BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In re:	)	
Town of Newmarket	)	
	)	NPDES APPEAL No. _____
NPDES Permit No. NH0100196	)	

PETITION FOR REVIEW OF A NPDES PERMIT ISSUED BY EPA REGION 1

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I. Introduction

Pursuant to 40 C.F.R. § 124.19(a) the Great Bay Municipal Coalition ("Petitioner" or "the Coalition") representing the municipalities of Dover and Rochester, petitions for review of the conditions of NPDES Permit No. NH0100196, which was issued to the Town of Newmarket Wastewater Treatment Plant ("Permittee" or "Newmarket") on November 15, 2012, by the United States Environmental Protection Agency ("EPA"), Region 1 ("the Region" or "Region I"). The New Hampshire Department of Environmental Services ("DES") provided a Section 401 Certification, approving the permit but without conditions. The permit at issue in this proceeding reauthorizes Newmarket to discharge treated wastewater effluent from the Town of Newmarket, New Hampshire's Wastewater Treatment Plant ("facility") to the Lamprey River. The central issue in this appeal is whether and how nitrogen limitations are necessary to ensure compliance with applicable State narrative water quality criteria.

Region I clearly erred in issuing the NPDES permit because it departed from well-established procedural law governing permit issuance. In addition, the NPDES permit contain numerous terms and provisions based on clearly erroneous findings of fact and conclusions of law that the Petitioners identified in its public comments which Region I has failed to reasonably address. This permit (one of three presently proposed by Region I with essentially identical effluent limitations and scientific justification) was issued following numerous attempts by the Coalition to engage Region I in an objective and open review of the available scientific information. At each juncture, EPA refused to meet, refused to engage in any technical discussions, precluded public involvement in the decision making, and simply moved forward with a predetermined decision to impose extreme nutrient reduction, regardless of the information presented.

At the heart of this appeal are two issues: (1) the attempt to impose, without rulemaking, new numeric nutrient criteria (nitrogen and transparency)[1] which have no demonstrable relationship to actual environmental conditions or needs anywhere in this system (including narrative criteria compliance) and (2) repeated actions directed at excluding scientific information from the record that confirmed the narrative criteria interpretations/permit decisions are in error. EPA continues such patently arbitrary and capricious activities in issuing the Newmarket permit as most clearly evidenced by EPA's refusal to consider any and all new information developed after the end of the comment period confirming EPA's decisions were fundamentally flawed (See EPA's Response to Comments for the Newmarket Permit at 2 n.1 [hereinafter RTC]) while considering any later information developed by other sources that supported EPA's position (See RTC at 83 n.35 including the letter from Thomas S. Burack, Commissioner, NHDES to the Coalition, dated, October 19, 2012 [hereinafter Burack 2012 Letter] addressing the *identical issues* EPA refused to evaluate when raised by the Coalition).

The Petitioners aver that the consideration of the available and relevant scientific information (including admissions by Commissioner Burack in his October 19, 2012 letter and DES scientist, Philip Trowbridge,[2] the author of the 2009 Numeric Criteria document, under oath) confirm that the proposed permit actions are (1) based on clearly erroneous scientific information, (2) fail to properly implement the adopted narrative standard, (3) clearly misapply applicable scientific principles and rules, and (4) ignore the agency's own expert opinion on

[1] *See* New Hampshire Department of Environmental Services, Numeric Nutrient Criteria for the Great Bay Estuary (2009), WD Doc R-WD-09-12 available at http://des.nh.gov/organization/divisions/water/wmb/wqs/documents/20090610_estuary_criteria.pdf (last visited December 13, 2012) [hereinafter 2009 Numeric Criteria].

[2] The key DES officials who were involved in the process of developing the 2009 Numeric Criteria document were Philip Trowbridge, DES Scientist and author of the 2009 Numeric Criteria document, and Paul Currier, former Administrator of the New Hampshire Department of Environmental Services Watershed Management Bureau and Mr. Trowbridge's supervisor throughout the development of the 2009 Numeric Criteria document. DES also heavily relied upon the findings of Dr. Fred Short, University of New Hampshire eelgrass scientist, in developing the document. Deposition testimony of the key DES officials was not available before the close of comments, however, the deposition testimony as well accompanying exhibits were submitted to EPA [hereinafter Deposition Exhibits].

accepted nutrient impact evaluation methodologies. Because of these manifest errors, the proposed permit issue would broadly squander local resources on expensive upgrades unrelated to actual environmental protection needs.[3]

Therefore, given Region 1's failure to rationally address or respond to the Coalition's comments, the Coalition now seeks full review by the Environmental Appeals Board ("the Board") of the appealed terms and provisions of NPDES Permit No. NH0100196. The Coalition describes the general basis for its appeal below without limiting its ability to submit a supplemental and more detail brief.[4]

II. Factual and Statutory Background

The Great Bay estuary, as part of the National Estuary Program, has an extensive monitoring program. Annual evaluations of eelgrass, oysters and other biological and chemical indicators have been undertaken since the early 1990s. The following briefly reviews the applicable regulatory history associated with the development of nutrient criteria and assessment of nutrient impacts for the Great Bay Estuary.

Great Bay Estuary is one of twenty estuaries of national significance identified under the Estuaries and Clean Waters Act of 2000, 33 U.S.C. § 1330. In 2005, EPA directed DES to develop numeric nutrient criteria for Great Bay, as part of a national program seeking the formal adoption of such criteria. EPA stated these criteria required formal adoption and DES planned to undertake that action. (See, 2009 Nutrient Criteria at 1; Exhibit 2. (Science Misconduct filing).

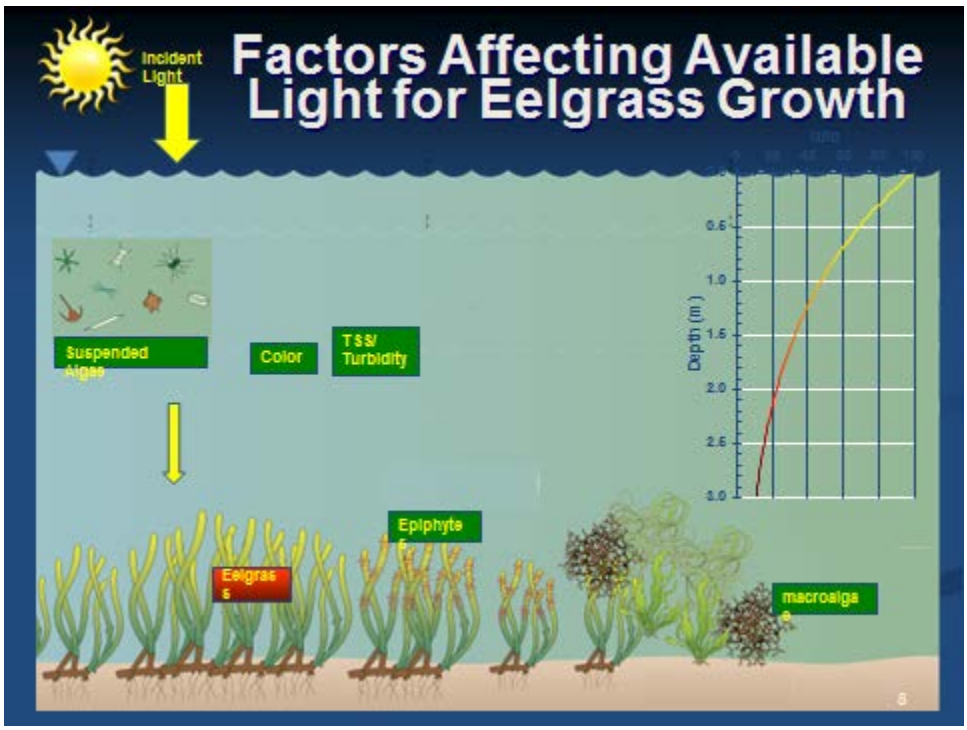
[3] The wastewater treatment plants cost associated with EPA's proposed requirements would exceed $600 million for the watershed; the costs associated with the stormwater and nonpoint source measures would be in excess of $1 billion.

[4] Under separate cover, the Coalition files a Motion for Extension of Time to File a Supplemental Petition for Review given the complexity of the matter. The Coalition has also request a stay of this proceeding in light of a Clean Water Act ("CWA") Section 505(a) mandatory duties suit filed on December 13, 2012 in D.C. District Court. Favorable resolution of those proceedings should result in the remand of this permit.

Such numeric criteria adoption is a separate action from narrative criteria implementation and was intended to supersede and supplement the existing narrative standard.[5] The numeric criteria development process was not undertaken to confirm existing narrative criteria violations or to implement the existing criteria. Supplemental Comments August 30, 2012, Exhibit 15 at 1-4). Rather, it was intended to establish a wholly new numeric value applicable to all Great Bay waters and replace the existing narrative standard. (2010 DES Wasteload Allocation Report at iii. [hereinafter 2010 WLA]). As with any other numeric criteria, it needs to be scientifically defensible and given that it was specifically related to Great Bay, it needed to reflect the specific water quality needs of that unique system. 40 C.F.R. § 131.11.

From 2006-2008 EPA and DES worked with a technical advisory committee ("TAC") on a review of the scientific data for Great Bay to see whether and how nitrogen was influencing system ecology and specifically water column transparency. At that time, the assumed route of impact for nutrients was that nitrogen can stimulate excessive water-column algae growth (phytoplankton or "microalgae") and that such excessive plant growth could limit light penetrating water adversely affecting eelgrass populations in the estuary. The following picture illustrates that dynamic.

[5] 2009 Numeric Criteria at 1 explaining that narrative criteria were difficult to implement consequently numeric criteria needed to be adopted.



Various analyses developed by Philip Trowbridge[6] and presented to EPA and the TAC, confirmed that nitrogen had not caused changes in transparency due to increased algal growth and other factors (natural) were controlling transparency in the system. (See Attachments to Exhibit 14 and 15 attaching Deposition Exhibits 31, 32, 71, and 72).[7] In fact, field data through 2005 indicated no apparent change in transparency (from any factor) or increase in algal growth had occurred over the past 15 years despite major increases in inorganic nitrogen – the form of nitrogen that is capable of stimulating additional plant growth. (Exhibit 14 - Deposition Exhibit 72). As part of the TAC evaluations, DES concluded that transparency was too low in various tidal rivers (where eelgrass previously grew but were now absent) but that natural factors, unrelated to algal growth (color, turbidity), were responsible for the condition. (Exhibit 15 -

[6] Mr. Trowbridge was the lead DES scientist developing the regulatory analyses and assessing the data. He concurrently was the lead staff scientist for the Piscataqua River Estuary Project which resulted in consistent positions being developed in these seemingly, but not really, independent entities.

[7] The TAC Reports in EPA's possession were never provided in response to an earlier FOIA request seeking all information transmitted by DES to EPA. They were only disclosed after discovery in a DES suit regarding the 2009 Numeric Criteria.

Deposition Exhibit 32). Additional detailed studies regarding the factors affecting transparency in Great Bay and the tidal rivers were conducted in 2007. These Federally funded studies again confirmed that algal growth was a very minor influence on transparency in Great Bay and the tidal rivers. (Exhibit 1 – Attachment 1L – from Morrison et. al (2008)).

In addition, the studies confirmed that the theory that total nitrogen ("TN") increase leads to transparency loss leading to eelgrass decline was not supportable. (Exhibit 14 - Deposition Exhibit 72; Morrison et. al (2008) at 51 finding "the water clarity in Great Bay, Little Bay and Lower Piscataqua River was sufficient for growth of eelgrass. The virtual absence of eelgrass from all but Great Bay suggests that other processes apart from light restricted growth are important for limiting eelgrass survival."). Algal effects on average transparency levels in Great Bay were calculated to be 12%, based on these detailed studies. *Id.* Other analyses also confirmed that color originating from system wetlands was the primary factor limiting acceptable transparency levels in the tidal rivers. (Deposition Exhibit 85 ("DO [color] . . . is tightly correlated with wetland coverage in the sub-basins and shows no effect at all from population density.")).[8],[9] Thus, even if TN control could reduce the algal levels present in the system, which was not indicated by the data, (as a 70% TIN increase did not stimulate additional algal growth, a TN decrease would not change the levels either), the effect would be, at best, minor.[10] The 2006 PREP Report found:

[8] In issuing nutrient criteria for Florida, EPA agreed that the effect of color on limiting plant growth was a key factor that must be addressed.

[9] Many deposition exhibits were internal EPA emails released well after the comment period closed; full copies of all these documents will be provided with the supplemental filing to the degree that they are not already part of the formal submissions made to date.

[10] A 1 ug/l change in algal levels would be a 4% improvement in transparency in Great Bay based on the Morrison analysis, which Philip Trowbridge was a co-author on. As the algal influence in the tidal rivers was even lower given the amount of color entering those systems, an even smaller percentage of transparency change would be expected in those systems. As noted by Mr. Trowbridge, the author of the 2009 Numeric Criteria document, the impact of nitrogen control on tidal river is expected to be negligible, more on this later.

> [A] comparison of historical and recent datasets shows that DIN concentrations have increased in Great Bay by 59 percent between the periods of 1974-1981 and 1997-2004 . . . Researchers are still debating the possible effects of the increasing DIN concentrations on Great Bay because it is a unique system, both hydrodynamically and biologically, that may respond differently to excess nitrogen than other estuaries. So far, the typical effects of excess nitrogen have not been observed in Great Bay, although DIN concentrations in Great Bay are similar to concentrations in other estuaries where negative effects have been clearly observed.

2006 PREP Report at 12.

Despite the clear findings that the TN-transparency-eelgrass loss paradigm did not apply to the Great Bay system, EPA nonetheless urged the State to proceed with a TN/transparency-based criteria to protect eelgrass. (See Deposition Exhibit 74). In early 2008, DES began work on such numeric criteria in earnest. In August 2008, DES proposed an impaired waters list that did not find any eelgrass related impairments due to nitrogen.[11] As noted earlier, the form of nitrogen that can stimulate algal growth increased by about 60% in the estuary, however, signs of cultural eutrophication (excessive plant growth) were not evident. After the issuance of the draft 2008 § 303(d) Report, Dr. Fred Short, a local eelgrass ecologist, reported the results of his 2006/2007 eelgrass mapping evaluations. These reports showed a sharp decline in eelgrass populations in 2006 (following major flooding events). These reports raised concerns that nitrogen caused the decline, although no data showed excessive algal populations occurred during this timeframe.

Based on these unsubstantiated fears, raised in particular by Dr. Short, in November 2008 DES released a draft criteria document that claimed TN had caused major transparency changes throughout the estuary. That new draft report gave (1) no consideration of other natural

[11] See "Methodology and Assessment Results related to Eelgrass and Nitrogen in the Great Bay Estuary for Compliance with Water Quality Standards for the New Hampshire 2008 Section 303(d) List," Deposition Exhibit 19. Prior to 2005 eelgrass populations fluctuated significantly over time due to a number of natural influences (e.g., most notably wasting disease) but eelgrass populations were considered healthy through 2005. Typical eelgrass fluctuation was 2,100 acres +/- 20%.

components controlling transparency (color, turbidity), (2) the prior analyses, finding no such nitrogen induced impact had occurred, were not mentioned, and (3) the system factors that influence algal growth were all ignored (hydrodynamics, color, detention time, etc.).[12] Following numerous objections by the regulated community and various members of the TAC, in June 2009 the State finalized its draft numeric criteria document claiming that a "cause and effect" relationship between eelgrass losses, transparency and TN had been confirmed. (2009 Numeric Criteria document at B4 ("All available data from the Great Bay Estuary are consistent with excess nitrogen as the primary cause of these effects.")). The final document noted that formal rulemaking to adopt the provision was necessary and a schedule for such adoption was prepared by DES. (2009 Numeric Criteria document at 1 ("The numeric criteria will first be used as interpretations of the water quality standards narrative criteria for DES' Consolidated Assessment and Listing Methodology for 305(b) assessments. *Later, DES will promulgate these values as water quality criteria in Env-Wq 1700*." – emphasis supplied).

Shortly thereafter, a local environmental group (Conservation Law Foundation- CLF) threatened EPA with a lawsuit if the State did not declare the estuary eelgrass impaired due to nitrogen (given the draft 2009 Numeric Criteria document). EPA then requested the State to radically amend the draft impairment listing by apply the new numeric criteria as the basis for identifying waters in violation of the State's narrative criteria. (Deposition Exhibit 34). It was well understood that the application of an unadopted criteria to classify a water body as impaired violated Federal law. 40 C.F.R. § 131.21.[13] To avoid this clear violation of Federal law, EPA

[12] EPA's Response to Comments has claimed that the author of the 2009 Numeric Criteria document affirmatively excluded the prior evaluations because of a belief that the new evaluation was more accurate. This is a complete and utter fabrication that has no basis anywhere in the administrative record. Mr. Trowbridge under deposition (which EPA refused to consider) confirmed that the prior analyses conduct were in fact accurate. His refusal to present those evaluations and to present a set of findings claiming the opposite results is, to this day, inexplicable.

[13] *See* Questions and Answers on the "Alaska rule" – "EPA Review and Approval of State and Tribal Water Quality Standards" available at http://water.epa.gov/lawsregs/rulesregs/ak/questions.cfm (last visited December12, 2012).

Regional Counsel recommended that the State refer to the new numeric criteria as a "narrative translator" to avoid the need to formally adopt the criteria. (Exhibit 2 -Deposition Exhibit 37). This attempt at form over substance was a sham, as now disclosed by EPA's Response to Comments in this permit action and by the Currier deposition (at 80).[14] (Exhibit 15 –August 30, 2012 Supplemental Comments at 2.)

In August 2009 the State undertook all of these requested actions, radically amending its draft § 303(d) impaired waters list by applying the unadopted criteria as an applicable water quality standards and EPA approved of the new impairment findings in September 2009. (Deposition Exhibit 36 and 59).

Following these actions, the major cities surrounding Great Bay formed a coalition (the Great Bay Municipal Coalition) to review the regulatory and scientific bases of these actions (not knowing, at this time, that the use of the draft criteria in impairment listing was directed by EPA). Outside experts were hired to independently assess the 2009 Numeric Criteria. Numerous fundamental scientific errors were noted with the DES analysis, in particular that it used statistical methods to derive the criteria that EPA's Science Advisory Board ("SAB") recently determined were not scientifically defensible.[15] (Exhibit1E). At this time it was not known that DES itself had conducted the same type of analyses showing TN was not the culprit in the eelgrass decline but had left those analyses and data out of the 2009 Numeric Criteria development document and subsequent peer review assessments. (Exhibits 14 and 15 - Deposition Exhibits 31, 32, 71, and 72).

[14] RTC at 70 ("New Hampshire also has not adopted translator mechanisms.").
[15] It is not the methods *per se* that are not scientifically defensible but it is their application without the completion of additional analysis to ensure that the results of the simplified methods in fact reasonably predict the relationships they are intended to represent. Without such additional analyses there is no basis to believe that other factors are not responsible for the very same effects. Thus the completion of the "cofounding factors" analysis is an essential component of such evaluation that was never attempted or completed by DES in this document.

The communities learned that a peer review was planned by EPA and considered this a good opportunity to have the more detailed scientific issues addressed. The communities sought involvement in that peer review but EPA refused to allow consideration of any of their issues or the new analyses developed by the Coalition's consultants showing that transparency could not have caused the recent eelgrass declines. (Exhibit 1J). However, EPA limited the peer review to the skewed record previously developed prior to June 2009, preventing the peer review panel from understanding that the central analyses in the 2009 Criteria document (graphs depicting a "solid" relationship between TN, chlorophyll 'a' and transparency and low DO- Figures 39 and 27) was a complete fabrication. The underlying studies deleted from the report confirmed no such relationships existed.[16] Moreover, DES attempted to represent the statistical analyses as having confirmed a solid "cause and effect" relationship when both EPA and DES knew the analysis contained no such demonstration. (Exhibit 6 – 11/9/8 email between Trowbridge and Lattimer; Exhibit 15, *passim*. This lack of cause and effect relationship was ultimately admitted by Mr. Trowbridge, the 2009 Numeric Criteria document author under deposition. *Id.* at 2.

Because the DES/EPA version of the science and the facts presented in the draft permits did not line up, numerous FOIA requests were submitted to EPA. Those responses confirmed that EPA did not have any record information supporting claims in the Fact Sheet on dozens of issues. (Exhibit 11- Supplemental Response to Exeter[17]). In response to the Newmarket, Exeter, and Dover permit actions, the Communities developed a detailed analysis of the available data, submitted to EPA, showing that:

[16] See Deposition Exhibits 31, 32, 71, and 72; Exhibits 14 and 15.

[17] The communities submitted a comment regarding Exeter that EPA FOIA responses confirmed a complete lack of information on major issues such as data actually confirming changes in TN caused eelgrass declines or increased algal growth adversely impacting transparency. This comment for Exeter is applicable to Newmarket since the same record is applicable in both cases and EPA gave the same FOIA response (or lack thereof) to Newmarket. Clearly EPA was well aware that it lacked supporting evidence and data on these issues.

