NPDES No. MA0100897

Taunton Wastewater Treatment Plant - Response to Comments

On March 20, 2013, the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) public noticed a Draft Permit (MA0100897) for the Taunton Wastewater Treatment Plant. The 2013 public notice superseded a previous draft permit that was placed on public notice from February 23 to March 24, 2007; as stated in the 2013 Fact Sheet the 2013 draft permit was a comprehensive revision of the 2007 draft and comments received in 2007 were superseded by the new draft permit.[1] Only comments received in the 2013 public comment period are addressed in this document.[2] The public comment was extended once at the request of the City and closed on June 17, 2013.

EPA and MassDEP received comments from the City of Taunton, the Taunton River Watershed Association and Mass Audubon (joint comments), the Nature Conservancy, Save the Bay, the National Park Service, the Upper Blackstone Water Pollution Abatement District, the Town of Bridgewater, Mr. Tim Watts, and the Rhode Island Department of Environmental Management. The following are EPA and MassDEP's responses to all significant comments received, descriptions of any changes made to the public-noticed permit as a result of those comments, and descriptions of any other changes made in the final permit.

EPA also received a request for reopening of the public comment period on September 16, 2014 from Hall & Associates on behalf of the City of Taunton. Pursuant to 40 C.F.R.

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[1] EPA notes that the comments on the 2007 draft permit were considered in the decision to issue a new draft permit. The new draft permit incorporates an entirely new analysis of the permit conditions and comments submitted in 2007 are superseded by the issuance of the new draft permit;

[2] On July 22, September 16, and November 25, 2014, and January 8, February 17, and March 20, 2015, Hall & Associates on the behalf of the City of Taunton emailed to EPA "supplemental comments" on the Draft Permit. These "supplemental comments" were submitted long after the close of the public comment period and are therefore not timely, and EPA does not respond to those comments here. The City's contention that "these supplemental comments should be considered timely filed" because the supplemental information "was not available at the time the public comment period closed and moreover, . . .the Agency has not issued a final permit," is without merit. Even if the comments are based on information unavailable during the public comment period, this does not render them timely. Under applicable federal regulations, EPA is only required to respond to materials submitted during the public comment period. See 40 C.F.R. § 124.17(a)(2). "That is, within the interval of time between the beginning and end of the public comment period, not before, not after." *In re Avon Custom Mixing Servs., Inc*., 10 E.A.D. 700, 706 (EAB 2002); *see also, In re City of Phoenix, Arizona Squaw Peak and Deer Valley Water Treatment Plants*, 9 E.A.D. 515, 524-31 (EAB 2000); *In re Steel Dynamics, Inc*., 9 E.A.D. 165, 194 n.32 (EAB 2000) ("Permitting authorities are under no obligation to consider comments received after the close of the public comment period."). The City had the opportunity to comment on the revised draft permit beyond the ordinary 30-day period required by regulation and submitted lengthy and voluminous comments on the permit (the City's original comment document is over 600 pages including attachments). The "supplemental comments," which the Region has reviewed, relate generally to the subject matter of the City's timely submitted comments, which have been duly considered, with the exception of the new, purely legal argument presented in the February 17, 2015 submittal regarding EPA's authority with respect to the permit flow limit and the several new issues raised in the March 20, 2015 submittal. Given the foregoing, and the fact that the existing permit is long expired, the evidence of ongoing water quality impairments, and the need in EPA's assessment for timely imposition of more stringent nutrient controls, EPA rejects the "supplemental comments" as untimely and accordingly does not respond to them in this Response to Comments.

124.14, EPA finds that such a reopening would not expedite the decision-making process and that the public comments do not appear to raise substantial new questions concerning the permit, and therefore denies the request.

The City of Taunton submitted comments by letter dated June 18, 2013, consisting of three parts: (A) A cover letter from Mayor Thomas C. Hoye, Jr.; (B) Attachment 1: Comments Submitted by the City of Taunton; and (C) Attachment 2: Comments Submitted by Hall & Associates on Behalf of the City of Taunton.

A. City of Taunton cover letter from Mayor Thomas C. Hoye, Jr

Comment A1. The City of Taunton ("Taunton" or the "City") submits the comment herein on the proposed modification of Taunton's NPDES Permit No. MA0100897 that were published for comment by EPA on March 20, 2013. The deadline for filing comments was extended at the request of the City, by EPA, to June 20, 2013. This new nitrogen limit for the Taunton permit is reflective of EPA's and the Massachusetts Department of Environmental Protection's (MassDEP) concern about nutrient loadings to the Taunton River and ultimately Mount Hope Bay. Taunton shares the concern of the federal and state governments about the health of Mount Hope Bay and acknowledges that it and other point sources discharge nitrogen from its wastewater treatment facilities (WWTF) into the Taunton River. Taunton also recognizes that there are significant non-point sources of nitrogen contributing to the Taunton River Watershed. We appreciate that upgrades to the Taunton WWTF, and others, may be necessary to ensure compliance with applicable standards.

> **Response A1.** EPA appreciates the recognition by the City that nutrient loadings from wastewater treatment facilities and other sources are impacting the health of Mount Hope Bay and the Taunton River, and that upgrades to the Taunton WWTF may be necessary for compliance with water quality standards. In developing the draft permit EPA performed a thorough analysis of the available data, including the contribution of point and nonpoint sources, and established loading targets and permit limits that will ensure the health of this system. EPA looks forward to working with the City as it comes into compliance with these requirements.

Comment A2. The comments filed today by the City indicate that it is not possible to reliably identify the degree of nitrogen control required to ensure compliance with applicable standards using the methodology employed by EPA. Many changes in plant performance have been implemented in this and other basins since 2004/2005. Moreover, the conditions governing dissolved oxygen concentrations in Mount Hope Bay differ significantly from those in the Taunton River. This reality impacts the degree to which the City and other municipal wastewater treatment plants discharging into Taunton River must reduce their nitrogen loading. The question is whether the nitrogen limit included in the draft permit (a monthly average concentration of 3 mg/l) is supported by the current data and analyses. The data used in the Fact Sheet for the Draft NPDES Permit is from 2004-2005. Since that time, water quality in Mount Hope Bay has

improved markedly due to the CSO deep tunnel project in Fall River, the construction of cooling towers at the Brayton Point Station and improvements to some upstream wastewater treatment plants. The beneficial effect of these changes on the Taunton River and Mount Hope Bay is apparent in more recent data, but was not assessed by EPA in rendering this permit decision. Therefore, more recent data should be used for analysis of nitrogen loading for the WWTP point source discharges to the Taunton River.

Response A2. EPA has carefully considered the information provided in the comment and has concluded that the comments do not raise issues that would lead EPA to change its conclusions regarding the nitrogen limit. The specific criticisms of EPA's analysis are incorrect in that they rely on selective use of data (see Responses C23 and C24); comparison of dissimilar datasets (see Response C13); misleading analyses that adjust some, but not all, relevant parameters (see Response B4); and mischaracterization of relevant literature (see Response C18). EPA relied on the best available data (the only comprehensive dataset, collected in accordance with a MassDEP approved program) in performing its analysis.

EPA is encouraged that the investments made in CWA compliance by the Brayton Point Power Plant, the City of Fall River, and the City of Brockton, among others, are perceived to have resulted in water quality improvements in Mount Hope Bay. However, monitoring of specific eutrophication-related indicators indicate that this specific aspect of Mount Hope Bay water quality issues has not been solved. While chlorophyll concentrations were somewhat lower in 2010-12 than in the prior four years, see Comment C29, they were still above the levels indicative of eutrophication impacts, and 2013 concentrations were among the highest ever recorded. See Response C29. Dissolved oxygen (DO) monitoring also indicates continued impacts of algae blooms on DO (supersaturated conditions at surface and bottom DO depletion) and violations of the DO water quality standards. See Responses C12 and C29. This is not unexpected; the specific water quality improvements implemented by Brayton Point and the City of Fall River would not be expected to have a substantial impact on eutrophication in this system, and while there have been load reductions since 2004-05 they are not as substantial as the comments claim. See Response C13. EPA's load analysis predicts that the load reductions to date would not be sufficient to control eutrophication, and that has proven to be the case, as adverse nutrient-related water quality impacts continue based on the limited more recent data.

EPA did in fact asses more recent data in its original analysis, see Fact Sheet at 25-26, and concluded that water quality violations have continued consistent with the prediction of EPA's loading model. EPA did not base its baseline analysis on the more recent available data because the recent data do not provide a comprehensive dataset suitable for analysis of nitrogen loading for the WWTP point source discharges to the Taunton River Estuary. The 2004-06 dataset, which was the product of a monitoring program approved by MassDEP and consistent with Massachusetts Estuaries Program (MEP) procedures, includes estuarine monitoring for both nutrients and eutrophication indicators (DO and

chlorophyll-a) at 22 stations within Mount Hope Bay and the tidal rivers contributing to the bay, while the more recent estuarine water quality monitoring for DO and chlorophyll-a is limited to a single site in Mount Hope Bay. The 2004-06 dataset also includes nutrient monitoring at stations in the freshwater sections of the Taunton River and four other contributing streams, which can be used in combination with flow records to determine river loadings to the estuary. In contrast the recent river loading sampling is limited to a single site in the Taunton River Estuary, is not directly comparable to freshwater sampling and is limited in parameters monitored.

In sum, EPA rejects the comment's suggestion that it must reanalyze the entire system rather than use the 2004-05 baseline because there have been some load reductions and other water quality projects since that time, even where (1) model predictions indicate eutrophication impacts will continue; (2) the available evidence indicates that EPA's predications are correct and eutrophication impacts are in fact continuing; and (3) such an update would require initiation of a new multi-year intensive monitoring effort similar to that done in 2004-06, delaying permit issuance for a minimum of two years. Nitrogen limits consistent with the Fact Sheet analysis are necessary to ensure that water quality standards are met and are included in the Final Permit.

Comment A3. The City has committed to begin promptly planning for an upgraded WWTF that will achieve appropriate total nitrogen concentrations in its discharge. A "Draft Environmental Impact Report and Final Comprehensive Wastewater Management Plan" was submitted to MassDEP in July 2009. Although discussions of nitrogen removal technologies were presented in the plan, it was never finalized as permit limitations for Total Nitrogen had not been developed by regulating authorities. Work to complete the plan will commence as soon as all comments regarding the draft NPDES permit are considered and the final permit is issued.

Response A3. EPA acknowledges the City's commitment to begin planning but notes that other facilities in the watershed have continued their planning process prior to issuance of a final permit and that the City has had notice of the expected permit limits since at least 2012. The City should be prepared to act expeditiously to finalize its plan so that upgrades can be completed within a reasonable schedule of compliance. See Response B8 regarding compliance schedules.

