Exhibit 3

TN < 0.34 mg/l (MADEP)
DIN < 0.15 mg/l (Ch. Bay) } eelgrass/SAV Chl-a ≤ 3.5

CONSERVATION LAW FOUNDATION

October 6, 2008

Mr. Stephen Silva
EPA New England, Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023

0.70 upper threshold to eelgrass
< 0.70 better

Mr. Alfred Basile
EPA New England, Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Re: State of New Hampshire 2008 Section 303(d) List

Dear Messrs. Silva and Basile:

As you know, the N.H. Department of Environmental Services (NHDES) recently submitted its final 2008 Section 303(d) List for the Environmental Protection Agency's (EPA) review and approval. I am writing to provide the Conservation Law Foundation's (CLF) concerns with certain aspects of the proposed List as it pertains to assessment units that are part of the Great Bay estuary, which have been identified as violating state water quality standards as a result of eelgrass declines and/or excessive nitrogen.

I. Background

Great Bay estuarine waters are experiencing significant declines in eelgrass – a cornerstone of the estuary's ecology – and rising nitrogen concentrations. CLF raised concerns with NHDES's omission of these problems from its initial, draft Section 303(d) List. We communicated those concerns to both EPA and NHDES through formal comments. As you know, NHDES responded by developing a draft, and then final, methodology for assessing these issues in New Hampshire's estuarine waters. Although CLF does not agree with all aspects of the methodology, we were pleased by the attention NHDES devoted to this issue, as well as its determinations that (1) a number of estuarine waters are violating state water quality standards as a result of eelgrass loss, and (2) four estuarine tributaries are violating state water quality standards relative to nitrogen. As a result of these determinations, the final 2008 List, as compared to the draft 2008 List, contains new impairment listings related to eelgrass loss and violation of narrative

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RHODE ISLAND: 55 Dorrance Street, Providence, Rhode Island 02903-2221 • Phone 401-351-1102 • Fax 401-351-1130
VERMONT: 15 East State Street, Suite 4, Montpelier, Vermont 05602-3010 • Phone 802-223-5992 • Fax 802-223-0060

Chap 4 - Appendix G 5/21/08 email to Ph.I

nutrients standards.[1] For each of the newly added estuarine impairments pertaining to eelgrass loss and nitrogen, NHDES has assigned a "TMDL priority" of "LOW," and a "TMDL schedule" of 2021.

II. TMDL Priority and Schedule

CLF is greatly concerned with the priority and TMDL schedule assigned to the above impairment listings. The priority assignment of "LOW" and the 2021 TMDL schedule are grossly inconsistent with the value of Great Bay estuary and the severity of the threats facing it. Indeed, NHDES' methodology itself acknowledges the critical nature of problems facing the estuary, and the essential role of eelgrass within the estuary, stating:

> Eelgrass (*Zostera marina*) is the base of the estuarine food web in the Great Bay estuary. Healthy eelgrass beds filter water and stabilize sediments (Short and Short, 1984) and provide habitat for fish and shellfish (Duarte, 2001; Heck et al., 2003). While eelgrass is only one species in the estuarine community, the presence of eelgrass is critical for the survival of many species. Maintenance of eelgrass habitat should be considered critical in order to "maintain a balanced, integrated, and adaptive community of organisms." Loss of eelgrass habitat would change the species composition of the estuary resulting in a detrimental difference in community structure and function. In particular, if eelgrass habitat is lost, the estuary will likely be colonized by macroalgae species which do not provide the same habitat functions as eelgrass (Short et al., 1995; Hauxwell et al., 2003; McGlathery et al., 2007).

NHDES, 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 (Aug. 11, 2008) (hereinafter "Final Methodology") at 3. The Final Methodology describes massive losses of eelgrass throughout the estuary (*see id.*, generally) and acknowledges the sensitivity of eelgrass to water clarity, including cultural eutrophication from excess nitrogen. *Id.* at 3.

The significant eelgrass losses, and rising nitrogen concentrations, have raised great concern, including the concern that the Great Bay estuary could be approaching a tipping

[1] Specifically, the List recently submitted by NHDES identifies the following named estuarine assessment units as being impaired for aquatic life uses as a result of eelgrass declines ("Estuarine Bioassessments"): Lamprey River, Squamscott River, Oyster River, Bellamy River North, Bellamy River South, Winnicut River, Adams Point Mooring Field SZ, Adams Point Trib, Lower Little Bay, Lower Little Bay Marina SZ, Lower Little Bay General Sullivan Bridge, Little Bay (North), Oyster River Mouth, Upper Piscataqua River – North, Dover WWTF SZ, Upper Piscataqua River – South, and Lower Piscataqua River. It identifies the following named estuarine assessment units as being impaired for primary contact recreation uses as a result of "Nitrogen (Total)": Salmon Falls River, Lamprey River, Squamscott River, and Oyster River. In addition to the above impairments, the List also identifies the following named estuarine assessment units as threatened, as a result of eelgrass declines ("Estuarine Bioassessments"): Great Bay Prohib SZ1, Great Bay Prohib SZ2, Crommet Creek, Pickering Brook, Fabyan Point, Great Bay Conditionally Approved, and Adams Point South. It also identifies the following named estuarine assessment units as being threatened as a result of eelgrass loss ("Estuarine Bioassessments"): Great Bay Prohib SZ1, Great Bay Prohib SZ2, Crommet Creek, Pickering Brook, Fabyan Point, and Great Bay Conditionally Approved.

point, and could experience the sort of catastrophic changes that have been experienced elsewhere, such as in the Chesapeake Bay. *See* June 3, 2008 Portsmouth Herald Opinion Piece submitted by Drs. David Burdick, Arthur Mathieson, Gregg Moore and Fred Short of the Jackson Estuarine Laboratory (attached). *See also* CLF Comments on State of NH Draft 2008 Section 303(d) List (March 24, 2008), Attachments D, F.

The above estuarine impairments are symptomatic of an ecological crisis which warrant immediate attention, before the situation worsens, and to avoid the threat of significant and widespread changes to the health of the Great Bay estuary. Accordingly, New Hampshire's Section 303(d) List must be amended to assign "High" priority, and an aggressive schedule (no longer than two years) for the development of TMDLs to address these impairments. CLF respectfully requests that EPA require these amendments prior to approving New Hampshire's 2008 Section 303(d) List.

III. Sources of Impairments

NHDES's Final Methodology assesses whether the significant eelgrass losses in Great Bay estuarine waters can be attributed to dredging or mooring fields. It concludes that eelgrass declines in the Winnicut River, Squamscott River, Lamprey River, Oyster River, Bellamy River, Little Bay and Piscataqua River (Upper and Lower) cannot be attributed to dredging activities; that there are only a few minor mooring fields in the Oyster and Bellamy Rivers; that certain mooring fields in Little Bay, and several large mooring fields in the Lower Piscataqua River "seem to overlap with potential and current eelgrass habitat"; and that "there are several large mooring fields [in the Upper Piscataqua River assessment zone] that seem to overlap with potential eelgrass habitat." Final Methodology at 11-14.

For each of the eelgrass-loss and nitrogen impairments described in footnote 1, above, the final 2008 List submitted by NHDES describes the source of impairment as "Source Unknown." Because dredging and mooring activities have not been identified as the sole culprit of eelgrass declines in a single assessment unit, because nitrogen concentrations and total suspended solids (TSS) are both increasing in the estuary, and because nitrogen and TSS both can contribute to eelgrass losses, we urge EPA to require the 2008 List to be amended to include nitrogen and TSS and, where applicable, mooring fields, as sources of eelgrass-loss impairments. We further urge EPA to require the 2008 List to be amended to identify relevant wastewater treatment facilities, and wet weather stormwater discharges, as sources of the nitrogen impairments. *See* CLF Comments on Draft Section 303(d) List (March 24, 2008), Attachment D, p. 13 (identifying wastewater treatment facilities (34 percent), and non-point sources draining to tributaries and directly to the estuary (61 percent collectively) as the primary sources of nitrogen). Absent these amendments, the final 2008 List submitted for EPA's review is simply not complete.

IV. Uses Affected by Nitrogen Impairment

The proposed final 2008 List identifies "Nitrogen (Total)" as impairing Primary Contact Recreation uses in the Squamscott, Lamprey, Oyster and Salmon Falls Rivers. It also

identifies the Squamscott, Lamprey and Oyster Rivers as being impaired as a result of eelgrass loss ("Estuarine Bioassessments"). In light of these latter impairment listings (i.e., because these waters have experienced significant eelgrass losses), and because nitrogen levels, and associated chlorophyll-a concentrations and other effects, can contribute to eelgrass losses, we urge EPA to require amendment of the final List to also identify "Nitrogen (Total)" as impairing the Aquatic Life uses of the Squamscott, Lamprey and Oyster Rivers.

V. "Estuarine Bioassessments" Terminology

The final List submitted by NHDES uses the term "Estuarine Bioassessments" to describe impairments associated with eelgrass loss. This terminology provides insufficient information for persons reading the List to understand the nature of this impairment. Accordingly, we request that EPA require the List to be amended to identify impairments associated with eelgrass losses as follows: "Estuarine Bioassessments – eelgrass declines." This change will obviate the need to locate and review NHDES's separate listing methodology to understand the meaning of the vague and generic term "Estuarine Bioassessments," thereby making it more user-friendly.

* * * *

As always, CLF appreciates the opportunity to comment on this matter. Thank you for your ongoing attention to these important issues facing the Great Bay estuary. Should you have any questions about these comments, please do not hesitate to contact me.

Very truly yours,

Thomas F. Irwin,
Senior Attorney

Encl.

cc: Mr. Robert Varney, Regional Adminstrator, EPA-New England
Mr. Harry Stewart, Director, Water Division, NHDES
Mr. Ken Edwardson, NHDES

Exhibit 4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

September 30, 2009

Harry T. Stewart, P.E., Director
New Hampshire Department of Environmental Services
Water Division
6 Hazen Drive, Box 95
Concord, New Hampshire 03302-0095

Re: 2008 Section 303(d) List

Dear Mr. Stewart:

Thank you for submitting New Hampshire's 2008 §303(d) list of water quality limited segments. In accordance with §303(d) of the Clean Water Act (CWA) and 40 CFR §130.7, the U.S. Environmental Protection Agency (EPA) has conducted a complete review of the State's list, including all supporting documentation. Based on this review, EPA has determined that New Hampshire's 2008 §303(d) list meets the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations. Therefore, by this order, EPA hereby approves the State's list, submitted electronically on September 10, 2008, and amended on August 14, 2009 to include listing a number of water body segments in the Great Bay estuary for nitrogen, and amended on September 29, 2009 to retain one water body on the list that had initially been removed from the list.

Thank you for your hard work in developing the 2008 §303(d) list. My staff and I look forward to continuing our work with NHDES to implement the requirements under §303(d) of the CWA. If you have any questions or need additional information please contact Steve Silva at 617-918-1561 or Al Basile at 617-918-1599.

Sincerely,

Lynne A. Hamjian

Lynne Hamjian, Acting Director
Office of Ecosystem Protection

Enclosure

cc: NH DES: Paul Currier, Gregg Comstock, Ken Edwardson
EPA: Steve Silva, Ann Williams, Al Basile, Beth Edwards

EPA Review of New Hampshire's 2008 Section 303(d) List

I. INTRODUCTION

EPA has conducted a complete review of New Hampshire's 2008 Section 303(d) list and supporting documentation. Based on this review, EPA has determined that New Hampshire's list of water quality limited segments (WQLSs) still requiring TMDLs, meets the requirements of Section 303(d) of the Clean Water Act ("CWA" or "the Act") and EPA's implementing regulations. Therefore, by this order, EPA hereby approves New Hampshire's 2008 Section 303(d) list. The statutory and regulatory requirements, and EPA's review of New Hampshire's compliance with each requirement, are described in detail below.

II. STATUTORY AND REGULATORY BACKGROUND

Identification of Water Quality Limited Segments for Inclusion on the 303(d) List

Section 303(d)(1) of the Act directs States to identify those waters within its jurisdiction for which effluent limitations required by Section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standard, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The Section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, pursuant to EPA's long-standing interpretation of Section 303(d).

EPA regulations provide that States do not need to list waters where the following controls are adequate to implement applicable standards: (1) technology-based effluent limitations required by the Act, (2) more stringent effluent limitations required by State or local authority, and (3) other pollution control requirements required by State, local, or federal authority. See 40 CFR Section 130.7(b)(1).

Consideration of Existing and Readily Available Water Quality-Related Data and Information

In developing Section 303(d) lists, States are required to assemble and evaluate all existing and readily available water quality-related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of waters: (1) waters identified as partially meeting or not meeting designated uses, or as threatened, in the State's most recent Section 305(b) report; (2) waters for which dilution calculations or predictive modeling indicate non-attainment of applicable standards; (3) waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in any Section 319 nonpoint assessment submitted to EPA. See 40 CFR §130.7(b)(5). In addition to these minimum categories, States are required to consider any other data and information that is existing and readily available. EPA's 2006 Integrated Report Guidance describes categories of water quality-related data and information that may be

existing and readily available. See EPA's October 12, 2006 memorandum on *Information Concerning 2008 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions* which recommended that the 2008 integrated water quality reports follow the *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act* (2006 Integrated Report Guidance (IRG)) issued July 29, 2005 (available at http://www.epa.gov/owow/tmdl/2006IRG/) as supplemented by the October 12, 2006 memo and attachments. While States are required to evaluate all existing and readily available water quality-related data and information, States may decide to rely or not rely on particular data or information in determining whether to list particular waters.

In addition to requiring States to assemble and evaluate all existing and readily available water quality-related data and information, EPA regulations at 40 CFR §130.7(b)(6) require States to include as part of their submissions to EPA, documentation to support decisions to rely or not rely on particular data and information and decisions to list or not list waters. Such documentation needs to include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; and (3) any other reasonable information requested by the Region.

Priority Ranking

EPA regulations also codify and interpret the requirement in Section 303(d)(1)(A) of the Act that States establish a priority ranking for listed waters. The regulations at 40 CFR §130.7(b)(4) require States to prioritize waters on their Section 303(d) lists for TMDL development, and also to identify those WQLSs targeted for TMDL development in the next two years. In prioritizing and targeting waters, States must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters. See Section 303(d)(1)(A). As long as these factors are taken into account, the Act provides that States establish priorities. States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic, and aesthetic importance of particular waters, degree of public interest and support, and State or national policies and priorities. See 57 FR 33040, 33045 (July 24, 1992), and EPA's 2006 Integrated Report Guidance.