1. Algal levels never increased in response to TIN increases in the estuary. (If no increase occurred TN could not have caused poorer transparency anywhere in the system and TN control could not be expected to reduce algal levels and improve transparency).
2. Available data indicated that secchi depth (a measure of transparency) had not changed in either Great Bay/Little Bay and the Piscataqua River. (Therefore the claim that transparency caused the eelgrass declines was completely unsupported).
3. DO was naturally low in the tidal rivers and that low DO did not coincide with elevated algal levels. For the Lamprey River, in particular, detailed studies showed that a hydrodynamic anomaly was the primary cause of the periodic low DO in that system. (Therefore, reducing algal levels would not be expected to have a beneficial effect on DO levels in the tidal rivers).
4. The analyses DES used to support the 2009 Criteria were fundamentally flawed since they plotted data from radically different environmental settings and presumed (contrary to the available data) that TN was the key parameter that explained the variation in DO and transparency. (These analyses confirm that the effect of other critical system parameters controlling transparency and the effect of nitrogen inputs were completely ignored contrary to accepted scientific methodologies and EPA guidance manuals).
5. The analyses were only rough correlations that failed to consider over a dozen important physical, chemical, and biological factors influencing whether or not TN will have any significant effect on the endpoints. (Such analyses are not considered scientifically defensible methods per EPA's SAB).

See Exhibits 1, 11-22.

DES Agrees With the Coalition and Signs a Memorandum of Agreement Deferring Application of the Draft 2009 Numeric Criteria Document

The Coalition's analyses of the data from Great Bay were transmitted to DES in January, 2011 (Exhibit 1J) and the primary author of the 2009 Numeric Criteria document (Mr. Trowbridge) prepared a rebuttal.[18] This difference in scientific opinion, lead to a series of meetings wherein the Coalition experts presented exhaustive analysis of the available data to DES. DES eventually agreed with the Coalition's experts that there were substantial uncertainties with the scientific approach used to develop the 2009 Numeric Criteria in April 2011.[19] In June 2011, a Memorandum of Agreement ("MOA") was reached between DES and the Coalition cities. (Exhibit 1A). The MOA included the following critical findings with respect to the scientific validity of the 2009 Numeric Criteria document and its future application in NPDES permitting:

- DES agreed that "relative to impairments on the 2010 303(d) list attributed to dissolve oxygen (DO) and nitrogen, there is uncertainty about the extent to which nitrogen is a causative factor relative to other factors in the listed assessment units. . ." MOA at 1.

[18] This is the 2011 Trowbridge analysis cited by EPA as the basis for claiming the Coalition's later filed comments were misplaced.

[19] For example, the parties both understood for a factor to have caused an eelgrass impairment to occur the change had to have occurred before the eelgrass declined. Consistent with this, DES acknowledged that TSS levels had changed after eelgrass levels occurred and therefore could not be the cause of such declines. Likewise as system transparency and algal levels have not material changed either before or after eelgrass declined, these factors too could not be the cause of the change in eelgrass populations. This of course is precisely what Mr. Trowbridge 2007/2008 TAC analyses had demonstrated. The Coalition's experts did not have copies of all of those presentations which were in archives and therefore, completed the same analyses by separately looking at the same data that had been available to Mr. Trowbridge years early. Failure by Mr. Trowbridge to provide the earlier analyses as these issues came up, demonstrates a fundamental lack of honesty and good faith on his part in addressing the scientific questions at issue. In addition, Mr. Trowbridge left his information out of his rebuttal of the HydroQual assessment which was an intentional admission of material information violating the fundamental ethical principle that one must tell the whole truth and not leave out material facts in the hope that others will reach an opposite conclusion and not discover the true reality of the situation. Such obvious material omissions demonstrate that the testimony and scientific analyses by this DES "expert" is thoroughly unreliable and therefore should not be considered as a basis for rendering a decision on this permit. This is precisely the type of behavior that lead to filing science misconduct charges against EPA Region 1.

- DES agreed that "a weight of evidence approach . . . there is uncertainty in the line of evidence for eutrophication as a causative factor, and additional analyses are required for macroalgae proliferation and epiphyte growth as causative factors." *Id.*
- DES agreed that "Additional work on the multiple lines of evidencefor the relationship between nitrogen and eelgrass loss should be conducted before the nutrient criteria are used to set permit limits…" *Id at 2.*
- DES agreed "[t]he best way to resolve the scientific uncertainties with respect to assessment units impaired for DO and nitrogen is a collaborative effort to build a dynamic, calibrated hydrodynamic and water quality model . . . that includes all of the major factors affecting the DO regime." *Id.* at 2, Provision I.
- DES agreed ". . . an adaptive management approach to water quality improvement is required to reduce impairments to aquatic life use in the Great Bay Estuary." *Id.*at 1. The Coalition agreed to "[c]ommit to achieve 8 mg/L Total Nitrogen (seasonal average) effluent limit for wastewater treatment facilities discharging to the Great Bay impairment zone . . ." *Id.* at 2, Provision VI.
- DES agreed to "[p]ublish site-specific nitrogen criteria for each assessment unit on the 2010 list with impairments attributed to dissolve oxygen (DO) and nitrogen as soon as practicable after results of a calibrated, verified dynamic hydrodynamic and water quality model are available for the assessment unit." *Id.* at 3, Provision II.
- DES agreed that "EPA action to finalize and issue the draft Exeter permit, and any other draft permits that may be released, should be stayed so that municipal resources may be focused on resolving collaboratively with DES the uncertainties concerning the

relationship between DO and nitrogen in the Squamscott and Lamprey Rivers." *Id.*at 2, Provision II.

The MOA directed the parties to conduct follow-up meetings to resolve the scientific uncertainties, (Provision V) under the auspices of the Southern Watershed Alliance or the Piscataqua Region Estuary Partnership (PREP).

MOA Technical Meetings to Discuss Available Scientific Information

It was apparent that EPA was very displeased that DES had signed the MOA undercutting the use of the 2009 Numeric Criteria document. (Deposition Exhibit 45). Following the issuance of the MOA, the technical meetings called for by Provision V of that document were held with the Coalition's experts, DES, EPA (who only attended one meeting and was quite upset at the entire process), and UNH professors knowledgeable about the available studies for the estuary. The technical discussions from those meetings were memorialized in meeting minutes reviewed by all in attendance for accuracy. (Exhibits 1U and 1T).

The discussions in July 2011 meeting confirmed that the approach used to develop the 2009 Numeric Criteria was fundamentally flawed and that there was no scientific basis for applying those criteria in the tidal rivers, as transparency is insufficient to support eelgrass growth in those areas, unrelated to TN levels or algal growth. The Group (confirmed by Dr. Short) further noted TN was not causing an epiphyte problem in the bay and that eelgrass in Great Bay get sufficient light under low tide conditions to support eelgrass populations. (Also confirmed by Dr. Short in Phone logs EPA included in the administrative record) Thus, TN

effects on water-column transparency, in general, and epiphyte growth in particular, was confirmed not to be a regulatory concern for Great Bay.[20]

At the September meeting, macroalgae concerns were discussed in detail. Dr. Art Mathieson, who is recognized as a local expert on macroalage for the Great Bay estuary, advised that increased macroalgae growth appears to be occurring but that more research is needed to understand (1) whether and how such plant growth is impacting eelgrass and (2) the degree of nitrate (not TN) control that would be needed to restrict such growth in the bay. These facts were confirmed in the deposition testimony of Mr. Trowbridge. (Exhibit 12 and 22) Macroalgae are not a problem in any tidal river due to their habitat needs-generally quiescent conditions and the 2009 Criteria document only discusses this as a potential issue for Great Bay. These discussions further supported application of the 2009 Numeric Criteria was not scientifically defensible nor was the imposition of stringent nitrogen limitations justified based on consideration of that document since the primary basis for the derivation of the numeric criteria was improvement of transparency via TN control.

DES Unilaterally Reverses Its Position on MOA Issues

While the MOA group meetings were ongoing, DES was secretly in the process of changing its position with respect to the need to meet the stringent draft TN criteria in the tidal rivers. The draft Exeter permit had presumed that the eelgrass/transparency criteria must be met up in the tidal rivers, simply because eelgrass had once been present in this location decades ago. The MOA review group, however, determined that there was no reasonable basis for mandating TN criteria in these areas, because TN and algal growth had virtually nothing to do with poor

[20] *See* Original Comments Exhibit 1T- MOA meeting minutes for July 2011. Little Bay which contains deeper waters was noted to be more sensitive to changes in transparency, but the available data did not indicate that any long term reduction in transparency had occurred in this system – based on data presented from Adams Point (an area between Little Bay and Great Bay where the Jackson Laboratory is located).

transparency conditions in this area. (Exhibit 1T) Following the MOA group conclusions would have meant EPA had to withdraw the draft permit since its technical rationale was plainly at odds with the local scientific review and available data for the tidal rivers.

In response to a request from EPA, DES authored a letter indicating that the transparency-based criteria for eelgrass protection should be applied in the Lamprey and Squamscott Rivers. (Deposition Exhibit 48). EPA relied on that letter in issuing the Newmarket permit. That letter was directly at odds with the findings in the MOA and the MOA meeting group discussions. (Exhibit 1A). This letter was not released to the Coalition until months later. In November 2011, the Coalition asked DES to modify its eelgrass impairment listings that had relied on the plainly unsupported draft 2009 Numeric Criteria document given the results of the updated technical discussions called for in the MOA and the new information presented. DES simply refused to modify any finding that would undercut the application of the 2009 Numeric Criteria. At this point it became apparent to the Coalition that both EPA and DES were attempting to ignore the actual data for the system in seeking to impose nutrient reduction mandates regardless of actual need or technical justification. The Newmarket Permit was issued with an identical technical rationale, as the Exeter permit, (relying on the 2009 Numeric Criteria) contrary to the data available confirming that transparency is naturally low in the tidal rivers and cannot be materially improved through TN control. In December 2011, Dover received the same permit with the same analyses.

EPA Summarily Rejects New Technical Information at February 2012 Regional Administrator Meeting

As noted earlier, EPA refused to meet with the Coalition's experts to discuss the available scientific information despite numerous requests. Finally, after all the draft permits

were issued, a meeting was arranged with EPA Regional Administrator Spaulding in February 2012 in Dover to discuss all of the updated scientific information and how this should alter EPA's decision making process. The fundamental scientific errors in the State's analysis as well as the missing data and analyses needed to support the Region's permit requirements were reviewed in detail. (Exhibit 25 - Feb. 7, 2012 PowerPoint presentation). At the close of the meeting Regional Administrator Spaulding glossed over all of these issues and simply claimed authority to impose stringent TN reduction requirements. He closed his remarks by recommending that the communities find out how to finance the plant improvements to achieve 3 mg/L TN limits. At this point, it was clear that all attempts to engage in an objective assessment of the available scientific information were in vain.

The Coalition's Actions to Ensure Science, not Policy, Controlled Permit Derivation

Given the Region's blank rejection of the updated science and DES actions to abandon its MOA commitments, the Coalition took two steps to defend against the unlawful application of the flawed 2009 Numeric Criteria:

1. DES was sued in state court for illegal rulemaking with regard to application of the 2009 numeric nutrient criteria and the author of the 2009 Criteria document, Philip Trowbridge was deposed regarding the basis for various scientific claims in that document - Docket No. 217-2012-cv-00212.

2. A "Science Misconduct" charge was filed at EPA Headquarters regarding the Region's repeated actions in ignoring the available scientific data, precluding participation in the criteria peer review and excluding critical studies from its "weight of evidence" analysis that confirmed the criteria were in error. Exhibit 2.

3. An Oversight Hearing was held by the Congressman Issa, Chairman of the House oversight Committee on Government Reform, regarding EPA's insistence that stringent TN reduction must be implemented.

The Oversight Hearing produced a staff report indicating that EPA was overstepping its bounds in seeking to impose requirements based on the unadopted 2009 Numeric Criteria. (Exhibit 26). The staff report for the hearing determined that EPA's actions were procedurally improper as the public was cut out of the "peer review" process and were in conflict with CWA requirements by imposition of new nutrient limits based upon an unadopted numeric water quality criteria. Id. EPA ignored the staff report and the urging of the Committee to reasonably resolve the disputed technical and regulatory issues.

DES Officials Admit Draft Criteria are based on Erroneous Technical Assumptions and Do not Demonstrate Narrative Criteria Violations

The filing of the state action lead to a series of depositions with key DES personnel involved in generating and approving the 2009 Numeric Criteria document. The depositions of key DES officials (Paul Currier and Philip Trowbridge) were completed in July 2012 (transcript available in August 2012). Both Mr. Trowbridge and Mr. Currier acknowledged that the transparency based criteria were based on broad assumptions not verified conditions for the estuary. Exhibit 15 at 2-4. Mr. Trowbridge acknowledged that he excluded from the 2009 Numeric Criteria "weight of evidence" analyses, all of his earlier analyses that showed TN was <u>not</u> responsible for causing eelgrass declines in the system due to reduced transparency. Id at 10-11. He acknowledged these findings were correct but not included in the 2009 Numeric Criteria

document. The following critical statements were made by Mr. Trowbridge, admitting that the fundamental technical deficiencies raised by the Coalition were correct:

1. Phytoplankton levels in the Estuary have not materially changed over the last 30 plus years despite the apparent increase in nitrogen levels known to stimulate algal growth. *(Note: 2009 Numeric Criteria are based on the assumption that TN had a major impact on algal growth, which then adversely impacted water column transparency*).
2. Transparency levels in the Estuary have not materially changed over the last 30 plus years. *(Note: 2009 Numeric Criteria were based on the assumption that water-column transparency had degraded significantly causing the eelgrass population changes).*
3. Great Bay is not a water column light-limited system. *(Note: 2009 Numeric Criteria was based on the opposite presumption).*
4. Data for the tidal rivers shows that transparency cannot be achieved regardless of TN reductions by wastewater treatment facilities due to natural conditions, algal growth impact on transparency in tidal rivers is negligible and TN control will not materially improve transparency in the tidal rivers. *(Note: 2009 Numeric criteria analysis assumed that TN induced algal growth was controlling tidal river transparency).*
5. Recent DIN levels in the Estuary have decreased to levels measured in the 1970s. *(Note: DIN increases were the original reason DES believed nitrogen was responsible for eelgrass declines).*
6. Narrative criteria violations and implementation must be based on a cause-and-effect demonstration that the nutrient in question caused "cultural eutrophication" which in turn caused an impairment to the system biota.

7. The 2009 Numeric Criteria were based on the "assumption" that TN caused a major change in transparency due to increased algal growth, not a "cause and effect" demonstration that such events actually occurred. Therefore the 2009 Numeric Criteria do not represent a finding about the degree of TN that causes a narrative criteria violation under existing state rules and the criteria are not based on a "cause and effect" relationship, which is needed to find a narrative criteria violation. (*Therefore the 2009 Numeric Criteria cannot be used as a basis to implement the narrative water quality standard criteria. § 122.44(d)*).
8. The relevant information DES/PREP analyses that evaluated whether (a) TN increases had caused changes in transparency, algal levels or DO and (b) a "cause and effect" relationship between TN and transparency/DO existed, were excluded from the technical information presented in the 2009 Numeric Criteria document and, therefore, were never presented to EPA's peer review panel. (*Thus, the 2010 peer review panel was not aware that the criteria were based on completely incorrect statistical associations.*) .

(*See, generally* Exhibit 15, August 30, 2012 Supplemental comments providing detailed references to the deposition testimony.). Copies of the depositions transcripts as well as selected excerpts were subsequently provided to EPA Headquarters (copies also provided to Region I) with the belief that EPA Headquarters would review the statements confirming that the Region's insistence on stringent TN reduction was thoroughly misplaced. (Exhibit 12). The Coalition stresses that it was only through the state litigation discovery process, after the close of the permit comment period, that the various DES analyses were uncovered and EPA's knowledge that there was no objective basis for claiming TN caused significant transparency decreases in this system was confirmed. It was also discovery that produced the emails discussing (1) how

EPA asked for DES to modify the impairment listings by applying the draft criteria as the basis for claiming narrative criteria violations to avoid a threatened suit from CLF (Deposition Exhibit 34) and (2) that EPA knew the 2009 Numeric Criteria were not based on any type of cause-and-effect demonstration. (Deposition Exhibit 88- "Nitrogen was not proven to be the causative agent for light attenuation."). Thus, it was apparent that EPA was centrally involved in creating nutrient criteria that were based on a complete fabrication – as the available site-specific information all confirmed that a TN-transparency relationship did not exist for this system, but the Agency sought to promote the adoption of TN criteria based on that alleged effect anyway. (Deposition Exhibit 35 and 80).

June 2012 Meeting at EPA Headquarters

A meeting was held with EPA in Washington, DC on June 28, 2012, to review the claims raised and the Regional office participated via conference call.[21] Subsequently, dozens of additional documents were provided to EPA to further demonstrate that the Region's technical position was thoroughly lacking in scientific basis.[22] (Exhibits 4-9). Months went by with no response from EPA Headquarters. On September 27, 2012, EPA Office of Water issued a short letter that claimed there was no basis for the science misconduct claim and relied on the peer review occurring in 2010 to claim the Region's position and criteria were adequately based. Exhibit 9. EPA did not address a single issue that was verified by the deposition testimony or the updated scientific information.[23] FOIA responses recently received confirmed that EPA Headquarters review involved the Regional office in refuting all of that alleged science

[21]Briefing materials provided to Office of Water and EPA Region I detailing the numerous DES admissions made under oath and the results of information released under discovery confirming EPA knew the analysis used to generate the 2009 Criteria was not credible.
[22] See, Exhibit 6 - Follow up Letters to Ellen Gilinski with list of issues confirmed to be in error under deposition.
[23] EPA's FOIA response listing of administrative record for rendering science misconduct response shows EPA did not consider any information filed by the Coalition after the initial letter was submitted. (Exhibits 29 and 30)

misconduct activities but such information nowhere addressed the issues documented through the depositions.[24] EPA basically conducted no investigation of the claim that critical information was excluded from the 2010 peer review and that, in any event, there is no transparency impact occurring from nitrogen in Great Bay Estuary. Likewise, the administrative record for this permit expressly excluded all information which confirmed the Region's actions were patently unlawful and not supported by objective scientific information. (See RTC at 2 n.1).

DES Issues a Letter Admitting Scientific Error but Refusing to Change Its Regulatory Stance

Concurrent with the EPA HQ review, the mayors of Dover, Portsmouth and Rochester transmitted a letter to Commissioner Burack, demanding that he direct his staff to withdraw the plainly flawed 2009 Numeric Criteria document in light of the sworn testimony of Philip Trowbridge – the author of the document. It is well recognized that admissions of material error mandate withdrawal of regulatory actions. *See e.g., NRDC v. United States Forest Serv.*, 421 F.3d 797, 816 (9th Cir. 2005) ("The Forest Service's *reliance on an important mistake in fact seriously impaired the rationality* of the Forest Service's judgment and Plan for the Tongass. The Forest Service's *error* in assessing market demand *fatally infected* its balance of economic and environmental considerations, rendering the Plan for the Tongass *arbitrary and capricious in violation of the APA*.") (emphasis added). On October 19, 2012, Commissioner Burack response verified that the 2009 Numeric Criteria relied on numerous erroneous scientific conclusions – but refused to abandon the document or the conclusions that stringent TN reductions were necessary. (Exhibit 22- attachment). The Commissioner, however, switched his rational from water-column

[24] Documents released under FOIA confirmed that, as expected, EPA Region I was fully engaged by the EPA HQ Office of Water in rebutting the allegations contained in the Science Misconduct letter.

transparency being the issue of concern in Great Bay estuary to excessive macroalgae growth as being the primary concern. This is the same position that was outlined by DES and EPA to the town of Exeter on September 21, 2012 in discussing the basis for finalizing that permit.[25] EPA included the Burack 2012 letter as part of the administrative record for the Newmarket permit, apparently not realizing that it admitted that TN control would not materially improve transparency in the tidal rivers and that the entire concept that TN-induced changes in water column transparency being the factor causing eelgrass impairment is in error. (See RTC at 85 n.35).[26]

Submission of Additional Supplemental Comments by the Coalition

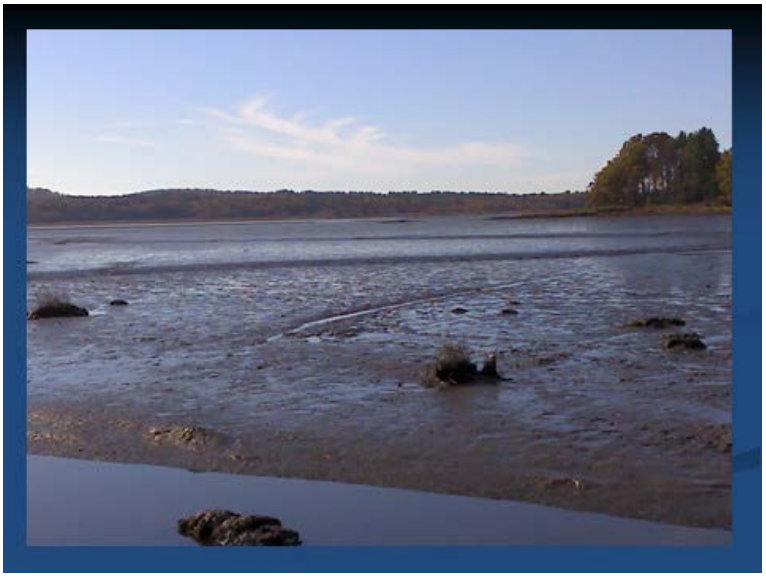
From June through November 2012, the Coalition supplemented its existing timely filed comments with the data and information presented in the science misconduct review and letter to Commissioner Burack. (See, Exhibits 12-22). Since macroalgae was now the claimed cause of eelgrass decline in the system, a detailed response on that endpoint as a basis for imposing the proposed permit limitations was supplemented.[27] In addition since EPA was focusing on tidal flats macroalgae pictures from 2008, pictures were taken of the current macroalgae growth in these same areas previously claimed to exhibit excessive growth. The pictures had to be taken in

[25] Attachment Exhibit 25 - presentation slides from EPA/DES/ Exeter meeting.

