

## TMDL TERMINOLOGY – A “Practitioner’s Translation” \*

<b>STREAMS OF CHESTER COUNTY</b>	<b>Status on PA Integrated Waters List</b>		<b>Next Steps</b>	<b>Community &amp; Municipal Role</b>
	<b>UNASSESSED</b> (may or may not be impaired)		<ul style="list-style-type: none"> <li>PADEP assesses in future and lists as attaining standards or as impaired, as conditions warrant</li> </ul>	<p><i>Clean Water Act requires PADEP to re-assess streams and revise the “Integrated Waters List” every 2 years.</i></p> <p><i>Even after a stream is listed as unimpaired or impaired, the future re-assessments may identify new or additional impairments to be listed.</i></p> <p><i>To avoid future TMDLs, it is essential to avoid additional stream impairments and to reduce existing impairments.</i></p> <p><i>To accomplish this, communities must continue to work toward reducing the “water quality footprint” of ALL land use management and property operations activities, land use planning decisions, land development designs, and existing and new stormwater management systems.</i></p>
	<b>UNIMPAIRED</b> (assessed and “attaining” their water quality standards)		<ul style="list-style-type: none"> <li>PADEP re-assesses every 2 years and makes no change in listing, or lists as impaired if conditions warrant</li> </ul>	
	<b>IMPAIRED</b> (assessed and NOT attaining their water quality standards)	<b>No TMDL required</b>	<ul style="list-style-type: none"> <li>PADEP re-assesses every 2 years and makes no change in listing, de-lists if impairment is resolved, or lists as further impaired for other causes/sources, etc., as conditions warrant</li> </ul>	
<b>TMDL required</b> (timeframe listed on the “Integrated Waters List”)		<ul style="list-style-type: none"> <li>PADEP/EPA develop/approve/publish TMDL</li> <li>PADEP re-assesses every 2 years and makes no change in listing, de-lists if impairment is resolved, or lists as further impaired for other causes/sources, etc., as conditions warrant</li> </ul>		

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	<b>Categories of TMDLs</b>	<b>Description</b>	<b>How Waste Load Allocations are Assigned</b>
<b>TMDL Required</b>	<b>POINT SOURCE POLLUTANTS</b>	<ul style="list-style-type: none"> <li>• Pollutants originate from effluent from the “end of a pipe” such as from an industrial or community wastewater facility.</li> <li>• Sometimes referred to as a “<b>low flow</b>” TMDL because the greatest impact and maximum allowable pollutant load are determined based on “drought” (or low streamflow) conditions.</li> </ul>	<ul style="list-style-type: none"> <li>• WLAs (and required WLA reductions) are assigned directly to individual NPDES wastewater dischargers</li> <li>• Are generally incorporated into the NPDES discharge permit at the time of renewal</li> </ul>
	<b>NONPOINT SOURCE POLLUTANTS</b>	<ul style="list-style-type: none"> <li>• Pollutants originate from diffuse sources across the landscape and are generally carried via overland runoff directly into streams, or into stormwater collection/conveyance systems.</li> <li>• Sometimes referred to as a “<b>high flow</b>” TMDL because the greatest impact and maximum allowable pollutant load are determined based on storm (or high streamflow) conditions.</li> <li>• <b>Pollutants originating from “nonpoint” sources become regulated as “point sources” when they are discharged from an NPDES-permitted point source such as an MS4 outfall.</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>WLAs (and required WLA reductions) are assigned to one or more of the following –</b> <ul style="list-style-type: none"> <li>○ <b>Specific municipality(ies)</b></li> <li>○ Subbasins of the watershed addressed by the TMDL</li> <li>○ Stream reaches or segments of the watershed addressed by the TMDL</li> </ul> </li> <li>• <b>Required municipal WLA reductions (and possibly others) are anticipated to be incorporated into MS4 permits during next renewal</b></li> </ul>
	<b>COMBINED (Point Source and Nonpoint Source)</b>	<ul style="list-style-type: none"> <li>• Includes <b>BOTH High Flow and Low Flow</b> TMDL components and allocations.</li> </ul>	<ul style="list-style-type: none"> <li>• Assigns WLAs and required WLA reductions to individual NPDES wastewater dischargers <b>AND</b> to municipalities and/or subbasins and/or segments.</li> </ul>
	<b>FISH CONSUMPTION</b>	<ul style="list-style-type: none"> <li>• Addresses toxic pollutants that become concentrated in fish tissue and present health risks when consumed (PCBs, chlordane, etc.)</li> <li>• Addresses industrial facility and wastewater point sources, and nonpoint sources where the pollutants may have migrated with sediment through the stream network.</li> </ul>	<ul style="list-style-type: none"> <li>• Can include <b>BOTH</b> individual NPDES wastewater dischargers WLAs <b>AND</b> one or more of the nonpoint source WLAs; and required WLA reductions for both.</li> </ul>

