

**SUPPLEMENTAL  
EXHIBIT – 1**

## **S. Exh. 1**

*List of additional documents that need to be added to the Administrative Record for the Town of Newmarket, New Hampshire NPDES Permit No. NH0100196 including the relevance of the documents and the corresponding supplemental exhibit number to this filing.*

### **D. SUPPLEMENTAL COMMENTS**

S. Exhibit 2. Briefing Sheets. John C. Hall. Great Bay Municipal Coalition Meeting with EPA Administrator, Lisa Jackson. June 28, 2012.

i. Attachments:

1. Email. Stephen Silva to Carl Deloi. Re: Great Bay SWA legislation. February 11, 2010.
2. Emails. Gregg Comstock to Paul Currier, et al. Re: 303d- EPA wants us to list Gt Bay for N. November 26, 2008.
3. Memorandum. John C. Hall. Sworn Testimony confirms no Objective Basis to Impose Stringent TN Reduction on Great Bay Municipalities.
4. Chart. Transparency-Phytoplankton Relationship Chart for the Squamscott River.
5. Chart. Transparency-Phytoplankton Relationship Chart for the Upper Piscataqua River (2003-2008).
6. Chart. Relationship Between Light Attenuation Coefficient and TN at Trend Stations (NH DES, 2009).
7. Chart. Algal Levels in Great Bay and other Estuaries.

### **H. CORRESPONDENCE**

S. Exhibit 3. Email. John C. Hall, Hall & Associates to Paul Currier, NHDES. RE: Draft Minutes from 4-5-11 Tech. Meeting with DES. April 29, 2011. (documenting the discussions between DES and the Coalition regarding technical uncertainties and showing NHDES' apparent desire to work cooperatively with the Coalition).

S. Exhibit 4. Emails. Between Ted Diers, NHDES and John C. Hall, Hall & Associates and Paul Currier, NHDES. RE: Draft MOU on GB. May 6, 10, 13, 2011. (documenting the discussions between NHDES and the Coalition in developing the MOU).

S. Exhibit 5. Emails. Between John C. Hall, Hall & Associates, Ted Diers, NHDES. Re: Eelgrass comment by Fred Short. May 12-13, 2011. (forwarding a summary of a discussion between Fred Short and Thomas Gallagher on factors controlling eelgrass survival in Great Bay where NHDES welcomes a cooperative approach and future research on the role of nitrogen in the system).

## **S. Exh. 1**

- S. Exhibit 6. Email. Bill McDowell to Philip Trowbridge et. al., RE: Composition of Organic Matter in Great Bay. Dec. 9, 2008. (discussing the increase in dissolved organic carbon and the correlation with CDOM in the system).
- S. Exhibit 7. Email. Alfred Basile to Ken Edwardson. RE: Add to [Cause\_LUT]? Sept. 28, 2009. (regarding listing light attenuation coefficient as a cause of the impairment).
- S. Exhibit 8. Email. Fred Short to Jim Latimer. RE: Agenda for NHEP nutrient criteria meeting- December 7. Dec. 5, 2007. (Fred Short statements regarding eelgrass populations receiving enough light at low tide to grow).
- S. Exhibit 9. Email. Alfred Basile to Lisa Larimer. Re: NH nutrient estuary criteria. March 5, 2009. (regarding how long until NH adopts the criteria and looking at chlorophyll a and health effects).
- S. Exhibit 10. Letter. Mayors of Portsmouth, Dover, and Rochester to Stephen Jones, Richard Langan, and Jonathan Pennock. RE: Request and Input on Results of Prior Research Conducted to Evaluate Nutrient Impacts on the Great Bay Estuary. Jan. 1, 2013.
- S. Exhibit 11. Letter. Richard Langan and Stephen Jones to Mayors of Portsmouth, Dover, and Rochester. RE: Request and Input on Results of Prior Research Conducted to Evaluate Nutrient Impacts on the Great Bay Estuary. Feb. 19, 2013.
- S. Exhibit 12. Letter. Mayors of Rochester and Dover to Thomas Burack. RE: DES Invitation for Meeting Regarding Nutrient Effects on the Great Bay Estuary. Oct. 3, 2012. (documenting the communities persistent attempts at participating in and meeting with DES to discuss the scientific validity of the 2009 Criteria).
- S. Exhibit 13. Letter. Mayors of Rochester, Dover, and Portsmouth to Thomas Burack. RE: DES Invitation for Meeting Regarding Nutrient Effects on the Great Bay Estuary. Sept. 25, 2012. (documenting the communities persistent attempts at participating in and meeting with DES to discuss the scientific validity of the 2009 Criteria).
- S. Exhibit 23. Emails. Between John C. Hall, Hall & Associates, Ted Diers, NHDES. RE: Application of eelgrass-based criteria in the tidal rivers. December 6, 9, 2011. (documenting that the Petitioners were still waiting a response from DES on whether the 2009 Criteria would apply in the tidal rivers, contrary to the MOA, in December 2011).

## **I. FREEDOM OF INFORMATION ACT (FOIA) REQUESTS**

- S. Exhibit 14. Letter. Deborah Nagle, EPA to John C. Hall, Hall & Associates. Re: Response to FOIA request EPA-HQ-2013-000197, -000711 through-000717, -000723.

## S. Exh. 1

November 30, 2012. (showing EPA Headquarters lacked documentation support its assertions that Region 1 had not engaged in science misconduct).

- S. Exhibit 15. FOIA EPA-R1-2013-0023333. Letter. John C. Hall, Hall & Associates to Freedom of Information Officer, EPA. RE: Dr. Fred Short's 2012 eelgrass survey including any and all communications between EPA Region 1 and any other party. December 20, 2012. (requesting all communications regarding Fred Short's most recent eelgrass survey which reflects the current status of the eelgrass populations in Great Bay).
- S. Exhibit 16. FOIA EPA-R1-2013-0023333. Letter. Cristeen L. Schena, EPA to John C. Hall, Hall & Associates. Re: Dr. Fred Short's 2012 eelgrass survey including any and all communications between EPA Region 1 and any other party. January 25, 2013. (EPA's response to our FOIA requesting all communications regarding Fred Short's most recent eelgrass survey which reflects the current status of the eelgrass populations in Great Bay).
- i. Attachment:
    1. Short, F. Great Bay Estuary Eelgrass: 2012 Observations. Memo received via e-mail (Fred Short, EPA to Dan Arsenault, EPA on September 11, 2012).