(B) Attachment 1: Comments Submitted by the City of Taunton

Comment B1. Inappropriate Interpretation of the Massachusetts Narrative Criteria
There remains significant uncertainty with respect to appropriate numeric nutrient criteria that should be used to establish discharge limits for treatment facilities in the Taunton River, Mount Hope Bay, and Narragansett Bay systems. The MassDEP and the Rhode Island Department of Environmental Management have not adopted numeric nutrient criteria for these surface water bodies and existing Surface Water Criteria in both states

rely on narrative criteria, only. (See comments by Hall & Associates, provided in Attachment 2, also addressing this issue).

To include the proposed nitrogen limit in the draft NPDES permit, EPA has relied on interim, unadopted numeric criteria serving as a translator of the narrative criteria established in State's Surface Water Quality Standards. The numeric criteria used were presented in an interim report (Massachusetts Estuaries Project – Site Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators) prepared by the School for Marine Science and Technology at the University of Massachusetts Dartmouth. However these numeric thresholds, which were developed for three Cape Cod embayments in the Town of Falmouth, MA, were never subject to public comment and may not be applicable to the Taunton River, Mount Hope Bay and Narragansett Bay.

Relying on data from dissimilar water bodies brings a high level of uncertainty with respect to the numeric criteria needed to protect the Taunton River, Mount Hope Bay and Narragansett Bay. The report states: "it is not possible at this time to put quantitative nitrogen levels on each Water Quality Class. In fact, initial results of the Massachusetts Estuary Project (Chatham Embayment Report 2003) indicate that the total nitrogen level associated with a particular ecological response can vary by over 1.4 fold". The report goes on to conclude that "before final criteria are established, several habitat quality classification issues need to be resolved, including, but not limited to: variation in multiple indicators, embayments versus salt marsh habitat, upper versus lower embayment thresholds, and stable versus transitional habitat quality." Since such activities have not occurred, reliance on the Critical Indicators report to classify the Taunton River as nutrient impaired or to set ambient water quality targets is inappropriate and unsupported.

> **Response B1.** EPA disagrees with the characterization of its permit limit analysis. As stated in the comment, the relevant water quality standards for nutrients in the receiving waters for Taunton's discharge include the Commonwealth's narrative nutrient water quality criteria. In setting the effluent limits in the draft permit EPA followed the process established in 40 CFR 122.44(d)(vi)(A), under which EPA:
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> > Establish[es] effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Such a criterion may be derived using a proposed State criterion, or an explicit State policy or regulation interpreting its narrative water quality criterion, supplemented with other relevant information which may include: EPA's Water Quality Standards Handbook, October 1983, risk assessment data, exposure data, information about the pollutant from the Food and Drug Administration, and current EPA criteria documents.

EPA's reliance in part on the interim report, Howes et al, *Massachusetts Estuaries Project – Site Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators* (2003) ("*Critical Indicators Report")*, is consistent with the directive of 40 CFR § 122.44(d)(vi)(A). That regulation permits the use of a range of "relevant information." While MassDEP has not adopted the *Critical Indicators Report* as a specific policy, it has afforded the document technical and scientific weight, has explicitly relied on the report in numerous Massachusetts Total Maximum Daily Load (TMDL) Reports interpreting the narrative nutrient criterion, see, e.g. *Final West Falmouth Harbor Embayment System TMDLs for Total Nitrogen* (2007) at 4; *Final Pleasant Bay System TMDLs for Total Nitrogen* (2007) at 4, and refers to the critical indicator process in the 2012 *Massachusetts Consolidated Assessment and Listing Methodology* ("*2012 CALM*"). EPA therefore properly considered this document as containing "relevant information", along with the other information sources cited in the Fact Sheet including EPA guidance documents, national and site specific studies of nutrients and eutrophication, and comparison to other state materials. EPA notes that 40 CFR § 122.44(d)(vi)(A) does not limit "relevant information" to documents that have undergone a public comment process; however, the various TMDL Reports and *2012 CALM* were subject to public comment, as was Taunton's draft permit.

EPA agrees that the specific numeric nitrogen thresholds established for the three Cape Cod embayments in Falmouth, MA were not intended to be directly applicable to the Taunton River estuary and Mount Hope Bay, and EPA did not simply apply those thresholds in establishing the effluent limit for the Taunton WWTP. Rather, EPA applied the process set forth in that document in assessing the condition of the receiving water in terms of eutrophication indicators and deriving site-specific nitrogen targets for the receiving waters impacted by the Taunton discharge. EPA also compared the results from the Taunton analysis to the site-specific criteria reported in the *Critical Indicators Report* and subsequent TMDLs (along with criteria applied in other states) to gauge whether the results fell within the same general zone of those values. They did, which provided EPA additional assurance that the target it derived for the Taunton River did not markedly differ from similarly (though of course not identically) situated water bodies.

EPA's approach is consistent with the language from the *Critical Indicators Report* quoted in the comment. The *Critical Indicators Report* states that the data therein are not sufficient to establish numeric criteria for "each Water Quality Class" (i.e. the state classification system for water bodies such as SA and SB) and that further work on habitat classification is necessary before "final criteria" (i.e. numeric nitrogen criteria promulgated as part of the state's water quality standards) can be established. This language describes the obstacles to establishing statewide numeric nutrient criteria for estuaries. The document supports the type of site-specific analysis performed by EPA; indeed the *Critical Indicators Report* contains site-specific analyses for several embayments and the

process therein has been used in multiple TMDLs. EPA's reliance, in part, on this report in its determinations under 40 C.F.R. § 122.44(d) was appropriate and consistent with state approaches. See also Response C4.

Although EPA acknowledges some unavoidable level of scientific and technical uncertainty in this permitting action, the existence of uncertainty does not excuse EPA from its obligation to set permit limits where a discharge "causes, has a reasonable potential to cause, or contributes to an excursion above a narrative criterion." 40 CFR § 122.44(d)(1)(i). EPA also agrees that there is some uncertainty with respect to the precise numeric water quality criterion for nitrogen that "will attain and maintain applicable narrative water quality criteria and fully protect the designated use" as required pursuant to 40 CFR § 122.44(d)(1)(vi)(A), although such uncertainty is within a relatively narrow zone. As set forth in 40 CFR 122.44(d)(1)(vi):

> Where a State has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority **must** establish effluent limits using one or more of the following options . . ."

This obligation exists even where there is incomplete or uncertain information concerning the precise target that will meet the narrative criterion. As stated by the Environmental Appeals Board:

> The Board has specifically held that "[i]n the face of unavoidable scientific uncertainty, the Region is authorized, if not required, to exercise reasonable discretion and judgment." *In re Dominion Energy Brayton Point, LLC,* 13 E.A.D. 407, 426 (EAB 2007). The federal courts in reviewing Agency decisions have similarly recognized that scientific uncertainty is not a bar to administrative decision making: "We do not demand certainty where there is none. There may be no strong reason for choosing [a particular numerical standard] rather than a somewhat higher or lower number. If so, we will uphold the agency's choice of a numerical standard if it is within a 'zone of reasonableness.'" *Small Refiner Lead Phase-Down Task Force v. EPA,* 705 F.2d 506, 525 (D.C. Cir. 1983) (citation omitted); *see also Hercules, Inc. v. EPA,* 598 F.2d 91, 116-17 (D.C. Cir. 1978). More than three decades ago, the D.C. Circuit aptly described the CWA's balance when confronted with a difficult situation and the obligation to eliminate water quality impairments: ". . . EPA may issue permits with conditions designed to reduce the level of effluent discharges to acceptable levels. This may well mean opting for a gross reduction in pollutant discharge rather than the fine-tuning suggested by numerical limitations. *But this ambitious statute is not hospitable to the concept that the appropriate response to a difficult pollution problem is*

> *not to try at all.*" *Natural Resources Defense Council, Inc. v. Costle,* 568 F.2d 1369, 1380 (D.C. Cir. 1977) (emphasis added) (finding unlawful a rule that would have exempted certain discharges from permitting requirements based on the difficulty in setting limits).

Upper Blackstone Water Pollution Abatement District, NPDES Appeal Nos. 08-11 to 08-18 & 09-04, 14 E.A.D. 577, 606 (May 28, 2010).

Comment B2. Proposed Nitrogen Limits are Unattainable

As stated above, Taunton does not believe EPA has a sound scientific basis to impose a limit of technology nitrogen limit. Even if EPA had sound reason to establish a limit of technology limit, the EPA has insufficient basis to establish that limit at 3 mg/l for several reasons. The first is that limits of technology need to be discussed in the context of a time period. What is achievable on an annual or seasonal average basis is different than what is achievable on a monthly average basis. EPA has inappropriately taken average seasonal limit of technology expectations and applied them as monthly limits. Section VI B. 5 of the Fact Sheet states: "The permit limit is 3.0 mg/l total nitrogen as a seasonal average, and a mass limit of 210 lbs/day….". Attachment D to the Fact Sheet (Page 8) also refers to the Total Nitrogen limit as seasonal and specifically states "The seasonal limit shall be applied on a rolling basis (e.g. the average reported for June shall include May and June of the reporting year as well as July through October of the preceding year)". However, the concentration and mass limits in the permit are identified as monthly averages not seasonal averages. Seasonal (May thru October/6-month rolling average) total nitrogen limit are the more appropriate permit basis.

EPA's Municipal Nutrient Removal Technologies Reference Document (2008, p. 2-80) references several factors that affect nitrogen removal efficiency. One factor that can influence how low the TN can be reduced is the dissolved organic nitrogen (DON) concentration. At this point, the DON concentration in Taunton's wastewater is not known and its impact on water quality is anticipated to be negligible. This will be explored in more depth as part of the Final Comprehensive Wastewater Management Plan. Effluent DON concentrations reported in various literature sources range from 0.4 mg/l to 2.2mg/l with an average concentration of approximately 1.3 mg/l. EPA's reference document also states that "The DON concentration is a critical variable for determining TN standards because the chemicals have limited availability for biological removal". Likewise, this parameter is not shown to have a stimulatory effect on plant growth in the River.

Absent this data, EPA cannot set the standard at the limit of technology with certainty or claim control of DON is necessary to protect the River. In the absence of DON data, EPA should consider a total inorganic nitrogen limit consisting of nitrite and nitrate nitrogen plus ammonia since these are the forms of nitrogen that are biologically available. This concept is further supported by an EPA publication entitled " An Urgent Call to Action Report in the State-EPA Nutrient Innovations Task Group" (August 2009) that discusses technology based limits for nitrogen in terms of nitrate and nitrite, only (see Attachment

1.A). We have included ammonia (ammonium) in the nitrogen standard because of its bio-availability.

