NACWA
A Clear Commitment to America's Waters

March 9, 2016

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Via Electronic Mail

RE: Follow-Up to Nutrient Permit Writer Training Session

Dear Deborah:

On behalf of NACWA I would like to again thank you and your staff for taking the time to walk us through your latest nutrient permitting training materials on February 2. It was a very informative session and we hope you agree that it was also a productive dialogue. The purpose of this letter is to provide concise feedback on the training, addressing just a few topics that we thought merited a summary of NACWA's perspective. We appreciate your continued willingness to consider these issues and maintain an open dialogue.

1. *NACWA supports the training material's inclusion of a wide variety of scientific and engineering references, including those produced by the Water Environment Research Foundation (WERF)*. Some of the key WERF references for nutrient permitting include Bott and Parker (2011), Falk and others (2013), and Bierman and others (2013). We note that these reports are referenced in the training material slides, but would also recommend that they be added to the reference materials summary.

2. *The training materials have been enhanced to emphasize the implications of longer averaging periods*. We believe these materials make it very clear that longer averaging periods are often appropriate, allowable, and should be directly considered at various stages of the permitting process. Examples of the welcome content include slides from module 3B (slides 163-170) and module 3C (209-226), that illustrate the effects of longer averaging periods on the reasonable potential analysis, and similar content in module 3C (slides 209-226) on water quality based effluent limit (WQBEL) calculations.

3. *The training materials continue to underemphasize alternatives to the use of instream nutrient concentration targets where valid concentration targets do not exist*. The methods

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presented in module 3A and module 3B (steps 1-2) largely adhere to the toxics-based assumption that a valid numeric nutrient concentration target exists, or that narrative nutrient standards can be simply translated by selection of concentrations targets from sources such as the U.S. EPA ecoregional criteria documents (slides 123-124) or the Gold Book (slides 127). There is very little acknowledgement in this section that nutrient concentrations are not useful indicators of impairment in every system, that valid concentration targets may not exist, or that aggregate nutrient loads are a more useful management variable for hydrologic settings that integrate the effects of nutrient inputs over time.

Subsequent material (e.g., module 3B, steps 3-4) appears to lend more support to load-response approaches. However, we recommend that the introductory material to module 3 include more explicit discussion and examples of alternatives to the use of concentration targets, such as load-response modeling, use of existing total maximum daily loads (TMDLs), setting limits based on existing conditions for healthy water bodies, or the use of technology-based limits combined with adaptive management.

5. *On the issue of dual nutrient control, the training materials should acknowledge that nitrogen and phosphorus may not need to be controlled to the same degree of stringency*. Slides 95-97 address the issue of dual vs. single nutrient control but lead with dual nutrient control. An unintended consequence of how this information is presented could be for the permit writer to impose TN and TP limits without any waterbody specific water quality basis. We believe this material should be enhanced to acknowledge that — even where dual nutrient control is appropriate — both nutrients do not necessarily need to be controlled to the same level or necessarily require water quality-based effluent limits.

Even in receiving waters where co-limitation occurs, it is often much more cost-effective to control one nutrient to a higher degree to attain the desired response. And if controls for a secondary nutrient are primarily driven by a water body far downstream, the relative contribution of the point source at that downstream location may be extremely small, such that the incremental benefit of stringent treatment tiers may be extremely low for the secondary nutrient. In such situations, the WQBEL for one nutrient might be set at more stringent treatment tiers than the WQBEL for the less influential nutrient.

Alternatively, it may be appropriate to impose a WQBEL for one nutrient but address the other nutrient in some other manner, such as optimizing the treatment process, applying moderate technology-based limits, or using an adaptive management approach that first monitors the effects of reducing the more limiting nutrient before implementing treatment changes for the less limiting nutrient.

6. *Toxics-based critical streamflow conditions are not recommended for use with nutrient permitting*. The training material (slides 151-170) correctly acknowledges that critical conditions for nutrients may be different than those for toxics. However the material still supports the use of the 7Q10 streamflow, both by specifically listing it as an option (slide 152) and the selection of the Wenatchee River example. The 7Q10 streamflow is a toxic-based statistics, and streams generally do not accumulate nuisance levels of algae in times periods as short as 7 days. It is recommended that the training materials remove reference to the 7Q10 as a viable option for nutrient permitting.

7. *The training materials should address the topic of how the allowable frequency of exceedance should influence the selection of critical conditions and probability bases*. As mentioned above, we believe the training materials are relatively strong on the topic of how longer averaging periods can be considered at various stages of the permitting process. However, one topic that the training materials do not adequately address is the effect the selection of critical conditions and probability bases has on the expected frequency of exceedance. More direct consideration of the

relations between averaging period and frequency will often lead to the conclusion that, when averaging periods are long, less conservative assumptions regarding critical conditions and probability basis are still highly protective of the environment. This could affect various stages of the permitting process, including reasonable potential, wasteload allocation (WLA) derivation, and WQBEL calculation. It would be recommended that module 3 include a direct discussion of this topic and some examples that quantify the expected frequency of exceedance in typical permitting situations.

Example: Consider a situation where the criterion is expressed as a growing season average not to be exceeded more than once every ten years. In Approach A, the critical condition is selected as a 1 in 10 year low-flow event, and the probability basis of the effluent long-term average (LTA) calculation is selected as 95% (i.e., 5% chance of exceedance in any growing season). The combined probability that the critical low-flow event coincides with the upper end of the effluent distribution is 0.10 x 0.05 = 0.005, equivalent to one exceedance every 200 growing seasons. In approach B, the critical condition is selected as a 1 in 3 year low-flow condition, and the probability basis of the effluent LTA is set to 90%. In this case, the combined probability of exceedance is 0.33 x 0.10 = 0.033, equivalent to one expected exceedance every 30 growing seasons. Both approaches are highly protective, but approach A would be obviously overprotective and could result in controls that are much more costly than merited. As the averaging period used in this type of example increases, the expected frequency of exceedance decreases. Hence, longer averaging periods will lead to the conclusion that less conservative critical conditions and probability bases are appropriate.

Similar concepts might be argued for toxics-based limits using steady-state models. However, the effect is magnified for criteria (like nutrients) with longer averaging periods because there are far fewer opportunities for exceedance in a given time period. For additional examples we refer the Agency to the handout/presentation materials of our meeting of February 12, 2015. As discussed during our meeting, we would welcome additional dialogue on this issue with the Agency once it has had time to further consider the points we have raised.

In addition to the technical issues outlined above, we want to express our concern with the training material's heavy reliance on the Upper Blackstone example. We understand that EPA believes the example is valid, especially given that the permit's effluent limitations have been upheld by the First Circuit, but the concerns raised by the permittee and the clean water community as a whole over the permit undermine its value as a case study. While the court believed the Agency deserved deference in this instance, it does not mean that there was broad agreement that the approach EPA used was sound. Given the concerns raised by the regulated community over EPA's methodology in this instance, it should not be relied upon so heavily as the basis for the permit writer training.

Thank you again for the time and effort that EPA has put into the nutrient training materials and related communications with NACWA.

Sincerely,

Chris Hornback
Chief Technical Officer