## **K. SITE-SPECIFIC BACKGROUND STUDIES, REPORTS, AND INFORMATION**

- S. Exhibit 17. PREP. 2012. Final Environmental Data Report. Piscataqua Region Estuaries Partnership, University of New Hampshire, Durham, NH. (Dec. 7, 2012) (EPA in its Response to Comments heavily relies upon the draft PREP 2012 report, therefore, the finalized PREP findings regarding the state of the Great Bay estuary should be included and are highly relevant to this permit).
- S. Exhibit 18. Short, F. Great Bay Estuary Eelgrass: 2012 Observations. Memo received via e-mail (Fred Short to Dan Arsenault, EPA on September 11, 2012). All analyses and aerial photographs relied upon. (requesting all data and aerial photographs taken by Fred Short during the most recent eelgrass survey, reflecting the current status of eelgrass populations in Great Bay, to be added to the record).
- S. Exhibit 22. Email. Steve Jones to John Hall, et al. Re: Fwd: Looking for a copy of the following report. Aug. 28, 2012. (attaching a final report that was further evaluation of a study include by EPA in the record (AR K.7) showing there was no DO and algal relationship).
- i. Attachments
    - a. Jones, S. 2008. Incidence and timing of Low Dissolved Oxygen Events in the Squamscott River: 2005-07. A final Report to the New Hampshire Estuarine Project. Addendum to:

**S. Exh. 1**

“Impacts of Wastewater Treatment Facilities on Receiving Water Quality”.

- b. Note: the other two studies attached to the email are already part of the record (AR K. 7-8).

**N. OTHER**

S. Exhibit 19. Dr. Steven Chapra, Affidavit (Feb. 27, 2013).

S. Exhibit 20. Dean Peschel, Affidavit (Feb. 25, 2013).

S. Exhibit 21. Thomas Gallagher, Affidavit (Feb. 27, 2013).

# **SUPPLEMENTAL EXHIBIT – 2**

**\* Please reference Exhibit 4 to Petitioners’  
Petition for Review (Dec. 14, 2012)**

**SUPPLEMENTAL  
EXHIBIT - 3**



## S. Exh. 3

**From:** John Hall

**Sent:** Friday, April 29, 2011 1:33 PM

**To:** Currier, Paul M.

**Cc:** Peter H. Rice; Diers, Ted; Dean Peschel; David Green; Jennifer Perry; sgreig@newmarketnh.gov; ekinder@nkms.com; Tom Gallagher; smwoodland@cityofportsmouth.com; Dave S. Allen; Edwardson, Ken; David Cedarholm; Trowbridge, Philip; Stewart, Harry

**Subject:** RE: DRAFT Minutes from 4-5-11 Tech Meeting w/ DES

Dear Paul

As discussed, attached please find a set of proposed DES findings that are needed to secure municipal commitments to move forward cooperatively on resolving technical uncertainties discussed at the April 5<sup>th</sup> meeting and avoid the peer review process. A "rationale" for each of the findings is included at the end of each provision. The findings are not only intended to support the collaborative monitoring/DO modeling effort, but also to support use of an adaptive management approach that implements a defensible level of TN reduction on a more accelerated schedule. The document also identifies the express commitments of the Coalition members to fund resolution of the scientific issues and move forward with nutrient removal designs/reductions at several facilities. We hope that agreement can be reached on these issues in advance of the May 11<sup>th</sup> SWA Science Symposium such that we both can report to that group regarding the collaborative efforts to address the key technical uncertainties while promoting efforts to reduce TN loadings to the Bay.

As previously discussed, a linchpin in this whole process is getting EPA to defer further action on the Exeter permit. That will allow the Coalition to focus its limited resources on the sampling and modeling effort and avoid further confrontation over the draft criteria. At this point, deferral of that permit has been requested by the Governor, both Senators and Congressman Guinta. Once DES and the Coalition agrees on how to proceed, I would suggest that a conference call or meeting be arranged to make sure that EPA Region I withdraws the permit since it is not consistent with the "adaptive management" approach we agree should be employed under the circumstances. I look forward to talking with you early next week on our proposed findings and preparation of a collaborative presentation for the May 11<sup>th</sup> SWA Symposium.

Please do not hesitate to call me if you have any questions regarding the suggested findings.

On behalf of the Coalition, thank you for your efforts in moving this process forward.

*John*

John C. Hall

Hall & Associates – **Note new address:**

1620 I Street, NW, Suite 701

Washington, DC 20006

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**SUPPLEMENTAL  
EXHIBIT - 4**

## S. Exh. 4

**From:** Diers, Ted [Ted.Diers@des.nh.gov]

**Sent:** Friday, May 13, 2011 4:07 PM

**To:** John Hall

**Cc:** Peter H. Rice; Dean Peschel; David Green; Jennifer Perry; sgreig@newmarketnh.gov; ekinder@nkms.com; Tom Gallagher; smwoodland@cityofportsmouth.com; Dave S. Allen; David Cedarholm; Stewart, Harry; Currier, Paul M.

**Subject:** RE: Draft MOU on Great Bay

John,

Attached is a draft of the MOA in which we have accepted nearly all of your comments and made a few clarifying edits. Largely we were attempting, as did your comments, to be clear, unambiguous and have parallel structure between the "whereas" and "therefore." It is attached both as clean and track changes. This version has been reviewed and accepted by our Commissioner, he is prepared to sign it on Monday.

Sorry to get this back so late in the day.

Ted

Ted Diers

New Hampshire Coastal Program - DES

-----Original Message-----

**From:** John Hall [mailto:jhall@hall-associates.com]

**Sent:** Tuesday, May 10, 2011 4:15 PM

**To:** Diers, Ted

**Cc:** Peter H. Rice; Dean Peschel; David Green; Jennifer Perry; sgreig@newmarketnh.gov; ekinder@nkms.com; Tom Gallagher; smwoodland@cityofportsmouth.com; Dave S. Allen; David Cedarholm

**Subject:** RE: Draft MOU on Great Bay

Ted

Attached is a revised version of the proposed MOA. We are very close and the group hopes that the clarifying points are acceptable. Please call if you have any questions regarding the suggested changes. We look forward to seeing you tomorrow at the SWA symposium.

Thanks

John

John C. Hall

Hall & Associates – Note new address:

1620 I Street, NW, Suite 701

Washington, DC 20006

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E-Mail: [jhall@hall-associates.com](mailto:jhall@hall-associates.com)

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S. Exh. 4

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**From:** Diers, Ted [Ted.Diers@des.nh.gov]  
**Sent:** Friday, May 06, 2011 11:32 AM  
**To:** John Hall; Currier, Paul M.  
**Cc:** Peter H. Rice; Dean Peschel; David Green; Jennifer Perry; sgreig@newmarketnh.gov; ekinder@nkms.com; Tom Gallagher; smwoodland@cityofportsmouth.com; Dave S. Allen; Edwardson, Ken; David Cedarholm; Trowbridge, Philip; Stewart, Harry  
**Subject:** Draft MOU on Great Bay

John et al,

Attached please find a draft MOA with regards to the modeling effort in the Great Bay Estuary. We have, to the best of our ability, incorporated all of the elements from your email of 4/29/11. This has passed through senior level review at DES and we are prepared to sign this document as rapidly as the communities can review and approve it. Please let me know if you have any questions. I look forward to this being the start of our formal collaboration on a solution to the issues in Great Bay.