Over the past few years, Connecticut communities have had to upgrade treatment facilities with state of the art technology to reduce nitrogen levels to the limits of technology in order to meet the requirements of the Long Island Sound total maximum daily load. The table below is a compilation of the 2010 data from ten of the recently upgraded plants in Connecticut.

Although these plants are producing low total nitrogen concentrations, individual monthly data (maximum month) from April through October indicates that the 3 mg/l limit cannot be achieved at all times. This also holds true for the average monthly concentration over the same April through October period. Setting a permit concentration at the limit of technology, requires a treatment facility to achieve discharge concentrations below that limit. By definition, this cannot be accomplished on a consistent basis and will result in persistent permit violations.

At a minimum, the EPA should consider defining total nitrogen as the sum of nitrite-N, nitrate-N and ammonia. Additionally, the permit limit for total nitrogen should be established as a rolling average seasonal limit over the May through October period.

CONNECTICUT WWTFs 2010 DATA
MONTHLY AVERAGE TOTAL NITROGEN CONCENTRAION (mg/l)

Town	Process	Average		Max. Month
		12-month	Apr. – Oct.	Apr. – Oct.
Branford	4-stage Bardenpho	3.4	3.1	4.7
Cheshire	Denite Filters	1.8	2.0	2.9
Jewett City	Phased Oxidation Ditch	2.3	2.1	3.0
Southington	Trickling Filter/Denite Filter	5.4	5.2	7.7
Suffield	MLE Oxidation Ditch	2.1	1.9	2.9
Stamford	4-Stage Bardenpho	3.5	2.8	3.2
New Canaan	MLE Oxidation Ditch	3.1	2.4	3.1
Milford Housatonic	4-Stage Bardenpho	4.7	4.4	5.1
Westport	4-Stage Bardenpho	2.6	2.1	2.6
Waterbury	4-Stage Bardenpho	4.1	3.7	5.4

* Reference **Attachment 1.B** for complete 2010 data.

Response B2. The comment appears to misapprehend the technology aspect of EPA's permit limit analysis. The permit limit for total nitrogen is not a "technology-based limit" within the meaning of the CWA. It is a water quality based limit and is not based on technological or financial feasibility. 40 C.F.R. § 122.44(d). In allocating the available nitrogen load among the contributing facilities, EPA in its discretion considered a number of factors, including size of facility, proximity to estuarine waters, and the limits of available nutrient-removal

technology to determine an appropriate permit limit for each facility. One possible permitting scenario was to uniformly impose a limit of less than 3.0 mg/l on all facilities. EPA's determination to include limits of 3 mg/l on the largest facilities and slightly higher (5-5.5 mg/l) on the smaller facilities was an appropriate allocation approach that accounted for the relative water quality impact of the various discharges.[3]

In EPA's experience since 2008, dissolved organic nitrogen (DON) has not proven to prevent attainment of a 3.0 mg/l TN permit limit. For example, the TN limits for Wareham, MA and Scituate, MA were increased from 3.0 mg/l to 4.0 mg/l based on issues raised relative to potentially high levels of DON in the discharges that might prevent attainment of the 3.0 mg/l limits and claims that the DON is not as bioavailable as the inorganic forms of nitrogen. The concern that high DON might prevent attainment of a 3.0 mg/l limit has since proven to be unfounded, while concerns with the bioavailability of DON have increased (see below). In 2010, Scituate's effluent TN during the period from April through October averaged 2.7 mg/l (with a maximum monthly average of 4.9 mg/l) and Wareham's TN during the months of April through October averaged 2.8 mg/l (with a maximum monthly average of 5.16 mg/l). See Facility DMR data, available from Envirofacts (www.epa.gov/enviro). Both of these facilities averaged less than 3.0 mg/l TN despite only being required to achieve a limit of 4.0 mg/l.[4]

EPA has considered defining the nitrogen limit in terms of a subset of nitrogen species as suggested in the comment, but has determined that such a definition would not be sufficiently protective as it does not address all the components of nitrogen that contribute to organic enrichment and eutrophication. Consistent with recommendations in EPA's *Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Waters* (2001), because of the recycling of nutrients in the environment it is best to limit total concentrations (i.e. total nitrogen) as opposed to fractions of the total. In addition, recent research has documented that forms of nitrogen considered unavailable for plant growth are substantially more bioreactive than previously thought, further supporting the need to control total nitrogen rather than just the dissolved inorganic components suggested in the comment. (Wiegner et al., (2006); Sedlak et al (2011) (portion of dissolved organic nitrogen (DON) that is not bioreactive is only 10 – 29% of the effluent

[3] When setting water quality based limits EPA is not restricted to the limit of technology; limits lower that a current limit of technology may be set, if necessary to achieve water quality standards. That was not required here, as the load reduction was achievable with limits at or above the limit of technology; however should future information indicate that more stringent limits are necessary (i.e. if nonpoint source reductions are not achieved), future permit limits could be set that are more stringent than the limit of technology.

[4] EPA notes that the City could readily have analyzed its effluent and provided data concerning DON concentrations during the 90 day comment period but chose not to do so, relying instead on a speculative concern that is not supported by the data from other facilities.

DON); Filippino et al., (2010) (between 31% and 96% of the effluent derived organic nitrogen (EON) was removed during biotic bioassays within the first 2 days)).[5]

The City's claim that Connecticut treatment facilities have had to upgrade with "state of the art technology to reduce nitrogen levels to the limits of technology in order to meet the requirements of the Long Island Sound" TMDL is not accurate. The permits, which were consistent with available WLAs for the discharge in EPA-approved TMDLs, set mass limits for these facilities. *See* CTDEP, General Permit for Nitrogen Discharges (2011) http://www.ct.gov/deep/lib/deep/water/municipal_wastewater/2011_2015_nitrogen_gp.pdf. The mass-only requirements in the TMDL equate to concentration limits at design flows ranging from 3.3 mg/l - 4.7 mg/l, and since the actual average flow at these facilities is significantly lower than the design flow, the concentration they must achieve is significantly higher (see table below); facilities may also engage in trading under the Connecticut Nitrogen Credit Exchange if they do not meet their load limit.

Facility	Total Nitrogen Limit in lbs/day (TMDL)	Design Flow (MGD)	Total Nitrogen Concentration Required to meet Load Limit at Design Flow (mg/l)
Branford	192	4.9	4.7
Cheshire	103	3.5	3.5
Jewett	15	0.5	3.6
Southington	204	7.4	3.3
Suffield	45	1.5	3.6
Waterbury	1049	27.0	4.7
Westport	87	2.85	3.7
Stamford	926	24.0	4.6
New Canaan	64	1.7	4.5
Milford Housatonic	307	8.0	4.6

Despite not being required to achieve limits as low as is feasible, seven of these facilities achieve a seasonal average (April – October) of less than 3.0 mg/l (Branford's 2010 seasonal average was 2.8 mg/l and not 3.1 mg/l as indicated in

[5] Wiegner et al., "Bioavailability of dissolved organic nitrogen and carbon from nine rivers in the eastern United States, 43 *Aquatic Microbial Ecology* 277-87 (2006); Sedlak, D.L., J. Jeong and H.D. Stensel. 2011. Bioavailability of Dissolved Organic Nitrogen in Wastewater Effluent as Determined by Resin Separation. *Nutrient Recovery and Management 2011*. Water Environment Federation; Filippino, K.C., M. Mulholland, P. Bernhardt, G. Boneillo, R. Morse, M. Semcheski, H. Marshall, N. Love, Q. Roberts, D. Bronk. The Bioavailability of Effluent-derived Organic Nitrogen along an Estuarine Salinity Gradient, *Estuaries and Coasts* (2010), 34(2): 269-280.

the comment due to a calculation error in the table presented in Attachment 1B) and four of these facilities achieve a year round average of less than 3.0 mg/l. Although not included in the table provided with the comment, the Town of Simsbury, Connecticut had a 2010 seasonal average of 2.2 mg/l and an annual average of 2.6 mg/l.

A 2007 study of Florida facilities found 40 facilities meeting effluent TN limits of 3.0 mg/l (as determined by the 95th percentile of monthly average concentrations), with 58% of them below 2.5 mg/l. The study concluded that "Currently, there is industry agreement that the LOT ["limit of technology"] for current technologies is on the order of TN and TP of 3.0 mg/L and 0.10 mg/L respectively. However, based on the information presented herein, "conventional" BNR facilities can actually consistently meet lower effluent requirements, particularly for TN." Jiminez et al., *Full Scale Operation of Large Biological Nutrient Removal Facilities To Meet Limits of Technology Effluent Requirements: The Florida Experience"* (WEFTEC 2007). Such results are not limited to facilities in warm climates; a 2011 WEF/WERF report indicates that the Tahoe, California wastewater treatment facility achieves a median TN concentration of 2.5 mg/l (95% are less than 3.37 mg/l). Parker et al., *WEF/WERF Cooperative Study of Nutrient Permit Limits: Achievable Technology Performance Statistics for Low Effluent Limits* (2011).

While the above confirms EPA's conclusion that a TN concentration of 3.0 mg/l is achievable, as stated in the Fact Sheet EPA concurs with the commenter that the available information on effluent variability indicates that an effluent limit of 3.0 mg/l may not be consistently achievable on a monthly basis in colder climates using currently available nitrogen removal technologies and may only be achievable over a longer seasonal period. The permit limit is a seasonal (six month) rolling average; EPA agrees that the Draft Permit language was unclear as to the seasonal aspect of the limit and Footnote 12 of the Final Permit has been modified to clarify this as follows:

> The nitrogen limit is a rolling seasonal average limit, which is effective from May 1 – October 31 of each year. The first value for the seasonal average will be reported after an entire May – October period has elapsed following the effective date of the permit (results do not have to be from the same year). For example, if the permit becomes effective on December 1, 2014, the permittee will calculate the first seasonal average from samples collected during the months of May through October 2015, and report this average on the October 2015 DMR. For each subsequent month that the seasonal limit is in effect, the seasonal average shall be calculated using samples from that month and the previous five months that the limit was in effect.

EPA has also reviewed its basis for including both a mass limit and concentration limit for total nitrogen. As set forth in the Fact Sheet, loads from the various

facilities were allocated using an assumed effluent limit, in order to provide a basis for comparison as to the level of treatment that would be required from facilities of different size and distance from the estuary. The nitrogen analysis itself, however, is based on analysis of total loads to the estuary and is not dependent on any assumptions regarding concentration and flow from this facility. In this context, a mass-only limit equal to that in the Draft Permit is protective of water quality standards in the estuary, without any corresponding concentration-based limit.

