

EXHIBIT 15 (AR H.71)



Re: NH estuary criteria

Alfred Basile,
Stephen Silva to: Jean Brochi, 11/26/2008 01:51 PM
David
Ann Williams, Ken Moraff, Mel
Cc: Cote, Roger Janson, Stephen
Perkins

From: Stephen Silva/R1/USEPA/US
To: Alfred Basile/R1/USEPA/US@EPA, Jean
Brochi/R1/USEPA/US@EPA, David
Pincumbe/R1/USEPA/US@EPA, Matt
Cc: Ann Williams/R1/USEPA/US@EPA, Ken
Moraff/R1/USEPA/US@EPA, Mel
Cote/R1/USEPA/US@EPA, Roger

To everyone involved in this review and preparation of these comments,
nice job! thanks,
Steve

Alfred Basile/R1/USEPA/US

Alfred
Basile/R1/USE
PA/US

11/25/2008
12:17 PM

To ptrowbridge@des.state.nh.us, pcurrier@des.state.nh.us,
gcomstock@des.state.nh.us

cc Ken Moraff/R1/USEPA/US@EPA, Stephen
Silva/R1/USEPA/US@EPA, Mel Cote/R1/USEPA/US@E
Roger Janson/R1/USEPA/US@EPA, Phil
Colarusso/R1/USEPA/US@EPA, Matt
Liebman/R1/USEPA/US@EPA, David
Pincumbe/R1/USEPA/US@EPA, Jean
Brochi/R1/USEPA/US@EPA, Ann
Williams/R1/USEPA/US@EPA, Stephen
Perkins/R1/USEPA/US@EPA

Subject NH estuary criteria

Hello Phil:

Thank you very much for your recent draft report on the development of numeric nutrient criteria for New Hampshire's estuaries. The EPA provides the following comments to assist in supporting final criteria recommendations. Overall, we believe that the approach used to derive impairment thresholds is scientifically sound. The EPA fully supports the application of a weight-of-evidence approach and the use of a conceptual model that tests whether there is a dose-response relationship in the data. As we have seen in other estuaries, as nitrogen concentrations increase to unacceptable levels, significant impacts to designated uses are likely to occur. We strongly encourage you to work as expeditiously as possible to ensure that the criteria are finalized

EXHIBIT 15 (AR H.71)

and ultimately adopted as water quality standards. Please let us know if we can provide further assistance as you continue to move forward.

General Comments

- 1) Page 2 - it is stated that results reported as less than the method detection level were excluded to avoid bias. Not sure we understand, as this may also introduce bias into the dataset. How many data points were excluded? Please provide greater explanation.
- 2) Page 7 - the section on hyperspectral imagery needs more explanation; what is sidelap? Also, at the TAC meeting it was stated that the hyperspectral imagery was not conclusive (something wrong with calibration of equipment?). More information would be helpful.
- 3) EPA strongly encourages the State to continue to develop both phosphorus and nitrogen criteria for lakes, rivers, and streams. Although nitrogen appears to be the primary controlling nutrient in the Great Bay estuary, elevated levels of both nutrients can significantly impact designated uses in the tributaries.

Chlorophyll a

- 4) Please provide more explanation on the primary contact recreation threshold for chlorophyll as this strongly influences the N criteria. Why is the threshold 15 ug/l in freshwater and 20 ug/l in saltwater?
- 5) A ratio was derived for the Squamscott River to convert the chlorophyll threshold from summer to annual. How applicable is this ratio for other waters?

Dissolved oxygen

- 6) Grab samples for D.O. most likely do not reflect minimum D.O. values and therefore the TN threshold of 0.57 mg/l should be given minimal weight. The sonde data only supports that the D.O threshold is somewhere between TN of 0.39 mg/l (high end of the range where D.O is fine) and 0.45 mg/l (low end of the range where D.O was not fine). When you couple this with the macroalgae data which indicates that TN should be less than 0.42 mg/l to prevent nuisance macroalgae (also an important indicator

EXHIBIT 15 (AR H.71)

of aquatic life impairment) it does not appear that the identified target of 0.5 mg/l TN will be protective of aquatic life.

7) It may be useful to look at the swing in DO concentrations from the Datasondes. Looking at daytime maximums versus night-time minimums on each day at each location may be insightful. Eutrophied areas generally experience hypersaturation during the day followed by night-time crashes in DO.

8) The D.O criterion is 5.0 mg/l minimum; there is no allowance for 10% exceedence of this threshold.

Eelgrass

9) Light Attenuation Coefficient -- We understand the use of the 22% of surface light as the endpoint for the quantity of light needed for eelgrass survival. As cited in your document, the Chesapeake Bay program developed a figure of >22% ambient light as needed for eelgrass survival. It should be noted, however, that this figure refers just to the survival of an adult shoot, it does not guarantee that quantity of light is sufficient to support successful reproduction and production of viable seeds. Reproduction is an energy intensive activity, so successful reproduction will likely require substantially more than 22% ambient light. We do not suggest a recalculation utilizing a different light attenuation coefficient, because a scientifically valid number to address our point is not yet known. We make this point to highlight that this part of the analysis is not conservative and results in a higher nitrogen concentration than what is actually required. However, this target may be more appropriate if the compliance point is upstream in the tidal tributaries, as reported on page 45 of the report, as this would ensure that nitrogen concentrations are less than 0.32 mg/L throughout the vast majority of the estuary.

10) EPA concurs with the assertion that nitrogen strongly contributes to water column turbidity which results in impacts to eelgrass. Even though the analysis is correlative, we are seeing strong relationships in the data and multiple components of the conceptual model have been corroborated.

11) Page 45 - additional research needed; states that deep edge depth (zmax) is needed.. Details on what is involved in zmax estimations and how the zmax information will be used should be included.

EXHIBIT 15 (AR H.71)

10) EPA concurs with the assertion that nitrogen strongly contributes to water column turbidity which results in impacts to eelgrass. Even though the analysis is correlative, we are seeing strong relationships in the data and multiple components of the conceptual model have been corroborated.

11) Page 45 - additional research needed; states that deep edge depth (zmax) is needed. Details on what is involved in zmax estimations and how the zmax information will be used should be included.

Macroalgae

12) The abundance of nuisance macroalgae is an important indicator of aquatic life use support, in both eelgrass and non-eelgrass areas. More information on the negative impacts of nuisance macroalgae would be helpful so the reader fully understands the importance of this issue.