Ted

Ted Diers  
New Hampshire Coastal Program  
Department of Environmental Services  
222 International Drive, Suite 175  
Portsmouth, NH 03801

603-559-0027 (Portsmouth)  
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[NH Coastal Program Website](#)

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**SUPPLEMENTAL  
EXHIBIT - 5**



## S. Exh. 5

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**From:** Diers, Ted [Ted.Diers@des.nh.gov]  
**Sent:** Friday, May 13, 2011 12:26 PM  
**To:** John Hall  
**Cc:** Peter H. Rice  
**Subject:** RE: Eelgrass comment by Fred Short

John,

This is good info. It should focus the discussion and future research on the role of N (and other things) on stimulating the growth of epiphytes and macroalgae (have to invest in some more transparencies for Art Matheson!). I think that we all agree that getting N reductions started should be the primary goal, with adaptive management from there.

Expect a revised and ready to sign MOA within hours.

Ted

Ted Diers  
New Hampshire Coastal Program - DES

-----Original Message-----

**From:** John Hall [mailto:jhall@hall-associates.com]  
**Sent:** Thursday, May 12, 2011 5:02 PM  
**To:** Diers, Ted  
**Cc:** 'Peter H. Rice'  
**Subject:** FW: Eelgrass comment by Fred Short

Ted

I thought you would find this summary from Tom Gallagher regarding his discussion with Fred Short yesterday to be informative on the transparency question. If there is concurrence from the experts that the GB transparency target is not the required endpoint for eelgrass protection, that will make it easier for EPA to walk away from the Exeter permit since that permit calculation was based on meeting 0.3 mg/l TN value derived to protect eelgrass in the Bay. I would note that the 8 mg/l TN value that Exeter and Newmarket will commit meet should make a very substantial impact on growing season TIN contributions which are more relevant to macroalgae and epiphyte growth. It also bring both facilities far below mid-1990s loadings when macroalgae populations were much lower.

We look forward to seeing the revised MOA.

Regards

*John*

John C. Hall  
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## S. Exh. 5

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**From:** Gallagher, Thomas [mailto:Thomas.Gallagher@hdrinc.com]

**Sent:** Thursday, May 12, 2011 11:33 AM

**To:** John Hall

**Cc:** Peter H. Rice; Dean Peschel; David Green; Jennifer Perry; sgreig@newmarketnh.gov; ekinder@nkms.com; smwoodland@cityofportsmouth.com; Dave S. Allen; David Cedarholm

**Subject:**

John,

I spoke with Fred Short during yesterday's meeting and asked him a series of questions about factors controlling Eelgrass survival in Great Bay. Some of his opinions on Eelgrass are as follows.

1. Water column light extinction is not limiting eelgrass growth in Great Bay because eelgrass gets sufficient light during low tide( I guess this eliminates a TN criterion of 0.30 mg/L as scientifically defensible ) .However he believes light limits eelgrass growth in other area of the Great Bay Estuary such as the Piscataqua River ( seems unlikely nitrogen is a factor with Chl a levels near 1 ug/L ).
2. He believes nitrogen stimulates the growth of macroalgae and epiphytes resulting in a reduction of available light for eelgrass growth. However he does not know of a specific TN criterion that would limit macroalgae and epiphyte growth.
3. In the absence of any specific TN concentration for limiting macroalgae growth he was open to the approach of setting TN loads to levels that occurred when there were healthy eelgrass beds. He was also open to the idea of using dissolved inorganic nitrogen instead of TN.
4. He agreed that seasonal point source TN limits were also reasonable.

Tom



**SUPPLEMENTAL  
EXHIBIT – 6**

**Sally L. Brabble**

**From:** McDowell, Bill <Bill.McDowell@unh.edu>  
**Sent:** Tuesday, December 09, 2008 5:16 PM  
**To:** Trowbridge, Philip; Morrison, John; Kellam, Dave; Sowers, Derek; Jean Brochi; Hunter, Jennifer; Pennock, Jonathan; Kathy Mills; Ballestero, Thomas; Comstock, Gregg; Currier, Paul M.; Diers, Ted; Rubin, Fay; Short, Frederick; Lucey, Kevin; Nash, Chris; Langan, Richard; Roseen, Robert; Jones, Stephen; William Clifton; Andrew Fisk; Rosenberg, Andy; Mathieson, Arthur; Al Basile; Carl Paulsen; Phil Colarusso; Mel Cote; Dave Courtemanch; Dean Peschel; Ed Dettmann; Dave Funk; Peter Goodwin; Diane Gould; Jim Fitch; Eileen Miller; Mike Kappler; Jim Latimer; Matt Liebman; Linda Kalnejais; Mark Allenwood; Peter Atherton; Peter Rice; Ray Konisky; Peeri, Shachak; Susan Davies; Tom Irwin; Hal Walker; William Brown  
**Subject:** RE: Composition of organic matter in Great Bay

Ru has already described some of the relationships that link organic matter in the bay to organic matter in the watershed. As we have seen in previous presentations by Ru, the CDOM in the bay is very tightly correlated with the measured dissolved organic carbon (DOC) in the Lamprey River at Packers Falls (Note that the measured DOC does not include any contribution by Newmarket sewage treatment plant). So there is a strong terrestrial signal in the Bay. A budgetary analysis could be conducted to estimate the sources of organic matter entering the Bay.

DOC in sub-basins of the Lamprey River is tightly correlated with wetland coverage in the sub-basins, and shows no effects at all from population density, road network, soils, or anything else we have measured. Very unlike nitrate, which shows strong increases with various measures of human impact in the sub-basins. Thus, it seems very likely that DOC delivered to the bay, at least at present human population levels, is driven by wetlands and not people. Although we have not seen differences in total concentrations, we have seen strong differences in the fluorescence signal of the DOC from different sub-basins, suggesting that there may be qualitative differences in DOC associated with human presence in the landscape, despite the fact that there is no quantitative signal that we can find.

Globally, increases in DOC have been occurring over the last 20 years. The mechanisms are uncertain, but we might expect DOC to increase in the Lamprey, and thus in the bay, too.

These observations do not directly answer the question Phil has asked. Given the strong correlation between CDOM in the bay and the DOC in the Lamprey, and the DOC concentrations in the Bay, I would guess that the great majority of the DOC in the bay is from the watershed, with minor contributions from the eelgrass, etc. For the particulate matter, given the relatively low levels of TSS in the Lamprey above Newmarket that my lab has measured, I would suspect/guess that at least half is generated within the Bay or from the towns right on the bay (sewage, urban runoff).

We have data on TSS and particulate C and N in the Lamprey over last 4-6 years, and perhaps they could be used to do a more careful assessment, if there are also comparable data for the Bay itself.