Concentration-based limits are authorized but not mandated under EPA's regulations, and EPA has regularly imposed them in other permits for a variety of water quality-based rationales. In this case, mass-only limits are expected to be sufficient to meet the water quality requirements described in the Fact Sheet, and will provide some flexibility to the facility to operate in a more cost-efficient manner even in the absence of trading.[6] Therefore EPA has eliminated the concentration limit for Total Nitrogen from the Final Permit in favor of a mass-load only limit. EPA notes that if in the future further analysis or data indicates that concentration-based limits are necessary to meet water quality requirements (such as if predicted reduction in nonpoint source and stormwater loads do not occur), EPA will include such limits in future permit reissuance. The Final Permit contains a seasonal average mass limit of 210 lb/day.

Comment B3. Proposed Mass Limit Restricts the City's Ability to Expand Sewer Service

The proposed mass limit for total nitrogen effectively caps future plant flow rates to the current permitted flow of 8.4 mgd. Since the permit, as written, sets the total nitrogen concentration in the effluent at the limit of treatment technology, no further reduction in total nitrogen is possible and therefore no increase in flow is possible to prevent the mass limit from being exceeded. Given the lack of current data or analyses (see Attachment 2 for further information), it is not reasonable or appropriate to impose the equivalent of a growth moratorium on the City.

In Section VI.A of the Fact Sheet, EPA acknowledges that in the Draft Environmental Impact Report (DEIR) for the Comprehensive Wastewater Management Plan, the City

[6] Mass-only limits have been implemented in certain state-delegated NPDES programs, involving watershed-wide loading analyses of nitrogen load reductions. For example, the Long Island Sound TMDL nitrogen load allocations (see NYSDEC and CTDEP, *A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound* (December 2001)) have been implemented in Connecticut through a mass load-based *General Permit for Nitrogen Discharges* from POTWs. This approach facilitates the trading of nitrogen load credits under Connecticut's Nitrogen Credit Exchange. See http://www.ct.gov/deep/cwp/view.asp?A=2719&Q=325572. Similarly in the Chesapeake Bay Watershed, EPA encouraged a permitting approach based on annual mass loads and promoted watershed permits and trading programs. See Chesapeake Bay Program, *NPDES Permitting Approach for Discharges of Nutrients in the Chesapeake Bay Watershed (*December 2004). Load based permit limits facilitate trading programs, although no such programs have been proposed in the Taunton watershed.

has identified 14 priority areas currently served by on-site wastewater disposal systems to which sewer system expansion has been proposed. Subsequent to the completion of the DEIR, the City has initiated planning to redevelop the Dever School property as an industrial park to enhance the City's economic base. Other future development opportunities are present in existing industrial zoned areas likely to contribute wastewater to the wastewater collection system. The proposed design flow rate to Taunton's wastewater treatment facility, in the DEIR, increases from 8.4 mgd to 10.2 mgd. This flow rate will be re-evaluated in the Final Environmental Impact Report.

Septic systems in general contribute a significant nitrogen load to the Taunton River watershed. By expanding the wastewater collection system to encompass the sewer needs areas, this will transfer treatment of wastewater to the WWTF and reduce the non-point nitrogen load to the River.

Establishing a mass total nitrogen limit in the discharge would effectively prohibit expansion of the wastewater collection and treatment system beyond its present design capacity. Antidegradation provisions in the clean water act could restrict future expansion of the wastewater treatment facility. Therefore, the mass limit should be removed from the permit.

> **Response B3**. EPA disagrees with the City's assumption that it is entitled to continue to add additional wastewater flows to a clearly impaired system pending the collection of more current data or development of additional analyses. See Responses A2, C12-13 and C29 for further discussion of current data. EPA also disagrees that the permit limit will function as a "growth moratorium." EPA agrees that septic systems contribute a significant nitrogen load to the Taunton River watershed, and that transfer of septic system flows to the WWTF has potential to reduce nitrogen loading to the River, particularly once the WWTF has been upgraded to achieve the permit load of 210 lbs/day. In considering requests for increased flow under an antidegradation analysis, the load reduction from transferring septic system flows to the WWTF will be considered in determining the overall impact of a flow increase. (For example, a load reduction from septic systems may be determined to offset load increases from new development in order to allow for tie-in of new development.)
>
> EPA also disagrees with the City's assumption that removing the mass limit would alleviate its concerns about restriction on future increased loads. The comment misapprehends the impact of a mass limit in this permit.
> The City is correct that "Antidegradation provisions in the clean water act could restrict future expansion of the wastewater treatment facility", in that any increase in the authorized discharge of pollutants is subject to the antidegradation provisions of the Massachusetts Water Quality Standards, whether or not a mass limit based on the current flow of 8.4 mgd is placed in the permit. The Massachusetts antidegradation provisions require that existing water quality and uses be maintained, a requirement that is in practice satisfied by maintaining the

same mass loading under an increased flow as was allowed under the prior effluent flow limit, whether or not a mass limit is included in the permit.

EPA recognizes that the City of Taunton has been engaged in a planning process that includes consideration of increased flows, although EPA notes that the planned increases are not limited to within the City of Taunton but extend to other communities currently connected to the Taunton WWTF. EPA also notes that the City's efforts to reduce inflow and infiltration (I/I) into its system pursuant to previous permits and compliance orders has dramatically reduced flows into the system and may reduce or eliminate any flow increase at the WWTF required to meet its planned needs. The City's planning documents indicate a significant amount of flow from tying in septic systems in needs areas, resulting in watershed load reductions that may well be sufficient to offset nitrogen impact of the increased flows under consideration. This is based on a preliminary review of the City's documents, which are not final, and EPA looks forward to working with the City as its planning process moves forward.

Comment B4. Allowable Total Nitrogen Load
Section VI.B.f.ii of the Fact Sheet develops an allowable total nitrogen load from the watershed, and more specifically point sources that would result in a concentration at or below the 0.45 mg/l threshold that was derived in other sections of the fact sheet. That validity of that threshold is questioned in other comments offered by the City but is used here for illustrative purposes.

The analysis performed by USEPA in the Fact Sheet relies on sampling performed by SMAST as part of the Mount Hope Bay Estuarine Monitoring Program, during the months of June, July and August of 2004 through 2006. Under that program, samples were collected on two occasions from 22 sampling stations each month for a total of 18 sampling events. In USEPA's analysis of allowable total nitrogen loading, data from 2006 was not used due to significant wet weather events that occurred in June. Although flows in the Taunton, Three Mile and Segreganset Rivers were elevated during that month, the 3-year average flow for June through August is more indicative of historic flows over the entire 6-month seasonal permitting period of May through October. The analysis should not be limited to selected low flow periods only.
Assuming EPA's approach is valid, we have recalculated the allowable total nitrogen load following the procedures established by USEPA and incorporating the 2006 monitoring data. The calculation is provided in **Attachment 1.C** for consideration and a brief summary of the results is provided as follows:

• The average total freshwater flow was 881 cfs
• Ocean flow was determined as 1,458 cfs based on an average salinity of 18.7 ppt.
• Based on a target TN concentration of 0.45 mg/l, the targeted nitrogen load was 5,672 pounds per day (ppd)
• The allowable load from watershed sources was determined as 3,472 ppd
• The required nitrogen load reduction was 756 ppd
• Based on a 20-percent reduction in nitrogen from non-point sources, the available nitrogen load from wastewater discharges was 2,187 ppd.

• Applying a uniform nitrogen concentration to wastewater discharges, the allowable total nitrogen concentration is 8.8 mg/l.

Based on the above, establishing a total nitrogen limit of 8.0 mg/l for all identified wastewater treatment facilities discharging to the Taunton River is warranted.

Response B4. The analysis presented in the comment is fundamentally flawed in its calculation of the required nitrogen load reduction of 756 ppd if 2006 is included in the period of analysis. That figure is based on an assumption that the watershed load in 2006 is the same as the amount calculated for 2004-05 (see Comment Attachment 1.C, using an assumed watershed load of 4,228 ppd). In fact nonpoint source and stormwater loads would be expected to be higher in wetter periods such as 2006, so this is an erroneous assumption. By accounting for the higher flows (higher dilution) in a wetter period, while ignoring the higher loads that accompany those higher flows, the comment presents a skewed analysis that does not reflect actual loading conditions in wet periods.

A corrected estimate for 2006 is presented below, which demonstrates that even if 2006 is included the allowable nitrogen concentration from wastewater discharges does not differ significantly from that presented in the Fact Sheet. EPA notes, however, that even if a higher allowable load were calculated using the extreme wet weather conditions of 2006 that would not change EPA's conclusions concerning the appropriate permit limit. 2006 was an extraordinarily wet year, with the highest average annual streamflow ever recorded at the Taunton River USGS gage at Bridgewater (period of record 1930-present). The comment's claim that the 2006 June to August period is "more indicative of the six month permit season" is false; for example flows at the USGS Bridgewater gage[7] averaged 839 cfs in June to August 2006, compared to a long term (1930-2012) May to October average of 288 cfs. EPA rejects the contention that it was required to include an extreme weather period in its analysis if the resulting permit limits would clearly be insufficiently protective in most years.

To estimate a more accurate nonpoint source load for 2006, EPA examined the available load data for 2004 and 2005 at flows comparable to those in 2006. (SMAST stream monitoring did not continue through 2006 so a direct calculation of 2006 loads is not available.) Figure R1 shows loads on the Taunton River at Weir Village[8] calculated from 2004 and 2005 monitoring data plotted against flow at the Bridgewater gage, along with the average summer flows in 2004, 2005 and 2006.