[26] The Burack response specifically addressed the DES admissions documented under oath during the depositions of July 2012. This was the same information that both EPA Headquarters and Region I ignored in rendering their decisions that the scientific approach presented in the 2009 criteria document were defensible. Putting aside that EPA is not permitted to simply ignore such information if it is submitted after the comment period closes, it is apparent that EPA was fully aware of the ramifications of that testimony given the inclusion of Burack letter in its Response to Comments. Sticking ones head in the sand, however, is not a permissible approach under the Federal Administrative Procedures Act.

[27] The Coalition originally made reference to the MOA group conclusions that the level of impairment and TN reduction needs of macroalgae were unknown. (See Exhibit 1). Once it was apparent this was now going to be EPA's primary rationale for permitting the facilities, these preliminary comments were supplemented with a more detailed evaluation of information related to macroalgae issues. Thus, this was not a "new or late" comment, it was a necessary supplement given EPA and DES' changing justification for the permits.

the peak macroalgae growth season (October/November) for the comparisons to be valid. The pictures of Lubberland Creek (2008 (top) and 2012 (bottom)) are shown below.



This 2012 pictures, as well as others also submitted to EPA and DES, confirmed that little macroalgae growth was presently occurring in these areas. (Exhibit 21). Likewise, the most

current information from PREP regarding nitrogen levels in the estuary was submitted which confirmed a dramatic decline in nitrogen (nitrate) levels had occurred from 2009-2011.[28]

EPA Region I, like EPA Headquarters, ignored all of this information, as well as the statements of the local experts most knowledgeable about the condition of the system, in relying on earlier reports prepared by Mr. Trowbridge as if they were unassailable given the 2010 peer review.[29] All of the updated information, as well as the historical analyses excluded by DES and EPA from the 2009 Numeric Criteria development demonstrate that this entire premise (TN caused a significant reduction in transparency via excessive water-column algal growth and TN triggered major changes in macroalgae growth), and the proposed nutrient limitations have no credible basis in science or actual environmental need.

2012 PREP Report Justifies the Immediate Remand of this Permit

As part of its record in support of its actions, EPA included many references to PREP State of the Estuaries reports including the draft 2012 PREP report, believing that the draft report supported its position on the need for stringent TN limitations. EPA apparently held this belief because the primary author of the sections on TN, eelgrass, DO and macroalgae of that report was Philip Trowbridge – the author of the 2009 Numeric Criteria. However, the final 2012 State of the Estuaries Report released on December 8, 2012, which generally considers the most recent scientific information for the estuary, plainly does not support the need for stringent TN

[28] EPA itself referenced a draft 2012 PREP report as part of its technical support for finding stringent TN reductions were required. The final 2012 PREP report paints a far different position, fully supporting the scientific points raised by the Coalition. The Final PREP report is included as a supplement to the records previously provided.
[29] The filing does not address EPA's use of the Dr. Viella's comments other than to note none of Dr. Viella's comments, made on behalf of CLF, consider any of the relevant site-specific information for Great Bay. For Dr. Viella, it is all guilt by association. Such analyses do not demonstrate that the estuary "has" TN impairments or that the 2009 Numeric Criteria are necessary to protect eelgrass populations in this estuary.

reductions at this time. Exhibit 24. The 2012 State of the Estuaries Report indicates the following with respect to monitoring data for the estuary:

1. Algae blooms in the estuary have not increased in over 30 years (2012 PREP at 16);
2. Macroalgae are an "emerging problem" that requires further investigation to assess its significance (*Id.* at 44);
3. Existing TN level for the Bay is averaging 0.38 mg/L TN and 0.116 mg/L DIN. DIN levels are comparable to those measured in the 1970s (*Id.* at 14);
4. The effect of nitrogen loads on the system is not "fully determined" and requires "additional research" (*Id.* at 12); and,
5. Eelgrass have rebounded in Little Bay to the highest level in decades. *Id.* at 20. This occurred despite the existing nitrogen levels EPA claims are inimical to eelgrass restoration.

Thus, based on this most recent report regarding the health of the estuary, there is no credible scientific basis to assert that extremely restrictive TN reduction requirements are mandated. Clearly, any claim that TN has caused major increased in algal (phytoplankton) blooms or excessive macroalgae growth is either demonstrably incorrect or premature speculation. Likewise, assertions that existing macroalgae or transparency levels are preventing eelgrass regrowth is plainly in error as Little Bay – the bay area claimed to be most sensitive to changing transparency – has the best eelgrass level since wasting disease depleted eelgrass in 1987. (See Deposition Exhibit 19 at 26, Table 2). If existing water quality and TN levels were preventing eelgrass reestablishment as EPA has claimed, obviously this would not have occurred.

III. Threshold Procedural Requirements[30]

Petitioner satisfies the threshold requirements for filing a petition for review under 40 C.F.R. Part 125, to wit:

1. Petitioner has standing to petition for review of the permit decision because it participated in the public comment period on the permit and participated in the public hearing. See 40 C.F.R. § 124.19(a). Petitioner submitted public comments on September 13, 2012 and supplemental comments to EPA Region 1. (See Exhibit 1). In addition, Petitioner commented at a public hearing which took place on November 30, 2011 at the Newmarket Town Hall. (See RTC at 1).
2. The issues raised by Petitioner in its petition were raised during the public comment period and supplemented as otherwise allowed by 40 C.F.R. § 124.13 for information not available when the comment period ended and therefore were preserved for review.

IV. Legal/Procedural Arguments

a. EPA arbitrarily considered information submitted after the close of the comment period to information favoring its decision to implement stringent nitrogen control for the Newmarket Facility but excluded similar information submitted by the Coalition.

It is axiomatic that an agency's decision is supposed to be based on the full administrative record before it. *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 420 (1971). The agency is not allowed to arbitrarily restrict the administrative record to those documents that are favorable to the agency's position nor are they allowed to ignore relevant

[30] The Coalition is appealing this action because of the refusal of EPA to look at the relevant science and comments submitted. It is understood that Newmarket wishes to proceed with the construction of updated facilities to achieve an 8 mg/l limit. The Coalition has no objection to and supports that proactive step consistent with the MOA. Therefore, it is requested that the Board's review not interfere with that activity to the degree possible under the applicable review regulations.

data and material submitted as part of the public comment process. This principle is demonstrated by the preamble language of 40 C.F.R. § 122.44(d) requiring that "all available scientific information" should be considered in developing appropriate effluent limitations and ensuring proper application of a State's narrative criteria. However, at the beginning of its Response to Comments, EPA blatantly ignores this principle:

> Given the opportunity for the Coalition to comment on the revised draft permit both in writing at the public hearing during an unusually protracted comment period that extended far beyond the ordinary 30-day period required by regulation; the lengthy and voluminous comments; and the failure of the Coalition to provide any specific or compelling justification for their tardy submittal, EPA rejects the supplemental comments as untimely and accordingly does not respond to them in this Response to Comments.

RTC at 2 n.1. EPA asserts all such supplemental information from the Coalition was late because a lengthy comment period was allowed and lack of "compelling justification." Neither rationale is a valid excuse ignoring this highly relevant data and information, not available when the comment period closed, confirming the permit actions are procedurally flawed. "Compelling justifications" are not required to supplement existing comments based on new data and analyses not available at the close of the comment period. The fact that such information was not available at the time the comment period closed is the "compelling justification."

It is apparent that the rationale provided for ignoring the supplemental information was simply a thinly veiled excuse for elimination new information confirming that the 2009 Numeric Criteria were admitted by DES to be fundamentally flawed. While excluding all of the Coalition's supplemental comments submitted after the close of the comment period by deeming them untimely, EPA has relied upon numerous other documents developed by third parties after the close of the comment period, *so long as those documents supported EPA's intended approach.* It was not even necessary for the document to have been submitted as a late comment

to the agency. For example, EPA referenced (1) the Draft PREP 2012 Report which were not released until July 16, 2012, (2) DES Response to Comments on the Draft 2012 Consolidated Assessment and Listing Methodology issued on April 20, 2012 that claimed the scientific methods that were used to derive the 2009 Numeric Criteria were proper, (3) comments submitted by Dr. Mathieson on May 21, 2012 to DES regarding the same Section 303(d) listing that EPA claims demonstrate macroalgae are causing system wide impairment and (4) the October 19, 2012 Burack Letter which reviewed the validity of various statements DES made under oath and whether such statements were inconsistent with the technical assumptions underlying the 2009 Numeric Criteria document. (See e.g., RTC at 4 n.6; at 83 n.35.). At a minimum, EPA's unexplained decision to accept these later developed information and analyses as Gospel while excluding the supplemental information and analyses on the very same issues provided by the Coalition members was arbitrary and capricious and requires remand of this permit.

i. The Coalition's supplemental comments did not raise new issues but rather included further data and analyses relating to the Coalition's original timely filed comments.

It should be noted that none of the Coalition's supplemental comments actually raised new comment issues. The Coalition was simply providing supplemental information with respect to issues previously raised in the Coalition's original, timely filed comments. On this point, precedent set by the Board, as well as other case law, makes clear that where new data is provided after the close of the comment period such information must be considered while new comments, i.e., wholly new issues not previously raised in the earlier timely comments, need not

be considered.[31] Thus EPA mistakenly classified these supplemental comments as new issues when in fact they transmitted updated data analyses, new data, and supplemental discussion based on new information available after the close of the comment period that pertain to issues previously raised in the timely filed comments. Thus EPA's decision to ignore the new factual information supporting existing permit objection issues was clear error.

ii. The information submitted by the Coalition was not available when the comment period closed, therefore, could be properly submitted before the final permit was issued.

The test for excluding late filed comments set forth in the underlying rules is whether the information was available at the time the comment period closed. 40 C.F.R. § 124.13. In this case, all of the information filed by the Coalition, after the close of the public comment period, was information not available when the permit record closed. Specific examples of such information include:

(A) Deposition testimony of Philip Trowbridge (DES Author of the 2009 Numeric Criteria Document), Paul Currier (Former Director of the State Water Quality Program – Mr. Trowbridge's supervisor throughout the development of the 2009 Numeric Criteria), and Dr. Fred Short (UNH Eelgrass Scientist).[32]

In these depositions, the following facts were confirmed: (1) the 2009 Nutrient Criteria document was based on fundamentally flawed scientific conclusions at odds with the available water quality data; (2) the 2009 Numeric Criteria did not represent the implementation of the

[31] *See e.g. In re New England Plating Co.*, 9 E.A.D. 726, 732-733 (2001) ("In limited circumstances, this Board has considered the merits of an issue not specifically raised in comments below where the specific issue raised in the petition is very closely related to challenges raised during the comment period, and the Region had the opportunity to address the concerns in its response to comments."); *In re EcoEléctrica, L.P.*, 7 E.A.D. 56, 64 n.9 (EAB 1997) ("[B]ecause the issue of data currentness is so closely related to the challenges to the existing air quality data that were properly preserved for review . . . and that the Region has had an opportunity to address, we decline to deny review based on the Committee's alleged failure to preserve a specific data-currentness objection."); *In re P.R. Elec. Power Auth.*, 6 E.A.D. 253, 257 n.5 (EAB 1995) ("Because the issue of meteorological data was generally raised during the comment period, and the Region's response to comments adequately address the concerns raised in the petition, we decline to deny review on the basis that this issue was not preserved for review.").

[32] See, e.g., Exhibits 12- 18.

States' existing narrative standard- it was a new numeric criteria; (3) a narrative criteria violation must be based on a demonstrated cause-and-effect relationship but the 2009 Nutrient Criteria contained no such demonstration; and (4) the 2009 Nutrient Criteria document excluded extensive site specific information and analyses prepared by DES showing that the TN had not been the cause of the claimed TN-induced use impairments or cultural eutrophication in this system. (See, Deposition excerpts submitted to EPA HQ and Region I - Exhibits 12, 15 and 18). Given EPA's extensive reliance on the work of Mr. Trowbridge as "scientifically defensible" and a proper basis for implementing the State narrative standard, no information could have been more important than an author admitting those documents were based on demonstrably incorrect scientific assumptions and did not implement the narrative standard. The full deposition transcripts were not completed until August 2012 and therefore, could not be submitted prior to that date. In any event, many of these same findings were reviewed and admitted to be true in Commissioner Burack's letter of October 19, 2012 that EPA included in the permit record.

(B) Draft PREP 2012 Report.[33]

The data contained in the Draft PREP 2012 Report confirmed nitrate and TN levels had decreased markedly over the past three years, returning to 1980 levels, as extreme weather conditions were no longer occurring. This information was relevant to whether and how much nitrogen reduction was necessary and to the degree to which it should be required given the recognition that nitrate is the most important parameter in controlling excessive plant growth in the system. This same fact was verified by the October 19, 2012 response from Commissioner Burack (Figure 4) and the final PREP 2012 SOE Report at 13 (Figure 2.3) (Exhibit 25).

[33] PREP. 2012. Draft Environmental Data Report. Piscataqua Region Estuaries Partnership, University of New Hampshire, Durham, NH. (July 16, 2012).

(C) 2011 Eelgrass Report.[34]

The 2011 Eelgrass Report for the system issued on September 12, 2012 by Dr. Short demonstrated that eelgrass coverage had dramatically rebounded in Little Bay despite claimed inadequate transparency levels in that system. This was the most eelgrass present in Great Bay in over 25 years. This information (also referenced in the draft 2012 PREP report cited by EPA but for other reasons) confirms that existing water quality is not preventing eelgrass populations from recovering, as presumed by the analysis performed for the permit.

(D) Pictures of macroalgae growth for 2012.[35]

The pictures of current macroalgae growth for 2012 had to be taken during the peak growing season which occurs in late fall. These pictures confirm that the level of macroalgae growth had decreased dramatically in comparison to conditions present in 2007-2008 EPA reported in the Fact Sheet. Given EPA's September 2, 2012 meeting with Exeter, indicating that macroalgae were now the primary cause of concern for Great Bay, Little Bay and the tidal rivers, (also reiterated in the Burack 2012 Letter) this was critical new information indicating that macroalgae growth was far less significant than originally believed. In fact, it was virtually absent in the same location considered excessive in 2008. This occurred with a slight decreased in system TN concentrations indicating that, if TN is the factor controlling such plant growth as asserted by EPA, clearly TN levels far less restrictive than 0.3 mg/l should be sufficient to control macroalgae growth.

(E) Burack 2012 Letter.[36]

[34] Short, F.T. 2012. Eelgrass Distribution in the Great Bay Estuary for 2011. A Final Report submitted to the Piscataqua Region Estuaries Partnership. September 14, 2012.
[35] See Exhibit 20.
[36] Letter from Thomas S. Burack, Commissioner, NHDES, to Cities of Portsmouth, Dover, and Rochester, dated October 19, 2012 (Exhibit 22).

On October 19, 2012, Commissioner Burack responded to the Coalition on the validity of key scientific issues covered in the depositions of Philip Trowbridge and Paul Currier (i.e. the information EPA refused to consider). EPA included this document as a justification for its action in its Response to Comments, while it completely ignored the parts of the letter that confirmed the disputed scientific issues raised by the Coalition were addressed by the Commissioner and admitted to be correct. This included the fact that Great Bay, Little Bay, and the Piscataqua Rivers do not have a demonstrated water-column transparency problem due to nitrogen inputs.

Plainly, even if EPA itself had not considered this same information for other purposes, it should had to be consider all of this "new information" since none of this information was available at the time the comment period closed. Moreover, it was all information available to EPA well in advance of the decision to issue a final permit, so no prejudice was created by the timing of the submissions in August/September 2012.

iii. As EPA (and DES) changed their rationale for imposing stringent TN limitations after the close of the comment period, the Coalition was allowed to submit data and analyses regarding the new rationale.

All of the permits relied upon the same basic technical documents, e.g., the 2009 Numeric Criteria Document, 2010 WLA Document, and 2010 USEPA Peer Review of the 2009 Numeric Criteria document. These documents focused on water-column transparency as the key factor to control to improve eelgrass populations. Because EPA switched its primary rationale for imposing stringent nitrogen controls (as disclosed to Exeter in September 2012), the public must be allowed to submit supplemental comments outlining the data and analyses applying to the new primary rationale. In this case, EPA and DES were switching from a transparency-based

impairment theory to a macroalgae-based impairment theory.[37] It is clearly improper for EPA to participate in the presenting new scientific information as the basis for imposing the permit requirements to one permittee and then preclude the Coalition from providing supplemental comments as to the validity of the new theories and analyses. Such an approach would violate due process rights intended to be granted by the opportunity for public comment.[38]

EPA Region I also participated extensively with EPA Headquarters in response to the science misconduct allegations, therefore, having access to all of the new information confirming the Region's approach was unsupported. Region I officials were literally on the phone with EPA Headquarters and the Coalition representatives discussing the new scientific information (including the initial results of the DES depositions) and how it thoroughly contradicted the positions taken by EPA Region I with regard to the scientific validity of the 2009 Numeric Criteria. (Exhibit 4). Therefore, the new scientific information confirming the earlier DES reports were in error, was presented to EPA Headquarters and consequently in the possession of Region I well before any permit decision was rendered.[39] As the science fraud process involved the same technical information and analyses that were the basis of the proposed Region I permit actions and the information was in EPA's possession, it's refusal to look at such information to determine whether its scientific position was in fact correct on the permitting actions that triggered EPA Headquarters' review is patently unreasonable, as the decision under Section

[37] After the close of the comment period, EPA continued to hold separate meetings and information exchanges with the Coalition members regarding the reasonableness of the permit requirements. These meetings included a February 2012 group meeting with all of the Coalition members at which updated scientific information as was discussed and a September 2012 meeting with Exeter and DES at which time new information was presented by DES addressing the "macroalgae impairment theory" as the leading basis for the permit requirements.

[38] Agencies are not permitted "to use the rulemaking process to pull a surprise switcheroo on regulated entities." *Envtl. Integrity Project v. EPA*, 425 F.3d 992, 996 (D.C. Cir. 2005).

[39] EPA Region I provided a document to EPA Headquarters to rebut the science misconduct claims. (Exhibit 30).

122.44 (d) was to be rendered considering "all available information." (RTC at 40).[40] The information was certainly "available" to the Regional office.

In summary, EPA's position that it will not consider the supplement information filed by the Coalition is complete form over substance. EPA's decision to cherry pick later available information that it believed supported its position while completely ignoring any such information contrary to its position, certainly fails to meet APA prerequisites and expectations of fair dealing. This approach, which biases the administrative record on appeal, cannot be ascribed as a reasonable or appropriate application of the underlying Federal rules. Full and proper consideration of this information, in particular the deposition statements of Philip Trowbridge, the author of the 2009 Numeric Criteria document as verified in the Burack 2012 Letter, should have led to a conclusion that numerous components of the 2009 Numeric Criteria analysis were flawed and do not reflect the actual conditions occurring in the system. Consequently, it was inappropriate for the Region to rely on either the 2009 Criteria Document or the 2010 WLA report, as an appropriate scientific basis for implementing the State's existing narrative standard or for concluding that nitrogen discharges from the Coalition's facilities were causing or contributing to cultural eutrophication in the system. As EPA's failure to consider the later filed information was "clear error", this permit should be remanded for consideration of that information.

b. EPA failed to fully and fairly consider the relevant information submitted by the Coalition prior to the close of the comment period.

As a corollary to the appeal issue addressed above, the Coalition asserts EPA clearly failed to fully consider even the relevant information submitted prior to the close of the initial

[40] It is rather obvious why EPA has refused to address the information. Region I wants to rely on the conclusions of various DES reports as the basis for the stringent permit limitations and reopener if extensive NPS controls are not implemented. If the author of those documents has admitted there are fundamental errors in their logic – obviously it would be unreasonable for EPA to rely upon them.

comment period before preparing a comment response and determining the appropriate effluent limitations. The following information shows that the Region's action clearly failed to meet regulatory requirements to fully consider permit comments.

To support its action, EPA relied extensively on the 2009 Numeric Criteria document prepared by DES without providing any independent analysis as to the scientific reasonableness of that document in the face of the permit comments, and data reviewed.[41] Rather EPA relied extensively on the EPA's internal (non-public) 2010 "Peer Review" of that document to assert it was proper to use the recommended numeric criteria as the applicable requirements to implement the narrative criteria under CWA Section 122.44(d). However, in reaching this conclusion the Region (I) ignored that the municipal entities being regulated were expressly excluded from participation in that peer review process by EPA Region I. (See, Exhibit 1D, letter from Tupper Kinder transmitting comments and objections regarding the peer review issues) and (2) the 2010 EPA Peer Review was not conducted in consideration of either the subsequent conclusions of the MOA or new information filed in response to these permit actions. In fact, by its actions, EPA excluded the Coalition *twice* from participating in the peer review process or challenging the sufficiency of the 2010 peer review findings.

Under oath, Philip Trowbridge admitted that the peer reviewers were not presented with the DES data analyses confirming that TN had not caused a change in transparency or algal levels. (Exhibit 15 at 10, 11. The Coalition's comments sought to present that information and, in response EPA claimed that the 2010 Peer Review determined that the 2009 Numeric Criteria was scientifically defensible. Thus, the Coalition's comments were rejected based on a peer review that expressly excluded the information raised in the permit comments. This circular logic does not constitute a proper response to the Coalition's comments as the underlying 2010 Peer Review

[41] EPA's Response to Comments cites to the 2009 Numeric Criteria document 46 times.

document plainly never even addressed these issues. (Note: Section 122.44(d) states that narrative criteria application must consider the available site-specific information. Clearly, the most important site-specific information was illegal excised from the process). 40 C.F.R. § 122.44(d)(vi)(A) and (B).

i. EPA purposefully did not include information submitted by the Coalition in the peer review process.

