

Piscataway Creek Basin Fecal Coliform Bacteria TMDL

Source Document: MDE (Maryland Department of the Environment). 2006. Total Maximum Daily Loads of Fecal Bacteria for the Non-Tidal Piscataway Creek Basin in Prince George's County, Maryland FINAL. Document Version May 10, 2006, revised May 2018¹.

Water Body Type: Non-tidal stream reaches of the Piscataway Creek Basin in Maryland

Pollutant: Fecal coliform bacteria

Designated Uses: Use I-P – Water Contact Recreation, and Protection of Aquatic Life and Water Supply

Size of Watershed: 69 square miles
Water Quality Standards: *E. coli*: 126 MPN / 100 mL
 Steady state geometric mean
 Enterococci: 33 MPN / 100 mL

Indicators: *E. coli*

Analytical Approach: Flow duration curve with bacterial source tracking used to determine proportional contributions from sources.

Date Approved: Approved September 20, 2007

impairment in non-tidal Piscataway Creek basin. It is entirely within Prince George's County and large portions of Andrews Air Force Base lie within it (Figure 1).

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. Monitoring was conducted at two stations (PIS0045 and TIN0006) and allocations were made at this scale.

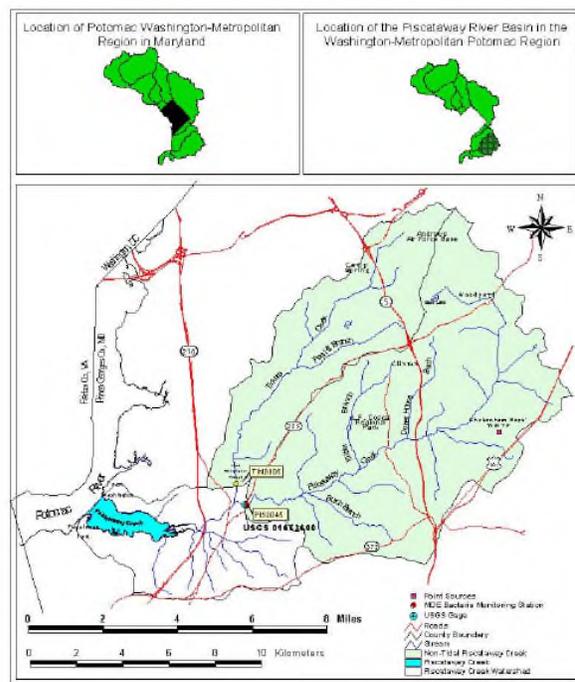


Figure 1. Piscataway Creek watershed

Source: MDE 2006.

Introduction

This Total Maximum Daily Load (TMDL) was developed to address the fecal coliform bacteria

¹As a result of the permit renewal for Cheltenham Boys' Village Youth Facility (NPDES permit MD0023931), an error was identified in the original allocations and an update was made to the Piscataway Creek Fecal Coliform Bacteria TMDL. A correction was made to the wasteload allocation (WLA). The WLA calculation necessitated a corresponding decrease in the load allocation (LA), resulting in an additional reduction of 0.02% from nonpoint source loads.

Problem Identification and Basis for Listing

The Maryland Department of the Environment (MDE) conducted twice monthly monitoring at two stations in the watershed from November 2002 to October 2003; Ranges were typically between 10 and 2,010 MPN/100 mL.

In Maryland, determination of impairment due to fecal bacteria is done by calculating the steady state geometric mean using data collected during the previous 2–5 years. Samples must be from steady state,

dry-weather conditions and during the beach season (May 31–Labor Day) to be representative of critical conditions. Data collected for each of the two stations resulted in steady state geometric means exceeding 126 MPN/100 mL for the seasonal period.

Applicable Data

TMDL analysis was performed using the data collected from November 2002 to October 2003, specifically for the TMDL (Table 1).

Table 1. Summary of *E. coli* data

Station	<i>E. coli</i> (MPN/100 mL)			
	Minimum	Maximum	Geo Mean	Criteria
Annual; 25 samples				
Piscataway Creek / PIS0045	10	1,350	123	126
Tinkers Creek / TIN0006	10	2,010	108	126
Seasonal; 12 samples				
Piscataway Creek / PIS0045	110	1,350	232	126
Tinkers Creek / TIN0006	10	2,010	183	126

Source: MDE 2006.

Sources

Typical sources contribute bacteria in this watershed including wildlife and domestic animals via nonpoint loading from land surfaces, and humans via septic and sewer systems. Sanitary sewer overflows have also been experienced in the watershed. A total of 25 sanitary sewer overflows were reported between July 27, 2001, and September 14, 2004, in the County’s portion of Piscataway Creek watershed. The watershed also contains the Cheltenham Boy’s Village wastewater treatment plant.

In addition, the watershed includes regulated stormwater. The regulated stormwater sources include industrial stormwater and federal (Andrews Air Force Base) municipal separate storm sewer systems (MS4s); however, the TMDL only identified an aggregate-regulated stormwater load allocation.

Technical Approach

The TMDL used a flow duration curve approach coupled with bacteria source tracking at each monitoring station to identify baseline loads and the proportion of source contributions. Baseline loads are estimated first for each subwatershed by using bacteria

monitoring data and long-term flow data. These baseline loads were divided into four bacteria source categories, using the results of bacteria source tracking analysis. Next, the percent reduction required to meet the water quality criterion in each subwatershed is estimated from the observed bacteria concentrations after accounting for critical condition and seasonality. Finally, TMDLs for each subwatershed were estimated by applying these percent reductions.

Allocations

Practicable Reduction Targets

After bacteria source distributions and baseline loads were determined for each of the two monitoring stations, MDE applied a process to identify the maximum practicable reduction (MPR) targets. The process is based on a review of the available literature and best professional judgment to identify reduction percentages to each source and subwatershed. Table 2 presents the MPR targets.

Table 2. MPR target reductions by source category

MPR per source	Human	Domestic (pets)	Livestock	Wildlife
Target percent reduction	95	75	75	0

Source: MDE 2006.

In the analysis of the MPR scenario, it was not possible to meet water quality criteria; therefore, additional reductions, as presented in Table 3, were required to meet criteria.

Table 3. Required percent reduction by source category

Subbasin	Applied Reductions %				Total Reduction Percent
	Pets	Human	Live-stock	Wild	
PIS0045	82.3	95	79.3	20.7	61.2
TIN0006	81.6	95	76.2	12.4	53.8

Source: MDE 2006.

Baseline Loads, Allocations, and Reductions

The TMDL report lists the TMDL, load allocation (LA) and wasteload allocation (WLA) portions of the analysis (Table 4). The margin of safety is implicit.

Table 4. TMDL summary by water quality station

Station	TMDL Load	LA Load	WLA-PS Load	WLA-MS4 Load
	Billion MPN/day			
PIS0045	136.5	90.2	0.334	46
TIN0006	64.1	27.3	0	36.8
Total	200.6	117.7	0.1	82.8

Source: MDE 2006, rev. 2018.

Note: PS = point source.

The MS4 load is analogous to the more generic term *regulated stormwater* and includes other regulated stormwater sources in addition to the County's MS4 (e.g., industrial stormwater). The TMDL report provides no additional listing or accounting of separate stormwater sources, such as a list of affected permits, nor does it provide a baseline load for the MS4s.

Reference

MDE (Maryland Department of the Environment). 2006. *Total Maximum Daily Loads of Fecal Bacteria for the Non-Tidal Piscataway Creek Basin in Prince George's County, Maryland.*