[7] The USGS Bridgewater gage measures flow from just over half of the overall watershed.
[8] Load = measured concentration * flow at USGS Bridgewater gage * 1.37 (flow correction factor for watershed area)

Figure R1

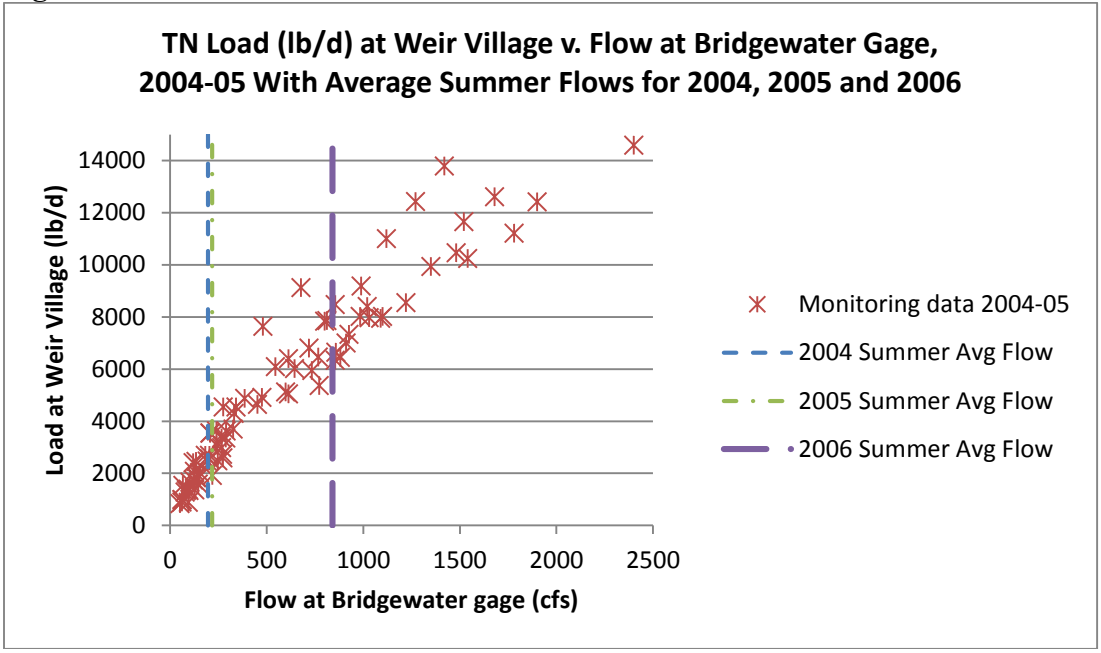

Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

Loads under average flow conditions range between 2,100-2,800 lbs/d, consistent with EPA's initial calculation using the LOADEST load estimation software of 2,474 lbs/d. In 2006 however, the average summer (June to August) flow was four times the 2004-05 average summer flow.[9] The corresponding loads are in the range of six to eight thousand lbs/day, or 140-220% higher than the load under 2004-05 average flow.

While this is merely an estimate, it is consistent with other references for the impact of wet weather flows. For example, the Narragansett Bay Commission ("NBC") (operator of the major POTWs for the City of Providence, RI) has conducted streamflow monitoring of major tributaries to the Narragansett Bay system since 2005 (Taunton River monitoring began in 2006). The NBC has concluded, "Rivers become a larger contributor to total nitrogen loading during wet weather when NBC data indicates that nutrient loading from the rivers increases by 88 to 152% over dry weather levels on average." Narragansett Bay Commission, snapshot.narrabay.com/app/MonitoringInitiatives/NutrientMonitoring (accessed November 15, 2013).

EPA therefore corrected the calculation in the comment by using a wet weather load for 2006 of 9,301 lb/day, an increase of 120% over the 2004-05 average load (the midpoint of the 88-152% range cited by NBC, and lower than the loads at

[9] This calculation is reasonably consistent with the comment calculation; the comment indicates that the 2004-2006 average freshwater flow is 881 cfs as compared to EPA's 2004-05 figure of 408 cfs. This would mean that 2006 freshwater flow is 1,827 cfs, or 4.5 times the 2004-05 value.

2006 flows indicated in Figure R1). Including that figure gives an average load over the three year period of 5,919 lbs/d. The remainder of the calculation is as follows [strikethrough and bold mark corrections from the comment calculations; a corrected version of the comment attachment is included as Attachment A to this document]:

• The average total freshwater flow was 881 cfs
• Ocean flow was determined as 1,458 cfs based on an average salinity of 18.7 ppt.
• Based on a target TN concentration of 0.45 mg/l, the targeted nitrogen load was 5,672 pounds per day (ppd)
• The allowable load from watershed sources was determined as 3,472 ppd
• The required nitrogen load reduction was ~~756~~ **2,447** ppd
• Based on a 20-percent reduction in nitrogen from non-point sources, the available nitrogen load from wastewater discharges was ~~2,187~~ **977** ppd. *[Compared to 939 ppd in the Fact Sheet analysis.]*
• Applying a uniform nitrogen concentration to wastewater discharges, the allowable total nitrogen concentration is ~~8.8~~ **3.58** mg/l. *[Compared to between 3.4 and 3.5mg/l in the Fact Sheet analysis.]*

This calculation would still require the largest dischargers, including the Taunton WWTP, to achieve a 3 mg/l TN effluent concentration in order to reach the loading target. The permit limit would not change if 2006 were included in the loading analysis, and the TN limit based on a 3 mg/l effluent concentration remains in the Final Permit.

Comment B5. Use of year round CBOD analyses

The City finds the permit language pertaining to CBOD5 analyses and nitrogen removal requirements to be contradictory and could put the City at risk for unwarranted violations. The permit utilizes CBOD5 as the measure of oxygen demand due to high nitrogenous oxygen demand in the effluent during the summer nitrifying season, as allowed under 40 CFR 103.102(a)(4). Page 9 of the Fact Sheet states: "The use of CBOD instead of BOD is not necessary in the colder season as the facility discontinues the nitrifying process, making the use of CBOD tests unnecessary. The City disagrees with this general premise. The fact that the facility is not fully nitrifying does not mean that such organisms are not present in the effluent in sufficient numbers to provide a misleading BOD reading. In addition, the City finds Footnote 12 on Page 6 contradictory as it requires the City to operate the treatment facility to reduce the discharge of total nitrogen during the months of November through April to the maximum extent possible even though there are no permit limitations for ammonia or total nitrogen during this period. If some degree of total nitrogen removal must be attempted in the colder season, the use of year round CBOD analyses would be necessary and appropriate to minimize the impacts from nitrogenous oxygen demand.

The statement in the Fact Sheet indicates that the nitrification process can be ceased from November through April. Therefore, Footnote 12 should be deleted in its entirety.

In the event that Footnote 12, takes precedent over the Fact Sheet in regard to the need to remove nitrogen from November through April, the City takes exception to the following statement:

"All available treatment equipment in place at the facility shall be operated unless equal or better performance can be achieved in a reduced operational mode"

This sentence appears to give EPA and MassDEP the authority to dictate to the City means and methods of complying with its NPDES permit or to dictate more restrictive operation even when unnecessary to meet applicable standards. Neither EPA nor MassDEP have such authority. We do not want to be subject to a violation in an instance where a regulator demands a particular piece of equipment be activated even though it does not improve the quality of the discharge, particularly in a situation where there is no established numerical standard.

The City retains licensed and experienced wastewater operators who will make the determination as to what equipment must be operated to meet permit conditions. To illustrate this point, the provision allowing discontinued use of a supplemental carbon source from November through April may warrant that some equipment such as denitrification filters, be removed from service as they would provide little, if any, water quality benefit. Removing the filters from service would result in significant energy savings and reduce the carbon footprint of the WWTF during this period. The subject permit statement appears to give EPA and MassDEP the authority to challenge this prudent and viable decision and impose a permit violation where none is warranted.

The first sentence in Footnote 12 requiring the facility to be operated to reduce the discharge of total nitrogen to the maximum extent possible during this period is sufficient.

> **Response B5**. EPA agrees that the continuation of nitrogen removal pursuant to the optimization requirement will likely involve the continuation of nitrification processes from November to April and that $CBOD_5$ will therefore be a more appropriate measure of whether technology-based biological oxygen demand limits are achieved. As requested, therefore, the Final Permit includes $CBOD_5$ limits in lieu of BOD_5 limits on a year-round basis. EPA agrees that the Fact Sheet language regarding use of BOD rather than CBOD was unclear; the permit language in all cases takes precedence over any arguably inconsistent or unclear language in the Fact Sheet. See also Response B6.
>
> The permittee's interpretation of the quoted sentence of footnote 12 as allowing EPA or MassDEP to "dictate more restrictive operation even when unnecessary" is inconsistent with the actual language of the sentence. As stated in Footnote 12, the requirement to operate all available treatment equipment does not apply if "equal or better performance can be achieved in a reduced operational mode." The City's operators may remove equipment from service if it does not provide a water quality benefit. The permit does not, however, allow equipment to be

removed from service based on an operator's judgment that energy costs outweigh the value of water quality benefits. This permit condition is an essential part of the nitrogen limit in order to keep annual loads low and limit the recycling of winter discharges in the system in the critical summer period, and is imposed pursuant to EPA's authority under the Act and implementing regulations.[10]

Comment B6. Inconsistent pH Limitations
Section VI.B.3 of the Fact Sheet states that: "MassDEP has stated that a permitted pH range of 6.0 to 8.5 SU is protective of State water quality standards, and this range has been included in the draft permit". This range is more restrictive than the range of 6.0 to 9.0 set forth in 40 CFR 133.102(c). However, the allowable range for pH in the Taunton WWTF discharge, as written in the permit, is 6.0 to 8.3 SU. There, does not appear to be any valid reason for the upper limit for pH being set at 8.3 SU instead of 8.5 SU.

Response B6. EPA agrees that the Draft Permit and Fact Sheet were inconsistent as to the upper pH limit and EPA has revised the limit in the final permit to be consistent with the language in the Fact Sheet.

Comment B7. 7Q10 River Flow
Based on a review of the sections pertaining to the 7Q10 established in the Draft NPDES Permit (MA0100897) for the Taunton Wastewater Treatment Facility that was issued on March 20, 2013, the following comments were generated:

In the 2001 NPDES Permit Reissuance, the 7Q10 flow was defined as 30.4 cfs at Station No. 01108000, Taunton River near Bridgewater gauge and 41.85 cfs at the point of discharge. In the present draft NPDES permit, the 7Q10 flow has been revised downward by EPA to 22.9 cfs at the gauge and 31.6 cfs at the point of discharge using EPA's in-house DFLOW analysis of USGS stream flow data for, for the years 1931 through 2002.

It is difficult to understand why the 7Q10 in the Taunton River at the Bridgewater gauge would drop by nearly 25-percent from one used in a permit issued in 2001 and a calculation performed on data through 2002. A review of daily flow data at gauging station 01108000 for the years 2003 through 2012 shows that the lowest 7 day flow during this 10-year period was 47 cfs, which occurred twice; once in August 2005 and again in September 2007. Therefore, we request that the 7Q10 flow be re-evaluated through 2012, as inclusion of the recent flow data will likely alter the statistical analysis.

