COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Division of Water Programs Coordination
Larry G. Lawson, P.E., Director

Subject: Guidance Memo No. 03-2015
Method for Representing WLAs in Bacteria TMDLs

To: Regional Directors

From: Larry G. Lawson, P.E., Director

Copies: TMDL staff, Water Permit staff, Alan Pollock, Cindy Berndt, and Jack Frye (VADCR)

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Summary:

This guidance addresses the issue of representing wasteload allocations in bacteria TMDLs such that future wastewater treatment plant expansions or additions can be accommodated within the approved TMDL.

Electronic Copy:

An electronic copy of this guidance in PDF format is available for staff internally on DEQNET, and for the general public on DEQ's website at: http://www.deq.state.va.us/water/.

Contact information:

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Disclaimer:

This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate any particular method nor does it prohibit any particular method for the analysis of data, establishment of a wasteload allocation, or establishment of a permit limit. If alternative proposals are made, such proposals should be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.

Method for Representing Wasteload Allocations in Bacteria TMDLs

Background

Bacteria TMDLs are developed to ensure that the contact recreational uses of Virginia's waters are protected. Bacteria concentrations in the water column determine the level of risk associated with contact recreation, i.e. the threat to human health. Because permitted point source facilities such as wastewater treatment plants (WWTPs) are required to meet the in-stream water quality criteria for bacteria at the point of discharge, i.e. end-of pipe, functioning WWTPs typically do not contribute to bacteria impairments in Virginia's waters. Despite the risk-based concentration standard, EPA Region III requires that bacteria TMDLs including WLAs are represented not as concentrations but as load equivalents in terms of counts/year.

Current Method

To meet EPA's requirement, WLAs are currently calculated as the product of the permitted concentration and design flow for all permitted facilities in the watershed area upstream of and adjacent to the impaired segment. Because permits must be in compliance with existing TMDL WLAs, this format has resulted in cases where TMDLs had to be remodeled to accommodate an increase in capacity at an existing WWTP, despite the fact that the new discharge would meet the existing water quality criteria. Similar situations can be envisioned where new permit applications throughout the watershed could be held up because of the WLA cap imposed with the TMDL. Having to remodel existing TMDLs is not an effective way to address this issue, given the fact that the discharge from functioning WWTPs is meeting water quality criteria in the effluent and should thus not be detrimental to stream water quality. In terms of counts/year, the contributions from WWTPs are also minimal, typically on the order of << 1%.

New Method

To avoid these situations, each bacteria TMDL should include a matrix of scenarios in which the cumulative design flow for the currently existing permitted point sources in the watershed is increased by one or more multipliers (up to a factor of five), or by a local multiplier based on projected growth rates in the watershed.

For **Load Duration TMDLs**, WLAs for all permitted facilities in the watershed area upstream of and adjacent to the impaired segment should be calculated using the single sample maximum concentration.

For **Hydrological Simulation Program - Fortran (HSPF) modeled TMDLs**, WLAs for all permitted facilities in the watershed area upstream of and adjacent to the impaired segment should be calculated using the geometric mean concentration.

Tables 1 and 2 below demonstrate appropriate formats for presenting the WLAs . A footnote to the table should state explicitly how each WLA was calculated.

This approach will result in a total WLA that can accommodate future expansions or additional treatment plants. The TMDLs that are presented in the final public meeting and are submitted to EPA should be based on the existing permit conditions but the matrix with additional WLA options should be included in the final TMDL report. The matrix will be subject to public comment during the regular TMDL comment period and EPA will approve the WLA matrix. In case of a facility expansion or addition, DEQ staff would notify EPA that a specific matrix scenario is being utilized during the permit process and that the WLA should be adjusted accordingly.

Implementation

This method should be applied only to bacteria TMDLs and not to TMDLs for any other pollutant. Central Office TMDL staff will provide all current TMDL contractors with a copy of this memorandum. Regional TMDL coordinators should ensure that this new approach is implemented for all bacteria TMDLs currently under development as part of the 2004 submittal cycle and for all future bacteria TMDLs. Regional permit writers should provide support to the TMDL coordinators to ensure that the appropriate information is included in the TMDL.

Table 1. WLA Table for HSPF-modeled bacteria (E. coli) TMDLs

VPDES Number	Facility Name	Receiving Stream	Watershed ID	Design Flow (Mgd)	Effluent Limit (#/100 mL)	Wasteload Allocation (#/year)
					126	
					126	
					126	
					126	
Existing WLA					N/A	
Expansion Matrix						
				Total x 2	126	Total x 2
				;;;		
				Total x local factor	126	Total x local factor
				Total x 5	126	Total x 5

Table 2. WLA Table for Load Duration bacteria (E. coli) TMDLs

VPDES Number	Facility Name	Receiving Stream	Watershed ID	Design Flow (Mgd)	Effluent Limit (#/100 mL)	Wasteload Allocation (#/year)
					235	
					235	
					235	
					235	
Existing WLA					N/A	
Expansion Matrix						
				Total x 2	126	Total x 2
				;;;		
				Total x local factor	126	Total x local factor
				Total x 5	235	Total x 5