III. ANALYSIS OF NEW HAMPSHIRE'S SUBMISSION

EPA has reviewed the State's submission. The initial submittal was sent electronically on September 10, 2008 (items 1-4). An amendment to the § 2008 303(d) list and associated documents (items 5-7), were sent electronically on Aug 14, 2009. The State sent a further amendment by email on September 29, 2009. The complete submittal package includes the following components:

1. State of New Hampshire 2008 Section 303(d) List;
2. List of waters/impairments being removed from New Hampshire's 2006 303(d) List;
3. New Hampshire's 2008 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology (CALM);

4. Response to Public Comments dated September 9, 2008;
5. Amendment to the § 2008 303(d) list, dated August 6, 2009, which adds a number of waterbody segments in the Great Bay estuary to New Hampshire's 2008 303(d) list;
6. Amendment to the § 2008 303(d) list, dated September 29, 2009, which retains Wright Pond on the list as impaired for aluminum.
7. Final report entitled "Numeric Nutrient Criteria for the Great Bay Estuary (June 2009)." The report documents the derivation of numeric targets that will be used to interpret the State's existing narrative nutrient criterion and narrative criteria for biological and aquatic community integrity; and
8. Response to public comments, dated June 10, 2009.

Public Participation

New Hampshire conducted a public participation process in which it provided the public the opportunity to review and comment on the 2008 draft Section 303(d) list. A public comment period was opened upon the release of the draft list on February 22, 2008 and was closed on March 24, 2008. The NHDES posted the draft list on the Department's website and mailed notices to approximately 30 organizations/agencies.

The City of Keene and Conservation Law Foundation (CLF) were the only commenters. The City requested NHDES to remove from the § 303(d) list the segment of the Ashuelot River downstream of the City's wastewater treatment plant discharge. EPA believes NHDES's decision to retain this segment on the § 303(d) list was reasonable because of multiple instream exceedences of the dissolved oxygen criteria since 2001 and the low dilution factor (2:1) associated with the wastewater treatment facility.

CLF raised several concerns about NHDES's failure to list a number of waterbody segments in the Great Bay estuary for impairments due to nitrogen. EPA agreed that the information provided by CLF warranted further evaluation, and EPA encouraged the State to rapidly move forward with the development of numeric nutrient targets for the Great Bay estuary.

On June 10, 2009, the NHDES completed the development of numeric thresholds for nitrogen concentrations, chlorophyll-a and light attenuation for the Great Bay estuary which will be used to translate, or interpret, the State's existing narrative criteria for nutrients and biological and aquatic community integrity, to protect the designated uses of primary contact recreation and aquatic life use support. EPA was heavily engaged throughout the development of the numeric targets, providing both technical assistance and submittal of two rounds of comments, one of which was during the public comment period.

The State plans to formally adopt the numeric targets as water quality criteria and to submit the water quality standards revisions to EPA for approval. In the meantime, as discussed further below, EPA believes that the targets represent a reasonable interpretation of the State's narrative criteria and form an appropriate basis for determining whether additional waters in the Great Bay estuary should be listed on the §303(d) list based on nonattainment with the narrative criteria.

The State conducted a public comment period from December 30, 2008 through March 20, 2009 to solicit comments on: 1) The appropriateness of the numeric targets as an interpretation of the State's narrative nutrient standard, and 2) The proposed listing of additional water body segments in the Great Bay estuary as a result of the newly derived numeric nutrient targets. Over one hundred comments were submitted by twelve entities; all of the comments related to the proposed numeric targets. There were no comments on the additional waters that the State would add to the § 303(d) list on the basis of the proposed numeric targets.

EPA concludes that New Hampshire's public participation process was consistent with its Continuing Planning Process (CPP), and that New Hampshire provided sufficient public notice and opportunities for public involvement and response.

Identification of Waters and Consideration of Existing and Readily Available Water Quality-Related Data and Information

EPA has reviewed the State's submission, and has concluded that the State developed its Section 303(d) list in compliance with Section 303(d) of the Act and 40 CFR § 130.7. EPA's review is based on its analysis of whether the State reasonably considered existing and readily available water quality-related data and information and reasonably identified waters required to be listed.

New Hampshire used the NHDES assessment database to develop its 2008 § 303(d) list. The same database was used to assist in the preparation of the biennial § 305(b) report. Both the § 303(d) and § 305(b) reports were submitted to EPA as an integrated report for 2008. The NHDES provides on-going notice on its website to request data from outside sources. Information received from outside sources was assessed in accordance with the State's assessment methodology. In the development of the 2008 § 303(d) list, New Hampshire began with its existing EPA approved 2006 § 303(d) list and relied on new water quality assessments (i.e., post-2006) to update the list accordingly. New Hampshire believes that information pertaining to impairment status must be well substantiated, preferably with actual monitoring data, for it to be used in § 303(d) listing.

As noted above, the State added additional waters to the § 303(d) list in response to CLF's comments on the draft list and further evaluation of nitrogen-related impairments in the Great bay estuary. As a result of that additional evaluation, which included the development of numeric targets to interpret existing narrative criteria, NHDES added a number of waters to the list. EPA has reviewed the Sate's analysis on which the numeric targets are based, and agrees that the targets reflect a reasonable interpretation of the State's existing narrative criteria. This determination is based on the fact that the State's analysis to derive nutrient targets was very transparent, included significant scientific and stakeholder input, and resulted in targets that were generated from very robust data sets using multiple lines of evidence.

EPA also believes that NHDES made reasonable decisions to include the additional waters in light of the numeric targets. The State reassessed all waters in the Great Bay estuary, appropriately applied

the newly derived nutrient targets, and added those assessment units that exceeded the new targets to the 2008 § 303(d) list.

The State provided a rationale for not relying on particular and readily available water quality-related data and information as a basis for listing waters. Beginning with the 1998 list and continuing through the 2008 listing process, New Hampshire chose not to list waters where the only information regarding water quality was unsubstantiated anecdotal information (e.g., citizen complaint). New Hampshire analyzed relevant data and information for each water body in the State in deciding whether there was sufficient, reliable data to support listing. The regulations require states to "assemble and evaluate" all relevant water quality related data and information, and New Hampshire did so for each of its waterbodies. The regulations permit states to decide not to use any particular data and information as a basis for listing, provided they have a reasonable rationale in doing so. New Hampshire's decision not to use unsubstantiated anecdotal information is reasonable in light of the uncertainty about the reliability of such information. Moreover, it is reasonable for New Hampshire to decide to focus its listing and TMDL development resources on waters where water quality impairments are well-documented, rather than on waters with only unreliable water quality information. As additional waters are assessed, EPA expects New Hampshire would add waters to its list where such assessments show water quality standards are not being met.

In certain cases, New Hampshire included waters on the 2008 303(d) list based solely on evaluative information when it had confidence that an impairment exists. In developing the 2008 303(d) list, New Hampshire used data older than five years of age if waters had previously been listed as threatened or impaired, even though data older than five years is considered "evaluative" information under EPA's Section 305(b) guidance. For waters not previously listed, New Hampshire considered only data that were five years old or less for rivers, streams impoundments, estuaries, and ocean waters, and 10 years old or less for lakes and ponds.

The State concluded that the use of data older than five years for waters previously listed (provided that it met all other data requirements stipulated in the assessment methodology) is reasonable in order to prevent removal of waters from a threatened or impaired category. In addition, NHDES has found that the water quality of many lakes and ponds does not change dramatically with time due to their large volume and longer retention times (on the order of years); therefore, use of 10-year-old data is believed to provide a reasonably accurate assessment of water quality conditions for these waterbodies. EPA believes this conclusion is reasonable, and it is consistent with EPA regulations for States to decide to list waters based on data older than five years. The regulations require States to consider all available data, and to use it unless they provide a reasonable rationale for not doing so.

Waters were not added to the 2008 § 303(d) list where limited information might indicate a possible impairment but it was determined to be insufficient (usually not well documented) for the purpose of listing on the § 303(d) list. For each assessment unit not listed, where information indicated that an impairment due to a pollutant may exist, but available information was determined to be insufficient to support a § 303(d) listing, the waterbodies were not included on the § 303(d) list. Instead, they

were included in a separate category on the Integrated Report for waters in need of further assessment.

In summary, the NHDES considered the most recent §305(b) assessments, as required by EPA's regulations, and used information obtained primarily through monitoring as the basis for adding water quality impairments to the 2008 §303(d) list. EPA concludes that the State properly assembled and evaluated all existing and readily available data and information, including data and information relating to the categories of waters specified in 40 CFR § 130.7(b)(5).

Priority Ranking

As described in its methodology, New Hampshire established a priority ranking for listed waters by considering: 1) the presence of public health issues, 2) natural/outstanding resource waters, 3) threat to federally threatened or endangered species, 4) public interest, 5) available resources, 6) administrative or legal factors (i.e., NPDES program support or court order), and 7) the likelihood of implementation after the TMDL has been completed.

Individual priority rankings for listed waters are presented as the date shown on the 303(d) list which indicates when the TMDL is expected to be completed. EPA finds that the waterbody prioritization and targeting method used by New Hampshire is reasonable and sufficient for purposes of Section 303(d). The State properly took into account the severity of pollution and the uses to be made of listed waters, as well as other relevant factors described above.

Waters which are not listed on New Hampshire's 2008 § 303(d) List

EPA requested that the State provide a rationale for its decision not to include previously listed waters. As discussed below, the State has demonstrated, to EPA's satisfaction, good cause for not listing these waters, as provided in 40 CFR § 130.7(b)(6)(iv):

1. The NHDES moved 5,123 AU's that were impaired for mercury to Category 4a. EPA concurs with this action as a Statewide mercury TMDL has been approved by EPA. All freshwaters in the State of New Hampshire were previously listed for mercury because of a Statewide fish consumption advisory. To keep the size of this document manageable, individual mercury delistings for fish consumption are not shown.

2. Since the approval of the 2006 303(d) List, the NHDES established 61 new freshwater AU's. The NHDES has placed these new AU's into Category 4a for mercury. EPA agrees that since the coverage of the approved mercury TMDL includes all freshwaters of the State, it is appropriate to place these new AU's into Category 4a and not into Category 5.

AUID	AUID NAME
NHIMP600030701-02	THURSTON POND DAM, DEERFIELD
NHIMP600031004-07	MARY'S POND DAM, SEABROOK
NHIMP700010802-01	SALMON BROOK II DAM

NHLAK600020604-03-02	MOORES POND SKI AND BEACH
NHLAK600020604-03-03	MOORES POND - ASSOCIATION BEACH
NHLAK600030607-05	SCRUTON POND, BARRINGTON
NHLAK700010205-01-01	MIRROR LAKE - MIRROR LAKE BEACH
NHLAK700010601-01-02	SPECTACLE POND - GROTON TOWN BEACH
NHLAK700010603-02-14	NEWFOUND LAKE - HEBRON TOWN BEACH
NHLAK700020110-02-37	LAKE WINNIPESAUKEE WAWBEEK CONDO ASSOC BEACH
NHLAK700030108-03	CAMPBELL POND, ANTRIM, CLS-A
NHLAK700030302-02-02	BLAISDELL LAKE - CAMP WABASSO BEACH
NHLAK700030505-04-01	ROLF POND - SANDY BEACH CAMPGROUND BEACH
NHLAK700060301-05	WHITTIER POND
NHLAK700060302-15	HORSESHOE POND, CANTERBURY
NHLAK700060601-01-02	DEERING RESERVOIR - DEERING LAKE BEACH
NHLAK700060601-01-03	DEERING RESERVOIR - HOPKINTON INDEPENDENT SCHOOL BEACH
NHLAK700060906-03	DREAM LAKE, AMHERST
NHLAK700061001-11	PENNICHUCK POND, HOLLIS
NHLAK700061102-14	WILSON POND, SALEM
NHLAK700061203-05-02	RAINBOW LAKE - KAREN-GENA BEACH
NHLAK700061403-13	CEDAR SWAMP POND, KINGSTON
NHLAK801060105-04-04	MASCOMA LAKE - DARTMOUTH COLLEGE BEACH
NHRIV600020105-09	ICE POND BROOK
NHRIV600020802-07	WEETAMOE BROOK
NHRIV600030603-11	HURD BROOK
NHRIV600030608-16	JACKSON BROOK
NHRIV600030902-15	CHASE BROOK
NHRIV600030903-13	GARRISON BROOK
NHRIV600030904-13	SHAW BROOK
NHRIV600030904-14	BRACKETT BROOK
NHRIV600030904-15	UNNAMED BROOK UNDER BAYSIDE ROAD
NHRIV600030904-16	WILLEY CREEK
NHRIV600030904-17	UNNAMED BROOK
NHRIV600030904-18	UNNAMED BROOK
NHRIV600030904-19	WILLEY CREEK
NHRIV600030904-20	UNNAMED BROOK
NHRIV600030904-21	UNNAMED BROOK
NHRIV600031001-11	UNNAMED STREAM BEHIND CHURCH
NHRIV600031004-17	MARY'S BROOK
NHRIV700010802-10	SALMON BROOK, CWF
NHRIV700020101-22	NORTH INLET TO RUST POND
NHRIV700020103-13	UNNAMED BROOKS TO DINSMORE POND
NHRIV700020108-06	UNNAMED BROOK - HAWKINS POND OUTLET
NHRIV700020201-21	DURKEE BROOK
NHRIV700020202-11	UNNAMED BROOKS TO SAWYER LAKE
NHRIV700030501-16	BEAVER GLEN BROOK
NHRIV700030504-14	UNNAMED BROOK TO FRENCH POND (ALONG FRENCH RD)
NHRIV700060401-12	UNNAMED BROOK TO CRYSTAL LAKE
NHRIV700060703-10	UNNAMED BROOK FROM CRYSTAL LAKE TO COHAS BROOK

NHRIV700061203-25	HOWARD BROOK
NHRIV700061203-26	LAUNCH BROOK
NHRIV801010902-04	INDIAN BROOK
NHRIV801060401-25	ANDERSON POND BROOK
NHRIV801060401-26	STROING BROOK
NHRIV801060405-30	UNNAMED TRIB - TO PERKINS POND
NHRIV801060405-31	UNNAMED TRIB - TO PERKINS POND
NHRIV801060405-32	UNNAMED TRIB - TO PERKINS POND
NHRIV801070203-13	SPRUCE RIVER
NHRIV802010101-19	UNNAMED BROOK - TO SAND POND
NHRIV802010101-20	UNNAMED BROOK - TO SAND POND

3. The NHDES moved 284 AU's that were impaired for pH to Category 4a. EPA concurs with this action, as pH TMDL's have been developed and approved for each of the 284 AU's.