Bill

William H. McDowell  
 Professor of Water Resources Management  
 Department of Natural Resources and the Environment  
 Presidential Chair  
 Director, NH Water Resources Research Center (<http://www.wrrc.unh.edu/>)  
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<http://www.unh.edu/natural-resources/fac-bmcdowell.html>

---

**From:** Trowbridge, Philip [<mailto:Philip.Trowbridge@des.nh.gov>]

**Sent:** Monday, December 08, 2008 2:17 PM

**To:** Morrison, John; Kellam, Dave; Sowers, Derek; Jean Brochi; Hunter, Jennifer; Pennock, Jonathan; Kathy Mills; Ballestero, Thomas; Comstock, Gregg; Currier, Paul M.; Diers, Ted; Rubin, Fay; Short, Frederick; Lucey, Kevin; Nash, Chris; Langan, Richard; Roseen, Robert; Jones, Stephen; William Clifton; Andrew Fisk; Rosenberg, Andy; Mathieson, Arthur; Al Basile; McDowell, Bill; Carl Paulsen; Phil Colarusso; Mel Cote; Dave Courtemanch; Dean Peschel; Ed Dettmann; Dave Funk; Peter Goodwin; Diane Gould; Jim Fitch; Eileen Miller; Mike Kappler; Jim Latimer; Matt Liebman; Linda Kalnejais; Mark Allenwood; Peter Atherton; Peter Rice; Ray Konisky; Peerl, Shachak; Susan Davies; Tom Irwin; Hal Walker; William Brown

**Subject:** Composition of organic matter in Great Bay

The typical speciation of nitrogen in Great Bay is shown in the following table. The majority (62%) of the total nitrogen is associated with organic matter but only 1% is associated with living phytoplankton. It would be helpful to have some information on the composition of organic matter (both dissolved and particulate) in the bay. Is it leaf litter from upland watersheds, salt marsh/eelgrass/macroalgae debris, detrital phytoplankton and zooplankton, or something else? If you have any information that might shed some light on this question, please contact me as soon as possible. Thank you.

**GRBAP - Great Bay**

N=48

| Fraction    | Species           | Median (mg N/L) | Percent of Total |
|-------------|-------------------|-----------------|------------------|
| Dissolved   | Ammonia           | 0.048           | 13%              |
|             | Nitrate+Nitrite   | 0.092           | 24%              |
|             | In Organic Matter | 0.148           | 39%              |
| Particulate | In Phytoplankton  | 0.005           | 1%               |
|             | In Organic Matter | 0.084           | 22%              |
| Total       |                   | 0.375           | 100%             |

+++++

Phil Trowbridge, P.E.

Coastal Scientist

N.H. Dept. of Environmental Services

603.271.8872

[Philip.Trowbridge@des.nh.gov](mailto:Philip.Trowbridge@des.nh.gov)

**SUPPLEMENTAL  
EXHIBIT – 7**





**Tony Lapa**

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**From:** Basile.Alfred@epamail.epa.gov  
**Sent:** Monday, September 28, 2009 3:48 PM  
**To:** Edwardson, Ken  
**Cc:** Reid.Wendy@epamail.epa.gov; Trowbridge, Philip; Comstock, Gregg; Currier, Paul M.; Tulloch, Megan L.  
**Subject:** RE: Add to [Cause\_LUT] ?

Hi Wendy,

We have been working with NH for quite some time on the development of their numeric nutrient criteria for the Great Bay estuary -- a very important achievement for the State. From a standards perspective, the light attenuation coefficient is somewhat analogous to other measures of clarity such as turbidity and TSS. If at all possible, it is very important that we acknowledge this parameter as a cause of impairment. This is one of several parameters, others being turbidity or excess algae, that often lead to a determination that excess nutrients are the problem. Maybe we can talk sometime this week if you would like. Thanks for your time.

Alfred Basile  
U.S. EPA New England  
Water Quality Branch  
1 Congress Street  
Suite 1100 (CWQ)  
Boston, MA 02114

[basile.alfred@epa.gov](mailto:basile.alfred@epa.gov)  
tel: (617) 918-1599  
fax: (617) 918-2064

-----"Edwardson, Ken" <Kenneth.Edwardson@des.nh.gov> wrote: -----

To: "Reid.Wendy@epamail.epa.gov" <'Reid.Wendy@epamail.epa.gov'>, Alfred Basile/R1/USEPA/US@EPA  
From: "Edwardson, Ken" <Kenneth.Edwardson@des.nh.gov>  
Date: 09/28/2009 02:04PM  
cc: "Trowbridge, Philip" <Philip.Trowbridge@des.nh.gov>, "Comstock, Gregg" <Gregg.Comstock@des.nh.gov>, "Currier, Paul M." <Paul.Currier@des.nh.gov>, "Tulloch, Megan L." <tulloch@rti.org>  
Subject: RE: Add to [Cause\_LUT] ?

Hi Wendy,

We are working with R1 to have a completed and signed 303(d) by the close of the FFY. The ability to assign impairments to our Numeric Criteria for Clarity (light attenuation) is now critical. The database should be reflecting the contents of our water quantity standards. Our standards should not need to be altered to reflect the DB.  
[http://des.nh.gov/organization/divisions/water/wmb/wqs/documents/20090610\\_estuary\\_criteria.pdf](http://des.nh.gov/organization/divisions/water/wmb/wqs/documents/20090610_estuary_criteria.pdf)

Yes, clarity is an indicator of many other causes just as low dissolved oxygen is an indicator of high nutrients, poor reaeration, high BOD, high SOD, ... but we none the less have numeric criteria for dissolved oxygen and list waters as impaired due to low DO.

**SUPPLEMENTAL  
EXHIBIT – 8**



S. Exh. 8

**Tony Lapa**

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**From:** Fred Short <fred.short@unh.edu>  
**Sent:** Wednesday, December 05, 2007 2:57 PM  
**To:** Latimer.Jim@epamail.epa.gov  
**Cc:** Trowbridge, Phillip  
**Subject:** Re: Agenda for NHEP nutrient criteria meeting - December 7

Hi Jim,

I think monitoring eelgrass in the system would be a good indicator for habitat assessment, but we have got to be careful to look at the conditions in Great Bay itself, differently from those in Little Bay and the Piscataqua River. Great Bay is dominated by extensive eelgrass meadows that are intertidal and receive enough light at low tide to satisfy their light requirement. In the Piscataqua River and Little Bay all the eelgrass beds are sub-tidal and require clear enough water to allow light penetration that will satisfy the light requirement. Currently, the eelgrass in the Piscataqua River and Little Bay are declining very fast in response to poor water quality. In Great Bay, the distribution of eelgrass is holding steady but the population is losing biomass. Also indicating water quality problems. I would suggest maintaining a long-term monitoring site in Great Bay (SeagrassNet) and assessing the NPI in the eelgrass populations of the whole estuary.