The Coalition resubmitted its comments that the peer review was deficient as part of the public comments – the Region said such a comment was improper and they would not respond to those issues. (RTC at 63). Both the original action and the latest denial run contrary to the CWA Section 101(e) which mandates that public participation be promoted when developing standards and effluent limitations.[42] These due process violations were further exacerbated by the Region's participation with DES in excluding information relevant to the peer review from the reviewers consideration and the development of the 2009 Numeric Criteria document for which the Region was the primary technical resource. (Deposition Exhibit 75). This series of events was all documented in the Science Misconduct letter submitted to EPA Headquarters and confirmed by Philip Trowbridge in his deposition (Exhibits 2 and 15). The documents DES excluded rom the original peer reviewers included numerous presentations developed by Trowbridge and presented to EPA confirming that the transparency/algal paradigm did not exist in the Great Bay system. (Deposition Exhibits 31, 32, 71, and 72).

Thus, EPA *knew it had this information in its possession showing the technical basis of the 2009 Numeric Criteria document was flawed but simply left it out of the administrative record on this matter.* Had EPA considered the detailed evaluation developed by Mr.

[42] CWA Section 101(e) states, in part, "[p]ublic participation in the development, revision, and enforcement of any regulation, standard, effluent limitation, plan, or program established by the Administrator or any State under this Act shall be provided for, encouraged, and assisted by the Administrator and the States."

Trowbridge as well as the comments regarding the deficiencies in the 2010 peer review, both in its possession all this time, it is highly probable that they would have concluded that the criteria were not scientifically defensible. At a minimum, EPA would have had to agree that this substantive information was excluded from the "weight of evidence" analysis presented to the peer review and therefore, EPA's reliance on the Peer Review conclusions would be an improper basis to reject the Coalition's comments on this issue.

ii. EPA ignored the fact that DES acknowledged numerous technical errors occurred in the development of the 2009 Numeric Criteria.

The central purpose of 40 C.F.R. § 122.44(d) is to (1) determine if a pollutant is causing an impairment and (2) established the effluent limitation necessary to eliminate that impairment. As noted earlier, EPA included the Burack 2012 Letter as part of its record justifying the selected numeric criteria and derived numeric nitrogen limits. (RTC at 85). However, EPA failed to acknowledge or evaluate that, in this letter, the State *specifically acknowledged* major technical errors had occurred in the development of 2009 Numeric Criteria document (precisely as the Coalition has claimed), including the exclusion of critical information from the peer review. (See Exhibit 22). Rather than defend the transparency-based 2009 Numeric Criteria document, DES acknowledged that transparency was not a significant ecological concern in this system but that changes in macroalgae were now the primary concern. (See Burack 2012 Letter at 1-2 ("It is correct that there have been no clear trends in chlorophyll 'a' . . . measured in Great Bay over the full period of record from 1974 to 2011 in Great Bay"). DES further confirmed that the information supplied by the Coalition to EPA as part of the public comments did demonstrate that nitrogen control would have no meaningful impact on transparency in the tidal rivers), at 3-4, at 7 ("Great Bay itself is not a transparency limited system because eelgrass population receive

sufficient light during the tidal cycle. . . . DES agrees . . ."), and at 11. See Burack 2012 Letter at 5 ("The point of the graphs was to attempt to show that chlorophyll-a was not well correlated with water clarity and, therefore, that other factors such as turbidity and colored dissolved organic matter (CDOM) must be controlling light attenuation. During the deposition, DES staff agreed that the graphs support this conclusion."). Ignoring that DES actually concurred with the Coalition's assessment, EPA, however, asserted, without any credible supporting analysis, that the information provided in the graphs (Exhibit 1S, 1V) was somehow unreliable and did not make the demonstration that DES agrees it does make, i.e. there is no benefit to nitrogen control regarding transparency in the tidal rivers. EPA's position is plainly unsupported. This was the same data used in other graphs that EPA relied on in rendering its decision. (See 2009 Numeric Criteria at 58-67). It is not apparent how such data become reliable only when presented as a long term average but are not reliable when presented as a location specific plot with averages for data intervals. EPA's rejection of this information explains nothing in its response. Had EPA properly reviewed this letter and objectively reported the admissions of the author of the 2009 Numeric Criteria document, EPA should have reached a conclusion that the entire premise of this permit, that nitrogen must be reduced to improve transparency in the Great Bay Estuary, was a fundamentally flawed determination.[43]

iii. EPA overlooked the significance of the draft PREP 2012 Report refuting findings of the 2010 WLA document.

EPA also referenced the Draft PREP 2012 Report and Burack 2012 Letter regarding various environmental indicators in the system but failed to grasp the significance of that

[43] The specific technical responses contained in the Burack 2012 Letter are completely inconsistent with EPA's belief that stringent nitrogen removal in the system is necessary to comply with water quality standards. Obviously if there was no change in Great Bay algal levels; TN effects on algal growth cannot have occurred causing lower transparency levels in Great Bay leading to eelgrass declines. Any other conclusion would be obviously incorrect given this data.

information in that preliminary report in refuting the findings of the 2010 WLA document prepared by DES. The 2010 WLA document was primarily based on reducing increased nutrient levels that had occurred during extreme rainfall conditions in 2005 - 2008. (See 2010 WLA Report Tables at 1-10). As noted in the Coalition's comments, these extreme rainfall conditions were outside the range of conditions intended to be controlled by water quality objectives. These were once in a hundred year rainfall events that produced dramatically higher nitrogen and nitrate loadings into the system as would be expected. Using this condition as a the basis for determining the degree of nutrient reduction required, EPA projected that major non-point reductions were needed, in addition to stringent point source limitations. (RTC at 24). However, the 2012 PREP Report contained new data demonstrating that since 2009 – 2011, when wet conditions existed in the watershed (but not extreme conditions), the nitrogen concentrations and loadings in the estuary dropped drastically. EPA, itself, used the 2009-2011 information when it estimated the proportion of the load that was due to various sources in the system. (See RTC at 106). These much lower system wide loadings were also demonstrated in the attachments to the Burack 2012 Letter. Figure 4. However, the system baseline load occurring 2009-2011 was acknowledged by the Burack 2012 Letter to be far lower than the 2005-2008 period, thereby requiring far less pollutant reduction.

As EPA's load reduction requirements and treatment decisions in Great Bay were based on a set of dated, transient, extreme weather conditions not representative of typical conditions governing eelgrass health, EPA's entire reliance on the 2010 WLA document was misplaced. EPA's flip flopping between the 2009-2011 baseline and the extreme wet weather conditions of 2006-2008 show that the agency simply failed to grasp the significance of the issue in regulating facilities in the watershed. In fact, the 2012 PREP Report (Figure 3.2) and Burack 2012 Letter

(Figure 7) confirmed that current nitrate and TN levels are at or below the levels considered sufficient to ensure excessive macroalgae growth does not occur in this system (the main concern cited in the Burack 2012 Letter). Therefore, EPA's failure to understand or consider how this information dramatically altered nitrogen reduction requirements (assuming TN is causing impairments) lead to regulatory determinations on this permit which are clearly flawed and need to be reconsidered.

c. EPA Failed to properly apply the State's narrative standard.

The permit limitations and instream numeric objectives are derived via application of Section 122.44(d). That provision does not constitute a basis for amending a narrative criteria but, as with other water quality standards, it is intended to strictly apply the standard as adopted, regardless of whether it is narrative or numeric. 40 C.F.R. § 122.44(d)(vii)(A). Cases discussing Section 122.44(d) require EPA to determine the State's intent on proper application of a narrative standard, if there is any question on that issue.[44] In this instance, EPA improperly applied Section 122.44(d) to independently develop a numeric criteria without the consideration of the actual requirements of the State's narrative standard. Throughout the Response to Comments, EPA presumes, but does not ever demonstrate, that (1) TN caused use impairments exist and (2) the numeric criteria developed in 2009 constitutes a proper application of the State's narrative standard. EPA further claims it has no requirement to demonstrate impairment prior to imposing pollutant reductions under 122.44(d). EPA's reliance on this assumption is clear error and a misapplication of the applicable water quality criteria and regulatory provision.

[44] See e.g., *Kentucky Waterways Alliance v. Johnson*, 540 F.3d 493, 469 n.1 (6th Cir. 2008); *Marathon Oil Co. v. Environmental Protection Agency*, 830 F.2d 1346, 1351-1352 (5th Cir. 1987); *American Paper Inst. v. EPA*, 996 F.2d 346, 351 (D.C. Cir. 1993).

The proper application of 40 C.F.R. § 122.44.d requires three independent steps to impose a water quality based effluent limitation:

(1) A narrative criteria violation must be documented,

(2) That is caused by a pollutant discharge, and

(3) The necessary level of protection to correct the narrative violation must be determined.

None of these steps properly occurred. First, there is no information confirming that eelgrass losses in this system are anything but naturally occurring. EPA simply assumed the eelgrass reductions were TN induced because this has occurred in other systems. While it is true that eelgrass populations declined since 1996 (the peak eelgrass level ever documented) this does not lead inexorably to a conclusion that nitrogen caused the decline. That has to be proven with some reasonable scientific certainty considering the available site-specific information but was not. (RTC at 72 discussing the need to base decisions on site-specific information, when available.).[45] CWA violations must be proven by a "preponderance of the evidence," not based on presumptions.[46] Absent such information, there is no basis to claim eelgrass populations constitute a violation of the state's narrative standard. As acknowledged by Mr. Currier and

[45] Under oath, Mr. Trowbridge testified that the 2006 flood conditions could have caused the rapid eelgrass declines that lead to the listing of Great Bay and lower tidal rivers as eelgrass impaired. (Exhibit 2 at 6-9). The Burack 2012 letter attempted to refute this point but it is apparent that this is the only rational explanation offered for why eelgrass populations crashed that year. No excessive algal blooms were noted in 2006 which would have implicated nitrogen as the cause. The supplemental data ignored by EPA did note that transparency in the Bay was extremely poor due to the large color inputs from the tidal rivers - the highest in 100 years. (Exhibit 2). That condition was extreme enough to affect eelgrass broadly and over an extended period.

[46] *Sackett v. EPA*, 622 F.3d 1139, 1145 (9th Cir. 2010) *rev'd on other grounds* ("[I]t follows that a court cannot assess penalties for violations of a compliance order under § 1319(d) unless the EPA also proves, by a preponderance of the evidence, that the defendants actually violated the CWA in the manner alleged."); *Smith v. Hankinson*, 1999 U.S. Dist. LEXIS 5151 (S.D. Ala. Mar. 31, 1999) ("In order to find plaintiff liable for a violation of the CWA, the EPA had to establish by a preponderance of evidence that….") *citing United States v. Brace*, 41 F.3d 117, 120 (3rd Cir. 1994); *Borden Ranch Pshp. v. United States Army Corps of Eng'rs*, 1999 U.S. Dist. LEXIS 21389 (E.D. Cal. Nov. 8, 1999) ("The EPA bears the burden of proving by a preponderance of the evidence that Tsakopoulos has violated the Clean Water Act . . .").

Trowbridge under oath, if the eelgrass fluctuation was caused by the 2006 flooding event or some other natural condition caused by high color entering the system, that decline in eelgrass would be natural and therefore not a violation of existing state narrative standards. (Exhibit 15 at 1-2 and 6-8).

Second, with respect to TN-induced transparency decrease as the cause of eelgrass losses, that conclusion rests on eelgrass losses in Great Bay and in the lower Piscataqua River. However, EPA points to no information presented in the record showing that Great Bay is a transparency limited system (Burack 2012 Letter confirms it is not) or that the existing tidal river transparency levels support eelgrass growth under natural conditions (Burack 2012 Letter confirms it does not). Both EPA and DES have admitted, CDOM and turbidity occurring in the tidal rivers originates from natural sources (Deposition Exhibit 85) and that the resultant transparency from these conditions is insufficient to support eelgrass (Burack 2012 Letter at 5; therefore, these conditions do not constitute a violation of the State's narrative criteria as explained by Mr. Currier (Exhibit 2 at 5) (regardless of whether or not additional nitrogen loadings worsen, these existing naturally, insufficient transparency levels).

Moreover, as noted in the Burack 2012 Letter and in the extensive documentation provided to EPA with the Coalition's comments, Great Bay is not a transparency limited system due to the extensive daily tidal variation, which allows eelgrass to receive sufficient light for growth. EPA's Response to Comments itself acknowledged this point. Therefore, the Region's conclusions that transparency is a source of narrative criteria violation due to eelgrass declines fluctuations in Great Bay is directly contrary to the conclusion that eelgrass in these areas are not generally transparency limited. Therefore, the Region's assumption that TN-induced

transparency caused the eelgrass declines in Great Bay and constituted a narrative criteria violation triggering the need for TN controls under Section 122.44(d) is plain error.[47]

Third, with regard to nitrogen effects on water-column transparency, DES confirmed (as did the draft 2012 PREP report cited by EPA) that inorganic nitrogen levels that had increased over time in the system *did not* cause a significant increase in water-column algal growth. If increased algal growth did not occur in response to changes in TN level in Great Bay, it is axiomatic that TN could not have caused a major decline in water column transparency.[48] As nitrogen never caused the alleged increase in algal (phytoplankton) levels, it is clear that regulating nitrogen as proposed by EPA will not cause a material decrease in the algal levels in this system. Therefore, nitrogen is plainly not a parameter that significantly effects water-column transparency due to excessive algal growth so it cannot be regulated under Section 122.44(d) as having caused a narrative criteria violation. Under these circumstances, the then Director of the State Water Quality Program, Paul Currier, acknowledged that nitrogen could not be considered to be causing a narrative criteria violation. (Exhibit 2 at 5).

Finally, with respect to demonstrating the level of nitrogen proposed to be controlled in the system (0.3 mg/L TN), the analyses supporting the derivation of that value plainly did not adhere to the prerequisites established in the State's narrative standard for demonstrating narrative criteria violations due to nutrients. Under oath, DES' author of 2009 Numeric Criteria document admitted the nitrogen criteria were developed based on the assumption that nitrogen was primarily responsible for transparency impacts using a correlation that did not actually

[47] Critical information disclosed during DES depositions indicated that EPA requested that DES declare Great Bay nutrient impaired in 2009 to avoid a threatened lawsuit from CLF. DES complied with EPA's request by stating that it could use the draft 2009 Numeric Criteria as the basis for declaring nitrogen was causing the eelgrass declines in the system.

[48] EPA emails with the State confirmed that EPA knew that methodologies employed in the 2009 Nutrient Criteria document were not based on a cause-and-effect demonstration but were mere correlations.(Exhibit 6)

demonstrate cause-and-effect relationship. This analysis ignored the other factors that primarily controlled transparency (e.g., water, color and turbidity) and simply attributed all of those influences to TN. However, the express language of the State's narrative criteria does require a cause-and-effect demonstration to conclude that nutrients caused an impairment. (See Exhibit 15 at 1-3.) Consequently, both Mr. Trowbridge and Mr. Currier admitted the 2009 Numeric Criteria Document could not be considered to be a basis for demonstrating a narrative criteria violation is occurring in the system due to lack of evidence showing a cause-and-effect relationship. (*Id.*). Both specifically stated that the 2009 criteria are new numeric values and do not constitute a narrative criteria translator. (*Id.)* None the less, EPA recommended that DES apply the criteria as a "narrative translator" to declare Great Bay estuary eelgrass impaired to due to TN and transparency. (Deposition Exhibits 34 and 36).

Given this information, it is clear that EPA used § 122.44(d) to create an assumed narrative violation to which a new numeric criteria would be applied rather than implement the language of the State's existing narrative standard and demonstrate TN was the cause of the 2006 eelgrass declines. Section 122.44(d) however provides no such authority to EPA. EPA must apply the State's existing narrative standard and make the demonstrations required under that standard.[49] It is apparent that EPA never properly demonstrated that narrative criteria violations due to nutrients existed in the system relying on the assumption that the 2009 Numeric Criteria document had provided that demonstration. Of course, a draft numeric criteria cannot provide such a demonstration. Therefore, this was clear error on EPA's behalf to make that assumption, rather than reasonably prove the violation actually existed.[50]

[49] In fact the reason that the new numeric criteria were developed was because DES felt that making the narrative criteria demonstration was simply too difficult.

[50] Likewise, EPA cannot rely on the eelgrass impairment designation for Great Bay and the tidal Rivers. The record confirms that EPA allowed that designation to occur based specifically and solely on the failure of the waters to

d. EPA illegally applied an unadopted numeric criteria when developing nitrogen effluent limitations.

As noted above, the application of the State's narrative criteria requires a different set of assessments and determinations to confirm nutrients are causing adverse effects which must be regulated under the narrative standard. Moreover, where natural conditions are responsible for the absence of a particularly use, e.g. eelgrass, from a specific area, those conditions do not constitute a violation of narrative criteria. (Env-Wq 1703.14(b)). EPA's Response to Comments sought to refute the position that the application of the 2009 Numeric Criteria was not the application of an unadopted, numeric nutrient criteria; the application of which would be prohibited by 40 C.F.R. § 131.21 also known as the "Alaska rule."[51] However, it is clear that EPA is illegally applying an unadopted, numeric criteria violating applicable Federal law, in deciding that a 0.3mg/L TN criteria must be met throughout the Great Bay Estuary to protect eelgrass.

i. Record Confirms WQS Adoption was Required

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meet the unadopted numeric criteria contained in the 2009 document. (Deposition Exhibit 36). That action plainly violated 40 C.F.R. § 131.21.

[51] EPA's "Alaska Rule" governing adoption and modification of state water quality standards – 40 C.F.R. § 131.21, 65 Fed. Reg. 24641, 24647 (April 27, 2000) ("During the adoption of the detailed procedures, all stakeholders and EPA have an opportunity to make sure that important technical issues or concerns are adequately addressed in the procedures. *** This approach is particularly useful for criteria which are heavily influenced by site-specific factors such as nutrient criteria or sediment guidelines. Such procedures must include a public participation step to provide all stake-holders and the public an opportunity to review the data and calculations supporting the site-specific application of the implementation procedures."); U.S. Environmental Protection Agency, Water Quality Standards Handbook, Second Edition, EPA 823-9-94-005a (August 1994), available at http://water.epa.gov/scitech/ swguidance/standards/handbook/index.cf, at 3-22 ("Where a State elects to supplement its narrative criterion with an accompanying implementing procedure, it *must formally* adopt such a procedure as a part of its water quality standards. The procedure *must* be used by the State to calculate derived numeric criteria that will be used as the basis for all standards' purposes, including the following: *developing TMDLs*, WLAs, and limits in NPDES permits . . . .") (emphasis added); *id.* at 3-22 ("To be consistent with the requirements of the Act, the State's procedures to be applied to the narrative criterion *must* be submitted to EPA for review and approval, and will become a part of the State's water quality standards. (*See* 40 C.F.R. § 131.21 for further discussion.)") (emphasis added); *id*. at 3-24 ("Where a State plans to adopt a procedure to be applied to the narrative criterion, it *must* provide full opportunity for public participation in the development and adoption of the procedure as part of the State's water quality standards.") (emphasis added).

The record relating to the development of the 2009 Numeric Criteria states that this is a new numeric criteria and that must be adopted into State law prior to its application to the regulatory process. It was EPA who urged the adoption of this numeric criteria and initially told DES that it must be formally adopted prior to applying the criteria in the regulatory process. *Id.* The 2010 WLA recognized this fact and specified that the 2009 Numeric Criteria was to "replace" the narrative standard, not to be used as a value that simply translated the narrative standard. 2010 WLA at iii. Likewise, EPA's 2010 Peer Review nowhere sought confirmation that the 2009 Numeric Criteria should be evaluated to ensure that it was a proper translator of the existing narrative standard. The 2009 draft document provides a reference to the current narrative criteria, but no further attempt is made in that document to show how the 2009 Numeric Criteria document fulfills all of the demonstrations required under the existing narrative standard.

ii. EPA Attempts to Avoid Rule Adoption

In late 2009, EPA requested that DES change its description of the new numeric criteria to call it a "numeric translator," believing that this changed designation would avoid the need to formally adopt the criteria and allow the immediate application of the numeric criteria to declare all of the Great Bay Estuary nitrogen impaired. (Deposition Exhibit 37- EPA Email to P. Currier). The Coalition's commented that simply calling the 2009 Numeric Criteria a translator could not negate the requirement that the criteria needed to be formally adopted into State law before it could be used as even a new "translator" constitutes an action requiring formal adoption. EPA's Response to Comments has now abandoned describing the 2009 Numeric Criteria document as a translator. (RTC at 70 ("DES has not adopted a numeric translator. . .")). Thus, if the 2009 Numeric Criteria is no longer considered a translator, its original designation as

a new numeric criteria stands and the criteria needs to be formally adopted. Moreover, even for § 122.44(d) purposes, EPA may not presume the numeric criteria values are equivalent to those nutrient levels necessary to ensure compliance with the narrative standard. That requires a demonstration that the narrative criteria considering the site-specific information would require the same result. There is no such analysis in the record. Finally, in the science misconduct review EPA Headquarters refers to the 2009 Numeric Criteria Document as creating a new "numeric criteria," not as a method for implementing the State's narrative standard.