AUID	AU NAME	PRIMARY TOWN	FFY of APPROVAL	TMDL ID
NHLAK600020302-01-02	ECHO LAKE - STATE PARK BEACH	CONWAY	2008	33879
NHLAK600020303-03-02	IONA LAKE - CAMP ALBANY BEACH	ALBANY	2008	33879
NHLAK600020303-07-02	PEQUAKET POND - REC DEPARTMENT BEACH	CONWAY	2008	33879
NHLAK600020701-02-02	LOWER BEECH POND - WILLIAM LAWRENCE CAMP BEACH	TUFTONBORO	2008	33879
NHLAK600020702-01-02	DAN HOLE POND - CAMP MERROVISTA BEACH	TUFTONBORO	2008	33879
NHLAK600020702-01-03	DAN HOLE POND - CAMP SENTINEL BAPTIST BEACH	TUFTONBORO	2008	33879
NHLAK600020801-06-02	SILVER LAKE - MONUMENT BEACH	MADISON	2008	33879
NHLAK600020801-06-03	SILVER LAKE - FOOT OF THE LAKE BEACH	MADISON	2008	33879
NHLAK600020801-06-04	SILVER LAKE - NICHOLS BEACH	MADISON	2008	33879
NHLAK600020801-06-05	SILVER LAKE - KENNETT PARK BEACH	MADISON	2008	33879
NHLAK600020802-04-02	OSSIPEE LAKE - CAMP CALUMET BEACH	OSSIPEE	2008	33879
NHLAK600020802-04-03	OSSIPEE LAKE - DEER COVE PB BEACH	OSSIPEE	2008	33879
NHLAK600020802-04-04	OSSIPEE LAKE - CAMP CODY FOR BOYS BEACH	FREEDOM	2008	33879
NHLAK600020803-08-02	SHAW POND - CAMP WAKUTA BEACH	FREEDOM	2008	33879
NHLAK600020804-01-04	LEAVITT BAY - CAMP MARIST BEACH	EFFINGHAM	2008	33879
NHLAK600020804-01-05	BROAD BAY - CAMP HUCKINS BEACH	FREEDOM	2008	33879
NHLAK600020804-01-06	BROAD BAY - CAMP ROBIN HOOD BEACH	FREEDOM	2008	33879
NHLAK600030601-05-02	SUNRISE LAKE - TOWN BEACH	MIDDLETON	2008	33879
NHLAK600030704-02-02	PAWTUCKAWAY LAKE - PAWTUCKAWAY STATE PARK BEACH	NOTTINGHAM	2008	33879
NHLAK600030704-02-03	PAWTUCKAWAY LAKE - TOWN BEACH	NOTTINGHAM	2008	33879
NHLAK700010802-03-02	HERMIT LAKE - TOWN BEACH	SANBORNTON	2008	33879
NHLAK700010804-01-02	HIGHLAND LAKE - TOWN BEACH	ANDOVER	2008	33879

AUID	AU NAME	PRIMARY TOWN	FFY of APPROVAL	TMDL ID
NHLAK700010804-02-02	WEBSTER LAKE - GRIFFIN TOWN BEACH	FRANKLIN	2008	33879
NHLAK700010804-02-03	WEBSTER LAKE - LEGACE TOWN BEACH	FRANKLIN	2008	33879
NHLAK700020101-05-02	LAKE WENTWORTH - ALBEE BEACH	WOLFEBORO	2008	33879
NHLAK700020101-05-03	LAKE WENTWORTH - WENTWORTH STATE PARK BEACH	WOLFEBORO	2008	33879
NHLAK700020101-05-04	LAKE WENTWORTH - PUBLIC BEACH	WOLFEBORO	2008	33879
NHLAK700020101-05-05	LAKE WENTWORTH - CAMP BERNADETTE BEACH	WOLFEBORO	2008	33879
NHLAK700020101-05-06	LAKE WENTWORTH - CAMP PLEASANT VALLEY BEACH	WOLFEBORO	2008	33879
NHLAK700020101-05-07	LAKE WENTWORTH - PIERCE CAMP BIRCHMONT BEACH	WOLFEBORO	2008	33879
NHLAK700020101-07-02	RUST POND - WOLFEBORO CAMP SCHOOL BEACH	WOLFEBORO	2008	33879
NHLAK700020108-02-03	LAKE WAUKEWAN - TOWN BEACH	MEREDITH	2008	33879
NHLAK700020110-02-04	LAKE WINNIPESAUKEE - MELVIN VILLAGE LAKE TOWN BEACH	TUFTONBORO	2008	33879
NHLAK700020110-02-05	LAKE WINNIPESAUKEE - MOULTONBOROUGH TOWN BEACH	MOULTONBOROUGH	2008	33879
NHLAK700020110-02-07	LAKE WINNIPESAUKEE - PUBLIC BEACH	TUFTONBORO	2008	33879
NHLAK700020110-02-08	LAKE WINNIPESAUKEE - CARRY BEACH	WOLFEBORO	2008	33879
NHLAK700020110-02-09	LAKE WINNIPESAUKEE - BREWSTER BEACH	WOLFEBORO	2008	33879
NHLAK700020110-02-10	LAKE WINNIPESAUKEE - ALTON BAY TOWN BEACH	ALTON	2008	33879
NHLAK700020110-02-11	LAKE WINNIPESAUKEE - PUBLIC DOCK TOWN BEACH	ALTON	2008	33879
NHLAK700020110-02-12	LAKE WINNIPESAUKEE - ELACOYA STATE PARK BEACH	GILFORD	2008	33879
NHLAK700020110-02-13	LAKE WINNIPESAUKEE - GILFORD TOWN BEACH	GILFORD	2008	33879
NHLAK700020110-02-14	LAKE WINNIPESAUKEE - ENDICOTT PARK WEIRS BEACH	LACONIA	2008	33879
NHLAK700020110-02-15	LAKE WINNIPESAUKEE - LEAVITT PARK BEACH	MEREDITH	2008	33879
NHLAK700020110-02-16	LAKE WINNIPESAUKEE - TOWN BEACH (CENTER HARBOR)	CENTER HARBOR	2008	33879
NHLAK700020110-02-17	LAKE WINNIPESAUKEE - STATES LANDING TOWN BEACH	MOULTONBOROUGH	2008	33879
NHLAK700020110-02-20	LAKE WINNIPESAUKEE - CAMP ALTON BEACH	ALTON	2008	33879
NHLAK700020110-02-21	LAKE WINNIPESAUKEE - BROOKWOOD/DEER RUN BEACH	ALTON	2008	33879
NHLAK700020110-02-22	LAKE WINNIPESAUKEE - CAMP KABEYUN BEACH	ALTON	2008	33879
NHLAK700020110-02-23	LAKE WINNIPESAUKEE - CAMP LAWRENCE BEACH	MEREDITH	2008	33879
NHLAK700020110-02-24	LAKE WINNIPESAUKEE - CAMP	MEREDITH	2008	33879

AUID	AU NAME	PRIMARY TOWN	FFY of APPROVAL	TMDL ID
	MENOTOMY BEACH			
NHLAK700020110-02-25	LAKE WINNIPESAUKEE - CAMP NOKOMIS BEACH	MEREDITH	2008	33879
NHLAK700020110-02-26	LAKE WINNIPESAUKEE - GENEVA POINT CENTER BEACH	MOULTONBOROUGH	2008	33879
NHLAK700020110-02-27	LAKE WINNIPESAUKEE - WINAUKEE ISLAND CAMP BEACH	MOULTONBOROUGH	2008	33879
NHLAK700020110-02-28	LAKE WINNIPESAUKEE - CAMP ROBINDEL FOR GIRLS BEACH	MOULTONBOROUGH	2008	33879
NHLAK700020110-02-29	LAKE WINNIPESAUKEE - CAMP TECUMSEH BEACH	MOULTONBOROUGH	2008	33879
NHLAK700020110-02-30	LAKE WINNIPESAUKEE - CAMP WINAUKEE BEACH	MOULTONBOROUGH	2008	33879
NHLAK700020110-02-31	LAKE WINNIPESAUKEE - CAMP BELKNAP BEACH	TUFTONBORO	2008	33879
NHLAK700020110-02-32	LAKE WINNIPESAUKEE - CAMP NORTH WOODS BEACH	TUFTONBORO	2008	33879
NHLAK700020110-02-33	LAKE WINNIPESAUKEE - CAMP SANDY ISLAND BEACH	TUFTONBORO	2008	33879
NHLAK700020110-02-34	LAKE WINNIPESAUKEE - CAMP DEWITT BEACH	ALTON	2008	33879
NHLAK700020110-02-35	LAKE WINNIPESAUKEE - WANAKEE METHODIST CHURCH BEACH	MEREDITH	2008	33879
NHLAK700020201-05-02	LAKE WINNISQUAM - TOWN BEACH	SANBORNTON	2008	33879
NHLAK700020201-05-03	LAKE WINNISQUAM - BARTLETT'S BEACH	LACONIA	2008	33879
NHLAK700020201-05-04	LAKE WINNISQUAM - BELMONT TOWN BEACH	BELMONT	2008	33879
NHLAK700020201-05-05	LAKE WINNISQUAM - AHERN STATE PARK	LACONIA	2008	33879
NHLAK700030105-01-02	ZEPHYR LAKE - TOWN BEACH	GREENFIELD	2008	33879
NHLAK700030105-02-03	OTTER LAKE - GREENFIELD SP PICNIC BEACH	GREENFIELD	2008	33879
NHLAK700030105-02-04	OTTER LAKE - GREENFIELD SP MIDDLE BEACH	GREENFIELD	2008	33879
NHLAK700030105-02-05	OTTER LAKE - GREENFIELD SP CAMPING BEACH	GREENFIELD	2008	33879
NHLAK700030105-02-06	OTTER LAKE - CAMP UNION BEACH	GREENFIELD	2008	33879
NHLAK700030105-02-07	OTTER LAKE - GREENFIELD SP BEACH	GREENFIELD	2008	33879
NHLAK700030105-03-02	SUNSET LAKE - TOWN BEACH	GREENFIELD	2008	33879
NHLAK700030105-03-03	SUNSET LAKE - NASHUA FRESH AIR CAMP BEACH	GREENFIELD	2008	33879
NHLAK700030402-02-02	PLEASANT LAKE - ELKINS BEACH	NEW LONDON	2008	33879
NHLAK700030505-01-02	CLEMENT POND - CAMP MERRIMAC BEACH	HOPKINTON	2008	33879
NHLAK700040401-01-02	MELENDY POND - TOWN BEACH	BROOKLINE	2008	33879
NHLAK700040401-02-02	LAKE POTANIPO - TOWN BEACH	BROOKLINE	2008	33879
NHLAK700040401-02-03	POTANIPO POND - CAMP TEVYA BEACH	BROOKLINE	2008	33879
NHLAK700060101-02-02	SONDOGARDY POND - GLINES PARK BEACH	NORTHFIELD	2008	33879

AUID	AU NAME	PRIMARY TOWN	FFY of APPROVAL	TMDL ID
NHLAK700060201-01-02	LOON LAKE - LOON LAKE BEACH	GILMANTON	2008	33879
NHLAK700060202-03-02	CLOUGH POND - TOWN BEACH	LOUDON	2008	33879
NHLAK700060401-02-02	CRYSTAL LAKE-TOWN BEACH	GILMANTON	2008	33879
NHLAK700060401-06-02	MANNING LAKE - CAMP BELL BEACH	GILMANTON	2008	33879
NHLAK700060402-03-02	HALFMOON LAKE - CAMP MI-TE-NA BEACH	ALTON	2008	33879
NHLAK700060403-01-02	BIG WILLEY POND - CAMP FOSS BEACH	STRAFFORD	2008	33879
NHLAK700060403-01-03	BIG WILLEY POND - PARKER MTN BEACH	STRAFFORD	2008	33879
NHLAK700060501-03-02	WILD GOOSE POND - WILD GOOSE POND BEACH	PITTSFIELD	2008	33879
NHLAK700060501-03-03	WILD GOOSE POND - WILD GOOSE CAMP BEACH	PITTSFIELD	2008	33879
NHLAK700060503-01-02	BEAR HILL POND - BEAR HILL POND BEACH	ALLENSTOWN	2008	33879
NHLAK700060601-03-02	PLEASANT LAKE - PUBLIC ACCESS BEACH	HENNIKER	2008	33879
NHLAK700061203-06-02	ROBINSON POND - TOWN BEACH	HUDSON	2008	33879
NHLAK700061203-06-03	UNKNOWN POND - CAMP WINAHUPE BEACH	HUDSON	2008	33879
NHLAK700061204-02-02	LITTLE ISLAND POND - CAMP RUNELS BEACH	PELHAM	2008	33879
NHLAK801010707-01-02	CHRISTINE LAKE - TB BEACH	STARK	2008	33879
NHLAK801040201-03-02	LAKE TARLETON - KINGSWOOD CAMP BEACH	PIERMONT	2008	33879
NHLAK801040203-01-02	POST POND - CHASE TOWN BEACH	LYME	2008	33879
NHLAK801060401-08-02	KOLEMOOK LAKE - TOWN BEACH	SPRINGFIELD	2008	33879
NHLAK801060402-04-02	LITTLE SUNAPEE LAKE - BUCKLIN TOWN BEACH	NEW LONDON	2008	33879
NHLAK801060402-04-03	LITTLE LAKE SUNAPEE - COLBY LODGE BEACH	NEW LONDON	2008	33879
NHLAK801060402-05-02	SUNAPEE LAKE - GEORGES MILL TOWN BEACH	SUNAPEE	2008	33879
NHLAK801060402-05-03	SUNAPEE LAKE - DEWEY (TOWN) BEACH	SUNAPEE	2008	33879
NHLAK801060402-05-04	SUNAPEE LAKE - BLODGETT'S LANDING BEACH	NEWBURY	2008	33879
NHLAK801060402-05-05	SUNAPEE LAKE - SUNAPEE STATE PARK BEACH	NEWBURY	2008	33879
NHLAK801060402-05-06	SUNAPEE LAKE - DEPOT BEACH	NEWBURY	2008	33879
NHLAK801060402-12-02	OTTER POND - MORGAN BEACH	NEW LONDON	2008	33879
NHLAK801060403-04-02	RAND POND - PUBLIC WAY BEACH	GOSHEN	2008	33879
NHLAK801070503-01-02	SPOFFORD LAKE - ACCESS RD TOWN BEACH	CHESTERFIELD	2008	33879
NHLAK801070503-01-03	SPOFFORD LAKE - N SHORE RD TOWN BEACH	CHESTERFIELD	2008	33879
NHLAK801070503-01-04	SPOFFORD LAKE - WARES GROVE TOWN BEACH	CHESTERFIELD	2008	33879
NHLAK801070503-01-05	SPOFFORD LAKE - CAMP SPOFFORD	CHESTERFIELD	2008	33879