Fred

-----  
) > < {{{ ( \* > ) } } ) ) ) ) )

Dr. Frederick T. Short  
University of New Hampshire  
Department of Natural Resources  
Jackson Estuarine Laboratory  
85 Adams Point Road  
Durham, NH 03824 USA

603-862-5134 phone  
603-862-1101 fax  
<fred.short@unh.edu>  
[www.marine.unh.edu/jel/faculty/fred2/fredshort.htm](http://www.marine.unh.edu/jel/faculty/fred2/fredshort.htm)  
[www.SeagrassNet.org](http://www.SeagrassNet.org)

On Dec 3, 2007, at 4:07 PM, [Latimer.Jim@epamail.epa.gov](mailto:Latimer.Jim@epamail.epa.gov) wrote:

Hey Phil,

What are your (and Fred's) thoughts on using eelgrass density as an indicator for this habitat's assessment?

See you Friday!


Regards,  
Jim



**SUPPLEMENTAL  
EXHIBIT – 9**

## S. Exh. 9

Alfred Basile /R1/USEPA/US  
03/05/2009 03:55 PM

To Lisa Larimer/DC/USEPA/US@EPA  
cc Danielle Fuligni/DC/USEPA/US@EPA, Jacques  
Oliver/DC/USEPA/US@EPA  
bcc  
Subject Re: NH nutrient estuary criteria 

Thanks Lisa. Not sure how long NH plans on test driving the numbers before adopting. I would imagine at least one listing cycle. Thanks for looking into the chl a - contact rec - health effects.. Curious to see where 20 ug/L falls out. And yes, you are correct that the aquatic life chlorophyll will trump the contact rec. at least at 20ug/L. Great to have feedback from HQ on this.. We'll probably go ahead and send comments out soon.

Lisa Larimer/DC/USEPA/US



Lisa Larimer/DC/USEPA/US  
03/05/2009 03:40 PM

To Alfred Basile/R1/USEPA/US@EPA  
cc Jacques Oliver/DC/USEPA/US@EPA, Danielle  
Fuligni/DC/USEPA/US@EPA  
Subject NH nutrient estuary criteria

Hi Al,

I've been sick the past two weeks, and every time I started to read NH's info the room started spinning after a couple pages (not good when nausea and its associated effects are some of your symptoms). I'm not trying to imply the writing wasn't good, just that I've been unable to concentrate on it (although in theory I have read the whole thing). So I apologize for not getting comments to you within the generous timeframe you provided, including extension.

I've read yours and Jacques' comments and they seem on target. One thing I was able to get out of the write-up was that it appears NH plans to test drive these numbers for a while before adopting them into their water quality standards. Is that right? If so, do you have a sense how long? When they do put it into standards, I think we will have to work with them on how to write up the standards so they can use them the way they want to with regard to not listing a water as impaired if nitrogen is exceeded and the response thresholds aren't. (And I agree that scenario should be "threatened" rather than "fully supporting") I'm also a little uncomfortable with assuming it is fully supporting if there's insufficient information - that's what Integrated Report category 3 is for.

Some thoughts & questions:

If both the aquatic life use and rec use apply to all estuarine waters, then the more sensitive use (in this case aquatic life for chlorophyll a) trumps, so Region 1's concerns on the rec use side may be assuaged in the sense that the waters will have to be at 12 ug/L. I think one of the states sent in some good info tying rec use and chlor a and health effects together. I'll try to look at that next week when I'm back in the office and see where 20 ug/L falls in their analysis.

I think I had some more thoughts, but the room is spinning again, so I'm going to lie down. Sorry I couldn't get robust comments to you this time. I'll try to do better with Maine.

---

Lisa Larimer, P.E.  
202-566-1017

**SUPPLEMENTAL  
EXHIBIT – 10**



## CITY OF PORTSMOUTH

Municipal Complex  
1 Junkins Avenue  
Portsmouth, New Hampshire 03801  
(603) 610-7200  
Fax (603) 427-1526

Eric A. Spear  
Mayor

January 1, 2013

Jonathan Pennock, Ph.D.  
Direction, UNH Marine Program & NH Sea Grant College Program  
President, Sea Grant Association  
University of New Hampshire  
102 Chase Ocean Engineering Laboratory  
24 Colovos Road  
Durham, NH 03824

Richard Langan, Ph.D.  
Director, Coastal and Ocean Technology Programs (Atlantic Marine Aquaculture Center,  
Cooperative Institute for Coastal and Estuarine Environmental Technology, NERRS Science  
Collaborative)  
University of New Hampshire  
Coastal and Ocean Technology Programs  
Gregg Hall, 35 Colovos Road  
Durham, NH 03824

Stephen H. Jones, Ph.D.  
Research Associate Professor, Department of Natural Resources & the Environment  
UNH Marine Program, Center for Marine Biology  
University of New Hampshire  
Jackson Estuarine Laboratory  
85 Adams Point Road  
Durham, NH 03824

Re: **Request for Input on Results of Prior Research Conducted to Evaluate Nutrient  
Impacts on Great Bay Estuary**

Dear Drs. Pennock, Langan and Jones:

I am writing this letter on behalf of the Cities of Dover, Rochester and Portsmouth. Our communities (as well as the smaller towns throughout the Great Bay watershed) are in desperate need of an objective scientific assessment on the degree to which nutrient loadings have been demonstrated to be the cause of eelgrass population changes and reduced DO in the Great Bay system. As you are aware, EPA has proposed extremely restrictive total nitrogen (TN) reduction requirements for both the Newmarket and Exeter wastewater facilities and plans to impose



## S. Exh. 10

similar requirements on other facilities throughout the system. In addition, EPA has specified that unless non-point sources of TN are greatly reduced, EPA will likely impose effluent limits on wastewater discharges in the range of 0.3 mg/l TN, which is beyond the capability of any available technology to achieve. Financing the type of improvements being mandated by EPA will likely approach or exceed a billion dollars, causing serious financial harm to the communities which are impacted by these costs for decades to come and preclude expenditure of municipal resources on other necessary projects (schools, hospitals, welfare services, technical research, etc.). As an alternative, our communities have supported a proactive approach to (1) ensure TN levels are controlled to prevent future increases, (2) conduct necessary research on system needs, and (3) implement other ecologically beneficial projects via adaptive management. EPA, however, has thoroughly rejected this concept focusing solely on stringent TN reduction measures as the solution to protecting system ecology.

EPA's regulatory decisions are premised on a number of scientific findings that the Agency claims to be demonstrated by the data and studies developed for the Great Bay estuary. The Jackson Laboratory and UNH were involved in the vast majority of the studies referenced by EPA. The EPA claims include the following:

- Data from the Estuary confirm that TN increases caused a significant increase in phytoplankton growth impairing water column transparency throughout the system.
- Studies demonstrated that water column transparency decreases related to TN induced algal growth caused the major reduction in eelgrass acres that occurred between 2006-2008.
- Studies confirmed that low DO occurring in the Lamprey and Squamscott River was caused by excessive algal growth.
- Studies demonstrate that eelgrass populations in the system are suffering from nitrate "toxicity".
- Macroalgae growth has been confirmed to be a major cause of changing eelgrass populations in Great Bay.
- Studies demonstrated that the floods occurring in 2006 were not the primary cause of eelgrass losses occurring in the system shortly thereafter.