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[10] *See* CWA §§ 402(a)(2) ("The Administrator shall prescribe conditions for such permits to assure compliance with the requirements of paragraph (1) of this subsection, including conditions on data and information collection, reporting, and such other requirements as he deems appropriate."); 301(b)(1)(C) (requiring "any more stringent limitation, including those necessary to meet water quality standards …or required to implement any applicable water quality standard established pursuant to this Act"); 40 C.F.R. §§ 122.4(a) (no permit may be issued, "When the conditions of the permit do not provide for compliance with the applicable requirements of the CWA, or regulations promulgated under CWA"); 122.43 ("In addition to conditions required in all permits (122.41 and 122.42), the Director shall establish conditions, as required on a case by case basis, to provide for and assure compliance with all applicable requirements of the CWA and regulations."); 122.44(d)(5) (requiring inclusion of "any more stringent limitations…in accordance with section 301(b)(1)(C) of the Act).

In fact, a printout from DFLOW provided by USEPA that was done after the 2007 draft permit was issued (using flow data from 1931 through 2008 rather than 2002) indicates that the 7Q10 is 23.7 CFS. This value is slightly higher than that used in the draft permit, although it is still much lower than the value used in the 2001 final permit. It does however provide justification that flow data through 2012 should be used in the evaluation.

The 7Q10 flow directly impacts the dilution factor at the discharge of the WWTF, which in turn impacts the allowable copper and chlorine residual concentrations established by the permit. EPA correctly reclassified the Taunton River at the point of discharge as a salt water body, immediately places more restrictive limits on total copper. Lowering the dilution factor places further restrictions on the discharge. These stringent standards, if enforced as they are, will require Taunton to treat its wastewater for copper. This does not appear to be justified, as Taunton's wastewater discharge has been in compliance with whole effluent toxicity testing.

> **Response B7.** EPA has been unable to confirm the derivation of the 30.4 cfs value for 7Q10 at the Bridgewater gage that was used in the 2001 reissuance. The 7Q10 for that gage, for the period of 1930-75, as reported in the USGS *Taunton River Gazetteer*,[11] was 24.6 cfs. The value calculated for data through 2002 was 22.9 cfs. As noted in the comment, the 7Q10 calculated through 2008 was 23.7 cfs. The 7Q10 calculated on data through 2012 is 24.1 cfs. These values are relatively consistent. EPA notes some variability is to be expected, particularly for a gage that is known to be regulated by diversions upstream for municipal water supplies and upstream wastewater treatment plant discharges.
>
> As the City requests, EPA has recalculated permit limits based on the 7Q10 calculated using data through 2012. The 7Q10 at the gage is 24.1 cfs, giving a 7Q10 at the point of discharge of 33.2 cfs (24.1 x 360/261).
>
> This results in a dilution factor of 3.6 (versus 3.4 in the Fact Sheet) and the following changes to permit limits:
>
> > Total residual chlorine: Avg monthly: 0.027 mg/l; Max daily: 0.047 mg/l
> > Copper: Avg monthly: 8 ug/l (no change); Max daily: 16 ug/l
>
> The discharge's compliance with whole effluent toxicity testing requirements does not obviate the need to comply with water quality criteria for copper. These numeric criteria are applicable independent of toxicity test results. See also Response C30.

[11] Wandle, et al., *Gazetteer of Hydrologic Characteristics of Streams in Massachusetts – Taunton and Ten Mile River Basins and Coastal River Basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound.*

Comment B8. Schedule in ACO not Permit
The Compliance Schedule included in the Draft permit is too restrictive and does not take into account the existing Administrative Order that the City of Taunton has with the EPA, Administrative Order Docket No. 08-042. The City of Taunton has applied for State Funding through the Clean Water State Revolving Fund and is listed on the Intended Use Plan for $15 million for three more projects. It is at the end of these projects that we believe the City will have completed elimination of all known cross connections between the sewer system and the storm drain system and removed sources of infiltration and inflow that are cost-effective. In addition to Sewer Separation and Infiltration/Inflow removal projects, the City is scheduled to complete its Comprehensive Wastewater Management Plan (CWMP) and Final Environmental Impact Report (EIR). As part of the CWMP and final EIR pilot testing will be required for determination of the most cost-effective and reliable means of achieving nitrogen reduction. Therefore, we are requesting that the compliance schedule be removed from the permit and negotiated through a separate Administrative Consent Order. The negotiated schedule must be more realistic in its duration and consider the long term economic needs of the City. The City believes that deferral of major Total Nitrogen reduction should occur until we know what improvements are necessary under current conditions. The City cannot afford to spend resources on multiple plant improvements as occurred in Upper Blackstone or to extend all of its resources on a "limit of technology facility" only to find that such a treatment requirement was not actually needed.

> **Response B8.** EPA recognizes that the City is engaged in other projects required under an existing Administrative Order, in addition to the upgrades required to meet the new permit limits, and that these requirements need to be prioritized and managed within the financial capability of the City's ratepayers. EPA therefore has included a revised compliance schedule in the final permit as described in Response B9.
>
> The compliance schedule in the permit is solely to allow for sufficient time to come into compliance with the permit conditions within the financial capability of the City. It is not a mechanism for deferring pollutant reductions until the City "knows [they] are necessary under current conditions." However EPA recognizes that the City intends to pursue further study of this system and hopes to present additional information that would indicate a less stringent limit is sufficiently protective; EPA will continue to consider all new information regarding nutrient and eutrophication conditions in this system and take any appropriate action based on such information in accordance with applicable regulations. The commenter does not specifically explain its rationale for removing the compliance schedule from the permit and moving the locus of compliance to enforcement. Inclusion of the compliance schedule in the permit rather than through an administrative compliance order is reasonable and makes sense from the standpoint of administrative efficiency. The public has had an opportunity to comment on the permit, inclusive of a compliance schedule. Additionally, the permit writer is already well familiar with the facility, including affordability data and other

relevant information, and is in a position to craft an appropriate compliance schedule.

With respect to the City's concern about multiple plant improvements, EPA's intent has been precisely to avoid that situation. The Taunton WWTP is a direct discharger of nitrogen to the least diluted and most impaired portion of the Mount Hope Bay/Taunton River Estuary system and as a result is subject to the most stringent nitrogen limits applied to any facility in the basin. The permit limits are designed to be protective under foreseeable future conditions including increases in flow up to the design flow for all POTWs. If for some reason EPA were to agree to a less stringent limit now, based on cost concerns, the City would most likely be facing a more stringent limit later, based on water quality considerations, leading to multiple plant improvements, an outcome both the City and EPA wish to avoid. The City's desire for a permit limit at 8 mg/l, based on what their consultants consider achievable with limited investment, is inconsistent with meeting water quality objectives. Other facilities in the watershed are planning, designing and have even constructed facilities to meet permit limits of 5 mg/l or lower.

Comment B9. Economic Impact

The City has spent a significant amount of money related to wastewater utility improvements since the WWTF was upgraded in 2000. As a result of past projects and the existing CMOM Program, the average sewer rate for FY2014 is estimated to be $516. We are concerned that further large expenditures, as would be required to again upgrade the WWTF to meet limit of technology nitrogen limits, will bear a great financial burden on our users.

The City has several Environmental Justice (EJ) areas in various census tracts within its sewer district boundary (refer to **Attachment 1.D**). We are duly concerned that rising sewer rates will adversely affect these populations. The EJ population actually makes up about 35 percent of the total sewered population. The median household incomes in the various EJ areas range from $21,440 to $39,632.

As stated in EPA's *Interim Economic Guidance for Water Quality Standards*: "if the average annual cost per household (sewer rate) exceeds 2.0 percent of median household income, then the project may place an unreasonable financial burden on many households within the community." Based on the estimated sewer rate for FY2104 and applying EPA's screening criteria of 2 percent results in a median household income of $25,800 below which there would an unreasonable financial burden.

The table provided below identifies future wastewater related projects that need to be completed in Taunton. These projects include those required to complete the sewer separation and infiltration/inflow reduction program, to generally improve the collection system, and upgrade the WWTF for nitrogen removal. As a result of these projects, the annual sewer rate is expected to increase to more than $1,000. Based on an annual sewer rate of $1,000 all households with a median income of less than $50,000 would be adversely affected, which represents about 50% of the sewered households.

The City is requesting relief from the schedule so we can properly plan the required work and protect the economic viability of the City and the sewered population. The City is also requesting another analysis with more recent water quality data before upgrading the WWTP to achieve Technology Based Limits for nitrogen reduction. Pursuant to 40 CFR 131.01(g), we request EPA's determination on whether the current cost impact of EPA's "limit of technology" standard may be considered "substantial and widespread economic impact" , which would allow deferral of the high cost total nitrogen reduction measures or the approval of a variance by MassDEP.

Future Wastewater Related Design and Construction Projects		
Project	**Timeframe**	**Opinion of Project Cost**
Phase 10 SSES	By 2016	$5,500,000
Phase 11 SSES	By 2018	$5,500,000
Phase 12 SSES	By 2018	$5,500,000
New Main Lift Pump Station	By 2018	$11,500,000
CSO Mitigation Facility	------	$9,000,000
Wastewater Treatment Facility Improvements	------	$45,000,000
Total Project Costs		**$82,000,000**
Anticipated User Fee Increase Due to Debt Service [1]		**$495**

1. User rate increases by $6 per $1,000,000 of expenditure. Does not include increases in operations and maintenance costs associated with nitrogen removal. All costs to be redefined during the preparation of the Final CWMP and Environmental Impact Report.

Response B9. EPA has reviewed the financial information provided by the City as well as additional supporting data (FY13 billing database, property information and debt schedules) requested from the City by EPA. On the basis of these data EPA agrees that a compliance schedule longer than five years is warranted by the City's financial capability. In making this determination, EPA considers cost and other factors (Hanlon, *Memorandum re Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits*, May 10, 2007).

The *Interim Economic Guidance for Water Quality Standards* (EPA 1995) provides the framework for financial capability analysis for compliance with water quality based requirements. Under that guidance, financial capability analysis is based on the Annual Cost per Household for Pollution Control Costs (current plus future) compared (as a percentage) to the Median Household Income (MHI) of the sewered community. The City of Taunton has provided a calculation of the MHI for the sewered portion of its community of $48,230. The guidance also provides a methodology for assessing a particular community's financial strength pursuant to secondary indicators. See *Interim Economic Guidance* Table 5-1.