> Section 1.2.3. of the EPA's Peer Review Handbook (3rd edition). The purpose of the peer review was to support the state by providing advice from national experts on how to improve the technical and scientific soundness of the document as a basis *for future development of numeric nutrient water quality criteria. The peer review was not intended to resolve the many complex issues concerning the development of nutrient criteria and the implementation of nutrient controls for the Great Bay.*

Exhibit 9 at 2.

Given EPA's acknowledgment and the State's admission that the 2009 Numeric Criteria does not constitute evidence or demonstrate a violation of the narrative standard, the 2009 Numeric Criteria document can only be classified as a new unadopted numeric criteria. To use this for narrative criteria implementation, there needs to be a demonstration that transparency reduction due to TN was the cause of the "eelgrass impairment." No such analysis exists as confirmed by Messrs. Trowbridge, Currier, and Short. (See Exhibit 2 at 2-3). Therefore, EPA's application of that criteria to (1) find the waters to be nutrient impaired and (2) to require the establishment of numeric limits under Section 122.44(d) plainly constitutes the illegal application of a new unadopted numeric standard under 40 C.F.R. § 131.21. As explained in the questions and answers on the Alaska Rule, NPDES permits may not be based on unadopted

numeric criteria, therefore, the Region's action plainly violates CWA requirement to only apply the exiting/adopted regulatory requirements in deriving NPDES permits.[52]

e. EPA has modified its interpretation of the requirements provided for under 40 C.F.R. § 122.44(d).

Section 122.44(d) requires that the permitting authority demonstrate the level of nutrient reduction that is "necessary" to ensure compliance with the applicable water quality standard. This regulation does not specify how an agency may balance pollutant reduction requirements when point sources are the minor component contributing to an alleged impairment. In this particular instance, EPA notes that for the Lamprey River the Newmarket discharge is approximately 15% of the total nitrogen discharged into the system during the period of the concern. (RTC at 106). In 1989, when EPA published the water quality based permitting requirements applicable under Section 122.44(d) , EPA published a graph showing that point source control for toxics reduction was not required where nonpoint source loadings were the overwhelming cause of alleged water quality criteria violations. (54 Fed. Reg. 1307, Ex. A.)

Reflecting this fact, EPA 1991 Technical Support Document for Water Quality-based Toxics Control (1991 TSD) contained a listing of 19 permit allocation approaches that may be used under the Act. (1991 TSD at 19). The document notes "[m]ore often a proportionality rule that requires the percent removal to be proportional to the input loading can be assigned. IN these cases larger sources would be required to achieve higher overall removals." EPA has demanded the opposite approach in this case. Nowhere did that nationally applicable guidance document indicate that point source reductions must be maximized where waters fail to attain standards due to a combination of point and non-point sources. Thus, the only explicit statement

[52] Clean Water Act ("CWA") Section 505(a) mandatory duties suit filed on December 13, 2012 in D.C. District Court.

EPA has published regarding balancing point source versus nonpoint source control indicates that point sources should not be penalized with more restrictive requirements where nonpoint sources are the clearly controlling load influencing ambient pollutant concentrations. This concept applies regardless of whether or not a TMDL has been completed.

In issuing this permit EPA has created an entirely new theory as to how Section 122.44(d) must be applied in circumstances where nonpoint sources are the controlling load and a TMDL has not been completed. EPA has stated that point source load reductions must be maximized where significant nonpoint source contributions exist. In fact, EPA has noted regardless of the degree of nonpoint source control that would be required (whether to obtain 0.3 mg/L TN instream transparency-based or 0.38 mg/L TN instream macroalgae-based instream objective) the resulting effluent limitation for Newmarket would be the same because EPA wishes to maximize point source control simply because significant nonpoint source control is going to be necessary. To accomplish this goal EPA added the following new clause to the permit:

> In order to achieve water quality standards in the Lamprey River, significant reductions in non-point sources of total nitrogen are necessary in conjunction with achieving the total nitrogen limitations in this discharge permit. Achieving the necessary nonpoint source reductions will require collaboration between the State of New Hampshire and public, private, and commercial stakeholders within the watershed to: (1) complete nonpoint source loading analyses; (2) complete analyses of the costs for controlling sources; and (3) develop control plans that include:
>
> a. A description of appropriate financing and regulatory mechanisms to implement the necessary reductions;
> b. An implementation schedule to achieve reductions (this schedule may extend beyond the term of this permit); and
> c. A monitoring plan to assess the extent to which the reductions are achieved.
>
> Following issuance of the final permit, EPA will review the status of the activities described above in items (1), (2), and (3) at 12 month intervals from the state of

> issuance. In the event the activities described above are not carried out within the time frame of this permit (5 years), EPA will reopen the permit and incorporate any more stringent total nitrogen limit required to assure compliance with applicable water quality standards.

Permit at 12 (emphasis added).

This requirement to maximize point source load reductions regardless of the degree of impact from the facility is radical revision of Section 122.44(d) requirements that nowhere appears in the rule and is plainly beyond EPA's authority. There is nothing in the record demonstrating that it is necessary to "maximize" point source control in order to ensure standards are attained. Moreover, there is nothing on the face of Section 122.44(d) that indicates any preference should be given to maximization of point source control simply because substantial nonpoint source reductions may be required in the system. In addition, EPA's recent action in the *Upper Blackstone* case[53] espoused no such regulatory theory in determining that a 5 mg/L TN limit was needed to protect Narragansett Bay (a system that has dramatically greater algal growth occurring in it than is occurring in Great Bay). Consequently, it is apparent that EPA Region I is applying a new regulatory interpretation nowhere reflected in the existing rule. EPA is using this interpretation to mandate a more restrictive permit limitations for all point sources. Such illegal rule amendments are expressly prohibited by the Administrative Procedures Act. *Amer. Mining Congress v. Mine Safety & Health Admin.*, 995 F.2d 1106, 1112 (D.C. Cir. 1993).

i. The Region's Interpretation Presents an Issue of National Significance

EPA's new interpretation of its authority under Section 122.44(d) is plainly an issue of national significance that needs to be addressed by the Board. If maximizing point source reductions is required wherever nonpoint source controls dominate a system, as is the case here,

[53] *Upper Blackstone Water Pollution Abatement Dist. v. United States EPA*, 690 F.3d 9 (1st Cir. 2012).

permittees nationwide will be required to maximize nutrient removal regardless of their relative impact caused by their discharge on the system. The cost implications of such a rule interpretation are easily in the hundreds of billions of dollars. This NPDES permitting theory is inconsistent with the Supreme Court's mandate that fair apportionment, where possible, is appropriate even when joint and several liability would ordinarily be imposed. *Burlington N. & Sana Fe. Ry. v. United States*, 556 U.S. 599, 613-615 (U.S. 2009); *O'Neil v. Picillo*, 883 F.2d 176, 179 (1st Cir. 1989). It is also inconsistent with the Restatement of Torts (Second) which states that fair apportionment is proper where there is a reasonable basis for determining the relative impact on the environment. Restatement (Second) of Torts § 443A(1)(b) (1976).

As Section 122.44(d) contains no preference for maximizing point source control, EPA must establish that it is fair and equitable to impose stringent nitrogen reductions on minor point sources rather than presume it is policy goal of the Region that must be applied. As no such demonstration is contained in the record, this permit should be remanded for a more complete analysis consistent with the adopted rules and generally accepted legal principles applied to alleged joint tortfeasors.

f. Since Great Bay is not a transparency limited system, EPA must be required to republish the permit allowing the public to comment on EPA's newest justification for imposing strict nitrogen limitations on Great Bay Communities.

The draft permit was clearly and extensively based on the need to improve transparency throughout the system to ensure eelgrass restoration. (See Fact Sheet, Passim; RTC at 14). EPA, however, in its Response to Comments switches it's position stating regardless of whether there is need to control transparency in the system, stringent nitrogen reductions are still warranted due to the demonstrated macroalgae problem. (RTC at 97-99). However, as noted by EPA, the DES-recommended numeric water-quality criteria acceptable to control marcroalgae (assuming

arguendo macroalgae is growing in excessive levels) is far less restrictive than the level of nitrogen needed to supposedly improve transparency (0.38 mg/L versus 0.3 mg/L respectively). *Id.* It is presumed that EPA included this language in an attempt to salvage its permit action in light of admissions contained in the Burack 2012 Letter acknowledging nitrogen removal will not materially affect transparency in Great Bay is not a transparency limited system. However, the data from the last three years in Great Bay shows that the Bay is currently averaging 0.38 mg/L TN and DIN levels (the factors that may stimulate macroalgae growth) are now at 1970's levels.[54] Therefore it is not apparent what, if any, additional TN reductions are needed to limit macroalgae growth at this time. Given that Commissioner Burack and the author of the 2009 Numeric Criteria document concurs that transparency should not be the focus of the analysis and the latest PREP Report confirmed that TN concentrations are in the range EPA has acknowledged is acceptable to limit macroalgae, the continued insistence that a 3 mg/l limit is required even if macroalgae are the only concern is clearly unsupportable.[55]

Likewise the Burack 2012 Letter sought to explain that nitrogen control should be required to limit macroalgae growth. (Exhibit 22, attachment at 1,7). Assuming the statements in the Response to Comments and the Burack 2012 Letter are accurate, i.e. the system is suffering from excessive macroalgae and some level of TN control is required, it is clear this permit must be republished to evaluate the appropriate requirements given (1) the different criteria applicable, (2) the different time frame when macroalgae growth is a concern (June to October) (Exhibit 1U – September 2011 MOA meeting minutes), (3) that nitrate is the form of

[54] *See* 2012 PREP Report at 14.

[55] In the face of repeated expert opinion that Great Bay is not a transparency limited system, EPA attempts to salvage this issue by claiming certain portions of Great Bay may be transparency limited. (RTC at 109, 110). Putting aside this analysis is speculative, EPA has presented no information showing that the deeper areas of Great Bay are (1) actually being adversely impacted and (2) those areas constitute more than a negligible amount of the eelgrass contained in this system. As discussed later, the available data for Great Bay provides no indication that eelgrass losses have occurred primarily in the deeper waters in the bay. The graphic EPA provides actually shows the opposite is occurring.

pollutant responsible for stimulating macroalgae growth (not TN) (Id.), (4) the recent reductions in system wide nitrate and TN levels (which indicate N levels and NO3 levels presently are at the level that would limit macroalgae growth) (2012 PREP Report), and (5) the recent pictures submitted by the Coalition documenting that macroalgae growth in Great Bay areas near the Squamscott River and Lamprey River have plummeted since the readings taken in 2008. Given all these radical changes that must be considered when developing "necessary" nutrient limitations under a narrative criteria framework, there is no basis to conclude, at this time, that a 3 mg/L TN limit is necessary to ensure excessive macroalgae growth will not occurring in this system.[56]

g. Reliance on Dated and Limited State Technical Evaluations to Address Current Permit Objections is Clear Error.

Throughout its comments the Coalition provided extensive evaluation of prior DES documents developed years earlier, demonstrated how new information was not considered within those documents, and mistaken analytical procedures used within those documents confirmed the criteria recommendations were not rationally based. In response to these comments, EPA repeated cites to subsequent DES documents (post-permit comment period closure issuance) that may or may not have addressed the issue of concern raised and presumes without further evaluation of the underlying information provided by DES, that that analyses are in fact correct, scientifically defensible, and specifically addresses the permit issue raised. (See e.g., RTC citing Trowbridge 2011 as response to HydroQual evaluation and Trowbridge 2012 as

[56] *See SEC v. Chenery Corp.*, 318 U.S. 80, 87 (1943) ("The grounds upon which an administrative order must be judged are those upon which the record discloses that its action was based."); *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 419 (1971) (internal citations omitted) (criticizing lower court's reliance on 'post hoc' litigation affidavits in reviewing agency action); *see also Forest Watch v. United States Forest Serv.*, 410 F.3d 115, 119 (2d Cir. 2005); *Envtl. Def. Fund, Inc. v. Costle*, 657 F.2d 275, 284 (D.C. Cir. 1981) ("It is well settled that judicial review of agency action is normally confined to the full administrative record before the agency at the time the decision was made. . . . not some new record completed initially in the reviewing court.").

response to scientific errors in 2009 Numeric Criteria derivation). Such action by EPA does not constitute an acceptable consideration of and response to comments.

If EPA wants to rely on DES' analyses as sufficient to address issues reviewed, it needs to explain in detail how the analysis specifically address in each of the issues of concern that are raised and why the updated analyses does not suffer the same flaws originally raised on prior DES' analyses. Absent such an evaluation there is no basis to presume that the information provided by DES in wholly, distinct regulatory settings, responds to the issues raised in this specific permit context. For example, EPA cites to an April 2012 DES comment response as the basis for addressing one of the Coalition's comments. EPA provides no information showing there is any reason to believe that the response is based on a reliable analysis or actually addressed the issue raised. Likewise EPA cites to the Burack 2012 letter to claim that the impairments continue to exist in the estuary, failing to note what impairment the Burack 2012 letter is claiming (macroalgae, not transparency) or citing the actual data showing that the statements by Burack are credible and supported by substantial evidence. The fact that DES makes a claim does not mean that it is a demonstrated fact sufficient to respond to comments claiming no such evidence actually exists.

Likewise, EPA repeatedly cites the Peer Review and its "glowing complements" on the criteria development as the basis for indicating the Coalition's comments are unsupported. However, nowhere does this peer review address any of the fundamental issues raised by the Coalition with respect to the underlying science and to how those conclusions are in error given the updated information. As noted previously, EPA Headquarters itself stated that the 2010 peer review was not intended to address complex issues associated with the Estuary. In fact, it is apparent it would be impossible for a document developed in 2010 to have provided a response

to technical issues raised regarding scientific information either not provided to peer review or simply not in existence at that time. Thus, EPA extensive reliance on this document and other documents to respond to the updated scientific information and specific allegations of technical deficiency is clear error.

V. Scientific Argument

In addition to the legal issues, EPA's technical positions were clearly in error on virtually every major scientific "finding" underlying the permit. EPA generally provided vague responses to the detailed technical observations made by the Coalition or EPA simply relied on generalizations about the expected impacts of nutrients in systems rather than addressing documented impacts, or lack thereof, in the Great Bay system. The Board should note that unlike the *Upper Blackstone* case, EPA had no working water quality model for transparency, macroalgae impacts/growth, algal kinetics or nutrient transport, or dissolved oxygen dynamics for anywhere in this system.[57] EPA has numerous published guidance documents and SAB recommendations that explain it is necessary to develop such tools in order to properly consider the factors that affect whether and where elevated nutrient concentrations may cause adverse effects and to develop scientifically defensible nutrient reduction requirements.

Rather than perform such detailed evaluations or even carefully inspect the site-specific data, EPA relied upon generalized conclusions from DES that overlooked the specific habitat, biological, and chemical factors that must be considered to derive scientifically defensible conclusions with respect to nutrients and the parameters of concern (dissolved oxygen, transparency, and macroalgae). The lack of this basic information needed to ensure that the

[57] The only transparency "model" for the estuary was developed by Morrison for Great Bay. That model, ignored by EPA and the Peer Review, confirmed on average algal growth controlled 12% of the transparency occurring in Great Bay. There was no evaluation of how much TN reduction would need to occur to affect algal growth in the Bay which is currently very low.

nutrients are actually causing or contributing to an alleged impairment and that the effluent limitations established are at a level that will meaningfully effect the parameters of concern, was simply never evaluated, rendering EPA's analyses facially deficient and were "questionable."[58] The following provides specific areas where EPA's scientific conclusions were clearly erroneous as they were not supported by a scintilla of relevant site-specific information or otherwise clearly contradicted by the available data and analyses.

a. Nitrogen controls will not achieve transparency targets due to naturally occurring CDOM and turbidity.

EPA concluded that stringent nitrogen limitations must be applied to significantly improve transparency and to allow eelgrass restoration to occur within the tidal rivers and Great Bay. (See RTC, Passim). However, EPA's Fact Sheet acknowledges the reason eelgrass have disappeared from this system is "unknown" and tidal river losses occurred sometime after the 1940s. (See Fact Sheet at 17, 25). Thus, on its face, EPA's assertion that transparency from changing TN levels caused the eelgrass losses is inconsistent with the Fact Sheet acknowledgement that the cause of eelgrass loss in the system is unknown. In response to EPA's claims, the Coalition provided site-specific studies and data showing the following: (1) that transparency in many tidal river areas today is naturally poor and insufficient to maintain eelgrass growth regardless of the effect of algal growth on transparency, (2) there is no data showing changing nitrogen levels caused any change in algal growth (the main assumption underlying the claimed need for TN reduction) and (3) the short detention time in the estuary did not lend itself to promoting algal growth. Therefore controlling nitrogen would have no

[58] Even in the *Upper Blackstone* case, EPA had a water quality model to determine how nitrogen was transported through the system and effected algal growth. There is no such evaluation for this estuary.

meaningful effect on the long-term average transparency levels DES and EPA state were necessary to allow eelgrass growth. (See RTC at 45-46 comment 7c).

In response, EPA disparaged the data sets showing transparency was insufficient regardless of the degree of algal growth, did not respond to any comments with regards to system hydrodynamics and its importance on regulating algal growth, and discounted that natural conditions were presently limiting transparency because the Coalition had not proven what had changed since the 1940s to cause the loss of eelgrass. Therefore, EPA felt it was appropriate to presume eelgrass loss was caused by changes in nitrogen concentrations in the system. EPA response is clearly deficient.

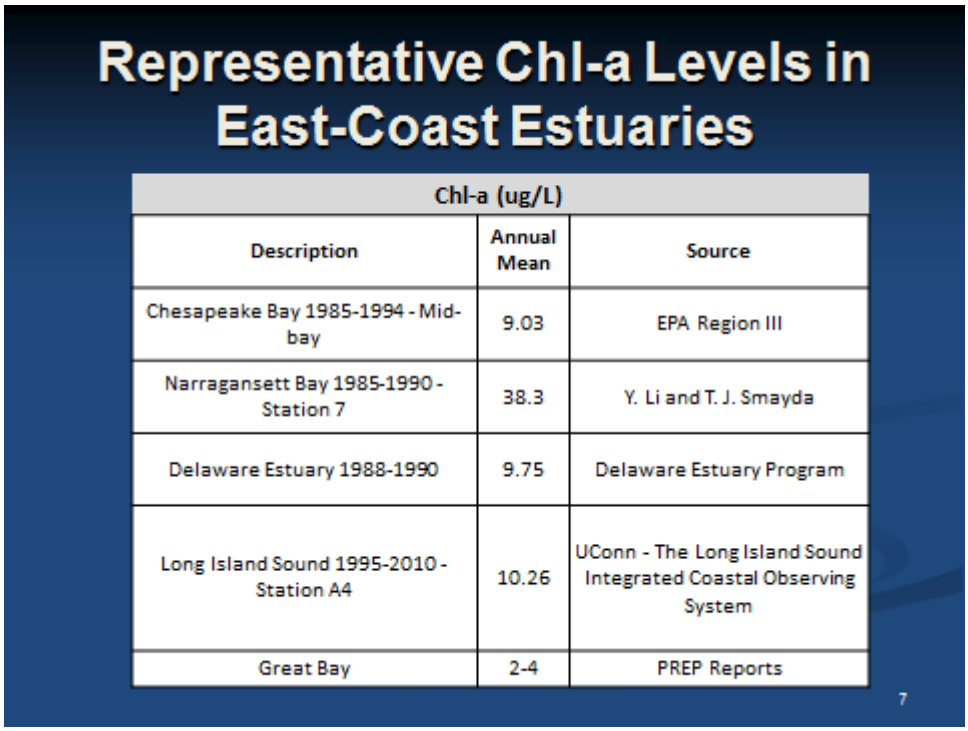
First, the detailed DES evaluations referenced by the Coalition confirm that CDOM and turbidity were the factors controlling transparency in this system, not chlorophyll a. (Exhibits 14, 15 providing Deposition Exhibits 31, 32, 73, and 74). The 2012 Burack Letter, referenced by EPA in the Response to Comments at 46, verified this point stating that:

> The point of the graphs was to attempt to show that chlorophyll-a was not well correlated with water clarity and therefore, other factors such as turbidity and color dissolved organic matter (CDOM) must be controlling light attenuation. During the deposition, DES staff agreed that the graphs supported those conclusions.

Burack 2012 Letter – Attachment at 5.

Furthermore, the Burack 2012 Letter did not deny the statements made under oath that CDOM and turbidity control transparency in the tidal rivers and that regulating TN will have a negligible impact on transparency in these areas. *Id.* Apparently EPA believed even a negligible effect on transparency allowed the Agency to presume that TN was the cause of this condition. An assumption is not the same as having data or analysis supporting a proposition, nor is it a sufficient evidentiary basis to claim a narrative criteria violation exists or that regulation of a

particular pollutant will remedy an alleged unacceptable condition in the face of data confirming that is plainly not the case. (*Leather Industries of Am. v. EPA*, 40 F. 3d. 392 (D.C. Cir 1994). The data confirmed that Great Bay estuary, in comparison to other "impaired waters" has very low algal growth.