Our communities are keenly interested in protecting the resources of Great Bay and supporting research necessary to ensure future generations will enjoy the same benefits. We understand that there are a wide range of important ecological factors that need to be evaluated and addressed to protect the system's ecology (e.g., oyster restoration, shoreline protection, marsh restoration, etc.). However, EPA's single minded focus on TN reduction will preclude all future investments in such research and restoration efforts as all available resources for decades to come will be committed to the "EPA TN solution." Thus, we are at a crossroads and we need to know whether the claims being made by EPA are reasonably supported by research conducted for this system.

You are three of the most knowledgeable and objective individuals regarding Great Bay research and studies – you have participated on the PREP Technical Advisory Committee and participated in many studies on the key tidal rivers and bay areas EPA is referencing. Attached is a short list of questions regarding the data and research that has been conducted for this system. Your



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prompt and concise response to these questions would be most appreciated and should help to ensure that future investments in protecting the system are properly directed. Thank you in advance for your assistance, it is most appreciated.

Sincerely,



Eric Spear, Mayor  
City of Portsmouth



Dean Trefethen, Mayor  
City of Dover



T.J. Jean, Mayor  
City of Rochester

Attachment

### Questions on Prior Research Findings for Great Bay Estuary

Please provide answers to the following question; if you have specific knowledge of the data and studies conducted for the Estuary regarding the topic of concern, please generally identify the information source (e.g., PREP water quality database, State of the Estuary Report, study for a particular area). The answers should avoid speculation and only present positions that represent your personal knowledge of data and research for this system. If there are specific research needs to resolve the question please let us know the type of research that needs to be funded.

#### **Transparency-related issues**

1. Has data collected for the estuary confirmed that changing TN levels have caused an increase in phytoplankton growth, significantly lowering water column transparency in Great Bay, Little Bay or the Piscataqua River?
2. Have studies determined the degree to which phytoplankton growth impacts transparency in this system and that it is a significant factor presently limiting eelgrass growth? Do these studies indicate that reducing TN levels is likely to result in a significant improvement in water column transparency for either Great Bay or the tidal rivers?
3. Do studies or available data confirm that water column transparency is a primary factor presently limiting eelgrass growth and restoration in Great Bay, Little Bay and/or the Lower Piscataqua River?
4. Have studies determined that the significant eelgrass declines which occurred systemwide in 2006 were not due to the impacts of excessive rainfall occurring that year but were caused by TN related impacts due to excessive nuisance algal growth?

#### **Nitrate Toxicity**

5. Have studies for the Great Bay system demonstrated that eelgrass populations are being adversely impacted by nitrate toxicity and that was a factor in the significant eelgrass decline that occurred systemwide in 2006?

#### **DO Impacts**

6. Have studies in either the Squamscott or Lamprey Rivers confirmed that algal growth in those rivers is the major cause of the periodic low DO observe in those rivers?

#### **Macroalgae Impacts**

7. Have studies of Great Bay demonstrated that increased macroalgae growth is the primary reason for decreases in eelgrass populations in that water body and that reduction in TN levels will abate such excessive plant growth?
8. Is significant macroalgae growth occurring in the tidal rivers and if so, does it present a significant obstacle to allowing eelgrass restoration in the tidal rivers?

**SUPPLEMENTAL  
EXHIBIT – 11**



received  
2/21/13

UNIVERSITY of NEW HAMPSHIRE

February 19, 2013

Eric Spear, Mayor  
City of Portsmouth

Dean Trefethen, Mayor  
City of Dover

T.J. Jean, Mayor  
City of Rochester

Dear Mayors Spear, Trefethen, and Jean;

We are writing to you in response to your request for input on research and monitoring in the Great Bay Estuary. Please accept our apologies for taking so long to respond. As University of New Hampshire professors, we feel it is part of our mission to provide technical information to citizens and municipal officials in cases where we have the knowledge and expertise to do so. In your letter, you cite claims attributed to the USEPA regarding conditions and cause and effect scenarios in the estuary. We are curious how these claims were expressed by EPA and would be interested in seeing the original documents from which they were excerpted if you are willing to share them.

Regarding the questions you have posed, first of all, we were either principal investigators on studies that pertain to your questions, or have been involved in written review studies or lengthy discussions of all studies as part of PREP TAC and other meetings. Secondly, because of the way your questions are worded and your request that they focus solely on studies that have been conducted in 'this system, e.g., the Great Bay Estuary, the answers for most of the questions would be "no" with some qualifiers for a few of them. This is a function of two facts, the first of which is that most data used to frame our understanding of how nutrient dynamics in the estuary works and what causes changes in water quality conditions are generated by monitoring programs. The purpose of monitoring programs is generally to assess the status, and when extended over time and space, the trends for whatever is of concern and is being measured. Data generated from this framework are not designed to answer questions of cause and effect, source identification and other 'why' and 'how' questions; these require specific studies designed to answer them or to address hypotheses. The second fact is that there have been few or no published studies designed to answer these questions.

The comments below have been generated from our collective memory, or a quick reference to existing studies. We will not respond to these questions in depth because it would take significant time and effort to provide more thorough answers.

Transparency-related issues:

#1- NO

There are several aspects to this question that are assumptions not necessarily backed up by any available data, including 'increase in phytoplankton growth', and 'lowering water column transparency...', let alone the relationship between TN, chlorophyll *a* and transparency measures. The only measures of phytoplankton growth that we are aware of are the respiration measures conducted in the Squamscott River in 2011 as part of the Coalition-funded study; otherwise, phytoplankton population dynamics are inferred from chlorophyll *a* data collected as part of monitoring studies, that include a few more detailed studies like the early studies conducted by Langan as part of the early NERR monitoring program during phytoplankton blooms in Great Bay and the various spatially-intensive DO-water quality studies

### **S. Exh. 11**

conducted by Pennock (Lamprey), Jones (Squamscott & Lamprey), and the 2011 Coalition study in the Squamscott River that included measures of chlorophyll *a*. Otherwise, there are no places where we are aware of documented increasing phytoplankton populations, and in many areas chlorophyll *a* remains present at relatively low levels. Many areas of the estuary are turbid due to CDOM and suspended sediments, the latter is largely a function of re-suspension events caused by wind and waves at low tide across the shallow areas of the estuary and by relatively rare large scale runoff events. As for changing TN levels, even at Adams Point there has been little change since the late-1980's, and a review of the NHEP Technical Characterization Report (Jones 2000), authored by ALL JEL scientists, N levels in GBE tributaries (Oyster, Lamprey, Bellamy) were lower during the 1990's than during the late 1970's.