TABLE 5-1

SECONDARY INDICATORS

	Secondary Indicators		
Indicator	**Weak**	**Mid-Range**	**Strong**
Bond Rating	Below BBB (S&P) Below Baa (Moody's)	BBB (S&P) Baa (Moody's)	Above BBB (S&P) or Baa (Moody's)
Overall Net Debt as Percent of Full Market Value of Taxable Property	Above 5%	2%-5%	Below 2%
Unemployment	More than 1% above National Average	National Average	More than 1% below National Average
Median Household Income	More than 10% below State Median	State Median	More than 10% above State Median
Property Tax Revenues as a Percent of Full Market Value of Taxable Property	Above 4%	2%-4%	Below 2%
Property Tax Collection Rate	< 94%	94% - 98%	> 98%

Based on publicly available information, EPA determined that the City of Taunton was in the mid-range of secondary indicators based on Net Debt, Unemployment, MHI and Property Tax Revenues and strong with respect to Bond Rating. EPA was unable to determine the Property Tax Collection Rate, but based on other indicators the City falls in the mid-range (between 1.5 and 2.5) secondary score for purposes of substantial impacts analysis. See *Interim Economic Guidance* Table 5-2.

TABLE 5-2

ASSESSMENT OF SUBSTANTIAL IMPACTS MATRIX

	Municipal Preliminary Screener		
Secondary Score	**Less than 1.0 Percent**	**Between 1.0 and 2.0 Percent**	**Greater than 2.0 Percent**
Less than 1.5	?	X	X
Between 1.5 and 2.5	✓	?	X
Greater than 2.5	✓	✓	?

Taunton's projected cost estimate presented in the comment indicates a total cost of treatment plant upgrades and planned collection system work of $82 million, with an annual debt service increase of $495 per user, increasing the average fee to over $1,000. Upon review of additional information submitted by the City in response to requests for documentation by EPA, EPA does not agree that the calculations provided by the City accurately characterize the average cost per

household according to the *Interim Economic Guidance* methodology. The City's cost-per-user is not based on the number of households receiving sewer service but on the number of "5/8-inch equivalent meters", which is a significantly smaller number. Thus, while there are 11,000 "5/8-inch equivalent meters" according to the City, there are approximately 13,000 households receiving sewer service (NPDES Application Form 2A; City of Taunton FY2013 billing database and analyses thereof[12], provided by Beta Group on March 5, 2104 and May 15, 2014) which pay 77.8% of the total sewer fees.

EPA does not use number of meters for affordability analysis (see *Interim Economic Guidance*, Worksheet C ("Do not use number of connections")). In accordance with the EPA guidance, EPA calculated an adjusted figure for households and household equivalents (nonresidential users) of [13,000 / 77.8% =] 16,710. EPA notes that Beta Group provided an alternative calculation of household and household equivalents based on flow[13] of 14,921 household equivalents (Email and attachment from Mike Andrus, Beta Group, to Susan Murphy, EPA, May 15, 2014); EPA considers the impacts with respect to both the EPA calculation and the Beta alternative calculation in this Response.

However, while EPA disagrees with the details of the City's calculations, EPA does agree that the impact on the City's ratepayers warrants an extended compliance schedule based on financial capability. More detailed cost and debt burden information provided by the City's consultants indicates that the total cost of WWTF improvements and planned collection system projects would be $95.3 million, with a resulting debt burden to Taunton ratepayers of $5,170,000 after accounting for contributions by the satellite communities pursuant to Intermunicipal Agreements. Beta Group, *EPA NPDES Draft Permit Economic Impact Analysis*, Updated May 6, 2014.[14] The resulting per household increase is calculated by dividing that amount by the number of household equivalents, for a per-household increase of $309 (EPA) to $346 (alternative calculation). EPA also recalculated the current household average cost to reflect actual number of households, giving approximately $430[15]. Total pollution control costs on an average household basis would therefore be:

Current total cost:	$430		
Projected increased debt cost:	$309	to	$346
Projected increased O&M:	$ 19		

[12] Beta Group's calculations based on a linked billing and property data analysis indicated that there 13,984 housing units connected to the sewer. Assuming a 6% vacancy rate (http://www.census.gov/housing/hvs/data/q414ind.html) there would be 13,115 households receiving sewer service, close to the Application Form data.
[13] Total billed flow divided by 75 hcf, which is the approximate average single family home usage.
[14] The City provided additional calculations in March 2015 that increased this cost to $98.3 million, but did not provide detailed debt burden impacts for this figure. EPA estimates the potential impact as approximately $10/household; this change would not impact the conclusions in this response.
[15] The City's FY13 database indicates total residential billings of $4,597,178, divided by 13,000 gives $353; this was increased by $76 to account for the FY14 rate increase.

Total:	$758 to	$795

This results in an average household cost of about 1.6% of the MHI, before consideration of MS4 compliance or other potential system capital needs. Consistent with the *Interim Economic Guidance* this indicates that there may be a substantial burden to the community. EPA also considers the CSO financial capability guidance (EPA, *Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development*, 1997), as much of the City's existing debt burden, and a substantial portion of future costs, is addressed at eliminating the West Water Street CSO. That guidance indicates that a schedule up to ten years is appropriate for communities in this mid-range of cost impacts. See *CSO Guidance*, Tables 3 and 4.

FINANCIAL CAPABILITY MATRIX
Table 3

Permittee Financial Capability Indicators Score (Socioeconomic, Debt and Financial Indicators)	**Residential Indicator** (Cost Per Household as a % of MHI)		
	Low (Below 1.0 %)	Mid-Range (Between 1.0 and 2.0%)	High (Above 2.0 %)
Weak (Below 1.5)	Medium Burden	High Burden	High Burden
Mid-Range (Between 1.5 and 2.5)	Low Burden	Medium Burden	High Burden
Strong (Above 2.5)	Low Burden	Low Burden	Medium Burden

FINANCIAL CAPABILITY GENERAL SCHEDULING BOUNDARIES
Table 4

Financial Capability Matrix Category	Implementation Period
Low Burden	Normal Engineering/Construction
Medium Burden	Up to 10 years
High Burden	Up to 15 Years*
	*(Schedule up to 20 years based on negotiation with EPA and state NPDES authorities)

In examining the appropriate schedule, EPA notes that the five year schedule in the Draft Permit was based on Normal Engineering and Construction concerns and does not provide any relief from the cost impacts identified here. A ten year schedule, however, would allow a portion of the work to phase in after a portion of the City's existing debt burden expires. As set forth in schedules provided by the City, while the existing debt burden as of FY2015 is $4,171,000, portions of the City's debt are being paid off in subsequent years so that by 2021 the burden from existing debt falls to $3,691,000; by 2024 it is $3,003,000. Beta Group, *EPA NPDES Draft Permit Economic Impact Analysis*, Updated May 6, 2014. This allows additional debt to be assumed by the City with less increase to ratepayers. EPA's analysis of economic impact analyses provided by the City indicates that under a ten year schedule the average cost per household (not per 5/8" meter) falls to between 1.3 and 1.4% of MHI; this is a reasonable impact consistent with the guidance documents and provides room for additional costs for MS4 and other projects before a threshold of 1.5% of MHI is reached. If at any time actual average household sewer rates are shown to be significantly higher than EPAs projected rates, the City can seek a revised schedule based on affordability considerations. Similarly, if EPA determines that actual average household sewer rate increases are significantly less than EPAs projections, EPA may pursue an accelerated schedule for achieving the final total nitrogen limit.

The schedule in the final permit allows for two years to initiate design of a treatment plant upgrade to achieve an interim monthly average 5 mg/l total nitrogen limit or less ("Phase 1 Upgrade"), three years to initiate construction of the Phase 1 Upgrade and five years to complete construction and optimize total nitrogen removal. The two years allowed for completing facilities planning is designed to allow ample time for the City to evaluate the effect of peak wet weather flows and other factors relative to design considerations in order to ensure that the waste water treatment facility upgrade will be able to attain all permit limits.

A permit proceeding is not the appropriate venue for a determination pursuant to 40 CFR 131.10(g)[16] regarding "substantial and widespread economic impact." 40 CFR Part 131 governs state water quality standards, and the specific provision provides that:

> (g) States may remove a designated use which is *not* an existing use, as defined in § 131.3, or establish sub-categories of a use if the State can demonstrate that attaining the designated use is not feasible because:
> . . .
> (6) Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.

Such changes must be pursued through a water quality standards proceeding by MassDEP subject to EPA approval. Similarly, as noted in the comment, a variance is a matter of Massachusetts Water Quality Standards that must be brought before MassDEP. If the City wishes to pursue such avenues it must do in the proper venue with MassDEP.

Although environmental justice issues are considered in permitting proceedings, nevertheless, the City's reference to environmental justice obligations is misplaced in this instance. Executive Order 12898 instructs federal agencies to address, as appropriate, "disproportionately high and adverse *human health or environmental effects* of [their] programs, policies, and activities on minority and low-income populations * * *." Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, Exec. Order 12898, 59 Fed. Reg. 7629 (Feb. 11, 1994). The Executive Order, thus, speaks to human health and environmental effects; it does not require federal agencies to consider issues regarding cost or rate changes as the City argues. Here, the City does not allege any facts showing a "disproprotionately high" impact on environmental justice populations, and the City's comments do not allege "adverse human health or environmental effects" on those populations. Thus, the City has not raised an environmental justice issue cognizable under Executive Order 12898. While we are mindful of cost impacts to communities in the City, the Region is also are mindful that the environmental justice populations in this area are affected by water quality degradation to the point that designated uses such as swimming and fishing have been impaired.

Comment B10. Ambiguity in the Reporting of Unauthorized Discharges

The permit identifies the towns of Dighton and Raynham as co-permittees "for specific activities required in Sections I.B – Unauthorized Discharges and I.C – Operations and Maintenance of the Sewer System, which include conditions regarding the operation and maintenance of the collection system owned and operated by the Towns". Comments on the draft permit submitted on April 18, 2013 by the Upper Blackstone Water Pollution

[16] The comment refers to 40 CFR 131.01(g); there is no such regulation and the correct citation, given the context, appears to be 40 CFR 131.10(g).

Abatement District (UBWPAD) specifically question the legal basis through which the EPA has authority to regulate Towns as co-permittees. The City of Taunton concurs with the comments issued by the UBWPAD (refer to **Attachment 1.E**) and they are included herein as Taunton's comments also.

EPA Region 1 does not possess legal authority to add or amend the existing NPDES rules *(Pennsylvania Mun. Authorities Ass'n v. Horinko, 292 F.Supp.2d 95 (D.D.C. 2003))*. EPA has never adopted the co-permittee requirements that the Region is seeking to impose. That such requirements may have been imposed on others is not relevant to their legality. Therefore, we request that the co-permittee provisions be stricken from this permit as arbitrary and capricious and otherwise not in accordance with law.