AUID	AU NAME	PRIMARY TOWN	FFY of APPROVAL	TMDL ID
	BEACH			
NHLAK801070503-01-06	SPOFFORD LAKE - ROADS END FARM BEACH	CHESTERFIELD	2008	33879
NHLAK802010202-07-02	RUSSEL RESERVOIR - CHESHAM BEACH	HARRISVILLE	2008	33879
NHLAK802010302-01-02	SWANZEY LAKE - RICHARDSON PARK TOWN BEACH	SWANZEY	2008	33879
NHLAK802010302-01-03	SWANZEY LAKE - CAMP SQUANTO BEACH	SWANZEY	2008	33879
NHIMP700060302-02	HAYWARD BROOK/MORRILL POND	CANTERBURY	2007	33878
NHIMP700060502-01	DURGIN POND OUTLET	NORTHWOOD	2007	33878
NHIMP700061403-04	POWWOW POND	KINGSTON	2007	33878
NHLAK600020202-01	FALLS POND	ALBANY	2007	33878
NHLAK600020302-01-01	ECHO LAKE	CONWAY	2007	33878
NHLAK600020303-03	IONA LAKE	ALBANY	2007	33878
NHLAK600020303-05	BIG PEA PORRIDGE POND	MADISON	2007	33878
NHLAK600020303-06	MIDDLE PEA PORRIDGE POND	MADISON	2007	33878
NHLAK600020303-07-01	PEQUAWKET POND	CONWAY	2007	33878
NHLAK600020303-09	WHITTON POND	ALBANY	2007	33878
NHLAK600020604-03	MOORES POND	TAMWORTH	2007	33878
NHLAK600020701-02	LOWER BEECH POND	TUFTONBORO	2007	33878
NHLAK600020701-04	UPPER BEECH POND	WOLFEBORO	2007	33878
NHLAK600020702-01	DAN HOLE POND	TUFTONBORO	2007	33878
NHLAK600020703-03	PINE RIVER POND	WAKEFIELD	2007	33878
NHLAK600020703-04	WHITE POND	OSSIPEE	2007	33878
NHLAK600020801-01	BLUE POND	MADISON	2007	33878
NHLAK600020801-05	MACK POND	MADISON	2007	33878
NHLAK600020801-06-01	SILVER LAKE	MADISON	2007	33878
NHLAK600020802-04-01	OSSIPEE LAKE	OSSIPEE	2007	33878
NHLAK600020803-01-01	LOWER DANFORTH POND	FREEDOM	2007	33878
NHLAK600020803-01-02	MIDDLE DANFORTH POND	FREEDOM	2007	33878
NHLAK600020803-03	UPPER DANFORTH POND	FREEDOM	2007	33878
NHLAK600020803-08	SHAW POND	FREEDOM	2007	33878
NHLAK600020804-01-01	BERRY BAY	FREEDOM	2007	33878
NHLAK600020804-01-02	LEAVITT BAY	OSSIPEE	2007	33878
NHLAK600020804-01-03	BROAD BAY	FREEDOM	2007	33878
NHLAK600020902-01	PROVINCE LAKE	EFFINGHAM	2007	33878
NHLAK600021001-01	BALCH POND	WAKEFIELD	2007	33878
NHLAK600030403-02	HORN POND	WAKEFIELD	2007	33878
NHLAK600030601-05-01	SUNRISE LAKE	MIDDLETON	2007	33878
NHLAK600030602-03	ROCHESTER RESERVOIR	ROCHESTER	2007	33878
NHLAK600030605-01	NIPPO POND	BARRINGTON	2007	33878
NHLAK600030704-02-01	PAWTUCKAWAY LAKE	NOTTINGHAM	2007	33878
NHLAK600030802-01	HUNT POND	SANDOWN	2007	33878

AUID	AU NAME	PRIMARY TOWN	FFY of APPROVAL	TMDL ID
NHLAK700010104-02	LOON POND	LINCOLN	2007	33878
NHLAK700010205-01	MIRROR LAKE	WOODSTOCK	2007	33878
NHLAK700010304-04	MCCUTCHEON POND	DORCHESTER	2007	33878
NHLAK700010304-05	POUT POND	DORCHESTER	2007	33878
NHLAK700010401-03	CONE POND	THORNTON	2007	33878
NHLAK700010402-03	LOWER HALL POND	SANDWICH	2007	33878
NHLAK700010402-05	UPPER HALL POND	SANDWICH	2007	33878
NHLAK700010402-08	LITTLE PERCH POND	CAMPTON	2007	33878
NHLAK700010501-01	BARVILLE POND	SANDWICH	2007	33878
NHLAK700010501-02	INTERVALE POND	SANDWICH	2007	33878
NHLAK700010501-03	KUSUMPE POND	SANDWICH	2007	33878
NHLAK700010502-04	SKY POND	NEW HAMPTON	2007	33878
NHLAK700010701-03	ORANGE POND	ORANGE	2007	33878
NHLAK700010701-05	WAUKEENA LAKE	DANBURY	2007	33878
NHLAK700010702-02	SCHOOL POND	DANBURY	2007	33878
NHLAK700010802-03-01	HERMIT LAKE	SANBORNTON	2007	33878
NHLAK700010802-04	RANDLETT POND	MEREDITH	2007	33878
NHLAK700010802-05	MOUNTAIN POND	SANBORNTON	2007	33878
NHLAK700010804-01-01	HIGHLAND LAKE	ANDOVER	2007	33878
NHLAK700010804-02-01	WEBSTER LAKE	FRANKLIN	2007	33878
NHLAK700020101-05-01	LAKE WENTWORTH	WOLFEBORO	2007	33878
NHLAK700020101-07-01	RUST POND	WOLFEBORO	2007	33878
NHLAK700020108-02-01	LAKE WAUKEWAN	MEREDITH	2007	33878
NHLAK700020108-02-02	LAKE WINONA	NEW HAMPTON	2007	33878
NHLAK700020108-04	HAWKINS POND	CENTER HARBOR	2007	33878
NHLAK700020110-02-01	PAUGUS BAY	LACONIA	2007	33878
NHLAK700020110-02-19	LAKE WINNIPESAUKEE	ALTON	2007	33878
NHLAK700020110-05	SALTMARSH POND	GILFORD	2007	33878
NHLAK700020201-05-01	LAKE WINNISQUAM	LACONIA	2007	33878
NHLAK700020202-03	POUT POND	BELMONT	2007	33878
NHLAK700020202-04	SARGENT LAKE	BELMONT	2007	33878
NHLAK700030101-08	GRASSY POND	RINDGE	2007	33878
NHLAK700030101-12	POOL POND	RINDGE	2007	33878
NHLAK700030101-13	BULLET POND	RINDGE	2007	33878
NHLAK700030103-02	TOLMAN POND	NELSON	2007	33878
NHLAK700030103-03	JUGGERNAUT POND	HANCOCK	2007	33878
NHLAK700030103-09	SPOONWOOD LAKE	NELSON	2007	33878
NHLAK700030103-10	DINSMORE POND	HARRISVILLE	2007	33878
NHLAK700030105-01-01	ZEPHYR LAKE	GREENFIELD	2007	33878
NHLAK700030105-02-01	OTTER LAKE	GREENFIELD	2007	33878
NHLAK700030105-03-01	SUNSET LAKE	GREENFIELD	2007	33878
NHLAK700030107-01	WILLARD POND	ANTRIM	2007	33878
NHLAK700030202-06	BAGLEY POND	WINDSOR	2007	33878

AUID	AU NAME	PRIMARY TOWN	FFY of APPROVAL	TMDL ID
NHLAK700030203-02	SMITH POND	WASHINGTON	2007	33878
NHLAK700030203-03	TROUT POND	STODDARD	2007	33878
NHLAK700030204-04	LOON POND	HILLSBOROUGH	2007	33878
NHLAK700030302-02	BLAISDELL LAKE	SUTTON	2007	33878
NHLAK700030302-04-01	LAKE MASSASECUM	BRADFORD	2007	33878
NHLAK700030304-05	TOM POND	WARNER	2007	33878
NHLAK700030304-07	TUCKER POND	SALISBURY	2007	33878
NHLAK700030304-08	LAKE WINNEPOCKET	WEBSTER	2007	33878
NHLAK700030401-02	BUTTERFIELD POND	WILMOT	2007	33878
NHLAK700030402-01	CHASE POND	WILMOT	2007	33878
NHLAK700030402-02-01	PLEASANT LAKE	NEW LONDON	2007	33878
NHLAK700030403-05	HORSESHOE POND	ANDOVER	2007	33878
NHLAK700030502-03	BEAR POND	WARNER	2007	33878
NHLAK700030505-01	CLEMENT POND	HOPKINTON	2007	33878
NHLAK700040401-01-01	MELENDY POND	BROOKLINE	2007	33878
NHLAK700040401-02-01	POTANIPO POND	BROOKLINE	2007	33878
NHLAK700060101-01	SHAW POND	FRANKLIN	2007	33878
NHLAK700060101-02-01	SONDOGARDY POND	NORTHFIELD	2007	33878
NHLAK700060201-01-01	LOON POND	GILMANTON	2007	33878
NHLAK700060201-03	NEW POND	CANTERBURY	2007	33878
NHLAK700060202-03-01	CLOUGH POND	LOUDON	2007	33878
NHLAK700060202-04	CROOKED POND	LOUDON	2007	33878
NHLAK700060401-02-01	CRYSTAL LAKE	GILMANTON	2007	33878
NHLAK700060401-06	MANNING LAKE	GILMANTON	2007	33878
NHLAK700060401-12	SUNSET LAKE	ALTON	2007	33878
NHLAK700060402-03	HALFMOON LAKE	ALTON	2007	33878
NHLAK700060402-05	HUNTRESS POND	BARNSTEAD	2007	33878
NHLAK700060403-01	BIG WILLEY POND	STRAFFORD	2007	33878
NHLAK700060403-02	LITTLE WILLEY POND	STRAFFORD	2007	33878
NHLAK700060501-03	WILD GOOSE POND	PITTSFIELD	2007	33878
NHLAK700060501-08	BERRY POND	PITTSFIELD	2007	33878
NHLAK700060502-03	CHESTNUT POND	EPSOM	2007	33878
NHLAK700060503-01	BEAR HILL POND	ALLENSTOWN	2007	33878
NHLAK700060601-01	DEERING RESERVOIR	DEERING	2007	33878
NHLAK700060601-02	DUDLEY POND	DEERING	2007	33878
NHLAK700060601-03-01	PLEASANT POND	HENNIKER	2007	33878
NHLAK700060602-02	MOUNT WILLIAM POND	WEARE	2007	33878
NHLAK700060604-01	PLEASANT POND	FRANCESTOWN	2007	33878
NHLAK700060607-03	LONG POND	DUNBARTON	2007	33878
NHLAK700060702-03	MASSABESIC LAKE	AUBURN	2007	33878
NHLAK700060802-02	LAKINS POND	HOOKSETT	2007	33878
NHLAK700060802-03	PINNACLE POND	HOOKSETT	2007	33878
NHLAK700060803-02	STEVENS POND	MANCHESTER	2007	33878

AUID	AU NAME	PRIMARY TOWN	FFY of APPROVAL	TMDL ID
NHLAK700061002-03	HORSESHOE POND	MERRIMACK	2007	33878
NHLAK700061101-01-01	ISLAND POND	HAMPSTEAD	2007	33878
NHLAK700061203-06-01	ROBINSON POND	HUDSON	2007	33878
NHLAK700061204-02	LITTLE ISLAND POND	PELHAM	2007	33878
NHLAK700061204-03	ROCK POND	WINDHAM	2007	33878
NHLAK700061205-01	GUMPAS POND	PELHAM	2007	33878
NHLAK801010102-03	ROUND POND	PITTSBURG	2007	33878
NHLAK801010707-01-01	CHRISTINE LAKE	STARK	2007	33878
NHLAK801040201-03	LAKE TARLETON	PIERMONT	2007	33878
NHLAK801040203-01-01	POST POND	LYME	2007	33878
NHLAK801060101-03	CUMMINS POND	DORCHESTER	2007	33878
NHLAK801060101-05	RESERVOIR POND	DORCHESTER	2007	33878
NHLAK801060103-02	LITTLE GOOSE POND	CANAAN	2007	33878
NHLAK801060104-02	GRAFTON POND	GRAFTON	2007	33878
NHLAK801060401-06	EASTMAN POND	GRANTHAM	2007	33878
NHLAK801060401-08-01	KOLELEMOOK LAKE	SPRINGFIELD	2007	33878
NHLAK801060402-04-01	LITTLE SUNAPEE LAKE	NEW LONDON	2007	33878
NHLAK801060402-05-01	SUNAPEE LAKE	SUNAPEE	2007	33878
NHLAK801060402-11	MOUNTAINVIEW LAKE	SUNAPEE	2007	33878
NHLAK801060402-12-01	OTTER POND	SUNAPEE	2007	33878
NHLAK801060403-01	GILMAN POND	UNITY	2007	33878
NHLAK801060403-04-01	RAND POND	GOSHEN	2007	33878
NHLAK801060404-01	ROCKYBOUND POND	CROYDON	2007	33878
NHLAK801070201-01	CRESCENT LAKE	CRESCENT LAKE	2007	33878
NHLAK801070503-01-01	SPOFFORD LAKE	CHESTERFIELD	2007	33878
NHLAK802010102-05	BARRETT POND	WASHINGTON	2007	33878
NHLAK802010104-01	CALDWELL POND	ALSTEAD	2007	33878
NHLAK802010104-03	CRANBERRY POND	ALSTEAD	2007	33878
NHLAK802010202-02	CHILDS BOG	HARRISVILLE	2007	33878
NHLAK802010202-07	RUSSELL RESERVOIR	HARRISVILLE	2007	33878
NHLAK802010202-14	BABBIDGE RESERVOIR	ROXBURY	2007	33878
NHLAK802010302-01-01	SWANZEY LAKE	SWANZEY	2007	33878
NHLAK802010303-02	MEETINGHOUSE POND	MARLBOROUGH	2007	33878
NHLAK802010303-07	SAND POND	TROY	2007	33878
NHLAK802010303-10	WILSON POND	SWANZEY	2007	33878
NHLAK802020103-04	EMERSON POND	RINDGE	2007	33878
NHLAK802020202-01	COLLINS POND	FITZWILLIAM	2007	33878
NHLAK600030604-01-02	BOW LAKE - TOWN BEACH	STRAFFORD	2006	32408
NHLAK600030604-01-03	BOW LAKE – MARY WALDRON BEACH	STRAFFORD	2006	32409
NHLAK600030604-01-04	BOW LAKE – BENNETT BRIDGE BEACH	STRAFFORD	2006	32410
NHLAK700030102-01-02	THORNDIKE POND – TOWN BEACH	JAFFREY	2006	30636
NHLAK700030103-05-02	HARRISVILLE POND - SUNSET TOWN BEACH	HARRISVILLE	2006	30661

AUID	AU NAME	PRIMARY TOWN	FFY of APPROVAL	TMDL ID
NHLAK700030108-02-02	GREGG LAKE – TOWN BEACH	ANTRIM	2006	30637
NHLAK700060502-08-02	NORTHWOOD LAKE – TOWN BEACH	NORTHWOOD	2006	30638
NHLAK700060502-09-02	PLEASANT LAKE – VEASEY PARK BEACH	DEERFIELD	2006	30639
NHLAK700061002-01-02	DARRAH POND – TOWN BEACH	LITCHFIELD	2006	30662
NHLAK801030302-01-02	ECHO LAKE – FRANCONIA STATE PARK BEACH	FRANCONIA	2006	30640
NHLAK802010303-05-02	STONE POND – TOWN BEACH	MARLBOROUGH	2006	30641
NHLAK802020101-01-02	CAMP TOAH NIPI BEACH ON PECKER POND	RINDGE	2006	22528

4. Since the approval of the 2006 § 303(d) List, the NHDES has established eight new beach AU's on ponds that already have approved TMDL's for pH impairments. EPA concurs that it is appropriate to list the eight AU's in Category 4a for pH, as the TMDL's developed for the parent lakes will also address impairments at the beach AU's.

