

Technical Memorandum

Nutrient Point Sources in the Mattawoman Creek Watershed

The U.S. Environmental Protection Agency requires that Total Maximum Daily Load (TMDL) allocations account for all significant sources of the impairing pollutant or pollutants. The TMDL analysis for Mattawoman Creek addresses the total nitrogen (TN) and total phosphorus (TP) loads during the low flow conditions (May – October) and average annual flow conditions. This technical memorandum identifies, in detail, the significant surface water discharges of TN and TP used as modeling input when computing the TMDL. The Maryland Department of the Environment (MDE) expressly reserves the right to allocate the loads among different sources in any manner that is reasonably calculated to achieve water quality standards.

Waste load allocations have been made to NPDES-regulated wastewater treatment plants and municipal separate stormwater discharges on Mattawoman Creek Watershed. There are four wastewater treatment plants contributing nutrient loads to the Mattawoman Creek: the Town of Indian Head WWTP, Lackey High School WWTP, Brandywine Receiving Station and the Lingafelt Residence. Waste load allocations have been made to these point sources based on their approved water and sewerage plan discharge flow. Annual waste load allocations are also given to three jurisdictions with separate municipal stormwater discharges in the Mattawoman Watershed to address nutrient loads from urban sources during storm events. Charles County and Prince George's County are currently covered under NPDES phase I stormwater permits while Indian Head Naval Surface Warfare center will be covered under a future phase II permit currently under development. Annual waste load allocations have been made to these stormwater discharges based on the 2000 Maryland Department of Planning land use data and nutrient loading coefficients from the Chesapeake Bay Model. Table 1 and Table 2 below provide the allocation of the nutrients - nitrogen and phosphorus - attributed to the point sources in the Mattawoman Creek during the Mattawoman Creek Eutrophication Model (MCEM) simulation for low flow and average annual flow conditions.

Table 1

**Loads Attributed to Point Sources Used to Compute the
Low-Flow TMDL (May – October)**

TMDL*

<i>Point Source Name</i>	<i>Permit Number</i>	<i>Nutrient Loads (lbs/month)</i>		<i>Flow (MGD)</i>	<i>Concentration (mg/l)</i>	
		TN	TP		TN	TP
Town of Indian Head WWTP	MD0020052	1,251	375	0.5	10	3
Lackey High WWTP	MD0023159	56	14	0.009	25	6
Brandywine Receiving Station	MD0025658	56	14	0.009	25	6
Lingafelt Residence	MD0063070	3	1	0.00045	25	6

* With 40% nonpoint source nitrogen and phosphorus reduction.

Table 2**Loads Attributed to Point Sources Used to Compute the
Average Annual Flow TMDL****TMDL**

<i>Point Source Name</i>	<i>Permit Number</i>	<i>Nutrient Loads (lbs/year)</i>		<i>Flow (MGD)</i>	<i>Concentration (mg/l)</i>	
		TN	TP		TN	TP
Town of Indian Head WWTP	MD0020052	22,830	4,566	0.5	15	3
Lackey High WWTP	MD0023159	684	164	0.009	25	6
Brandywine Receiving Station	MD0025658	684	164	0.009	25	6
Lingafelt Residence	MD0063070	34	8	0.00045	25	6
Charles County*		46,618	5,213	NA	NA	NA
Prince George* County		9,546	1,069	NA	NA	NA
Indian Head Naval Surface Warfare Center**	NA	5,388	602	NA	NA	NA

*Allocations for all urban stormwater sources on the Mattawoman Watershed, including all NPDES regulated dischargers.

** Allocation reserved for future NPDES Phase II stormwater permit (currently under development)

The nutrient limits for point sources, reflected in the TMDL analysis, are designed to protect local water quality. It is likely, however, that future Chesapeake Bay Agreement nutrient reduction goals will entail more ambitious point source nutrient limits to protect the water quality of the bay. Nonpoint sources were estimated on the basis of observed in-stream data (low flow condition) and 10 years average of regional nutrient loading data provided by EPA Chesapeake Bay Program (average annual flow condition). The nonpoint source loads used in the model account for both “natural” and human-induced components.