

# HALL & ASSOCIATES

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March 17, 2010

Dr. Angela Nugent  
Designated Federal Officer  
EPA Science Advisory Board (1400F)  
1200 Pennsylvania Ave, NW  
Washington, DC 20460

RE: Comments on January 8, 2010 SAB Ecological Processes and Effects Committee Advisory Report on Empirical Approaches for Nutrient Criteria Development

Dear Dr. Nugent:

The Science Advisory Board (SAB) Ecological Processes and Effects Committee completed a thorough public review of EPA's draft guidance document, Empirical Approaches for Nutrient Criteria Derivation, on September 11, 2009. The Committee released a preliminary draft report, dated December 3, 2009 prior to a public teleconference to discuss the preliminary draft. The draft report, dated January 8, 2010, incorporated comments and discussions from the December 3 teleconference. By and large, the draft report is identical to the preliminary draft with the exception that it now includes more specific recommendations regarding the tiered weight of evidence recommended by the Committee for developing scientifically defensible nutrient criteria. At the September 2009 SAB meeting, there was no information or presentation by EPA regarding what, in their view, would constitute a sufficient "weight of evidence" analysis to support criteria derivation. These recommendations were included as a response to a specific request by EPA during the December 3 teleconference and are presented below.

Tiered environmental assessment is iterative. The initial assessment is the simplest (e.g., minimal ecosystem specific data) and most conservative, and thus will not always provide sufficient certainty for decision-making. Cause and effect relationships would be inferred but not demonstrated; only a few lines of evidence would be available and the corresponding uncertainty high. At the highest tier, there would be several lines of evidence and factors that would confound the prediction of effects, such as other stressors or the morphology of the waterbody, and these need to be understood and considered. Successive tiers will involve more focused (e.g., specific for particular ecosystem types) investigations, based on the results of the previous tier. Data needs are relatively low at the initial tier, but increase at successive tiers; however, uncertainty also reduces at successive

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tiers, and sources of uncertainty become better understood. It is important to explicitly describe and consider uncertainty in the criteria development and decision-making process. Weight-of-evidence typically determines the tier at which uncertainty has been reduced sufficiently for informed management decision-making.

(January 8, 2010 Draft at 3, lines 5-17)

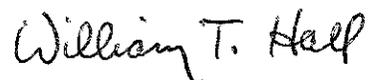
Overall, we commend the Committee for its thorough review of the draft Guidance, its consideration of the science necessary to support defensible water quality criteria for nutrients, and its recommendations to the Agency on moving forward with the draft Guidance. Moreover, we support the Committee's clarifications with regard to the use of a tiered weight of evidence approach and need for conceptual model development as a necessary step in the process of criteria development.

As discussed in the description of the tiered weight-of-evidence analysis, we understand that the following demonstrations must be included to support nutrient criteria derivation:

1. Cause and effect relationships must be demonstrated. (As further discussed in the Draft, the effect must be biologically significant and related to use impairment);
2. Confounding factors must be considered (Various confounding factors influencing nutrient dynamics were identified in the Draft including light, flow, and habitat); and,
3. Uncertainty must be explicitly described and sufficiently reduced in a tiered "weight of evidence" approach (Confirm that the relationship and supporting information is sufficiently strong to determine a regulatory target necessary to ensure protection of a designated use).

Given the Agency's more recent reliance on "weight of evidence" as a justification for nutrient criteria adoption, we request that these key points, from the draft report, be highlighted in either the summary or cover letter. We look forward to the Board's approval and issuance of this report.

Sincerely,



William T. Hall

cc: John C. Hall  
Thomas Gallagher  
Dominic DiToro