AUID	AU NAME	New AUID as of	Parent Lake TMDL ID
NHLAK600020604-03-02	MOORES POND SKI AND BEACH (NH635571)	07/05/2006	33878
NHLAK600020604-03-03	MOORES POND - ASSOCIATION BEACH (NH173393)	07/05/2006	33878
NHLAK700020110-02-37	LAKE WINNIPESAUKEE WAWBEEK CONDO ASSOC BEACH (NH283207)	07/05/2006	33878
NHLAK700010601-01-02	SPECTACLE POND - GROTON TOWN BEACH (NH883841)	07/05/2006	11453
NHLAK700030302-02-02	CAMP WABASSO BEACH (NH770125) ON BLAISDELL LAKE	04/20/2007	33878
NHLAK700060601-01-02	DEERING LAKE BEACH (NH476110) ON DEERING RESERVOIR	04/20/2007	33878
NHLAK700060601-01-03	HOPKINTON INDEPENDENT SCHOOL BEACH (NH770215) ON DEERING RESERVOIR	04/20/2007	33878
NHLAK700010205-01-01	MIRROR LAKE BEACH (NH224709) ON MIRROR LAKE	04/20/2007	33878

5. The NHDES moved 21 AU's that were impaired for aluminum to Category 4a. EPA agrees that this action is appropriate because the aluminum impairments will be addressed by the already approved TMDL's for low pH. Low pH can mobilize aluminum from soil and rock, thus resulting in exceedence of water quality standards. According to NHDES, there are no known sources of aluminum in the 21 AU's other than leaching resulting from low pH.[1]

1. NHDES had also initially moved Wright Pond (NHLAK801010103-03), which had previously been listed for impairment due to aluminum, to Category 2 (fully supporting), based on a determination that the aluminum levels were due solely to naturally low pH, which causes aluminum to be mobilized from soil/rock. After discussions with EPA, NHDES added Wright Pond back onto the § 303(d) list, because acid rain, not just naturally low levels of pH,

AUID	AUID Name
NHLAK400010502-02	CORSER POND, ERROL
NHLAK400010502-05	SWEAT POND, ERROL
NHLAK600020102-02	SAWYER POND, LITTLE, LIVERMORE
NHLAK600020602-02	FLAT MOUNTAIN POND (1&2), WATERVILLE VALLEY
NHLAK700010104-01	BLACK POND, LINCOLN
NHLAK700010201-03	LONESOME LAKE, LINCOLN
NHLAK700010203-02	RUSSELL POND, WOODSTOCK, W/CWF
NHLAK700010204-01	EAST POND, LIVERMORE
NHLAK700010205-02	PEAKED HILL POND, THORNTON, CWF
NHLAK700010304-02	DERBY POND, ORANGE
NHLAK700010307-01	LOON LAKE, PLYMOUTH, WWF
NHLAK700010401-04	GREELEY POND (UPPER), LIVERMORE
NHLAK700010402-04	HALL POND, MIDDLE, SANDWICH, CWF
NHLAK700030301-01	SOLITUDE, LAKE, NEWBURY
NHLAK801010706-01	BOG POND, LITTLE, ODELL
NHLAK801030302-01-01	ECHO LAKE, FRANCONIA
NHLAK801030302-01-02	FRANCONIA STATE PARK ECHO LAKE
NHLAK801030701-01	CONSTANCE LAKE, PIERMONT
NHLAK801060401-07	HALFMILE POND, ENFIELD
NHLAK802010101-04	LONG POND, LEMPSTER
NHLAK802010101-06-01	MILLEN POND, WASHINGTON

6. The NHDES moved one AU that was impaired for shellfishing and primary contact recreation to Category 4a. EPA concurs with this decision, as this AU has an EPA approved TMDL that addresses both uses.

AUID	AU Name
NHEST600031002-02	Little Harbor, C-Ap, 197.98, Ac

7. The NHDES moved one AU that was impaired for primary contact recreation to Category 2 (fully supporting for this use). EPA agrees that this action is appropriate as the source of the impairment, a failed septic system, has been removed and sampling data has demonstrated attainment of water quality criteria. Follow-up water quality monitoring has included analysis of 40 samples.

AUID	AU Name
NHEST600031001-05	Back Channel, P/SZ, 421.64, Ac

contributes to aluminum leaching into the water body. Unlike the other lakes and ponds with high aluminum levels due to acid rain, Wright Pond is not addressed by any of the pH TMDLs that have been approved.

8. The NHDES moved two AU's that were impaired for primary contact recreation to Category 4a. The EPA concurs with this decision, as both AU's have an approved TMDL.

AUID	AU Name
NHIMP802010303-04-02	SAND DAM VILLAGE POND-TOWN BEACH
NHIMP700030204-05-02	MILL POND-TOWN BEACH

9. The NHDES moved one AU that was impaired for primary contact recreation to Category 2 (fully supporting for this use). The EPA agrees that this action is appropriate because more recent sampling conducted in 2002, 2003, 2004, 2005, 2006 and 2007 have revealed that water quality criteria for primary contact recreation are in full support. The original listing was based upon sampling conducted on a single day in 2001.

AUID	AU Name
NHRIV700010303-09-02	LOWER BAKER RIVER-TOWN BEACH

10. The NHDES moved seven AU's that were impaired for lead (Pb) to Category 3 (Insufficient Information). The NHDES has reported that the original listing was in error, as all collected samples were below the analytical detection limit. EPA concurs with the State's decision to move these waters to Category 3.

AUID	AU Name	Number of Lead Samples	Number of lead samples below the analytical detection limit
NHRIV600020305-02	Saco River	9	9
NHRIV600020106-08	Saco River	2	2
NHRIV600020202-05-01	Swift River	2	2
NHRIV600020202-05-02	ROCKY GORGE-SWIFT RIVER	2	2
NHRIV600020202-05-03	LOWER FALLS-SWIFT RIVER	2	2
NHRIV600020203-01	Swift River	2	2
NHRIV600020302-05-02	Kearsarge Brook	2	2

12. The NHDES moved 36 AU's that were listed as impaired for fish consumption due to PCB's to Category 3 (Insufficient Information). NHDES explained that it believed that the reason for listing in previous cycles was because PCB's have been detected in the tissue of fish taken from the Connecticut River. However, the concentrations were below the threshold that would trigger a fish consumption advisory, according to both NHDES and the NH Environmental Health Program (NHEHP). NHDES interprets its designated use of "fish consumption" to be in attainment if there are no "restricted consumption" or "no consumption" fish advisories in effect. Given that the levels

of PCB's in the tissue of fish from the Connecticut River are below levels that would trigger a consumption advisory, EPA believes that NHDES's decision to move these AU's to Category 3 is reasonable.

AUID	AU Name
NHIMP801010305-01	CONNECTICUT RIVER - CANAAN HYDRO
NHIMP801030201-01	CONNECTICUT RIVER - GILMAN DAM POND
NHIMP801030203-01	CONNECTICUT RIVER - COMERFORD STORAGE DAM
NHIMP801030205-02	CONNECTICUT RIVER - MCINDOES RESERVOIR
NHIMP801030206-01-01	CONNECTICUT RIVER - DODGE FALLS (TAILRACE OF MCINDOES DAM)
NHIMP801030206-01-02	CONNECTICUT RIVER - DODGE FALLS
NHIMP801060703-05	CONNECTICUT RIVER - BELLOWS FALLS
NHIMP801070507-01	CONNECTICUT RIVER - VERNON DAM
NHLAK801030202-01	MOORE RESERVOIR
NHLAK801040402-03	WILDER LAKE
NHRIV801010203-04	CONNECTICUT RIVER
NHRIV801010203-07	CONNECTICUT RIVER
NHRIV801010305-01	CONNECTICUT RIVER
NHRIV801010305-02	CONNECTICUT RIVER
NHRIV801010404-02	CONNECTICUT RIVER
NHRIV801010405-03	CONNECTICUT RIVER
NHRIV801010603-05	CONNECTICUT RIVER
NHRIV801010902-02	CONNECTICUT RIVER
NHRIV801010902-03	CONNECTICUT RIVER
NHRIV801010903-02	CONNECTICUT RIVER
NHRIV801030201-02	CONNECTICUT RIVER
NHRIV801030203-01	CONNECTICUT RIVER
NHRIV801030205-02	CONNECTICUT RIVER
NHRIV801030206-03	CONNECTICUT RIVER
NHRIV801030703-04	CONNECTICUT RIVER
NHRIV801040205-06	CONNECTICUT RIVER
NHRIV801040402-13	CONNECTICUT RIVER
NHRIV801060302-01	CONNECTICUT RIVER
NHRIV801060302-05	CONNECTICUT RIVER
NHRIV801060305-12	CONNECTICUT RIVER
NHRIV801060702-12	CONNECTICUT RIVER
NHRIV801070501-10-01	CONNECTICUT RIVER - BYPASSED RIVER REACH BELOW BELLOWS FALLS DAM
NHRIV801070501-10-02	CONNECTICUT RIVER
NHRIV801070502-06	CONNECTICUT RIVER
NHRIV801070505-10	CONNECTICUT RIVER
NHRIV802010501-05	CONNECTICUT RIVER

13. The NHDES moved two AU's to Category 2 (Fully Supporting) for both primary and secondary contact recreation (sedimentation/siltation). The original impairments and subsequent listings were the result of direct stormwater discharges. Sediment deltas formed in the lake below each of the

outfalls. In response to the identification of these impairments, the City of Manchester implemented a Section 319 restoration project in the watershed which was designed to eliminate excessive sediment transport to the lake. NHDES provided comprehensive information on the steps that the City has taken to remove the deltas, install BMPs, and reduce storm water discharges to the lake. Since removal of the deltas and the sediment sources, recreational uses are no longer impaired. EPA supports delisting on this basis.

Crystal Lake, Manchester (NHLAK700060703-02-01)
Crystal Lake, Town Beach (NHLAK700060703-02-02)

14. The NHDES moved one AU impaired for primary contact recreation due to E. coli to Category 2 (Fully Supporting for primary contact recreation). This AU was listed because of an illicit discharge. A follow-up investigation identified two sources. Both sources were disconnected in 2007. Follow-up outfall monitoring revealed E. coli concentrations of <30/100 mL in the pipe. In-situ sampling from 2003 to the present revealed no exceedences of the single sample or geometric mean water quality criteria in the 55 samples collected. EPA concurs with the State's decision to remove this AU from the 303(d) List.

Lamprey River/MaCallen dam (NHIMP600030709-03)

Waters impaired by nonpoint sources of pollution

The State properly listed waters with nonpoint sources causing or expected to cause impairment, consistent with Section 303(d) and EPA guidance. Section 303(d) lists are to include all WQLSs still needing TMDLs, regardless of whether the source of the impairment is a point and/or nonpoint source. EPA's long-standing interpretation is that Section 303(d) applies to waters impacted by point and/or nonpoint sources. In 'Pronsolino v. Marcus,' the District Court for Northern District of California held that Section 303(d) of the Clean Water Act authorizes EPA to identify and establish total maximum daily loads for waters impaired by nonpoint sources. Pronsolino v. Marcus, 91 F. Supp. 2d 1337, 1347 (N.D.Ca. 2000). This decision was affirmed by the 9th Circuit court of appeals in Pronsolino v. Nastri, 291 F.3d 1123 (9th Cir. 2002). See also EPA's Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act – EPA Office of Water—July 29, 2005.

SUPPLEMENTAL EXHIBIT – 15

S. Exh. 15

HALL & ASSOCIATES

Suite 701
1620 I Street, NW
Washington, DC 20006-4033
Telephone: (202) 463-1166 Web: http://www.hall-associates.com Fax: (202) 463-4207

Reply to E-mail:
jhall@hall-associates.com

December 20, 2012

VIA ELECTRONIC FOIA MANAGEMENT SYSTEM

Regional Freedom of Information Officer
U.S. EPA, Region I (OARMO 1-6)
5 Post Office Square, Suite 100
Boston, MA 02109-3912
E-mail: r1foia@epa.gov

RE: Freedom of Information Act Request for Records Associated with EPA Region I's Draft NPDES Permits for Exeter, NH, NPDES Permit No. NH0100871; Newmarket, NH, NPDES Permit No. NH0100196; and Dover, NH, NPDES Permit No. NH0101311

To Whom This May Concern:

This is a request for public records pursuant to the Freedom of Information Act ("FOIA"), 5 U.S.C. § 552, as implemented by the Environmental Protection Agency ("EPA") at 40 C.F.R. Part 2. This request is submitted by Hall & Associates on behalf of the Great Bay Municipal Coalition. For purposes of this request, the definition of "records" includes, but is not limited to, documents, letters, memoranda, notes, reports, e-mail messages, policy statements, data, technical evaluations or analysis, and studies.

Request

Generally, this request seeks EPA Region I's records associated with its proposed NPDES permits for Exeter, NH, NPDES Permit No. NH0100871; Newmarket, NH, NPDES Permit No. NH0100196; and Dover, NH, NPDES Permit No. NH0101311 regarding the need to achieve a transparency-based 0.3 mg/l TN instream requirement to allow recovery of eelgrass in the tidal rivers and Great Bay.

Specifically, please provide us with all records regarding Dr. Fred Short's 2012 eelgrass survey including any and all communications between EPA Region 1 and any other party.

