

Estimation of margin of safety for Korean TMDL development

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ABSTRACT

The Clean Water Act in the US requires that total daily maximum loads (TMDLs) shall be established with an assessment of the impact of seasonal variations and of the uncertainty in quantification methods to account for lack of knowledge concerning the relationship between effluent limitations and water quality. Due to uncertainties in model structure and/or model parameters in addition to natural and seasonal variability of forcing functions, estimation of waste loads in a TMDL analysis requires a margin of safety (MOS). The margin of safety is typically incorporated implicitly through conservative assumptions used to develop the TMDL or added explicitly as a separate component of the TMDL. For successful TMDL development, accurate and appropriate predictions of waste loads from a watershed and the variation of water quality in a water body are essential. This paper summarizes the estimation process of the MOS in the Nakdong River, Korea considering variability in observed data and the uncertainty in the model. Approved TMDL reports in eight northeastern states in US were used for guidance.

Keywords: Clean Water Act; TMDL; Waste load allocation; MOS; Margin of safety; Nakdong River

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