Representative Chl-a Levels in East-Coast Estuaries

Chl-a (ug/L)		
Description	Annual Mean	Source
Chesapeake Bay 1985-1994 - Mid-bay	9.03	EPA Region III
Narragansett Bay 1985-1990 - Station 7	38.3	Y. Li and T. J. Smayda
Delaware Estuary 1988-1990	9.75	Delaware Estuary Program
Long Island Sound 1995-2010 - Station A4	10.26	UConn - The Long Island Sound Integrated Coastal Observing System
Great Bay	2-4	PREP Reports

7

Powerpoint Presentation by J. Hall on 2-7-12.

Given the low algal growth it is not surprising that, the detailed studies verified that chlorophyll a has a negligible effect on transparency in the system and that Mr. Trowbridge agreed with this under deposition. (Exhibit 15 at 4, 7). As algal growth did not respond to DIN changes this verifies that system hydrodynamics and other factors (water column transparency) in fact limiting algal growth in this system. These are the same factors that EPA guidance manuals expressly state must be evaluated to properly determine the influence of nitrogen on algal growth. Nutrient Criteria Technical Guidance Manual for Estuaries and Coastal Waters at

3-2 to 3-3; Appendix C.[59] These are the same factors that EPA evaluated when it proposed the criteria for the state of Florida finding waters subject to low transparency due to turbidity or color naturally entering the system exhibit a far lower algal response to nutrient inputs. EPA's refusal to analyze these same factors that are essential to comprehend whether or how nutrient inputs are effecting algal growth and transparency, in this system, was clear error.

i. The Coalition is not required to demonstrate what caused eelgrass declines that is the responsibility of the regulatory agencies.

In rejecting the Coalition's comments, EPA asserts the Coalition was somehow responsible for demonstrating what caused the eelgrass loss and refuting EPA's presumption that nitrogen should be assumed to be the factor controlling eelgrass population has no basis in law or fact. First, it is irrelevant what caused the eelgrass loss in this system 40 plus years ago if existing eelgrass populations cannot be reestablished in this area due to otherwise naturally occurring CDOM or turbidity. Second, it is widely understood that color inputs are rainfall dependent and the Coalition provided the long term rainfall records showing that rainfall after the 1970's dramatically increased compared to conditions occurring from 1930-1960. Exhibit 1Y. This additional rainfall would certainly bring more color into the system and reduce the natural transparency in the system.[60] Thus, to the degree it was necessary, the Coalition did provide information explaining what likely changed and caused eelgrass declines in this system. EPA simply ignored that information also.

[59] EPA is proposing to use location-specific approaches for the derivation of numeric nutrient criteria to ensure that the diversity of unique habitats found in each type of water body are taken into account and addressed. This location-specific approach allowed the Agency to consider individual physical, chemical, and biological characteristics for a particular water body as a whole.

[60] Natural conditions are not violation of narrative criteria. Env-Wq 1703.14(a) ("unless naturally occurring"). Whether such natural conditions existed in 1940 or are the "new" natural conditions is irrelevant to this regulatory conclusion

ii. EPA's Rejection of the Tidal River Data Analysis is Baseless

The data presented in the tidal river charts showing that transparency was negligibly affected by TN levels was based on the data contained in the DES database for Great Bay Estuary. This was the same dataset that formed the basis for the 2009 Numeric Criteria development. It is patently arbitrary for EPA to claim that the same quality-assured data sets used to derive the correlations between transparency and nitrogen by DES cannot be used to do an assessment of how algal growth/nitrogen inputs effects transparency for this individual system. That was clear error.

It is apparent that the correlation developed by DES in the 2009 Numeric Criteria document cannot possibly tell you what is controlling transparency for the individual tidal river sites contained in the regression. DES simply plotted single long term averages for a given site in the watersheds (Piscataqua, Lamprey, Oyster, etc.) and presumed that different transparency levels found in each location were a direct function of the degree of nitrogen present. No analysis of the data for any individual site was conducted to verify that this assumption was correct. What is obvious though is that the physical conditions at the various sites differ dramatically and therefore would need to be assessed to determine whether nitrogen control will produce any demonstrable benefits at any particular location. The permit comments and presentations to EPA indicated the following differences were present at the various sites:

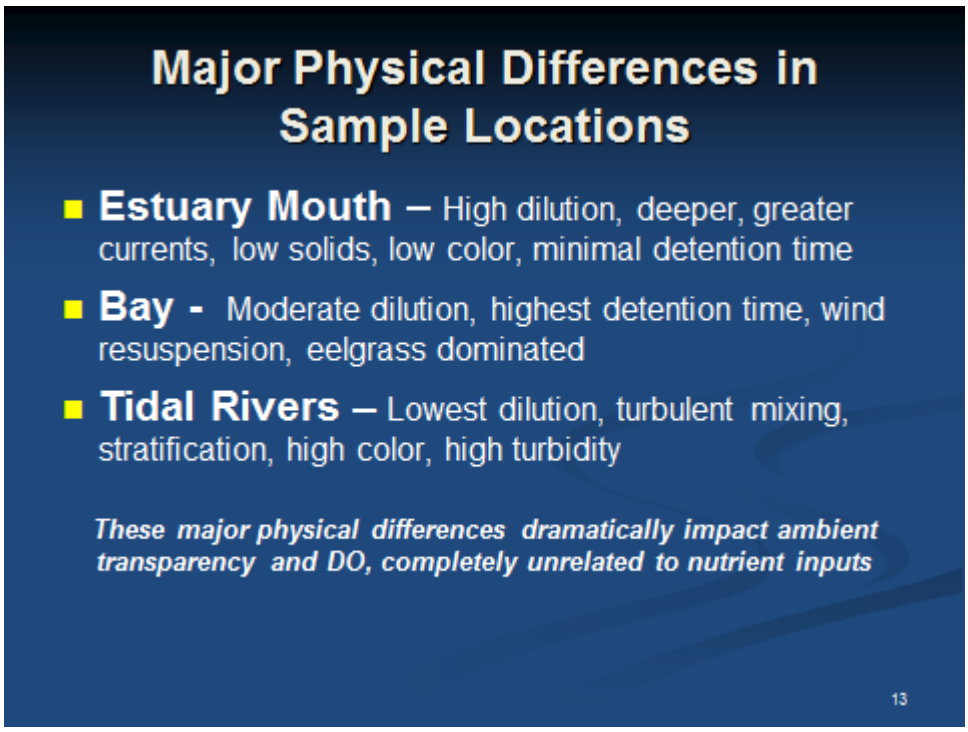


Exhibit 1O and Coalition's Powerpoint Presentation to EPA, Regional Administrator on February 7, 2012.

EPA simply assumed that achieving the nitrogen levels at the mouth of the estuary would produce the same transparency levels if those same nitrogen concentration were to occur in the tidal rivers. Putting aside the available data confirmed that this assumption was in error (data which EPA excluded from its assessment and the Response to Comments) there is obviously no information in the record showing that EPA scientific presumption that TN is the only factor naturally changing at all these different locations is are reasonable or appropriate. Absent such information one cannot claim the effluent limitations are necessary to ensure compliance with applicable standards and prevent further narrative criteria violations from occurring. That was clear error on EPA's part.

b. Great Bay is not a transparency-limited system.

Well over 90% of the existing eelgrass population in the Great Bay Estuary resides in Great Bay and Little Bay. EPA alleges that transparency in Great Bay is insufficient, was the cause of eelgrass declines, and that nitrogen was the critical parameter controlling that specific endpoint. EPA primarily based its conclusion on the 2009 Numeric Criteria document and the 2010 Peer Review that generally supported the notion that the 2009 Numeric Criteria document was scientifically defensible criteria. As noted previously, and admitted by EPA Headquarters and DES under oath, the 2009 Numeric Criteria document was not intended to determine what caused the eelgrass declines in this system. Moreover, the pertinent analyses and data that verified TN had not caused these impacts were excluded during the development and peer review of the 2009 Criteria document. These two acknowledgements, standing alone, verify reliance on the 2009 Numeric Criteria as "proof" of impairment or the nitrogen levels necessary to meet the narrative standard is pure speculation.

Perhaps the single most important scientific error associated with the development of the numeric criteria was that both EPA and DES ignored repeated expert determinations that Great Bay proper is not a transparency limited system because eelgrass are able to get sufficient light over the tidal cycle. (Exhibit 2 at 8). EPA even acknowledged this point in its response to comments, but failed to understand its importance. The Burack 2012 Letter confirmed this point. (Exhibit 22, attachment at 7). The Coalition also noted that the peer review was not presented with this specific technical finding applicable to Great Bay and therefore, had no reason to know that the transparency targets believed reasonable to protect eelgrass were essentially irrelevant for Great Bay (the area where the vast majority of eelgrass resides in this system). The failure to recognize the importance of this issue was clear error. If Great Bay is not a water-column transparency limited system it is clear error for EPA to conclude limiting TN to improve water-

column transparency is necessary to assure narrative criteria compliance in this part of the system.

i. There is No Field Data Showing Existing Transparency is Insufficient to Support Eelgrass Growth in Great Bay/Little Bay

Coalition's comments noted that EPA's assumption that existing transparency and TN levels were preventing eelgrass recovery ignored data showing eelgrass were rebounding in areas of Great Bay and were reestablishing themselves in Little Bay in waters that did not meet the transparency targets EPA and DES claimed were necessary to allow healthy eelgrass populations to exist (20% incident light at 2 meters). (Exhibit 15- at 8,9; accord eelgrass charts from Burack 2012 letter (Figure 5 showing eelgrass in Great Bay increased from about 1200 to 1650 acres between 2006 and 2011)).

The "late filed" data presented on this issue was in EPA's possession at the time the draft permit was developed but was excluded from that document. The new information developed by Short showing extensive new eelgrass beds in Little Bay was released in September 2012, after the comment period closed. EPA's Response to Comments noted a 37% eelgrass increase in Great Bay since the 2006 downturn, but failed to realize the significance of this fact – eelgrass regrowth is not being prevented by existing water quality conditions related to transparency. (See Short, F.T. 2011. Eelgrass Distribution in the Great Bay Estuary for 2011). In fact, Dr. Morrison reached precisely the same conclusion in 2007. Morrison et al (2008) at 51. EPA itself funded this research. Short's 2011 assessment confirmed that 48 acres of eelgrass have now regrown in Little Bay; a level of eelgrass higher than that occurring in 1996 when eelgrass resources in Great Bay was considered unimpaired. (See Deposition Exhibit 56- 2009 Section 303 impaired waters list). This confirms that a less restrictive transparency and nitrogen level

would support eelgrass reestablishment. Likewise this data confirmed that there was no toxicity problem impacting the system, precluding eelgrass regrowth, as EPA has implied is occurring. This information, some old and some new, confirms it was clear error to assert that the numeric criteria developed in 2009 (which never considered such information) was necessary to ensure healthy eelgrass populations can be reestablished in Great Bay or Little Bay. EPA's failure to consider this relevant site specific information, as mandated by the narrative criteria and Section 122.44(d) was clear error.[61]

ii. The Data does not show transparency-induced eelgrass losses in Great Bay

Finally, the Coalition presented information (again that was previously in EPA's possession but not included in the 2009 Numeric Criteria Document) showing that there was never a significant change in transparency despite changing TN levels in the system and therefore, it is apparent that any loss of eelgrass, long-term or otherwise, could not be attributed to a factor (transparency) that never changed. (Exhibit 1H). In fact, DES made a specific presentation to EPA Region I on this issue in March 2008, confirming transparency levels in the system had never declined prior to developing the 2009 Numeric Criteria document. (Exhibit 2 at 3). In response, EPA largely ignored every one of these observations that were separately verified by Commissioner Burack's letter which EPA chose to include in the record. EPA did acknowledge that Great Bay is not a transparency limited system[62] but raised the new claim that precluding eelgrass impairments in Great Bay, nonetheless requires increased transparency level to be met at 2 meters and implying that eelgrass loses primarily occurred in these deeper waters.

[61] Considering the actual data for the estuary to establish the degree of transparency and TN level that supports healthy eelgrass growth is a type of "stressor response" and "reference waters" approach.

[62] EPA's response is schizophrenic. In one section EPA admits Great Bay is not transparency limited, in another section EPA claims the data confirm transparency and eelgrass declines in Great Bay are closely related – showing a picture that on its face supports no such conclusion.

(RTC at 109-110) It is apparent that this was simply a "post hoc rationalization" and that none of these statements are remotely correct other than Great Bay is not generally a transparency limited system, as follows:

A. The graph presented by EPA to imply eelgrass loses in Great Bay occurred in primarily deeper waters (first presented in this Response to Comments) on its face does not show this to be correct. (See RTC at 110). The figure shows vast majority of eelgrass declines that occurred in 2006/2007 occurred in shallow waters that otherwise received sufficient light over the tidal cycle which was confirmed in the Morrison 2007 Study. Morrison confirmed that *"[t]hese results suggest that the water clarity in Great Bay, Little Bay and Lower Piscataqua River was sufficient for the growth of eelgrass. The virtual absence of eelgrass from all but Great Bay suggests that other processes apart from light restricted growth are important for limiting eelgrass survival." (Morrison at 51).*
B. Other than simply stating that the graph provides this demonstration, EPA provides no substantive explanation of how this figure does so. Absent such specific information this is just an unsupported, conclusory opinion (that is demonstrably incorrect from examining the figure itself).
C. EPA fails to mention that in comparison to 2007 present eelgrass populations rebounded several hundred acres in Great Bay despite "inadequate transparency" and are now at the threshold where Great Bay would not be considered eelgrass impaired using the DES Section 303(d) listing criteria. As stated in the 2008 Section 303(d) list, an average healthy eelgrass population in this part of the system is 2,100 acres +/- 20%. (Deposition Exhibit 19 at 19). The present eelgrass population is barely below the lower threshold averaging 1,650 acres versus 1,680 acres, the non-impairment threshold. Given this

information there is no credible basis for EPA to claim that restoring the system to non-impaired status requires additional acres of eelgrass to be obtain in deeper waters as opposed to prevalent shallower waters where historic eelgrass declines have generally occurred.

D. The Burack 2012 Letter cited by EPA in its Response to Comments, expressly acknowledged that (1) algal levels had not changed in the system for 30 years despite changing nitrogen levels, and (2) Great Bay is not a transparency limited system. Ignoring the opinion of the State on this matter, when it relied on all other state developed analyses was clear error as it is without explanation in the record.

Although both EPA and DES have admitted that Great Bay is not a transparency limited system, both continue to rely on a set of technical analyses and related flawed peer review premised on the opposite conclusion. EPA's determination to forge on to impose stringent nitrogen controls to improve transparency, in a non-transparency limited system, is clear error.

c. Great Bay is not confirmed to be a macroalgae impaired system.

In response to the Coalition's comments that TN-induced transparency is not causing eelgrass impairment, the draft permit Fact Sheet mentioned but had little discussion of macroalgae impairments alleged to exist in Great Bay.[63] It should be noted that the 2009 Numeric Criteria document only had two pages devoted to discussing possible macroalgae impairment[64] and DES concluded that based on the limited data available a significantly less restrictive nitrogen level up to 0.38 mg/L TN could be sufficient to prevent excessive macroalgae growth in the system. (2009 Numeric Criteria at 28). Concurrently, Dr. Short informed EPA he

[63] The Fact Sheet only references macroalgae four times. (Fact Sheet at 13, 18, 20, 22.). Epiphytes are a form of macroalgae that grows directly on the eelgrass leaves.
[64] See 2009 Numeric Criteria document at 37-39.

was not finding a significant macroalgae or epiphyte impairment in the system and that eelgrass were not being smothered by macroalgae growth. (See, Exhibit 22 and EPA Phone logs with Dr. Short). Moreover, Short found that locations where eelgrass had previously existed now had macroalgae growing in them after eelgrass declined rapidly in 2006. Thus it was not apparent that (1) macroalgae caused any eelgrass declines or (2) that the new presence of macroalgae in certain areas would preclude eelgrass restoration in the future (macroalgae growth being transient). In any event, the Coalition noted that following the macroalgae increase of 2007/2008, eelgrass populations rebounded by about 40% and DES confirmed that there was no information showing that macroalgae were significantly preventing eelgrass regrowth in the system. (Exhibit 15 at 9).

Following the issuance of the draft permit and the close of the comment period, both EPA and DES participated in meetings with the permittees in Great Bay indicating that macroalgae growth was now the primary concern in the system, not transparency. (See, e.g. Exhibit 22 slides from Exeter permit meeting Sept- 2012). This position was also reflected throughout the Burack 2012 Letter which repeatedly claimed the main issue effecting eelgrass in the system was macroalgae. (See Burack 2012 Letter at 1 and 7). It should be noted that the 2009 Numeric Criteria Document itself indicated that the only location where macroalgae was considered to be a possible threat was in Great Bay proper, not in any of the tidal rivers, due to Great Bay proper having habitat which promotes macroalgae growth while the tidal rivers do not. (See 2009 Numeric Criteria at 38). Because EPA and DES appeared to be using new information supporting the new rationale that Great Bay is a macroalgae limited system, the Coalition submitted supplemental comments noting the lack of technical basis for asserting that macroalgae levels were either (1) causing ecological impairment in the system or (2) presently

limiting eelgrass regrowth in the system. (See Supplemental Comments submitted on October 18, 2012, November 4, 2012, and November 8, 2012). Significant technical data and information confirming these positions was provided to EPA including deposition testimony from Short (leading macroalgae expert) and Trowbridge (DES).

Consistent with the new position outlined in the Burack 2012 Letter, EPA's Response to Comments also repeatedly alleges that macroalgae are documented at a level causing impairment and they are preventing eelgrass regrowth in the system. (See RTC at 109). Other than EPA's reference to limited data which are incapable of demonstrating this point, there is no evaluation confirming these statements are correct. EPA's response expressly ignored all the new data and information submitted by the Coalition confirming that this modified position was in error. That in itself warrants reversal of this permit action given that this was not an issue that played any prominence in the original Fact Sheet and that EPA's and DES' change in rationale occurred after the close of the comment period.

Moreover, there is no data or analysis in the record showing that marcoalgae or epiphytes (another form of attached algal) is significantly impairing eelgrass populations or system biology. Documents in EPA's possession from Dr. Short repeatedly informed the agency that epiphytes were not a cause for concern in this system. (See phone logs cited in EPA Response to Comments.) Despite this, EPA repeatedly claims that epiphytes are some sort of generic concern that warrants extreme nitrogen reduction requirements to be implemented by Coalition communities. DES admitted under oath that it has no information showing the degree of impact, ecological or otherwise, for macroalgae in the system. (Exhibit 15 at 9). DES also admitted that eelgrass populations rebounded since the 2006-2007 decline in areas where macroalgae have previously grown, confirming that macroalgae growth is not precluding eelgrass repopulation in

the system. *Id.* Likewise the data for Little Bay confirming 48 new acres of eelgrass beds now exist is proof positive that eelgrass regrowth is not being precluded by alleged macroalgae impacts. EPA's use of unsupported speculation to justify claims of narrative criteria violations and the need for stringent TN reduction was clear error.

i. EPA's Presentation of Nettleton's Report is Misleading and Not Current

EPA cites to a report done by Nettleton (2011) as proof of macroalgae impact on eelgrass. First, EPA fails to acknowledge that the Nettleton analysis was done in areas where eelgrass do not and cannot grow – in the tidal flats exposed during low tide. (Exhibit 22). Thus, this report has no relevance to eelgrass impact whatsoever. Moreover, the data provided by the Coalition (and ignored by EPA) confirmed that current macroalgae growth in areas investigated by Nettleton in 2008 showed dramatically reduced macroalgae growth in 2012. (See Exhibit 20 -- below is one comparison of macroalgae growth at the same site in 2008 and 2012).

Jeremy Neddleton (2008)

Dean Peschel (2012)

EPA's repeated refusal to consider the updated information regarding the extent of macroalgae growth and its actual impact on eelgrass ecology in this system is clear error. Relying on generalized claims that macroalgae "can" or "may" cause impairment to eelgrass (RTC at 109) is not evidence that such impairments actually occurred in this system, violating narrative

standards. DES admitted under oath that such impairments have never been demonstrated.[65] (Exhibit 15 at 9). It should be noted that the macroalgae issue was raised in the MOA group meetings with various University of New Hampshire professors knowledgeable of the conditions in the system. It was Dr. Mathieson's position that macroalgae had increased and was at a level that raised some concern. However, because it was unknown whether or not nutrient control would be effective as a number of the species now found were invasive and he recommended that detailed research was need to determine whether nitrogen reductions could limit macroalgae growth. (Exhibit 1U – MOA Meeting minutes Sept 2011). Dr. Mathieson also noted that the form of nitrogen that should be control is nitrate, not TN, as macroalgae take this bioavailable nitrogen directly out of the water column. *Id.*

In conclusion, EPA's assertion that macroalgae growth is documented to be excessive, precluding eelgrass reestablishment in the Great Bay system has no reasonable scientific foundation.[66] The data confirms that eelgrass populations continue to rebound from the 2006 decline regardless of what level of macroalgae growth is occurring in the system. Moreover, the recent data confirms macroalgae growth on the tidal flats has significantly declined in areas previously highlighted by EPA and DES in the permit meetings and the cause for this change needs to be understood before one can claim that additional nitrogen reductions are necessary to protect the biological integrity of the system. Lastly, there is no information in the record showing that stringent nitrogen reduction is required at this time to control macroalgae growth. The lead expert on macroalgae has reiterated that the degree of macroalgae and nitrogen control needed is simply unknown but if it is to occur, nitrogen reduction should focus on reducing

[65] EPA also relied on a comment submitted by Dr. Viella for CLF to claim macroalgae impacts are occurring. A thorough review of that document will demonstrate that it is not based on any analysis of data from the Great Bay system.