Please contact the undersigned if the associated search and duplication costs are anticipated to exceed $250.00. Please duplicate the records that are responsible to this request and send them to the undersigned at the above address. If any requested records are withheld based upon any asserted privilege, please identify the basis for the non-disclosure. If the Agency lacks records responsible to a particular item, please not that in the response. If you have any questions regarding this request, please do not hesitate to contact this office so as to ensure that agency resources are conserved and only the necessary documents are reproduced.

Sincerely,

/s/ John C. Hall
JOHN C. HALL

Cc: Dan Arsenault, EPA Region 1

SUPPLEMENTAL EXHIBIT – 16

S. Exh. 16

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
One Congress Street
Suite 1100
Boston, Massachusetts 02114

January 25, 2013

RE: Freedom of Information Act request No. EPA-R1-2013-002333

Dear Ms. Sedlacek,

This is in response to your Freedom of Information Act request of December 20, 2012 **for records regarding Dr. Fred Short's 2012 eelgrass survey including any and all communications between EPA Region 1 and any other party.**

Information responsive to your request is enclosed. Please note that this information was previously emailed to Mr. Hall on January 13, 2013.

If you consider any portion of this response to be a denial, you may appeal it by addressing your written appeal to the National Freedom of Information Officer U.S. EPA, FOIA and Privacy Branch, 1200 Pennsylvania Avenue, N.W. (2822T), Washington, DC 20460 (U.S. Postal Service Only), FAX: (202) 566-2147, E-mail: hq.foia@epa.gov. Only items mailed through the United States Postal Service may be delivered to 1200 Pennsylvania Avenue, NW. If you are submitting your appeal via hand delivery, courier service or overnight delivery, you must address your correspondence to 1301 Constitution Avenue, N.W., Room 6416J. Washington, DC 20001. Your appeal must be made in writing, and it must be submitted no later than 30 calendar days from the date of this letter. The Agency will not consider appeals received after the 30 calendar day limit. The appeal letter should include the RIN listed above. For quickest possible handling, the appeal letter and its envelope should be marked "Freedom of Information Act Appeal." Due to the limited nature of your request there will be no charge for the processing of it.

Sincerely,

Cristeen L Schena

Cristeen L. Schena, R1 FOIA Officer
Office of Administration & Resources Management
(Office) 617-918-1102 -- (Fax) 617-918-0102 -- Email address: schena.cristeen@epa.gov

Enclosure

S. Exh. 16

Great Bay Estuary Eelgrass: 2012 Observations

During the first week of August, 2012, I revisited the Great Bay Estuary for an assessment of the eelgrass conditions in the estuary and to judge the overall health of the estuary, similar to the surveys I have been doing for the past 28 years. I was able to conduct several days of low tide boat surveys, fly in a small plane over the entire estuary taking aerial photographs, and swim/snorkel in the eelgrass meadows. My overall reaction was one of increasing concern. The estuary has clearly degraded since 2011, with masses of nuisance seaweed, many epiphytes on the eelgrass blades, and large colonies of tunicates overgrowing the eelgrass plants. The water color transitions from a green tint in Portsmouth Harbor to a pronounced green in Great Bay.

I was extremely lucky to have five days of very low tides, little wind and fairly clear conditions. Eelgrass is still found throughout much of Great Bay although the plants are often coated with a near-continuous layer of reddish-brown algae growing as epiphytes on the blades. The eelgrass meadows are very low density, with only a few shoots per square meter and low biomass. Additionally, the eelgrass beds are packed full of the nuisance seaweeds typical of eutrophic conditions: green *Ulva lactuca* (sea lettuce) and red *Gracilaria tikvahiae* (red weed) as well as *Gracilaria verrucosa* (a recent invasive species). These nuisance seaweeds are overgrowing the eelgrass beds and contributing to the decline in eelgrass abundance. The combination of the extensive epiphytic algal growth and the nuisance seaweeds has turned the eelgrass meadows from their historic brilliant green color to a brownish dirty-looking meadow and at low tide the exposed eelgrass flats look brown in the full sun rather the shiny green of earlier years.

The bottom line is that eelgrass continues to decline in Great Bay with all signs of an estuary experiencing eutrophication from excess nutrients. The decrease in production of these eelgrass beds is leading to an overall decline in the health of the estuary and will result in reduced invertebrate and fish populations in the estuary, providing less food for striped bass and blue fish, as well as reduced populations of waterfowl, blue herons, osprey, and other birds. Decreases in the amount and health of eelgrass also reduce its ability to filter the water of nutrients and particulates and allow for more re-suspension of bottom sediments. My detailed PREP report on the status and trends of eelgrass for 2012 will quantify the changes, but the above description conveys my initial impression.

Fred Short
fredtshort@gmail.com
603-659-3313 cell

SUPPLEMENTAL EXHIBIT – 17

*** Please reference Exhibit 24 to Petitioners' Petition for Review (Dec. 14, 2012)**

SUPPLEMENTAL EXHIBIT – 18

*** Please reference AR K.29 for the main document. Petitioners request all analyses and aerial photographs relied upon in AR K.29 be included as S. Exh. 18.**

SUPPLEMENTAL EXHIBIT – 19

S. Exh. 19

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

In re:	)
Town of Newmarket	)
NPDES APPEAL No. 12-05	)
NPDES Permit No. NH0100196	)
	)

Declaration of Steven C. Chapra, Ph.D., F.ASCE[1]

Assessment of Whether the Department of Environmental Service's Approach to Nutrient Criteria Derivation for the Great Bay Estuary Used Reliable, Scientifically Defensible Methods to Derive Numeric Nutrient Criteria

Executive Summary

This document provides an expert review of the New Hampshire Department of Environmental Services (DES) approach to nutrient criteria development for the Great Bay Estuary. The methodologies under review are those presented in the document entitled "Numeric Nutrient Criteria for the Great Bay Estuary" (2009). My analysis is specifically directed at addressing whether the Division's use (and EPA's acceptance) of the "stressor-response" methodology in that document to derive the recommended nutrient criteria for total nitrogen employed scientifically defensible methods and whether those methods, as applied, are consistent with generally accepted scientific norms applicable to the use of such statistical methods. Upon review, it is my opinion that the DES criteria document did not use scientifically defensible methods and it failed to apply stressor-response methods in a manner accepted by the scientific community. *The methods applied are, in fact, grossly incorrect, internally inconsistent and have produced results that bear no reasonable relationship to reality.* Consequently, the analysis was fundamentally flawed and the proposed TN criterion of 0.3 mg/l is not demonstrated to be either necessary or appropriate to protect aquatic resources in the Estuary.

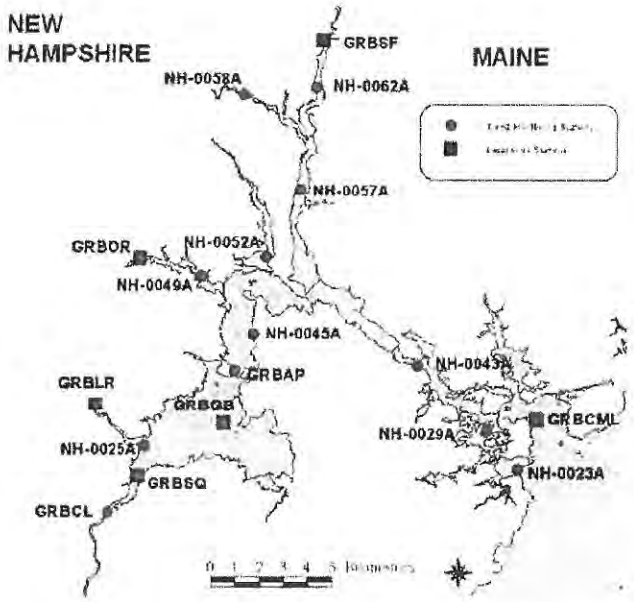
[1] Professor and Berger Chair in Computing and Engineering; Civil and Environmental Engineering Department; Tufts University; Medford, MA 02155

Assessment of whether the 2009 Numeric Nutrient Criteria document employed scientifically defensible methods in criteria derivation

The DES numeric criteria document (hereafter, the "Criteria Document") was completed in June 2009[2] and relied extensively on simple linear regression analyses (1) to show nitrogen was causing certain adverse system responses and (2) to select the level of nitrogen that would control and eliminate those adverse responses. The adverse responses of concern were (1) low dissolved oxygen (D.O.) occurring in the tidal rivers and (2) poor water column transparency caused by excessive algal (phytoplankton) growth. The document also included limited references to excessive macroalgae growth for Great Bay proper, but this concern did not control the derivation of the recommended TN criteria for either the tidal rivers or the bay systems.

Figure 2 from the Criteria Document, presented below, indicates the scope of the monitoring program used to supply the data in the regression analyses. The various locations are physically very heterogeneous and include near ocean bays, tidal straights, inland bays, and tidal rivers.

Figure 2: Trend Monitoring Stations for Water Quality in the Great Bay Estuary

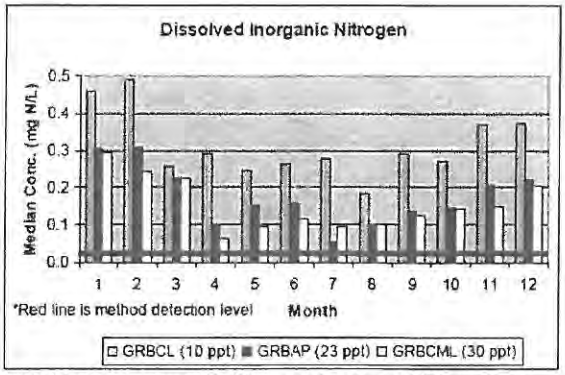


Data from these various locations throughout the estuary, representing dramatically different physical habitats and hydrodynamic conditions, were averaged for use in subsequent regression analyses. Charts were prepared claiming to demonstrate how key nutrient concentrations and response variables (e.g., chlorophyll a, transparency) changed

[2] Numeric Nutrient Criteria for the Great Bay Estuary. New Hampshire Department of Environmental Services. June 2009.

through the system as a function of each other. Figure 8 from the Criteria Document illustrates monthly changes in inorganic nitrogen levels for a tidal river (Station GRBCL; Squamscott River), an inland bay (Station BRBAP; Great Bay-Adams Point), and the mouth of the estuary (Station BRBCML). The figure shows that inorganic nitrogen concentrations are significantly higher in the tidal river and decrease towards the mouth of the estuary. This decrease generally aligns with the average salinity at each station.

Figure 8: Seasonal Pattern for Dissolved Inorganic Nitrogen at Trend Stations with Different Salinities



All available data for these stations in 2000 - 2008 were included in this graph which accounts for:
GRBAP: (Jan-Mar) 2000, 2001, 2006, 2007, 2008; (Apr-Dec) 2000 through 2008
GRBCL: (Jan-Mar) 2000, 2001; (Apr-Dec) 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
GRBCML: (Jan-Mar) 2001; (Apr-Dec) 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008

Figure 13 from the Criteria Document illustrates the long term algal levels at various sites within the estuary, while Figure 16 illustrates monthly changes in median chlorophyll-a in a tidal river (Squamscott), Great Bay, and at the mouth. The long term average algal levels are higher in certain tidal rivers (e.g., Squamscott) but lower as one proceeds into waters with greater flushing characteristics (Great Bay and the Piscataqua River). It should be noted that the algal levels occurring throughout the system are, on average, generally quite low. Even in the higher detention time areas of Great Bay, the average concentration is only about 3 µg/l while in areas of very high tidal exchange (Piscataqua River) the average concentration ranges from 1-2 µg/l. This low level of primary productivity indicates that this system is not conducive to producing significant algal growth as a result of current nutrient inputs. [3]

[3] For example, a 100 µgN/L level of dissolved inorganic nitrogen in Great Bay has the potential to grow about 30 µg/L chlorophyll-a. This is an absolute upper limit as is borne out by the fact that the median algal growth in Great Bay is one tenth of this potential. This indicates that other factors (i.e., water column transparency, detention time, nutrient recycle, etc.) are controlling the amount of plant growth that occurs.

Figure 13: 90th Percentile Concentrations of Chlorophyll-a in Regions of the Great Bay Estuary Calculated from Samples Collected in All Seasons in 2000-2008

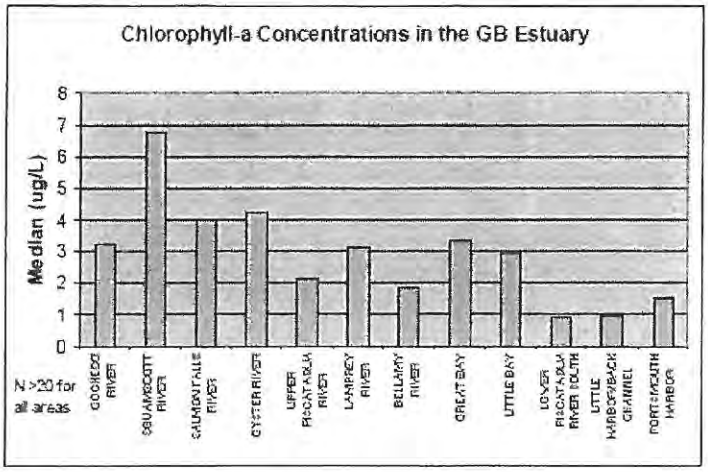
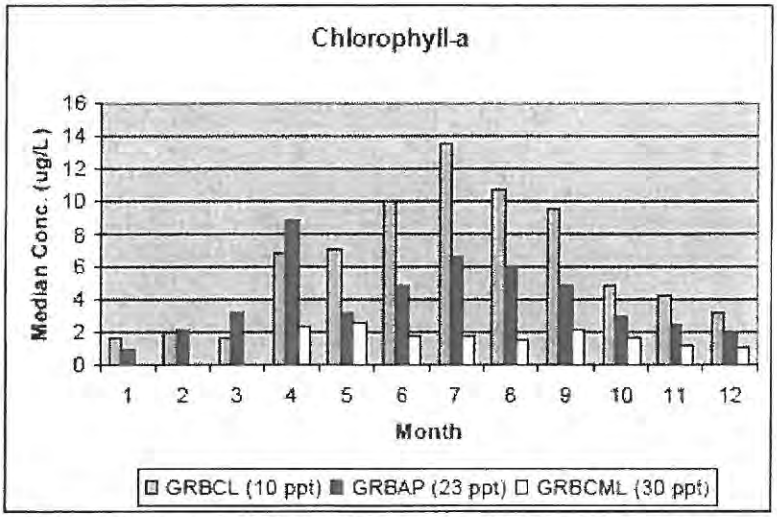


Figure 16: Seasonal Patterns of Chlorophyll-a at Trend Monitoring Stations with Different Salinities