#2-There are two questions here; YES, to the first part (a) and NO to the second part (b).

a) YES. The study by Morrison et al. found phytoplankton/chlorophyll *a* concentration-related contribution to transparency limitation in Great Bay to be 12% (Great Bay buoy) of the total limitation from all factors; CDOM, water and suspended sediments were the major factors. The study did not include eelgrass growth measures. There was one verbalized interpretation of this finding at a TAC meeting where Morrison presented the results of his study that was not backed up by any analysis, yet it was accepted by some as feasible and promulgated thereafter, that even this relatively small influence was, "...enough to limit eelgrass growth..."

b) NO. Given the small degree to which phytoplankton contributes to transparency limitation, reductions in TN were not discussed in this report. TN reductions would not appear to provide much in the way of improving transparency through this mechanism, although no study has been conducted to address this. Given the large reserve of TN in sediments and its efflux during warm months to the water column, reducing TN loading may not have much influence on TN levels in the estuary for quite some time. What the study did state in the Executive Summary was that "...it would be predicted that water clarity in Great Bay, Little Bay and the Lower Piscataqua River was sufficient for eelgrass growth. Absence of eelgrass from any one of these areas is suggestive of factors other than water clarity controlling eelgrass distribution".

#3-NO & YES

We believe the habitat restoration document (O'Dell et al.) suggested that eelgrass restoration in a few of the rivers (Squamscott) is not feasible in part by poor transparency, although we'd have to go back and look at that. As well, it is well established that eelgrass will not grow in water that is too deep, so transparency becomes a factor limiting it's establishment and growth at lower depths within the estuary. For areas where it is and has been present, i.e., some of the shallow areas of the estuary, transparency has not, to our knowledge, been demonstrated as a primary factor limiting growth; myriad other factors have been cited as being primary limiting factors. Also see previous answer for a direct response to this question.

#4-NO

We have not seen any analysis, or even a comprehensive consideration of all of these factors that would enable discerning the relative influence of each on what happened to eelgrass in 2006. Emerging research on sediment re-suspension in Great Bay suggest extreme runoff events, like what happened during 2006, cause highly significant sediment re-suspension.

#### Nitrate toxicity:

#5: NO

No studies on nitrate toxicity in eelgrass in the GBE have been conducted, and we are not aware of any study showing this was a factor in 2006. This seems to be highly speculative, especially because nitrate levels did not change that drastically in 2006 compared to other years.

#### Dissolved oxygen impacts:

#6: NO

This question is a bit strange in that algal growth assumes photosynthesis and under these conditions DO is increased; at night algae respire and take up oxygen and can cause lower DO levels to occur. A 2005 study by Jones in the Squamscott River was designed to capture this latter condition by conducting river length surveys early in the morning under tidal conditions that were most frequently associated with



**S. Exh. 11**

lower DO levels. That study and a similar one (Jones 2007) did not reveal any extensive low (<5 mg/L) levels, and low DO levels that did occur were not correlated with chlorophyll *a* levels.

Macroalgae impacts:

#7: a qualified "NO"

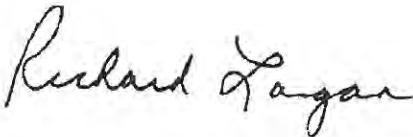
Most studies addressing the decline of eelgrass list an array of factors affecting eelgrass populations in Great Bay. There are sparse data on macroalgae biomass trends, the little available data, along with many anecdotal accounts, suggest increases have occurred, although it is also well accepted that macroalgal blooms are ephemeral and unpredictable. There was a study that mapped eelgrass and macroalgae (Pe'eri et al. 2008) that left many suggestions for future studies but few conclusions from their actual study, and no conclusions of cause and effect. One weakness of their project was there was no ground-truthing of eelgrass at the time of the study. Given the accepted concept of how ephemeral macroalgal mats are in the estuary, this was acknowledged to be a significant factor that should be required in any new studies. No studies have demonstrated mechanisms for macroalgae growth causing decreases in eelgrass populations.

#8: NO

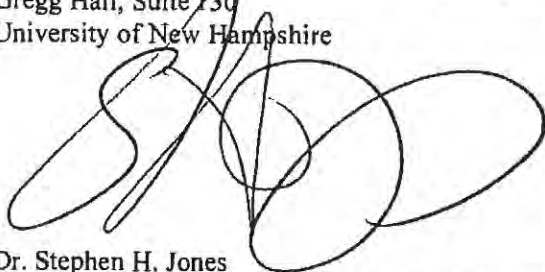
Not much data are available on this, though many people weigh in with anecdotal input that this may be happening. Our personal observations are that there has been an increased presence of macroalgae in intertidal and shallow subtidal areas of tidal rivers where water salinity is high enough, but its occurrence is ephemeral and not consistent over time, within seasons and between years. How this would affect establishment of eelgrass in the rivers is not something anyone has studied, to our knowledge.

In closing and with regards to your suggestion that we comment about types of research that need to be funded to answer these questions, please realize that in a climate of limited resources, these issues are among many that should be investigated through funded research to provide answers for critical problems in the NH Seacoast. The best next step in terms of prioritization of research and monitoring efforts should be in the context of all critical issues, to enable synergistic studies that can address multiple issues and thus leverage limited resources in the most efficient way possible. There are always new research efforts underway, including some addressing questions related to nutrient dynamics in the estuary.

Sincerely,



Richard Langan, Ph.D.  
Director, Coastal and Ocean Technology Programs  
Gregg Hall, Suite 130  
University of New Hampshire



Dr. Stephen H. Jones  
Research Associate Professor of Marine Biology and Natural Resources  
Assistant Director for Research, NH Sea Grant College Program  
University of New Hampshire  
Dept. of Natural Resources and the Environment & Jackson Estuarine Laboratory

Jackson Estuarine Laboratory

85 Adams Point Road Durham, New Hampshire 03824-3427 603-862-2175 603-862-1101 fax



**SUPPLEMENTAL  
EXHIBIT – 12**



October 3, 2012

*City of Rochester, New Hampshire*

OFFICE OF THE MAYOR  
31 Wakefield Street • Rochester, NH 03867  
(603) 332-1167

Thomas Burack, Commissioner  
Department of Environmental Services  
29 Hazen Drive; PO Box 95  
Concord, NH 03302-0095

Re: **DES Invitation for Meeting Regarding Nutrient Effects on the Great Bay Estuary**

Dear Commissioner Burack:

As you may recall, we wrote to you in August expressing our significant concerns regarding actions taken by your Department to address the issue of nutrients in the Great Bay Estuary, most significantly involving the development of 2009 Numeric Nutrient Criteria document ("2009 Nutrient Criteria"). As you know, our communities have taken issue with the conclusions reached in that document almost since the time it was first published. On May 31 of this year, our representatives were first granted a meeting with you and Harry Stewart, Director of the Water Division. At that time, our representatives directly presented the information supporting our position that the scientific assumptions underlying the development of the 2009 Nutrient Criteria were seriously flawed and that the intended environmental benefits would not accrue from the nutrient reductions mandated by application of that document. Neither you nor Mr. Stewart provided any substantive response to the concerns expressed by our representatives at that meeting. You stated, however, that DES would discuss those concerns internally and get back to us with such a substantive response.

