Northeast and Northwest Branch Non-Tidal Anacostia River PCB TMDL

Source Document:	MDE (Maryland Department of the Environment). 2011. Total Maximum Daily Loads of Polychlorinated Biphenyls in the Northeast and Northwest Branches of the Nontidal Anacostia River, Montgomery and Prince George's Counties, Maryland. Document Version September 30, 2011.
Water Body Type:	Non-tidal stream reaches of the Northeast (NEB)and Northwest (NWB) Branches of the Anacostia River
Pollutant:	Polychlorinated biphenyls (PCBs)
Designated Uses:	Use I - Water Contact Recreation, Protection of Warm Water Aquatic Life. NWB: Use IV-Trout Waters NEB (Upper Beaverdam Creek) – High Quality
Size of Watershed:	127 square miles (combined watersheds)
Water Quality Standards:	Human Health – 0.64 ng/L Total PCB Fish tissue threshold 39 ng/g
Indicators:	Total PCBs
Analytical Approach:	Back calculation from downstream allocations on the basis of proportional contributions from landuses and clam study data
Date Approved:	September 2011

Introduction

This Total Maximum Daily Load (TMDL) was developed to address the 2002 listing of the NEB and NWB of the Anacostia River (Figure 1) for impairment due to PCBs. The majority of both the NEB and NWB are non-tidal. In 2006 a PCB TMDL was approved for the tidal portions of the Anacostia River, which included allocations for both the NEB and NWB tributaries. Analysis for this TMDL applied the tributary allocations identified in the Tidal TMDL for both branches and further identified allocations to source categories.

This fact sheet provides summary data related to the TMDL and includes specific information related to allocations made for Prince George's County, Maryland, regulated stormwater sources.

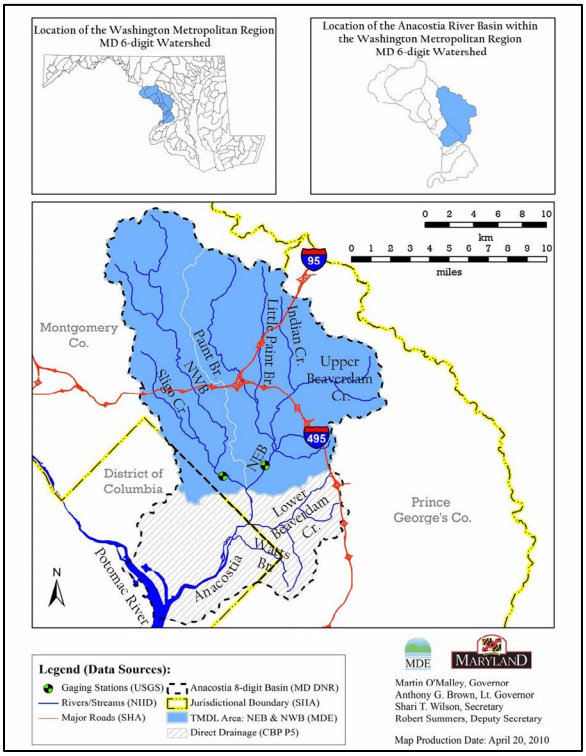

Figure 1. Anacostia River watershed.
Source: MDE 2011.

Problem Identification and Basis for Listing

Water column data collected between 2004 and 2005 demonstrated that the human health criterion (0.64 ng/L) was exceeded in both the NEB and NWB (Table 1). Appendix A of the report provides detailed information regarding the PCB data collected to confirm the impairment and support the TMDL development.

Table 1. Average tPCB levels from monitoring data

Tributary	Average tPCB (ng/L)
NEB	3.35
NWB	4.30

Source: MDE 2011.

Note: tPCB = total PCB.

Applicable Data

Historical water quality data was used to characterize the impairment and support modeling in the TMDL and in Appendices A and E. The TMDL development effort used water column concentration data, targeted sampling of wastewater treatment plant (WWTP) discharges, and a bivalve (clams) exposure study to contrast long-term conditions with ambient sampling.

Sources

The Tidal Potomac and Anacostia PCB TMDL provided baseline and allocated loads for both the NEB and NWB (Table 2).

Table 2. Tidal Potomac and Anacostia PCB TMDL allocations assigned to the NEB and NWB tributaries

Tributary	Baseline (g/yr)	Allocation (g/yr)	MOS (g/yr)
NEB	429	8.14	0.43
NWB	298	5.66	0.30

Source: MDE 2011.

Note: MOS = margin of safety.

The NEB and NWB Tributary TMDL further subdivides the allocations given in the Tidal TMDL among the following sources:

- WWTP
- Contaminated sites
  - 15 in NEB drainage
- Regulated stormwater
  - Small, medium, and large municipal separate storm sewer systems (MS4s)
  - Industrial stormwater discharges
  - Construction sites
- Nonregulated stormwater
- District of Columbia upstream watershed

State and federal properties were not explicitly considered in the TMDL; however, if they are permitted to discharge stormwater they may appear in Appendix C. Their loads are inherently considered in the regulated stormwater load.

Technical Approach

This TMDL used the allocations provided in the Tidal Potomac and Anacostia TMDL for both tributaries and was based on an understanding of existing WWTP loads[1] and contaminated site loads[2], back-calculated loads for regulated stormwater, nonregulated stormwater, and District upstream load.

The three calculated loads were determined using proportional contributions from each of these source categories in the NEB and NWB tributary drainage basins on the basis of a total PCB (tPCB) clam exposure study, the land cover area making up each source category, and a runoff coefficient for each land cover category. Formulas for these calculations are detailed in the TMDL report.

Areas regulated by the Maryland National Pollutant Discharge Elimination System (NPDES) stormwater permits were represented in this analysis by the following 2006 land cover classifications:

- Developed open space
- Low-intensity urban
- Medium-intensity urban
- High-intensity urban

Allocations

The NEB and NWB PCB TMDL allocations are presented by county for each tributary; however, the regulated stormwater allocation refers to all known NPDES stormwater dischargers within the County's portions of the NEB and NWB drainage basin (identified in Appendix C).

Table 3 shows the Regulated Stormwater Baseline Load and the Regulated Stormwater TMDL allocations for the County. For implementation of the

[1] Extrapolated from similar facilities' data and adjusted based on targeted sampling results.

[2] Calculated edge-of-field loads, then converted to edge-of-stream loads using the same RUSLE2-based methods as Maryland's non-tidal sediment TMDLs.

County's MS4 allocations, additional analysis will be needed to calculate the County's portion of the regulated stormwater allocation. If it is possible to identify the areas covered by construction and industrial stormwater permits, then by subtracting those from the remaining stormwater land cover areas and applying the formula for stormwater loads and runoff, the County's MS4 load could be identified. Required information includes the runoff coefficient for the stormwater land cover, the clam concentration for relevant subwatersheds, and the area of the County's MS4 stormwater lands. Tetra Tech has not identified whether and where the clam concentration data are presented in the TMDL; however, Figure 7 on page 16 shows the location of clam deployment sites and subbasins are color coded according to average clam tPCB concentration.

Table 3. NEB and NWB PCB TMDL – Prince George's County MS4 baseline and TMDL allocated loads

Regulated Stormwater Loads	Baseline (g/yr)	TMDL (g/yr)	% Reduction
NEB	277.12	3.77	98.64
NWB	93.0	1.77	98.10

Source: MDE 2011.

Reference

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