baseline load and allocation assigned to these facilities. Table 2 identifies all of the applicable NPDES stormwater permits in the Baltimore Harbor watershed. Table 3 provides the distribution of the NPDES Regulated Stormwater WLA in the Baltimore Harbor watershed amongst the permits identified in Table 2.

Table 1: Baltimore Harbor Sediment TMDL Wastewater Point Source WLAs

Facility Name	NPDES #	Permit Type	Baseline Load (ton/yr)	WLA (ton/yr)	Reduction (%)	MDL ton/day
Building Materials Corporation of America – GAF	MD0001988	Industrial	1	1	0	0

Table 2: Baltimore Harbor Watershed NPDES Stormwater Permits

NPDES Permit #	Facility Name	NPDES Regulated Stormwater WLA Sector
MD0068306	Anne Arundel County	County Phase I MS4
MD0068292	Baltimore City	County Phase I MS4
MD0068314	Baltimore County	County Phase I MS4
MD0068276	State Highway Administration	SHA Phase I MS4
MDR055501	State and Federal Phase II MS4	State and Federal Phase II MS4
MDE 12-SW-A	General Permit For Discharges of Stormwater Associated With Industrial Activity	Other NPDES Regulated Stormwater
MDRC	General Permit for Storm water Associated with Construction Activity	Other NPDES Regulated Stormwater
MDG49	General Discharge Permit For Discharges from Mineral Quarries, Borrow Pits, and Concrete and Asphalt Plants	Other NPDES Regulated Stormwater

Table 3: Baltimore Harbor Sediment TMDL Allocations for NPDES Regulated Stormwater WLAs

NPDES Regulated Stormwater	NPDES #	Baseline Load (ton/yr)	WLA (ton/year)	Reduction (%)	MDL (ton/day)
Anne Arundel County Phase I MS4	MD0068306	1,660	697	58	3.4
Baltimore City Phase I MS4	MD0068292	2,109	886	58	4.3
Baltimore County Phase I MS4	MD0068314	1,334	560	58	2.7
State Highway Administration	MD0068276	284	124	56	0.6
State and Federal Phase II MS4	MDR055501	467	202	57	1.0
Other NPDES Regulated Stormwater	N/A	950	600	37	2.0
TOTAL		6,804	3,069	55	14

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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).
- MDE (Maryland Department of the Environment). 2011. *CBP P5.3.2 Land-Use and MDE Urban Source Sector Delineation - Development Methodology*. Baltimore, MD: Maryland Department of the Environment.
- USEPA (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://www.chesapeakebay.net/what/programs/modeling/phase_5.3_watershed_model