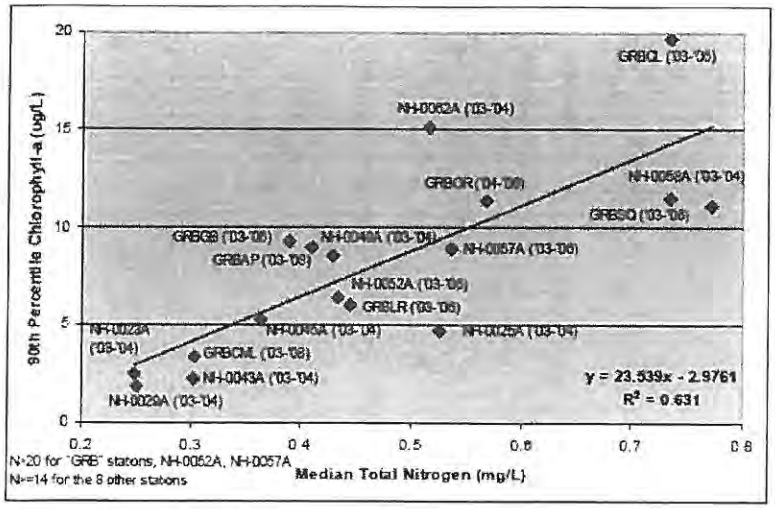


All available data for these stations in 2000 - 2008 were included in this graph, which amounts to:
GRBAP: (Jan-Mar) 2000, 2001, 2006, 2007, 2008; (Apr-Dec) 2000 through 2008
GRBCL: (Jan-Mar) 2000, 2001; (Apr-Dec) 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
GRBCML: (Jan-Mar) None; (Apr-Dec) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008

The DES considered this information and concluded that the observed algal chlorophyll-a was in response to the spatial pattern of nitrogen. DES then prepared a regression analyse relating the 90th percentile chlorophyll-a concentration to total nitrogen (Figure 17 from the Criteria Document). It then claimed that this regression proves that primary productivity (as indicated by phytoplankton blooms) is associated with the concentration of nitrogen. [4]

[4] This conclusion was directly at odds with the 2013 State of the Estuaries report that confirmed algal levels in the system have not materially changed over a 30 year period despite wide fluctuations in available inorganic nitrogen. This would only occur if TN was NOT the factor presently limiting algal growth in this system.

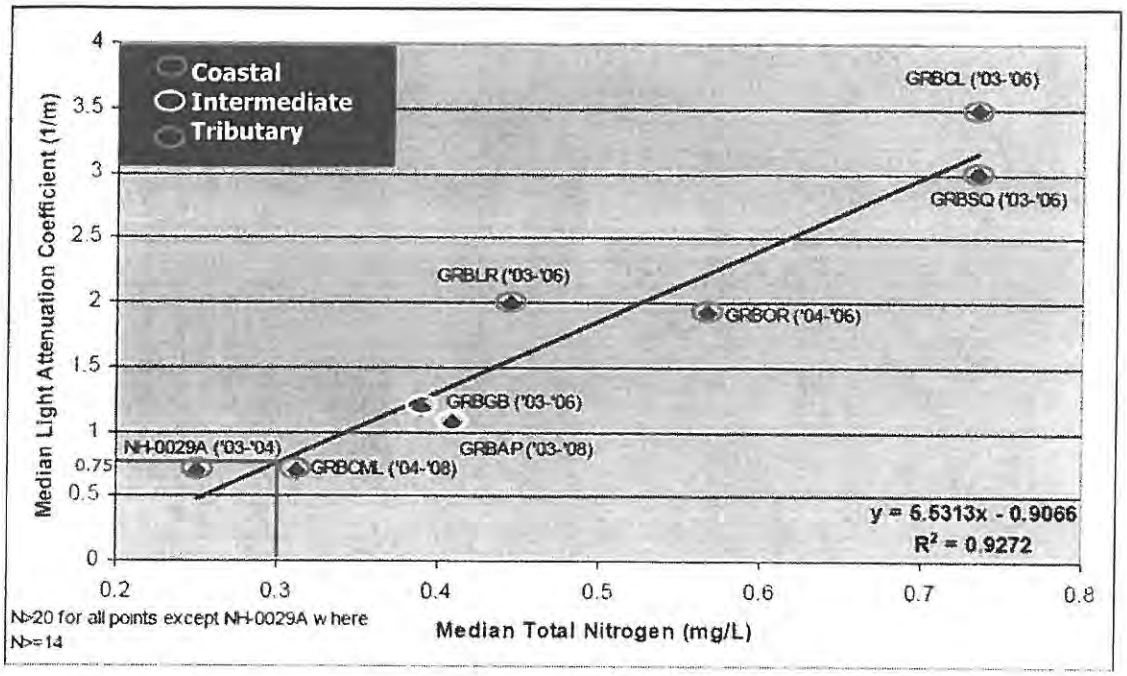
Figure 17: Relationship between Nitrogen and Chlorophyll-a Concentration: at Trend Stations



This regression does not provide any of the "proof" claimed by DES, and as discussed below, has gross methodological flaws. For a regression analysis to be scientifically defensible, confounding factors that influence the response variable (chlorophyll-a) must be controlled so that the stressor variable (total nitrogen) is the only factor (or at least the primary factor) influencing the response. DES did not considered any confounding factors when it prepared this simple regression. Consequently, all that can be determined from this analysis is that chlorophyll-a levels and total nitrogen levels co-vary. Such omission of confounding factors leads to what are formally called in the statistics literature "spurious correlations."[5]

If the data are re-plotted and classified according to biotype it is readily apparent that the observed light attenuation response reflects the hydrologic conditions of the monitoring station. The apparent relationship between light attenuation and TN is an artifact caused by the concurrent decrease in TN concentration caused by dilution with the tides. Virtually all of the regression evaluations presented in the Criteria Document plot data from highly different systems (riverine, bay, ocean) without accounting for the many factors that make these systems respond differently. Such evaluations are not scientifically defensible, are not accepted within the scientific community and yield unreliable results.

[5] Pearl, J. 2000. Causality: Models, Reasoning and Inference, Cambridge University Press.



Dissolved Oxygen Impact Analyses

The Criteria Document presented several simple regressions relating dissolved oxygen levels to chlorophyll-a concentration (Figure 26) and total nitrogen (Figure 29). In Figure 26, the minimum and maximum reported dissolved oxygen concentrations are plotted against the 90th percentile concentration of chlorophyll-a in the various Assessment Zones of the estuary. The Criteria Document claims that these regressions clearly show both a decrease in the minimum D.O. and an increase in the maximum D.O. with increasing chlorophyll-a.[6] This regression evaluation is unreliable for several reasons. First, as with other graphs, it combines results from hydrologically distinct areas, which has no basis in proper ecological data assessment. Many factors influence D.O. and it is certain that these factors are not uniform among all of the assessment zones and seasonal data (e.g., temperature, salinity, time of sampling). Secondly, the supposed influence of algal level on minimum D.O. yields a very flat response, confirming that nutrients cannot be the primary factor influencing the response. Consequently, nutrient control cannot materially improve water quality with regard to attainment of the D.O. criterion. Finally, Figure 26 implies that the diurnal range in D.O. varies from 7 – 12 mg/L for chlorophyll-a ranging from 2 – 17 µg/L. Modeling estimates using well calibrated models predict a diurnal D.O. range of only 1 – 3 mg/L for such a narrow range of algal growth. Consequently, some other unconsidered factors must contribute significantly to the observed results, not TN.

[6] It is not apparent that this graph is even plotting the D.O. condition occurring when the 90th percentile chlorophyll-a concentrations occurs. If this is not the case, the entire relationship is a statistical fabrication based on unrelated information.

Figure 26: Relationship between Dissolved Oxygen and Chlorophyll-a in Assessment Zones

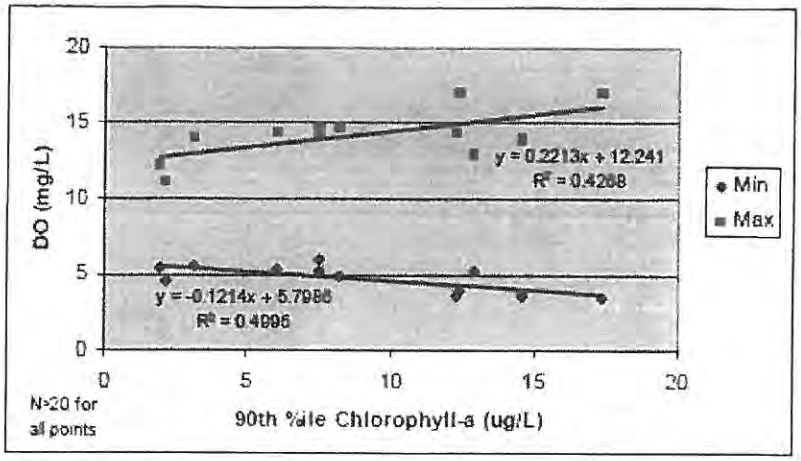


Figure 29 presents minimum dissolved oxygen at the Trend Stations in relation to median total nitrogen. This type of analysis has no basis in the literature or any published method of acceptable DO impact assessment. TN does not have a direct effect on dissolved oxygen and attempting to relate these two parameters is not accepted within the scientific community. Rather, DES must first show the relationship between TN and chlorophyll-a and then show the relationship between chlorophyll-a and D.O. If this is done by comparing Figure 17 and Figure 26, it shows a very minor influence of TN on minimum D.O. However, the regression in Figure 29 suggests a very significant influence of total nitrogen on minimum D.O. This discrepancy is a clear indication that these regression analysis are producing diametrically opposed results.

Figure 29: Relationship between Dissolved Oxygen and Nitrogen at Trend Stations

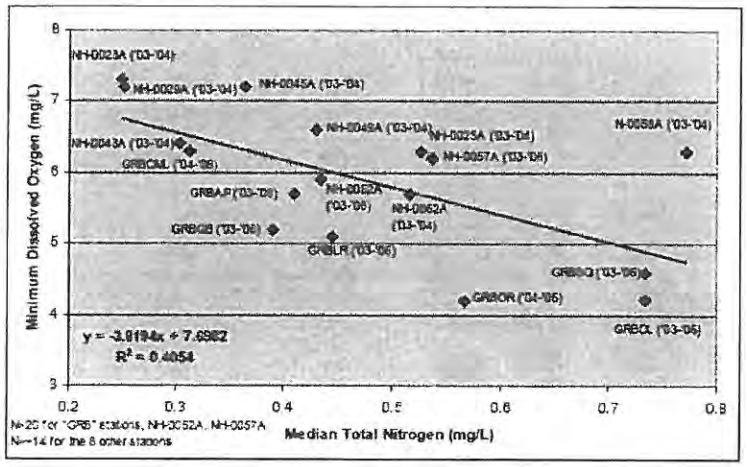
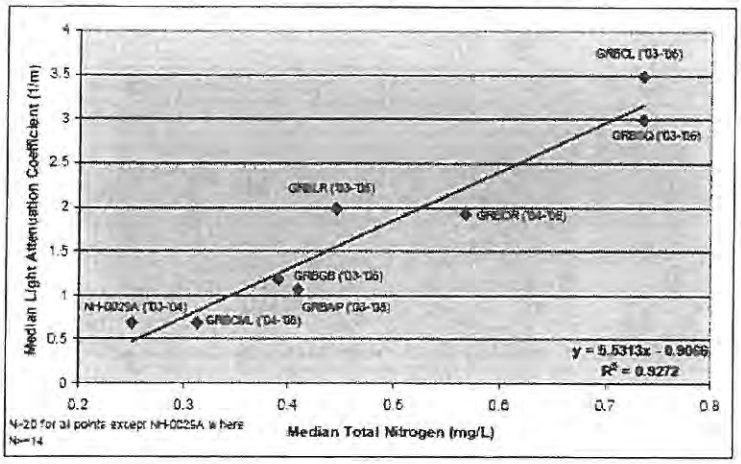


Figure 39 from the Criteria Document presents a regression of the measured light attenuation coefficient versus median total nitrogen at the Trend Stations. Based on this regression analysis, and targeting light penetration depth to support eelgrass populations, DES established a TN criterion of 0.3 mg/L. As with the other regressions, light attenuation is influenced by many other factors (e.g., color, turbidity) that were not

considered when the data for all the Trend Stations were pooled to develop the regression. As a result, the analysis is not scientifically defensible. However, other data are available to confirm that this regression is only an artifact of the analysis. The data presented in Figure 13 show that median algal levels vary from about 1 – 7 µg/L through the system. These concentrations cannot physically cause the change in transparency suggested in Figure 39. Moreover, an independent study on the factors influencing transparency determined that chlorophyll-a is only a minor factor. (Morrison et al. 2008) Therefore, TN cannot cause the change in transparency presented in Figure 39.

Figure 39: Relationship between Light Attenuation Coefficient and Total Nitrogen at Trend Station:



The fundamental errors common to all of these analyses are:

1. The analyses combine data sets from greatly different physical settings; this is a simply not acceptable.
2. The predicted impacts from algal growth on transparency and DO are physically impossible, but that reality was not recognized by the document author.
3. None of the co-varying or confounding factors that must be considered to allow such regression analyses to produce reliable results were conducted.
4. The results are directly at odds with published State of the Estuary reports and tributary assessments confirming that TN has not caused material changes in algal growth nor is it controlling minimum DO, verifying these analyses have no connection to reality in this system.

The Criteria Document discusses the work of Morrison et al., 2008 (at 61) which confirmed that algal growth was a minor component affecting system transparency – as would be expected given the low algal growth in the system. That analysis confirmed that color from the tidal rivers was the main factor limiting light throughout the system. Color is NOT a factor influenced by the total nitrogen inputs to the system but is a natural condition occurring in certain watersheds throughout the country. The steady improvement in transparency through this system is most readily explained by dilution of color inputs from the tidal rivers – not any TN influence on excessive algal growth.