After months passed with no word from you or your Department, we wrote you in August. In the interim, we had the opportunity to take the depositions of key DES personnel involved in the development of the 2009 Nutrient Criteria. As you know, that document is premised on the belief that nitrogen levels in the Great Bay Estuary control transparency and dissolved oxygen via stimulated algal growth. As set forth in our August letter, the depositions confirmed that none of the analysis used by DES to derive the Criteria were based on any "cause and effect" relationship between nitrogen levels and algal growth, and that DES had excluded from the document the results of prior studies that had confirmed that nitrogen reductions would not meaningfully change either transparency or dissolved oxygen. Our letter further referenced data analyzed for the 2013 State of the Estuaries Report that the key nitrogen indicator relied upon by DES – dissolved inorganic nitrogen (DIN) – had dropped by 40% in the past three years and returned to late-1970s levels, obviously without significant change in municipal nitrogen loading to the Estuary. Accordingly, we requested that DES withdraw the 2009 Nutrient Criteria Document and join with our Coalition and

S. Exh. 12

Thomas Burack, Commissioner  
October 3, 2012  
Page Two

UNH experts to thoroughly evaluate system dynamics to determine the steps need to protect the Great Bay Estuary. Our letter requested a meeting with you.

We have now been informed, that while you are willing to meet with the Mayors, no attorneys or technical consultants are permitted at the meeting. Given that this will preclude discussion of the substantive issues referenced above, we request that you reconsider this decision. In any event, we will, of course, meet with you and listen carefully to what you have to say – once the meeting date is identified by your office. However, regardless of who is in attendance, we expect substantive answers to certain key questions that we have been raising now for months. Attached is a list of the substantive questions which we believe need to be addressed to avoid misdirecting state and local resources. We also request that these answers be put in writing in advance of the meeting so that a meaningful exchange on the issues may occur

We look forward to meeting with you and receiving clear responses to the questions posed in the attached to this letter.

Sincerely



Thomas J. Jean  
Mayor City of Rochester

Dean Trefethen  
Mayor City of Dover

Enclosure

**Burack Meeting Questions**

Given the DES staff deposition statements, as discussed in the Mayor's letters of August 2012, the Department's responses to the following questions should be addressed at the meeting:

1. DES staff admitted in deposition that:
  - a. the 2009 Criteria document failed to include critical scientific information and evaluations showing increased nutrients had not caused eelgrass and transparency declines in the system;
  - b. Great Bay is not a transparency-limited system;
  - c. the impact of the 2006 floods on eelgrass declines (that occurred promptly thereafter) was never assessed and could have caused the decline;
  - d. the key charts used to derive the 2009 criteria were not based on a "cause and effect" relationship and other factors which had far greater impact on the relationships were ignored in deriving the criteria.

*Given these admissions, will the Department support a new peer review that would include an assessment of all the relevant scientific information? If not, why not?*

2. DES has acknowledged that changing nitrogen levels in Great Bay never caused a change in algal levels or a decline in transparency based on the available data. *Given this statement of scientific fact which confirms lowering nitrogen level at the wastewater plant can't improve transparency, why is DES continuing to support the in-stream numeric criteria of .3 mg/L TN as necessary to improve transparency?*
3. In August 2011, DES recommended that EPA apply the eelgrass-based TN criteria in the tidal rivers to restore eelgrass populations there. Under deposition, DES scientists agreed that the available data confirms that transparency is naturally poor in the tidal rivers and, therefore, nitrogen control will provide negligible benefits and not restore eelgrass populations in the tidal rivers. *Given this information is DES going to inform EPA that imposing TN control to restore tidal river eelgrass is not justified?*
4. Recent data compiled by PREP have confirmed a significant decline in nitrogen levels in the estuary occurred 2009-2011. Existing conditions are now equivalent to the conditions present in the early 1990s when eelgrass thrived in Great Bay indicating that major TN reductions are not warranted. *Given this information why is DES continuing to claim stringent point source reductions are necessary? Doesn't it make sense to first investigate why a 40% decrease in ambient levels occurred before insisting on significant and expensive reductions at the wastewater plants?*

**SUPPLEMENTAL  
EXHIBIT – 13**



September 25, 2012

Thomas Burack, Commissioner  
Department of Environmental Services  
29 Hazen Drive; PO Box 95  
Concord, NH 03302-0095

Re: **DES Invitation for Meeting Regarding Nutrient Effects on the Great Bay Estuary**

Dear Commissioner Burack:

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After months passed with no word from you or your Department, we wrote you in August. In the interim, we had the opportunity to take the depositions of key DES personnel involved in the development of the 2009 Nutrient Criteria. As you know, that document is premised on the belief that nitrogen levels in the Great Bay Estuary control transparency and dissolved oxygen via stimulated algal growth. As set forth in our August letter, the depositions confirmed that none of the analysis used by DES to derive the Criteria were based on any "cause and effect" relationship between nitrogen levels and algal growth, and that DES had excluded from the document the results of prior studies that had confirmed that nitrogen reductions would not meaningfully change either transparency or dissolved oxygen. Our letter further referenced data analyzed for the 2013 State of the Estuaries Report that the key nitrogen indicator relied upon by DES – dissolved inorganic nitrogen (DIN) – had dropped by 40% in the past three years and returned to late-1970s levels, obviously without significant change in municipal nitrogen loading to the Estuary. Accordingly, we requested that DES withdraw the 2009 Nutrient Criteria Document and join with our Coalition and

**S. Exh. 13**

Thomas Burack, Commissioner

September 25, 2012

Page Two

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We have now been informed, that while you are willing to meet with the Mayors, no attorneys or technical consultants are permitted at the meeting. Given that this will preclude discussion of the substantive issues referenced above, we request that you reconsider this decision. In any event, we will, of course, meet with you and listen carefully to what you have to say – once the meeting date is identified by your office. However, regardless of who is in attendance, we expect substantive answers to certain key questions that we have been raising now for months. Attached is a list of the substantive questions which we believe need to be addressed to avoid misdirecting state and local resources. We also request that these answers be put in writing in advance of the meeting so that a meaningful exchange on the issues may occur

We look forward to meeting with you and receiving clear responses to the questions posed in the attached to this letter.

Sincerely

Thomas J. Jean  
Mayor City of Rochester

Dean Trefethen  
Mayor City of Dover

Eric Spear  
Mayor City of Portsmouth

Enclosure

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*Given these admissions, will the Department support a new peer review that would include an assessment of all the relevant scientific information? If not, why not?*

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