[66] The Coalition makes no separate rebuttal to the observations of Dr. Viella, submitted on behalf of CLF. All of his observations are generalized and not based on Great Bay specific data.

nitrate levels. Those nitrate levels have dramatically declined in the past three years to the level that existed when significant macroalgae did not exist in this system (pre-1990 levels). (See Burack 2012 Letter at 11("DES agrees that average annual DIN concentrations at Adams Point have decreased in the last four years and are similar to concentrations measured in the 1970s.")). Thus, it is not apparent whether any further TIN control is necessary for macroalgae control and the reliance on DES' 2010 WLA document to project those "necessary" reductions is thoroughly unsupported.[67] Ignoring all of this information, given its direct effect on whether the existing narrative criteria is met and if it is not being met, determining the best vehicle for meeting such limitation, was clear error.

d. EPA improperly ignored the significant impact the 2006 extreme weather had on the data sets.

The central premise of EPA's action is that eelgrass populations declined as a direct result of nitrogen inputs causing some form of excessive plant growth (water-column algae, macroalgae, or epiphytes). The Coalition noted that there was no data developed anywhere in the Great Bay system that ever made this demonstration and that EPA acknowledged, in the original Fact Sheet, that the cause of eelgrass population changes was unknown. In the face of this admission, it is clear that EPA's claim that nitrogen inputs are the cause of the eelgrass decline is simply speculation and is insufficient to support the imposition of stringent nitrogen reduction requirements.

The Coalition conducted further analysis of archieved data and new data after the close of the public comment period to determine if a cause of the eelgrass declines could be determined from the data. (Exhibits 18 and 19). Those evaluations demonstrated the following:

[67] The 2010 WLA document only assessed the degree of treatment needed to achieve a 0.3 mg/l TN level in various areas of the system – it had no analysis of the degree of TIN control needed to limit macroalgae growth.

- Although inorganic nitrogen, by implication TN, rose significantly from 1990-2005, there was never an indication that algal growth increased or that eelgrass populations were adversely affected by this event. (This was confirmed by the 2012 PREP report and Commissioner Burack's October 19, 2012 letter).
- Through 2005, the State considered eelgrass populations in Great Bay to be healthy and unimpaired. Consequently eelgrass impairments never appeared in contemporaneous in the Section 303(d) lists during this period. (Confirmed in 2000- 2006 PREP reports and depositions).
- In 2006, a major flood occurred in the system and eelgrass populations dramatically declined in numerous areas of the estuary. These extreme flow conditions were accompanied by very poor transparency in Great Bay due to increased turbidity and color being forced out of the tidal rivers into the main parts of the estuary. As a result of the dramatic eelgrass decline in 2006, DES determined it was necessary to declare the Bay impaired in its 2008 Section 303(d) report. (Deposition Exhibit 36). Coalition experts subsequently submitted detailed evaluations of eelgrass acreage versus rainfall effected parameters which showed a high correlation between eelgrass health and tributary river flow (a surrogate for rainfall and indicator of higher color loading to the system).
- Available transparency data from a buoy moored in Great Bay confirmed 2006 had the worst transparency on record during the high flow periods which coincided with the peak spring growing season for eelgrass in the system. These analyses were presented to DES (Trowbridge) who admitted under oath that DES had not considered whether the floods had caused the dramatic eelgrass decline in 2006 and he acknowledged that could have been the factor that caused the declines to occur in 2006. (Exhibit 15 at 6-7, 9,10).

One would have thought that EPA would find this information highly important, since EPA's response to comments chided the Coalition for not providing an explanation regarding what could have caused system-wide eelgrass declines.

EPA's response to this information was astounding. They simply ignored the detailed supplemental analysis of the available data. (See RTC at 2 n.1). EPA claimed that DES subsequently disagreed with these conclusions and therefore the conclusions lacked merit.[68] The "source" of this "fact" was the October 19, 2012 Burack letter. However, EPA cannot simply ignore sworn deposition testimony by Mr. Trowbridge stating that the eelgrass losses could have been caused by the 2006 floods and that, if so, the eelgrass decline would not be a violation of narrative criteria since floods are natural occurrences. (Exhibit 15 at 6-7, 9).

Given this fact, it is essential that the impact of the 2006 floods be accurately assessed because if the Coalition's position is correct there is no eelgrass related impairment in this system; there is simply eelgrass loss due to a natural event and ongoing recovery from this natural event. Consequently, EPA's refusal to address the Coalition's comments on this issue (or to have itself evaluated the information from the 2006 buoy records) was clear error.

Because it is apparent that the regulatory agencies failed to assess (1) the impact of the largest hydrologic events that have occurred in the past hundred years and (2) how those events could likely have caused the eelgrass declines occurring immediately thereafter, it is clear that EPA's conclusion that nitrogen reductions is the remedy to the eelgrass declines is in error. EPA's decision making process on this issue was fundamentally flawed in failing to accurately consider and assess the available information.

[68] Providing another example of where EPA refused to conduct any type of independent assessment of the data to determine whether or not the conclusions presented by the Coalition were correct.

e. EPA applied an incorrect return frequency to determine the proposed limits.

A related issue to the major flooding in 2006, is the improper use of extreme wet weather periods to set requirements under the State's narrative criteria. As noted by the Coalition these conditions (rainfall occurring 2005-2008) was a once-in-a-hundred-year wet weather period. This resulted in dramatically higher nonpoint source loadings coming into the system for a host of parameters and DES used those loading conditions from the extreme wet weather years as its baseline for evaluating necessary permit reductions to achieve its assumed numeric criteria. The DES 2010 WLA report, relied upon by EPA demonstrated how sensitive the reduction requirements were to the base year chosen to calculate required reductions. (2010 WLA Appendix C). As confirmed by the data presented in the Burack 2012 Letter (Figure 4), years subsequent to 2008 (2009-2011) also had wet weather but these were not record rainfall years. As a consequence inorganic nitrogen levels as well as TN levels declined substantially throughout the system. These declines also produced much lower system loadings of nitrogen as demonstrated by the charts presented by EPA and DES in the permit meetings, after the period closure, and the Burack 2012 Letter. *Id.* Based on this information, it is clear that the need for the degree of nitrogen reduction proposed by EPA is highly sensitive to the baseline year used for the analysis. The Coalition noted that a once-in-a-hundred-year condition is not consistent with proper criteria application or permit development as follows:

- The excepted Federal standard for a return frequency on criteria compliance is once-in-a-3-year average. (See 1985 National Guidelines and EPA Nutrient Criteria developed for State of Florida.).
- The State employs a once-in-a-ten-year average condition in criteria application for toxics (7/Q/10).

- A once-in-a-hundred-year condition is not consistent with the narrative criteria, which is not intended to regulate water quality extreme natural conditions.
- The once-in-a-hundred-year condition is not consistent with how the criteria were developed (2-5 year average condition). This does not mean a 2-5 year conditions happening once every 100 years. As repeatedly stated in the Response to Comments the criteria must be applied with consistent with how they were derived. These criteria were plainly not.

Based on the above information it is clear that using a once-in-a-hundred-year condition is not scientifically defensible on a host of grounds and that the projections of necessary reductions related to rainfall conditions occurring 2005-2008 should not have been the basis for the analysis.

In response, EPA stated that Section 122.44(d) allows them to use maximum conditions. (RTC at 100). And no other response was presented to the misapplication of the criteria (other than EPA's agreement that applying the criteria at 7/Q/10 as originally proposed in the permit was not scientifically defensible). EPA's reliance on Section 122.44(d) to set the criteria return frequency is clear error. Section 122.44(d) is a permit provision that looks to EPA guidance on criteria development to set the appropriate criteria requirements where narrative criteria are being translating into numeric values. (See Section 122.44(d)(vi) referring to reliance on EPA's Water Quality Standards Handbook – which specifies a once in three year recurrence interval is protective of aquatic life at 5-10, 5-11). This regulation nowhere states that once-in-a-hundred-year condition should be the return frequency applied to criteria compliance. As <u>all</u> EPA published guidance, as well as <u>all</u> EPA published numeric criteria for states, specify that a once-in-a-three-year average frequency is protective of ecological conditions, the use of once-in-a-

hundred-year condition was clear error and unsupported by any other relevant scientific information in this record.

A finding that the Coalition's position is correct on this issue necessarily requires a remand of this permit as EPA extensively relied on the 2010 WLA as the basis for choosing necessary limitations in conjunction with appropriate nonpoint source reductions. As that document is premised on the wrong baseline and the new information for the system confirms that existing conditions indicate for less nutrient reduction would be necessary for all sources. As such, the assertion that a 3 mg/L limitation was necessary is plainly erroneous since it relied on the wrong baseline condition.[69]

f. Nitrate levels in Great Bay are not at toxic levels leading to eelgrass declines.

As part of the 2009 Numeric Criteria development, EPA recommended that DES include a scientific paper[70] containing experimental evidence for southern estuaries that nitrate may cause toxicity to eelgrass and cause eelgrass populations to decline. This issue was mentioned briefly within the 2009 Numeric Criteria document, but there was no subsequent attempt in the 2009 Numeric Criteria Document to determine whether the conditions evaluated in the Burkholder paper were relevant and applicable to Great Bay. The 2009 Numeric Criteria document did note that other states set inorganic nitrogen levels at 0.15 mg/L as protective of eelgrass resources- the same level of inorganic nitrogen that was typically present in Great Bay up through 2005 when eelgrass were considered unimpaired.

[69] A once in three year condition would statistically convert to a rainfall condition that is exceeded 33% of the time. While that analysis is yet to be done, it is apparent that the conditions occurring in 2009-2011 which are significantly wetter than average still would be in the range of the appropriate conditions.

[70] Burkholder, J.A., D.A. Tomasko, and B.W. Touchett. 2007. Seagrass and euthrophication. Journal of Experimental Marine Biology and Ecology 350: 46-72.

In EPA's Fact Sheet, the Burkholder study was mentioned as a part of the "weight of evidence" considered when determining that nitrogen was responsible for eelgrass declines in Great Bay. However, similar to the 2009 Criteria Document there was no attempt to analyze data from the system to determine whether or not the presence of eelgrass was closely related to the degree of inorganic nitrogen present in the system. The Coalition in an effort to be comprehensive, noted in its comments, that there was no information showing that level of inorganic nitrogen evaluated in the Burkholder paper had any relevance to Great Bay as healthy eelgrass populations existed for decades in the presence of nitrate levels that were supposedly higher than the concentrations evaluated by Burkholder. The Coalition also noted that EPA had conducted an eelgrass survey in Great Bay and found that eelgrass beds were "lush" near the Squamscott River, where some of the highest inorganic nitrogen levels would exist in the system due to inputs from the two major tidal tributaries in that area. EPA, ignoring all of this actual data for the system, responded that nitrogen toxicity was a major issue that warranted imposition of stringent nitrogen requirements to allow eelgrass recovery in the tidal rivers.

EPA response is completely speculative, conclusory and unsupported. It does not constitute a sufficient evaluation of the existing data (showing no indication of nitrate toxicity in this system) or confirm that the weight of evidence shows that nitrate reduction is needed to protect eelgrass. EPA's speculation that it took decades of nitrate exposure for eelgrass to finally collapse in 2006 bars credulity and can only be attributed to wishful thinking in an attempt to defend an indefensible position. There is no information from the Burkholder paper cited by EPA, showing that a system that has robust eelgrass growth for decades under elevated nitrate levels would suddenly collapse in a three month period a decade later. Moreover, as EPA indicated, the type of degenerative effects found in the Burkholder studies (eelgrass growing then

collapsing due to weak cell walls) cannot be found anywhere evidenced in Great Bay or the reports of Dr. Short.

In addition, the numeric criteria found acceptable by other states and approved by EPA, e.g., the Rehoboth Bay criteria (3 times higher than the 0.05 mg/L value cited by EPA), shows that EPA has not found the Burkholder results to be credible or necessary to ensure eelgrass survival in any northern estuary. EPA's position would have the Board ignore the actual data and survival of eelgrass through this system and instead have let the agency rely on a laboratory study to conclude that the eelgrass should actual not be present despite the fact that they are. This is not a credible position and is clearly erroneous. Laboratory studies do not trump actual use attainment data, as EPA's own regulations (§ 122.44(d)) require the consideration of the actual site-specific data, were available, in rendering decisions on narrative criteria compliance.

g. Assuming Eelgrass are impaired by nitrogen, EPA is regulating the wrong pollutant form; it should be regulating nitrate not total nitrogen.

Consistent with the recommendations contained in the 2009 Numeric Criteria Document, EPA concluded that the form of nitrogen that must be regulated in this system is TN, not simply the biological available forms of nitrogen (inorganic N) that may stimulate plant growth. (RTC at ---). EPA stated that its nutrient criteria development guidance documents typically recommend regulating TN rather than individual nitrogen forms and that non-inorganic nitrogen forms that could convert rapidly to inorganic nitrogen in this system. *Id.* The Coalition commented that none of these positions were accurate for Great Bay or supported by any objective analyses. The Coalition stated that if nitrogen had to be regulated, given the specific circumstances of Great Bay (short detention time, rapid dilution system) the only form of the pollutant to be regulated should be nitrate. (Exhibit 1).

The Coalition supplemented its comments after receiving data showing that nitrate levels in the system plummeted in the past three years. EPA, itself, recognized that macroalgae growth is regulated by nitrate, not total nitrogen. The Coalition also noted that the form of nitrogen that should be regulated if water-column algal growth were the issue for the system and in particular the tidal rivers, would exclusively be nitrate since the detention time in those rivers is too short for any meaningful amount of organic nitrogen to convert to inorganic forms.

In response, EPA's Response to Comments agreed that nitrate (inorganic nitrogen) is the form of the nitrogen that controls algal and macroalgae growth. However, EPA rejected the observations made by the Coalition by asserting that organic nitrogen "may" "quickly" convert in this system and that EPA guidance typically supports regulating TN due to this concern.

EPA's response is plainly deficient, clearly in error and has no substantial factual basis for this system. In responses to its claim that organic nitrogen "may" "quickly" convert to inorganic forms in the system, a FOIA request was submitted by Hall & Associates asking for all information confirming this claim is true for the Great Bay estuary. (Exhibit 11). EPA's response contained no information indicating that any significant level of organic nitrogen would convert to inorganic forms in this system. Therefore, there is no substantial evidence of this concern.

Secondly, then nutrient criteria guidance documents cited by EPA (RTC at 99), generally indicate that total pollutant form maybe regulated but federal guidance further indicates, in shortened detention time systems, that the inorganic forms maybe the proper form to regulate. The key issue is whether the system has sufficient detention time to allow for the significant conversion from organic to inorganic forms given the type of inorganic nitrogen and the

retention time. EPA is well aware that this is a short detention time estuary[71] but ignored the relevance of this factor on determining which form of nitrogen is the one to regulate to limit excessive plant growth (assuming arguendo, it is occurring).

EPA evaluated none of these critical hydrologic aspects in rendering its decision. As noted in the Coalition's comments the residence time of the tidal rivers is quite short and significant conversion from organic to inorganic would not be expected and that certain nitrogen forms in this system, i.e. those associated with color are highly resistant to conversion and should be discarded from consideration. EPA's response that fails to consider the particular factors in this system that would justify regulating TN over bioavailable inorganic forms is plainly deficient as it relies on mere generalities, not a demonstration that TN control, not nitrate control, is in fact necessary for this system. EPA is not authorized to make regulatory decisions on "generalizations" when the case specific facts indicate that the generalized approach is inappropriate. *See Columbia Falls Aluminum Co. v. EPA*, 139 F.3d 914 (D.C. Cir. 1998).

The effect of regulating TN versus nitrate dramatically impacts the level of nutrient control that may be required, particularly given the recent arguments raised by EPA and DES for this system, i.e., the main issue is macroalgae control. As noted by Dr. Mathieson and reported by Coalition, macroalgae only respond to inorganic nitrogen and their primary growing season is June to October. (Exhibit 1U). During this later period, EPA recognized that nonpoint source contributions are substantially reduced and therefore, point source reductions in organic nitrogen are far more effective in reducing overall system loads. The 2010 WLA report, relied upon by EPA to claim a 3 mg/l TN limit was necessary, however, was not based on the loadings occurring in the summer months but was based on annual loading which are irrelevant to

[71] Some organic nitrogen compounds may break down into inorganic nitrogen forms, others will not. This is a system-specific issue where influenced by a host of factors (light, detention time, temperature, DO, source of organic nitrogen, etc.).

macroalgae growth.[72] Information present in the Response to Comments and un-refuted by EPA, shows that achieving a 8 mg/L TN limitation should produce a 40% or greater reduction in inorganic nitrogen levels in the system during the critical period for macroalgae growth. This is well below the level that DES has indicated would be needed for macroalgae control (10-20% reduction). Therefore, the decision on which pollutant to regulate critically affects the degree of treatment that may be necessary in this system. EPA's failure to adequately assess the importance of these factors in determining the "necessary" requirements under Section 122.44(d) and the state's narrative standard was clear error.

h. EPA ignored the MOA conclusions on the appropriate requirements for point sources in the Great Bay estuary.

EPA has indicated that the basis for deciding the degree of treatment required was through the application of 40 C.F.R. § 122.44(d). EPA properly noted that interpretation of that provision is supposed to give deference to the State's decision on the requirements necessary to achieve its narrative criteria. The Coalition commented that the MOA developed *after the 2009 Numeric Criteria and 2010 WLA documents were finalized*, determined that the scientific information relied upon in those documents was uncertain, required additional analyses and justification and that those criteria should not be applied in the development of permit limits. (See Exhibit 1T and 1U). Moreover, the MOA concluded that until such time as more detailed information could be developed to support the need for more stringent reductions, limitations more restrictive than 8 mg/L TN should not be imposed. *Id.* EPA's response rejected the MOA and its conclusions *in toto*. That is a clear violation of the applicable Federal regulations governing decision making on water quality-based permits.

[72] The detention time of the tidal rivers is so short that a condition occurring even a week earlier has very little effect on the ambient nutrient concentration.

First, EPA pointed to letters sent to non-MOA signatory communities, to claim DES supported application of more restrictive requirements. However, those letters do not refute the MOA. Secondly, EPA repeatedly relied on DES criticisms of Coalition position developed by Mr. Trowbridge prior to signing the MOA as the basis for its position. (DES 2011 analysis in response to HydroQuals scientific assessments of the data). What EPA failed to note is that the Coalition had several meetings with DES to discuss Mr. Trowbridge's response and the Coalition provided specific information that demonstrated that those positions were in error. Rather than proceeding to an independent peer review, which DES had previously concurred that it would allow,[73] the parties agreed to issue an MOA that jointly recognized the scientific uncertainties and need for additional scientific information and analyses as the parties were now in agreement that the 2009 Numeric Criteria document had major differences. Thus EPA's attempt to use earlier evaluations by Mr. Trowbridge to discount the later MOA findings signed by the Commissioner was clear error.

Section 122.44(d) plainly indicates that state regulatory interpretation regarding narrative criteria compliance need to be respected (unless obviously incorrect). EPA's entire permitting approach that discards those findings, signed by the Commissioner, is clear error and the MOA provisions applicable to proper implementation of the narrative criteria must be respected. *Kentucky Waterways Alliance v. Johnson*, 540 F.3d 493, 469 n.1 (6th Cir. 2008) ("In interpreting a state's water quality standard, ambiguities must be resolved by 'consulting with the state and relying on authorized state interpretations."); *Marathon Oil Co. v. Environmental Protection Agency*, 830 F.2d 1346, 1351-1352 (5th Cir. 1987) (EPA is merely an "interested observer" as to how a state interprets its WQS provisions); *American Paper Inst. v. EPA*, 996 F.2d 346, 351 (D.C. Cir. 1993) ("Of course, that does not mean that the language of a narrative criterion does

[73] See correspondence between DES and Coalition dated December 1, 2010.

not cabin the *permit writer's* authority at all; rather, *it is an acknowledgement that the writer will have to engage in some kind of interpretation to determine what chemical-specific numeric criteria--and thus what effluent limitations--are most consistent with the state's intent as evinced in its generic standard.*") (emphasis added)). Adherence to the MOA findings would have resulted in a conclusion that the 2009 Numeric Criteria should not be applied to generate restrictive limits and that the most restrictive effluent limits justified at this time for narrative criteria compliance would be a 8 mg/L TN.

i. EPA ignored the admissions made by the author of 2009 Nutrient Criteria document stating that the information relied upon was in error.

EPA throughout its Response to Comments heavily relies on the 2009 Numeric Criteria, the 2010 WLA document, and other analyses created by Philip Trowbridge (DES) as reliable scientific information and its justification for implementation of stringent nitrogen criteria in Great Bay. However, EPA has purposefully ignored the admissions made by the author of the 2009 Numeric Criteria document (Mr. Trowbridge), *under oath during deposition testimony* (and confirmed by the Burack 2012 Letter), showing the 2009 Numeric Criteria document was severely flawed and did not properly implement the State's narrative criteria. The following summarizes the key admissions made by Mr. Trowbridge under oath, presented to EPA in the supplemental comments (Exhibit 15):[74]

- The numeric TN criteria for eelgrass and DO were not based on a demonstrated "cause and effect" relationship *and both the state and EPA knew that these numeric*

[74] Whether EPA already knew this information before the depositions were conducted would be a matter that could be proven if the Board allowed deposition of the EPA permit writers. In any event, it is clear that the deposition testimony did not exist before the close of the comment period and therefore its submission to EPA was timely.

criteria were based on confounded correlations that did not show TN caused the claimed changes in either transparency or DO.