Likewise, with respect to system D.O., the Criteria Document (at 51) indicates that low D.O. in the Lamprey River is documented to be caused by the system hydrodynamics. However, this factor is nowhere assessed in any of the D.O.-related evaluations. Thus, it is clear that the report's conclusions based on these graphs are not scientifically defensible and fail to conform to even basic principles of environmental data analysis (i.e., to draw inferences from ecological responses to pollutants (such as nutrients), causal relationships and confounding factors must be identified and controlled in the assessment). This is a strict requirement to ensure that the analysis does not become confounded by factors unrelated to the variable of concern.[7]

Where complex and second order effects are involved, which may be controlled by a host of factors unrelated to nutrients (such as transparency and dissolved oxygen), the analysis must account for the other factors to demonstrate that the parameter of concern (in this case nutrients) is the parameter controlling the system response. No treatise accepts the position that it is proper to plot TN or chlorophyll a versus an instream D.O. concentration or measurement of transparency to demonstrate a scientifically defensible causal relationship. D.O., in particular, is easily affected by a dozen chemical, physical and biological factors that interact to cause a particular response.[8] Algal growth may affect dissolved oxygen via two routes: (1) diurnal changes due to plant photosynthesis and respiration and (2) creation of additional oxygen demand through cell death (e.g., sediment oxygen demand or "SOD"). However, neither of these factors are assessed. At a minimum, measurements of SOD could have confirmed whether algal growth is having any significant effect on this component. Likewise, transparency is controlled by four main factors: water, color, non-algal turbidity, and algal growth. There is no direct relationship between TN and transparency. Any regression showing such a relationship must first demonstrate the connection between transparency and chlorophyll-a, but no such relationship was provided in the Criteria Document.

Unless this is confirmed and quantified, the other factors known to be changing between the locations due to system hydrodynamics and differing external inputs could completely explain these graphs.[9] Such a sub-system response analysis would have provided the necessary level of confirmation that reducing TN levels will have a

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[7] It is a basic principle of environmental assessment and water quality criteria development that tests and evaluations are run under stable (steady state) conditions to ensure that the effect of the parameter of concern, and not some other changing variable, is occurring. The graph present a vision of "single parameter ecology" which is a uniformly rejected theory of data and ecological impact assessment.

[8] Thomann, R.V., Mueller, J. A. 1987. Principles of Surface Water Quality Modeling and Control. Harper-Collins; Chapra, S.C. 1997. Surface Water Quality Modeling, McGraw-Hill.

[9] HydroQual (2012) demonstrated that algal levels in the Squamscott River were heavily influenced by the discharge of algae from the Exeter lagoon system. The average impact on algal levels was approximately 6 ug/l. Since these algae do not grow in the system, it was totally inappropriate to plot data from the Squamscott River along with other tidal river algal levels and attribute those changes to TN inputs. As shown in Figure 16 (average monthly chlorophyll a levels for three system locations) the average algal in the Squamscott River (at Chapman's landing) ranges from 10- 14 ug/l June to September. Approximately 50% of this algal growth appears to be an artifact of the Exeter discharge. Eliminating this artifact would have resulted in a graph demonstrating little difference in algal growth between this tidal river and Adams Point in Great Bay. This would likely have had an even greater impact on Figure 17 given the importance of the Squamscott River data to the regression line.

demonstrable benefit to improving D.O. and transparency. At this point, the only thing that this analysis demonstrates is that as one moves from the tidal rivers to the ocean, minimum D.O. levels increase and transparency improves. That is a thoroughly unremarkable finding that would apply to almost any estuarine system since transparency is typically better and D.O. concentrations less variable in the ocean but poorer (often naturally) in the tidal rivers due to marsh and other watershed/system hydrodynamic influences.

In summary the analysis presented in the document entitled "Numeric Nutrient Criteria for the Great Bay Estuary" (2009) are (1) not based on methods generally accepted by the scientific community, (2) are contrary to the methods published in dozens of treatises on this topic (3) utilize obviously incorrect and physically impossible relationships attributed to algal growth and nitrogen influences and (4) are so thoroughly confounded and unexplained as to render them worthless for the purposes of numeric nutrient criteria development.

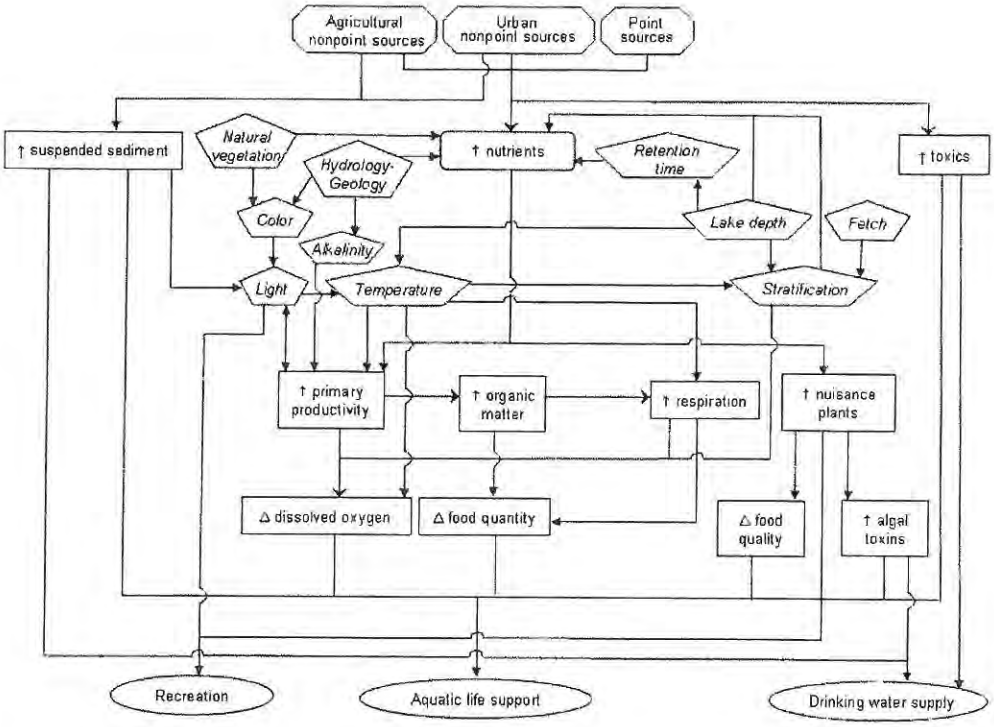
Acceptable Scientific Methods Governing Use and Application of Stressor-Response Methodologies

The following provides additional information regarding the degree of analysis necessary to allow this type of "stressor-response" assessment to be considered scientifically defensible and useful in nutrient criteria development.

The proper use of statistical methods to develop scientifically defensible nutrient criteria has been a highly controversial subject. In 2008, EPA began to apply regression analyses in an effort to set nutrient endpoints for use in TMDLs in lieu of site-specific modeling evaluations. At that time, I participated in an effort to get these methods reviewed by EPA's Science Advisory Board.

In August 2009, EPA released a draft Guidance document on use of the "stressor – response" approach to derive numeric nutrient criteria that recommended simply plotting the nutrient level versus various ecological endpoints (e.g., macroinvertebrate indices) under the assumption that the nutrients present in the water column were the cause of the change in the response variable (e.g., invertebrate index).[10] The fundamental scientific error impacting the validity and scientific reliability of this approach was that it presumed, rather than demonstrated "cause and effect." It is widely understood in the scientific community that response variables such as invertebrate indices and chlorophyll a level are impacted by a broad range of factors that may co-vary with nutrient levels. Moreover, as nutrients themselves are not toxics, one would, in general, need to first demonstrate that the nutrient level caused some change in plant growth that then caused a change in habitat and other water quality factors. This fact is reflected in an example "mechanisms" diagram contained in EPA's final stressor-response guidance, below.

[10] Empirical Approaches for Nutrient Criteria Derivation (Science Advisory Board Review Draft) USEPA August 17, 2009.



EPA 2010 Stressor-Response Guidance at 10

Due to the numerous technical concerns voiced over developing nutrient criteria using these simplified methods, EPA used its Science Advisory Board (SAB) to conduct an independent peer review in September 2009 (three months after the 2009 Numeric Nutrient Criteria document was finalized by New Hampshire DES). Expert's from across the country were brought together to hear testimony and review the validity of EPA's approach. The SAB review clearly determined that the use of these methods for nutrient criteria development were not "scientifically defensible" unless major revisions and restrictions were incorporated to ensure that the statistical relationships reasonably reflected what was actually occurring in the receiving water.[11] In any event, the SAB determined that EPA's recommended approach to employing various simplified regression approaches to predict complex ecological response to nutrients were not scientifically defensible for a series of reasons including:

- The methods do not demonstrate "cause and effect";
- The methods failed to consider confounding and co-varying factors such as habitat and physical/chemical differences independently affecting the response variables;
- The methods failed to address first-order impacts (plant growth) that must precede any more complex impacts; and
- The statistical methods, by themselves, do not verify that the changes in condition

[11] SAB Ecological Processes and Effects Committee, April 27, 2010 Final – Review of Empirical Approaches for Nutrient Criteria Derivation.

are biologically significant.

In response to these criticisms, EPA significantly revised the draft stressor-response document and republished the methods in November 2010.[12] That document largely reflected the technical recommendations of the Science Advisory Board. Most importantly, EPA's final document specified that the methods would only be considered sufficient if data are available on "causal variables, response variables and confounding factors" (EPA Guidance @ 4). Absent such information, a "scientifically defensible' relationship generally cannot be developed. Ensuring that data are properly "classified" is a key factor for ensuring the evaluated relationship reflects nutrient impacts and is not unduly impacted by other changing ecological (confounding or co-varying) conditions (EPA Guidance @ 55, 56) Consequently, EPA notes that "many confounding factors must be considered when estimating the effects of nitrogen/phosphorus on a measure of aquatic life in streams (e.g., macroinvertebrate index)." (EPA Guidance @ 11) This concept applies also to endpoints such as D.O. and transparency that are not directly influenced by nutrients. Consequently, EPA includes extensive discussion on the importance of properly conducting the "confounding factors" analysis and further indicates that when parameters co-vary (such as nutrients, color, turbidity, solids, algal levels) it is critical to determine which parameter is actually controlling the response variable. (EPA Guidance @ 26-29).

The following quotes from EPA's guidance document further illustrate the methodology that must be used and factors that must be considered to ensure a "stressor-response" assessment is scientifically defensible:

Recommendations from 2010 USEPA Stressor-Response Guidance

Need to ensure Data Evaluation is Only Conducted for Similar Ecological Settings

[I]n the first step of the analysis, classification, the analyst attempts to control for the possible effects of other environmental variables by identifying classes of waterbodies that have similar characteristics and are expected to have similar stressor-response relationships. Classifications for a stressor-response analysis are typically based on statistical analysis; however, existing classes can be used as a starting point. The most widely used existing classification for analyses of nutrient data are the fourteen national nutrient ecoregions.

(EPA Stressor-Response Guidance at 32)

Classifying data is a key step in analyses of stressor-response relationships because the expected responses of aquatic ecosystems to increased N and P can vary substantially across different sites.

(EPA Stressor-Response Guidance at 55)

[12] Using Stressor response Relationships to Derive Numeric Nutrient Criteria, USEPA November 2010.

The first step for classifying data is to identify variables to include in the analysis that will help improve the accuracy and precision of estimated stressor-response relationships.

* * * * *

[E]xploratory data analysis can indicate other variables that should be included in the classification analysis. In particular, other variables that are strongly correlated with the stressor variable or with the response variable should be evaluated for inclusion in classification analysis.

(EPA Stressor-Response Guidance at 56 – 57)

The Impact of Confounding and Co-varying Factors Must be Assessed

[M]any confounding variables must be considered when estimating the effects of nitrogen/phosphorus pollution on a measure of aquatic life in streams (e.g., a macroinvertebrate index).

(EPA Stressor-Response Guidance[13] at 11)

[W]hen the effects of a possible confounder are not controlled, the relationship estimated between the nutrient variable and the response variable may partially reflect the unmodeled effect of the confounding variable.

(EPA Stressor-Response Guidance at 65)

The possible influences of confounding factors are the main determinants of whether a statistical relationship estimated between two variables is a sufficiently accurate representation of the true underlying relationship between the two variables. ...

Before finalizing candidate criteria based on stressor-response relationships, one should systematically evaluate the scientific defensibility of the estimated relationships and the criteria derived from those relationships. More specifically, one should consider whether estimated relationships accurately represent known relationships between stressors and responses and whether estimated relationships are precise enough to inform decisions.

(EPA Stressor-Response Guidance at 65)

Beyond the possible effects of confounding variables, one should also consider whether assumptions inherent in the chosen statistical model are supported by the data.

(EPA Stressor-Response Guidance at 67)

The 2009 Numeric Nutrient Criteria document clearly did not meet any of these pre-requisites for applying simple linear regression analysis in the development of numeric

[13] EPA. November 2010. Using Stressor-response Relationships to Derive Numeric Nutrient Criteria. EPA-820-S-10-001.

nutrient criteria. The findings presented in the Criteria Document are based on procedures that the SAB rejected, which is not surprising given the timing of its development (pre SAB).

A cursory review of the 2009 Numeric Nutrient Criteria Document confirms that is did not rely on accepted, scientifically defensible methods. The evaluation errors were extensive and included virtually every major factor that EPA has identified in its final Stressor-Response guidance document, including:

- Combining data from different biotypes that affect D.O. and transparency;
- Failing to consider co-varying pollutants and parameters;
- Failing to evaluate key confounding factors;
- Presuming that the pollutant was the cause of the changing system response parameter when the available data confirmed it was not; and,
- Failing to assess the accuracy and reliability of the suggested relationships based on data and studies from specific areas within the Great Bay system.

Is the Department's use of simplified regression methods scientifically defensible and consistent with accepted scientific methods?

The short answer is clearly - no. The key to the proper/defensible use of the stressor-response methods lies in addressing the factors that could otherwise explain the relationship being assessed. Since both DO and transparency are affected by numerous ecological, chemical and biological factors, any valid defensible assessment must reasonably account for these factors, prior to reaching any conclusion that nutrients are the primary cause of changing transparency and D.O. in this system. Both the SAB and EPA itself have identified the prerequisites that must be met to utilize these methods to produce reliable and scientifically defensible results. The Department has plainly failed to address the confounding factors and similar system prerequisites and has simply ignored other admonitions contained in the SAB report and the applicable federal guidance regarding proper use of this method.

Moreover, as an expert in the field of environmental impacts and effects analysis, I am aware of no treatise that would support the position that an acceptable analysis may plot data from multiple habitat types with major hydrologic difference on the same graph in assessing complex ecological phenomena. Consequently, the estuary-wide nutrient criteria generated by using the approach described in the Department's technical report is not scientifically reliable, not scientifically defensible, not a method generally accepted within the scientific community and has produced a result that is, consequently, demonstrably incorrect.

I swear that the forgoing statements are true to the best of my knowledge.

Steven C. Chapra, Ph.D., F.ASCE

STATE OF MASSACHUSETTS

COUNTY OF MIDDLESEX

Signed and sworn to before me on this 27TH day of February, 2013 by Steven C. Chapra.

Notary Public

My Commission Expires: August 10, 2018

(Notary Seal)

NANDI P. BYNOE
Notary Public
Commonwealth of Massachusetts
My Commission Expires
August 10, 2018

Notarized this Day, 27 FEB 2013