

# Technical Memorandum

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## *Nutrient Point Sources in the Breton Bay Watershed*

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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 Breton Bay addresses the total nitrogen (TN) and total phosphorus (TP) loads during the growing season (May – October) and average annual flow conditions. This technical memorandum identifies, in detail, the significant surface water discharges of TN, TP and biochemical oxygen demand (BOD) 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 storm water discharges on Breton Bay Watershed. There is one wastewater treatment plant contributing nutrient loads to the Breton Bay, the Leonardtown WWTP. Waste load allocations have been made to this municipal point source based on its approved water and sewerage plan discharge flow. Municipal storm water discharge is under the jurisdiction of St. Mary's County. Annual waste load allocations have been made for these storm water discharges based on the 2002 Maryland Office of Planning land use data and nutrient loading coefficients from the Chesapeake Bay Model. Sufficient data are not available to assign waste load allocations to the storm water discharges during the growing season. Table 1 and Table 2 below provide the allocations of the nutrients - nitrogen and phosphorus – as well as BOD, attributed to the point sources in the Breton Bay during the Breton Bay Eutrophication Model (BBEM) simulation for growing season and average annual flow conditions.

**Table 1**

**Loads Attributed to Point Sources Used to Compute the  
Growing Season TMDL (May 1 – October 31)**

TMDL\*

<i>Point Source Name</i>	<i>Permit Number</i>	<i>Nutrient Loads (lbs/summer)</i>			<i>Flow (MGD)</i>	<i>Concentration (mg/l)</i>		
		<b>TN</b>	<b>TP</b>	<b>BOD</b>		<b>TN</b>	<b>TP</b>	<b>BOD</b>
<b>Leonardtown WWTP</b>	<b>MD0024767</b>	4,086	306	10,206	0.68	4	0.3	15

\* With 30% nitrogen, phosphorus and BOD reduction from all non-WWTP sources (including nutrient loads from urban stormwater, agriculture practices, forest land and air deposition).

**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>		
		<b>TN</b>	<b>TP</b>	<b>BOD</b>		<b>TN</b>	<b>TP</b>	<b>BOD</b>
<b>Leonardtown WWTP</b>	<b>MD0024767</b>	12,420	622	31,050	0.68	6	0.3	15
<b>Urban Stormwater*</b>	<b>NA</b>	50,160	3,397	NA**	NA	NA	NA	NA

\*Allocations in Breton Bay Watershed reserved for future NPDES stormwater permit.

\*\* Due to the difficulty in separating the source of origin, the BOD allocation for average annual flow TMDL for urban storm water is inclusive with other nonpoint sources and described in the technical memorandum for the non point sources.

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.