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The term “**TMDL**” is often used to refer to three different things, either individually or collectively:

- In its strictest sense, the term “TMDL” is used to refer to the “true” “**total maximum daily load**”, or numeric quantity, of pollutant loading that the stream can safely receive from a particular source or land area while still meeting its water quality standards. This pollutant load is generally expressed as pounds (or tons) per year.
- The term “TMDL” is also sometimes used to refer to the numeric quantity of **pollutant load reduction** that is required to improve the stream water quality from its existing – or “**baseline**” – condition to its target “total maximum daily load” where water quality standards will be achieved. This pollutant load reduction is generally expressed in either pounds (or tons) per year and/or as “% reduction”.
- The term “TMDL” is also frequently used to refer to the entire **TMDL report** – the final, approved, and published report that presents the “total maximum daily load” values, baseline values, and the “required load reductions” as well as descriptive text and information regarding how and why the TMDL was developed.

In developing a TMDL, computer modeling is conducted to quantify “baseline” – or existing – pollutant loads, and to predict the “maximum pollutant load” that the stream can accept while still achieving its water quality standards. The “baseline” and “maximum” loads are each divided into the 3 components of the TMDL – Load Allocation (LA), Waste Load Allocation (WLA), and Margin of Safety (MOS):

- $\text{Baseline LA} + \text{Baseline WLA} + \text{MOS} = \text{total baseline pollutant loading causing the impairment}$
- $\text{TMDL LA} + \text{TMDL WLA} + \text{TMDL MOS} = \text{total maximum load that can be received by the stream to achieve water quality standards.}$

**Margin of Safety (MOS)** is included in all calculations to account for various types of potential error and uncertainties.

**Load Allocation (LA)** represents the portion of the baseline and TMDL pollutant loads that originates from background and natural sources and flows directly into streams without entering a stormwater or wastewater system. This portion of the load is considered to not be able to be reduced and is not required to be reduced.

**Waste Load Allocation (WLA)** is the most important component of the TMDL. The waste load allocation is the portion of the pollutant load that must be reduced. The baseline WLA is the component of the TMDL that is required to be reduced, and the TMDL WLA is the component of the TMDL that is required to be achieved by improved management of pollutants in point source discharges. The required pollutant reduction = (Baseline WLA – TMDL WLA). The required pollutant load reduction is generally expressed in pounds (or tons) per year and/or as “% reduction”. The TMDL WLA and the required WLA reduction are assigned through NPDES permits to the point source(s) where the pollutant is discharged (i.e., at an NPDES permitted wastewater or stormwater outfall).

**The TMDL Report includes a section that specifies how/to whom the WLAs and required WLA reductions are to be assigned.** Depending on the pollutant being addressed, the WLA is assigned to one or multiple of the following:

- NPDES wastewater discharger(s) (usually specified by NPDES permit number)
- **Municipality (specifically listed by name of municipality)**
- Subbasin of the study watershed
- Segment of studied stream or watershed.

The baseline and TMDL WLAs for nonpoint source pollutants (high flow or stormwater TMDLs) are generally “parsed out” (or subdivided and assigned) by land use, by subbasin, and/or by municipality based on total land area of each that is within the contributing drainage area. **The TMDL reports specifically indicate that Municipal WLAs need to be further parsed out to determine how much of the WLA should be applied to MS4 permitted stormwater systems. This was not done during development of the TMDL because mapping of individual MS4 systems was not available. MS4 permit holders who maybe subject to MS4 TMDL requirements should consider conducting this mapping exercise for their MS4 system as part of the preparation of the MS4 NOI.**