- Algal levels in the system did not change materially from 1980 to present, despite an estimated 59% increase in TIN levels between 1980 and 2004 and *therefore TN inputs could not have caused changed transparency in the system*.
- The best available information shows that transparency in Great Bay and Lower Piscataqua River did not change materially from 1990 to 2005; *therefore this parameter could not be the factor causing eelgrass declines found in the system prior to that time as assumed in the draft 2009 Numeric Criteria*.
- Transparency in the major tidal rivers is poor, but the available data (not previously analyzed by DES) shows that (1) the effect of algal growth on transparency is negligible (2) CDOM and turbidity are the key factors controlling transparency in the system and (3) regulating TN in the tidal rivers *will not result in any demonstrable improvement in transparency*.
- A large increase in rainfall and major floods occurring from 2006 (a natural condition) could be the primary cause of significant eelgrass declines that occurred in Great Bay during that period due to increased turbidity and CDOM. DES failed to assess the importance of these events in triggering the eelgrass decline in the system despite the obvious temporal correlation.
- Available historical data and recent eelgrass regrowth in the system since 2008, which increased by approximately 40% in areal coverage, indicate that the transparency level chosen to establish the draft 2009 numeric nutrient criteria is not

necessary to support eelgrass growth and reestablishment in Great Bay, Little Bay and Lower Piscataqua River.

- No site-specific research has been completed to evaluate the cause of more recent eelgrass declines anywhere in the Great Bay system. To date, the causes of such eelgrass declines remain unknown.
- The various DES analyses that confirmed (1) TN increases did not cause changes in transparency, algal levels or DO and (2) a "cause and effect" relationship between TN and transparency/DO did not exist, were excluded from the technical information presented in the 2009 Numeric Criteria document and, therefore, were never presented to EPA's internal peer review panel.

As noted previously, many of these admissions were also reconfirmed (or never denied) by Commissioner Burack in his October 19, 2012 letter that EPA included in the permit response record. EPA Headquarters and Region 1 were given the transcripts containing these admissions on multiple occasions[75] and simply chose to ignore these admissions. Either way, it is arbitrary and capricious for an agency to rely on a document whose own author has admitted is flawed. *See Texas Oil & Gas Ass'n v. United States EPA*, 161 F.3d 923, 935 (5th Cir. 1998) ("When an agency adopts a regulation based on a study [that is] not designed for the purpose and is limited or criticized by its authors on points essential to the use sought to be made of it the administrative action is arbitrary and capricious and a clear error in judgment.") (*quoting Humana of Aurora, Inc. v. Heckler*, 753 F.2d 1579, 1583 (10th Cir. 1985), *cert. denied*, 474 U.S. 863 (1985)). Consequently, EPA's reliance on the 2009 Numeric Criteria was clear error.

[75] Exhibit 6- Letter to Gilinksy on July 13, 2012.

j. EPA's use of the Peer review violated the Coalition's Due Process Rights and CWA Mandatory Duties

In March 2010, the Region set up an extremely limited internal peer review with selected EPA contractors for the purposes of assessing the technical sufficiency of the new 2009 Numeric Criteria. The Coalition repeatedly requested to be a part of the peer review process to ensure that appropriate technical questions prepared by the Coalition were addressed but EPA ignored such requests and refused to even submit the Coalition's questions to the peer reviewers. EPA compounded this violation by refusing to consider the points raised in objection to the peer review scope and content as part of these permit comments. This action and the original exclusion from the flawed peer review expressly violated Section 101(e) of the Act. This is plain error that must be remedied before EPA can rely, in any form on the alleged comprehensive peer review.

Moreover, the data excluded from the peer review (as feared by the Coalition) biased that analysis rendering the document useless for permit decision making. DES admitted that critical information, the same critical information excluded from the 2009 Numeric Criteria document, was excluded from the peer review process. (Ex 2 at 10-11). This was the data and analysis that showed TN had not caused any documented change in algal growth or transparency in the system and that the relationships presented in the 2009 Numeric Criteria document were unsubstantiated correlations. *Id.*[76] Mr. Currier testified that if the peer review had indicated that the proposed criteria were based on unsubstantiated correlations, DES would have withdrawn that document. (Exhibit 15). Therefore, as the peer reviewers were purposefully not given the

[76] EPA's response to comments artfully says prior comments from the communities on the 2009 Numeric Criteria document were given to the peer review. However, it was not until after that time the Coalition hired experts to evaluate the basis of that DES decision and discovered various errors in the analysis. Thus, EPA has excluded from consideration any comments or issues raised since June 2009 as part of this permit action. That is a grossly improper procedural error as the 2009 Numeric Criteria document is not some sort of infallible and irrebuttable regulatory decision.

opportunity to review all relevant information relating to the adoption of the 2009 Numeric Criteria document (information showing the approach was, in fact, misplaced), they could not render an objective, unbiased decision on the scientific defensibility of such document. Consequently, any reliance on such a document would be *per se* arbitrary and capricious and clear error. [77]

k. Weight of evidence assessment was procedurally and substantively flawed

EPA allegedly based its decision that narrative criteria violations existed and stringent nitrogen requirements were the solution based upon a "weight of evidence" analysis. EPA expressly stated on a number of occasions that such analyses are allowable for narrative criteria interpretation and derivation of necessary permit requirements without actually making any cause-and-effect demonstration that the pollutant at issue was in fact responsible for the alleged impairment found in the receiving water. (RTC at 57). To this end EPA stated it was allowable to rely on mere correlations as the basis for asserting that nitrogen was the cause of certain impairments so long as the type of adverse effect being regulated has been found in other estuaries, e.g. Chesapeake Bay and some Massachusetts bays. (*Id.* at 72).

The Coalition stated that a weight of evidence approach cannot substitute for a reasonable cause-and-effect demonstration based on the data from the water body being actually regulated, as required by the narrative standard. In short, that one may not rely on generalizations and vague correlations in asserting violations of the CWA have occurred and certain permit limitations costing in excess of a billion dollars throughout the watershed must be implemented. The Coalition also noted that even if a weight of evidence approach could be allowed, that

[77] In the Burack 2012 Letter, DES has agreed to participate in an independent peer review so long as EPA also agrees to participate. It should be noted that the Coalition has been calling on, and continues to request, EPA to conduct a fair, independent peer reviewing looking at the all relevant evidence available for Great Bay to make a truthful determination on whether the 2009 Numeric Criteria document is scientifically defensible.

weighing the evidence required the fair and objective consideration of *all the evidence* that both supports and detracts from the position being asserted. EPA's weight of evidence analysis did not – it only considered supporting evidence and ignored all contradicting information. That was clear error.

i. Prior DES studies Showing No Transparency Relationship were improperly Excised from Record

When EPA developed its weight of evidence approach with DES all of the site specific information confirming that nitrogen had never caused any material change in water-column transparency was eliminated from the record developed by EPA. This was verified in deposition (Exhibit 15) and confirmed by Commissioner Burack's October 19, 2012 letter. EPA's failure/refusal to give appropriate weight (controlling weight) to the actual site specific information was a fundament flaw as stated by the SAB.

ii. EPA Ignored Relevant Science Advisory Board Findings that Confounded Correlations are not a Scientifically Defensible Basis for Criteria Assessment

The Coalition repeatedly commented that the type of statistical evaluations used by DES to derive the "weight of evidence" criteria had been determined to be unreliable by EPA's SAB. EPA essentially ignored all these arguments and stated that a weight of evidence approach was admitted to be acceptable by the Coalition and SAB. EPA said its decision, including the peer review, was rendered after EPA's SAB decision on requirements for scientifically defensible stressor-response analyses, implying, therefore, that the analyses done to generate the 2009 Numeric Criteria consistent with and met all regulatory perquisites outlined by the SAB for a "weight of evidence" criteria.

EPA response on this issue is clear error. First and foremost, simply invoking the term "weight of evidence" does not render the particular analysis sufficient to demonstrate that a use impairment has occurred due to nitrogen or that the nitrogen target used to remedy that impairment is sufficiently justified. It is true that the Coalition acknowledge that *a* weight of evidence approach may be appropriate however this is no way implied *the* weight of evidence approach originally developed by DES in 2009 and employed by EPA was scientifically defensible.

Secondly, the SAB noted that weight of evidence requires an evaluation of the uncertainties underlying the presumed generalized relationship. (See Exhibit 1) This requires a consideration of whether the site-specific information available for the water body shows whether a relationship exists. Rather than evaluating the degree to which the relationship existed and assessing the certainty or lack thereof of the relationship considering the site-specific information, EPA simply excluded the site-specific information showing that the relationship did not in fact exist. (See RTC at 2 n.1; Exhibit 15 at 9-10). Finally, EPA's FOIA response issued for each of the permittees confirmed that none of the uncertainty analyses or confounding factors evaluation required by the SAB to confirm the analysis is scientifically defensible was ever performed with respect to the 2009 Numeric Criteria (including the effect of the habitat and hydrology on the system response to nitrogen inputs) thereby rendering the 2009 Numeric Criteria analyses little more than unsupported speculation. On this basis it is clear that EPA's assertion that the "weight of evidence" analysis to demonstrated that nitrogen had caused transparency declines and eelgrass losses in this system was a complete and utter fabrication.[78]

[78] An email between EPA and DES that says EPA understood that the 2009 Criteria are based on nothing more than a correlation that would be expected from data, since TN is present in many factors influencing water column transparency.

Moreover, the fact that EPA's permit and the 2010 Peer Review, was conducted *after* the SAB issued its final findings in April 2010 that certain weight of evidence approaches are not scientifically defensible, does not mean that EPA properly addressed the admonitions of the SAB. EPA nowhere shows that this weight of evidence approach employed by DES meets any of the prerequisites outlined by the SAB and contained in EPA's subsequently issued stressor-response criteria guidance document. Simply claiming that the peer review was conducted after the SAB recommendations were available does not mean that the peer review considered those recommendations and is therefore scientifically defensible. In fact, it is perfectly clear from the peer review response documents that the critical analyses the SAB indicated must be conducted were never assessed in that review.[79]

EPA's assertions that its weight of evidence approach conforms with SAB's requirements and later issued EPA guidance is a conclusory statement that is demonstrably incorrect based upon the record before the Board. Therefore, as this "weight of evidence" analysis was a plainly deficient, both procedurally (failing to consider the SAB admonitions) and substantively (failing to account for any of the relevant confounding factors), EPA's acceptance of the DES documents as a scientifically defensible basis for establishing TN limitations was clear error.

l. EPA's Action fails the Daubert Test

An essential objection raised by the Coalition to EPA's/DES reliance on the 2009 Numeric Criteria document is that the central analysis used to derive the applicable requirements (0.3 mg/L TN) was based on nothing more than an unsubstantiated correlation. It is axiomatic that correlations do not prove causation. It is also axiomatic that criteria are to be based on

[79] For example, the SAB and EPA's stressor response guidance document specify that cofounding factors that explain and influence a claimed relationship, e.g. TN and transparency, must be fully assessed to determine whether there is scientific support for the generalized relationship that is claimed. The record confirms that no such analyses were done, including the testimony of the person who had conducted the analyses, Mr. Trowbridge. (Exhibit 2 at 9-10).

demonstrated causal relationships. CWA § 304(a); 40 C.F.R. § 131.3(c) (Section 304(a) criteria are developed based on the latest scientific information on the relationship that the effect of a constituent concentration has on a particular aquatic species . . .") .

DES, the author of the 2009 Numeric Criteria document, has admitted that the central analysis used to select the "necessary" and "protective" nutrient criteria for the system is based on nothing more than a correlation. Emails to and from EPA at the time the criteria document was developed acknowledged this fact.[80] (Exhibit 2 at 2-3). Despite this acknowledged DES misinformed the public and peer review in its response to comments that the graphs at issue did in fact prove causation a clearly misstated position. (See 2009 Criteria 79, Appx. B-4). It is not accepted within the scientific community that stressor-response analyses used to identify numeric criteria, be based on mere correlations. (See 2012 EPA Stressor-Response Guidance). EPA's SAB has stated this position because the resulting regulatory analyses maybe highly in error:

> In order to be scientifically defensible, empirical methods must take into consideration the influence of other variables…. The statistical methods in the Guidance require careful consideration of confounding variables before being used as predictive tools…. **Without such information, nutrient criteria developed using bivariate methods may be highly inaccurate**."

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[80] It should be further noted, that EPA presentation of low DO frequency in the Lamprey River (see RTC at 104) is on its face a deficient analysis. While this figure shows the frequency of low DO has varied widely year to year, EPA provides no information regarding the degree of chl a present in the system year to year to verify that the reasons why the DO changed was directly a result of change in chl a levels and the nitrogen influence on those levels. The Coalition asserts that the reason this information was not presented is obvious. The actual data shows the opposite for example, the year with least amount of DO violations was 2006. That however, is the year with the greatest nitrogen loading into the Lamprey River. See Burack 2012 Letter, Figure 4. However, this would also be a year with the lowest algal levels occurring in the Lamprey River because of the enormous freshwater flows reducing the detention time in the system which would also concurrently reduce stratification in the system. Thus it is apparent EPA's entire regulatory theory is completely and utterly in error. There is no algal/TN/low DO relationship present in the tidal rivers, nor has it been demonstrated in any other tidal river as confirmed by the deposition testimony of the author of 2009 Numeric Criteria Document- testimony that EPA ignored and has left out of this record on review. (Exhibit 2 at 10).

Moreover, the Coalition noted that the analysis was fundamentally flawed because areas with radically different ecological settings- tidal rivers, Great Bay, mouth of the harbor- were plotted on the same chart without any analysis of the relevant factors influencing nitrogen impacts and other related factors influencing transparency (or DO) at these different locations. There is no treatise or EPA guidance manual that indicates such an assessment is scientifically defensible or in any way accepted in the scientific community. In fact, in April 2010 EPA's SAB has expressly stated the opposite- that only similar ecological settings should be evaluated when developing nutrient criteria and conducting stressor/response analyses based on empirical evidence.

> For criteria that meet EPA's stated goal of "protecting against environmental degradation by nutrients," the underlying causal models must be correct. ***Habitat condition is a crucial consideration in this regard (e.g., light [for example, canopy cover], hydrology, grazer abundance, velocity, sediment type) that is not adequately addressed in the Guidance***. Thus, a major uncertainty inherent in the Guidance is accounting for factors that influence biological responses to nutrient inputs. ***Addressing this uncertainty requires adequately accounting for these factors in different types of water bodies***. (SAB at 36,37)

> **Numeric nutrient criteria developed and implemented without consideration of site specific conditions can lead to management actions that may have negative social and economic and unintended environmental consequences without additional environmental protection**. (at 37)

EPA itself has put out different guidance manuals for rivers, lakes (bays) and estuaries because of the need to consider the effects of such different settings on nutrient impacts and criteria assessment. None of these documents indicate it is acceptable to plot data from these different settings on the same chart to predict the impact of nitrogen or any other nutrient.

EPA's response to comments ignored this observation and fained uncertainty as to the scientific basis for this concern raised by the Coalition. This issue however was described in

detail in the comments and in the public presentations which included the slides describing the different factors that would affect nutrient dynamics in each of these areas and the SAB acknowledgements regarding the need to address these different factors to have a scientifically defensible analysis. EPA's response goes as far as to claim that these comments are not applicable because the requirement to be scientifically defensible in the development of criteria doesn't apply to Section 122.44(d) when attempting to implement a narrative criteria. That claim does not even merit a response.

Given that the methods employed to generate the .03 mg/L TN criteria have not been demonstrated acceptable in any published treatise, they must be excluded from the record under Supreme Court decision in Daubert.[81] It does not matter that a state agency developed these provisions or that a "peer review" allegedly confirmed that the numeric criteria were acceptable, as the precise issue raised in the permit comments was not assessed by the peer review and in any event the analyses on their face are inconsistent with accepted methodologies for criteria derivation. Based on the Supreme Court's decision in *Daubert*, no agency may base an analysis and no court may accept scientific information that fails to meet the test outlined in that case. For scientific evidence to be considered reliable for agency decision making, it must be based on an analysis that is accepted in the scientific community. The analysis prepared by DES and accepted by EPA fails to meet this requirement as it is not based on the accepted methodology for using "weight of evidence" or "stressor-response" analyses to generate applicable numeric criteria. Consequently the 2009 Numeric Criteria document and all related DES documents 2010

[81] *See generally Daubert v. Merrell Dow Pharms.*, 509 U.S. 579 (1993).

WLA) must be struck from this record and may not be considered by the EAB in rendering its decision.[82]

m. EPA's Response to Comments confirms 3 mg/l TN limit is insufficient to ensure compliance

Assuming arguendo that the Board rejects all of the above comments describing various flaws in EPA's analyses and the need to remand the permit, it is apparent that the permit limitations established in this permit are insufficient to meet water quality standards in two ways. Frist, the TN criteria presumes 100% of the effect on DO and transparency is TN-induced. The data plainly shows this is false and EPA has admitted this fact. Therefore, the limits as structured will not assure criteria compliance as required by 40 C.F.R. § 122.44(d). Second, EPA has indicated that DES must implement stringent nonpoint source control measures to allow the Newmarket permit to have a 3 mg/L effluent limit. Newmarket only constitutes at most 15% of the load to the Lamprey River. 85% of the load comes from unregulated sources upstream in the watershed. The vast majority of these sources are either natural or not regulated under the CWA. (See RTC at 135-138.).

The nitrogen reduction requirements applicable to the nonpoint source assuming all analyses in this permit are correct are estimated to be on the order of 60% reduction of controllable sources. (See also 2010 WLA document Appx. C, Table 3). There is no information in the record that this is a physically attainable target and no reason to believe that DES will mandate attain this target or parties will voluntarily agree to implement such massive nonpoint source controls. Recent correspondence from DES to the New Hampshire Legislature (not available until after this permit action was completed) confirms that the State will not be implementing mandatory nonpoint source requirements therefore the legal analysis presented by

[82] The Coalition intends to file a specific evidentiary motion on the issue, briefing the matter in detail.

EPA and the reopener contained in the permit will mandate the reopening of this permit to impose a more restrictive requirement.

At this point it is essential that the Coalition understand whether, as a matter of law, EPA will impose, as expected, a 0.3 mg/L TN limit on this and other facilities where nonpoint source controls for a host of reasons cannot assure attainment of the 0.3 mg/L TN standard with a 3 mg/L effluent limit for wastewater facilities. The applicable engineering solution is highly dependent upon whether the nitrogen limit is attainable. The 3 mg/L TN is at the limits of technology and any lower limit will be physically unattainable leaving the facility in ongoing noncompliance in perpetuity. If a lower limit is applicable the discharge would likely need to be relocated out of the basin. Such relocation to the ocean, for example, would not likely require nutrient reduction prior to discharge. Therefore, a subsequent modification of the permit will render any facility improvements for nitrogen reduction to have been wasted expenditures.

For this reason, the EAB should rule on whether there is any reasonable likelihood that the type of nonpoint source reductions EPA claims are necessary have any reasonable assurance of being completed, particularly given DES's post permit issuance confirmation that only voluntary measures will be implemented by the State. This same action is being undertaken by EPA in Chesapeake Bay wherein EPA is now arguing that nitrogen limits establish a mere three years ago must now be amended because there are no reasonable assurances that nonpoint source controls will be implemented. The Coalition claims that the data in the record presently shows there is no reasonable basis to believe that nitrogen mandates will be anything other than voluntary and in any event and the degrees of non-point control is not reasonably attainable with any economically affordable of best management practices program. Therefore, we request that the Board rule that EPA's selection of a 3 mg/L TN limitation was arbitrary and capricious in

light of this information and that the permit be remanded to recalculated the effluent limitation applicable given the likelihood that sufficient nonpoint source controls will not and cannot be implemented to attain 0.3 mg/L TN objective upstream of the tidal rivers.

VI. Conclusion

The Coalition respectfully seeks a full review by the EAB of the appealed terms and provisions of the final NPDES permit. After such a review, the Coalition requests a stay of the proceedings until:

1. EPA Headquarters decides whether it is going to conduct an updated peer review to determine the scientific validity of the 2009 Numeric Criteria Document relied upon when issuing this permit. If a peer review occurs all of the site-specific information excluded from the record would be considered in a proper setting;
2. A determination is rendered in the Federal suit regarding EPA's mandatory duty to review DES's revised water quality standards and promote public input and consideration of the latest scientific information in the revision of the standard because if the court finds in the Coalition's favor, the 2009 Numeric Criteria document will need to be formally adopted rendering this case moot, and
3. A determination is rendered in the FOIA Appeal regarding FOIA requests submitted to EPA Headquarters and Region 1 which EPA refused to disclose documents related to the scientific validity of EPA's determination to issue these permit conditions, or in the alternative, the Coalition seeks an order demanding EPA produce such documents.

Or in the alternative, the Coalition seeks:

1. A remand to Region 1 with an order to issue an amended NPDES permit that conforms to EAB's findings on the terms and provisions appealed by the Coalition; or, in the alternative,
2. A remand to Region 1 requiring it to remedy any clearly erroneous findings of fact and conclusions of law, or requiring it to consider any data, analyses, or other arguments that the EAB determines Region 1 failed to duly consider; or in the alternative,
3. A remand to Region 1 to re-open the public comment period for purposes of allowing the public to comment on its new rationale, macroalgae impairment, for issuing the permits and any other areas that the EAB finds necessary, and,
4. Any additional relief the Board deem appropriate in this action.

Thank you for your time and consideration.

Respectfully submitted,

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