In addition, Section I.B of the permit states that "Discharges of wastewater from any other point source, including sanitary sewer overflows (SSOs), are not authorized by this permit and must be reported to EPA and MassDEP orally within 24-hours of the time the permittee becomes aware of the circumstances and a written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances". The City of Taunton, who is designated as the permittee, in no way has control over the operation of wastewater collection systems in satellite communities and is not responsible for its functionality. Accordingly, the permittee (City of Taunton) will not be responsible for reporting SSOs that occur outside its municipal boundary and legal jurisdiction.

Taunton's inter-municipal agreements with contributing communities only regulate the quantity and character of the wastewater that enters the Taunton collection system to ensure that the integrity and performance of its wastewater infrastructure are protected. Taunton assumes no further responsibility.

> **Response B10**. EPA disagrees with the arguments made by the UBWPAD with respect to the legal authority to include satellite collection systems operators as copermittees and responds to those arguments in detail at Response I1-I14.
>
> EPA's inclusion of the satellite communities as copermittees is consistent with existing NPDES regulations and does not involve adding to or amending NPDES rules. See Responses I1 to I14. EPA has discretion under the regulations with respect to treatment of multiple entities responsible for a POTW or other discharge and its determination to adopt a copermitting framework is a valid exercise of that discretion.
>
> The importance of the collection system component of treatment works has been the subject of increasing attention for a number of years, and EPA's approach would apply the same requirements to satellite systems as are being routinely applied to collection systems that are owned by POTW owners. The need for such an approach is particularly important where, as here, the treatment plant owner and operator has denied any responsibility for those portions of the treatment works on the grounds that they are owned and operated by the contributing communities.

EPA agrees that under the Permit language it is the satellite collection system operator that it responsible for reporting of SSOs from the satellite collection system. The City of Taunton is responsible only for reporting SSOs that occur within its jurisdiction and/or from its system (although this would include interceptors owned by the City that extend into other communities, if any).

Comment B11. Wet Weather Limits

Taunton is requesting that consideration be given to providing a higher concentration limit during wet weather events. Maximizing wet weather flow treatment and simultaneously minimizing effluent nitrogen loads can be competing goals and provisions should be made in the permit to acknowledge different limits during wet weather events. Although the final plan to reduce the frequency and volume discharged from the West Water Street CSO, it is likely that more wastewater/stormwater will be directed to the WWTF during significant wet weather events.

USEPA Region I has acknowledged this issue and issued "two tiered" permit limits to account for wet weather events in many locations including, New Haven, CT, Bangor ME, and Boston MA. New York City, in Region II, has similar accommodations for wet weather in their permits, as does Ohio, in Region V.

40 CFR 122.44(d) and CWA Section 301(b)(1)(C) only require more restrictive limitations as "necessary to attain water quality standards…". The permit's various water quality-based limits are not necessary under high flow conditions as the wastewater facility has basically no meaningful impact on ambient water quality when such flows occur. Therefore, the discharge should not have to meet the more stringent limitations under these conditions – only technology-based requirements should apply (e.g., secondary treatment). The permit should be modified to specify that continued operation of all facilities is required under these conditions but the more restrictive water quality-based limits are suspended under these conditions.

Response B11. The City has not provided any basis for concluding that more wastewater/stormwater will be directed to the WWTF under the final plan for the West Water Street CSO. To date the approach for that CSO has involved mitigation of I/I that has reduced the overall flow to the treatment plant significantly.

Region 1 has not issued "two tiered" wet weather permit limits for water quality based limits. Most of the permits referred to were not issued by EPA (Maine and Connecticut have received delegation of the NPDES program in Region 1, and New York and Ohio also have NPDES-delegation), and EPA can identify no tiering of water quality-based limits in any of these permits, as discussed below:

- The Bangor, Maine permit involved a CSO-related bypass variance to secondary treatment effluent limits only; that approach is permissible only when a CSO Long Term Control Plan has been completed and approved and is not in any case applicable to the water quality-based limits for

which the City seeks relief. *See*, EPA, Approval Letter from David Fierra to John L. Murphy. That letter notes that approval requires the bypass to meet the criteria of 40 C.F.R. § 122.41(m) and the CSO Control Policy, including (1) the bypass is unavoidable to prevent loss of life, personal injury, or severe property damage; (2) there are no feasible alternatives to the bypass; and (3) the bypass will not cause exceedances of water quality standards.

- The permit issued to MWRA for the Boston Deer Island treatment facility does not contain any tiered concentration limits, either for technology- or water quality-based effluent limitations. The MWRA permit does define the flow limit of 436 mgd in terms of "dry day flow" and excludes CSO storage facility flows from the reported flow. See NPDES No. MA0103284, http://www.epa.gov/region1/eco/mwra/pdf/mwrafpm1.pdf. This approach has been adopted in recognition of the increased flows from the CSO storage facilities and to encourage maximization of flows to the treatment facility during wet weather events. This approach does not involve any tiering of water quality based effluent concentration limitations. In any case it is not an applicable approach to the Taunton system where CSO flows are being reduced through a program of I/I reduction that is reducing the overall volume of flow to the facility.

- The Greater New Haven WPCS permit is issued by CTDEEP, not EPA Region 1, and as in Bangor, ME includes CSO-related bypass provisions for secondary treatment percent removal requirements as well as maximum daily limits that are not water quality based. See Permit CT0100366 at 27 ("no water quality based limits were included in the permit at this time"). Nitrogen loads from this facility are covered under the Long Island Sound TMDL and related permit and do not exclude high flow periods.

EPA does not view vague references to permits issued by states outside Region 1 to be relevant to the Taunton WWTP. However, EPA has attempted to review the referenced permits and has not found any model that would support the City's position.

- EPA's review of the fourteen New York City SPDES permits, which are issued by the New York State Department of Environmental Conservation, not EPA Region 2, does not reveal relevant tiering of water quality-based effluent concentration limits. See Draft Permits and Fact Sheets for the NYC POTWs at http://www.dec.ny.gov/permits/92038.html. For example, the 2013 Draft Permit for the Bowery Bay WWTP provides that calendar days influenced by wet weather flows as defined in the permit shall not be considered in calculation of BOD_5 and TSS percent removal. Draft Permit No. NYS0026158,

http://www.dec.ny.gov/docs/permits_ej_operations_pdf/boweryspdes.pdf. This approach is consistent with regulations at 40 CFR 133.103(a) that allow relief from the percent removal requirements of secondary treatment for treatment works with combined sewers. The permit also suspends the TSS daily maximum limit on "days when wet weather influent flow is twice the design flow or on the succeeding day"; this limit is not supported by a water quality analysis but is described in the fact sheet as an operational control measure. See Fact Sheet at 14. ("This limit ensures good WPCP performance on a daily basis in addition to the 30 day and 7 day total suspended solids secondary treatment limits.") The Bowery Bay WWTP permit does not provide wet weather relief for total nitrogen limits, which are expressed in terms of mass loading and not effluent concentrations. In fact, the permit specifically provides loading limits for CSO discharges as well as WWTP discharges and requires additional reductions from WWTPs above that required by the Long Island Sound TMDL in order to make up for the expectation that CSO loadings will exceed the TMDL target.

- EPA was unsuccessful in determining which of the more than 100 major POTW NPDES permits issued by the State of Ohio the comment might be referring to.

The commenter has not provided any support for its assertion that "under high flow conditions as the wastewater facility has basically no meaningful impact on ambient water quality when such flows occur," or explained how such an approach would comply with applicable state water quality standards. *See* Letter from James Pendergast, EPA, September 20, 1996, to Gary Stenhouse, City of Rochester New Hampshire (discussing considerations relating to permit limits based on seasonal flows, including critical low flow requirements under state water quality standards). The comment's argument, however, appears to be only that Taunton WWTP discharges are a relatively smaller component of the total load under wet weather conditions. While this may be the case, the POTW discharges are not negligible under wet weather conditions. The analysis provided in Response B4 of the 2006 wet year indicates that total loads during that year were approximately 9,300 lb/day, of which 2,800 lb/day or 30% are from wastewater treatment plants. While this is less than the contribution from treatment plants in an average summer it is still a substantial contribution to nitrogen loads. It is also clear that water quality standards are violated under wet weather conditions; as noted in material provided by the City at Comment C29, 2006 saw the highest reported chlorophyll-a concentrations in any year from 2006 to 2010.

Comment B12. Comments from Hall and Associates

Attachment 2, prepared by Hall & Associates, provides further comments on the reasonableness of the proposed nitrogen and copper limitations. Based on those comments the City requests that both limitations by stricken from this permit. At a minimum, the present need for nitrogen limitations must be based on an assessment that

fully accounts for effluent reduction requirements presently enacted or anticipated in this watershed and the watersheds affecting Mount Hope Bay.

These include actions affecting CSO, organic loadings and nutrient loadings that all affect the dissolved oxygen regime. Moreover, a rational connection between nutrient levels, algal growth and dissolved oxygen conditions must be developed (at least for the Taunton River) to allow for the identification of actions that will ensure minimum dissolved oxygen compliance. Lastly, it is apparent that the dissolved oxygen water quality criterion for the estuary is out of date and inconsistent with those adopted for Narragansett Bay. It would seem most reasonable to ensure that the updated standards are adopted and to reassess the need for total nitrogen reduction given the best available science, using current standards.

> **Response B12.** The specific comments prepared by Hall & Associates are addressed below. As set forth in more detail in those responses, the analysis performed by EPA was based on the only comprehensive dataset available and was designed to project and account for the impact of reduction in nitrogen discharges on conditions in the Taunton River Estuary and Mount Hope Bay – indeed the primary purpose is to project conditions under a reduced discharge condition (permit limits). Hall & Associates contention that EPA should redo its nitrogen analysis because some incremental nitrogen reductions have been achieved since those data were collected is unpersuasive, particularly since the small amount of more recent data available is not inconsistent with EPA's original analysis and does not indicate any error in EPA's approach.
>
> The connection between nutrient levels, algal growth and DO conditions is not only rational but is well understood in the scientific community and is supported by the data for this system. The DO water quality criteria discussed in the Fact Sheet remain the current criteria in Massachusetts water and are not expected to change in the foreseeable future. Different criteria apply in Rhode Island waters, but this is simply a facet of addressing interstate waters and does not impact the conclusions in the Fact Sheet, particularly since the RI criteria have also been violated in Mount Hope Bay.

Comment C1. Attachment 2: Comments Submitted by Hall & Associates on Behalf of the City of Taunton.

The draft effluent limitation for total nitrogen ("TN") is based on EPA's determination of a "protective" threshold nitrogen concentration for the Taunton River Estuary to preclude an impairment. The basis for this determination is presented in the Fact Sheet. (*See* Fact Sheet, at 12 – 34). Over these 23 pages, EPA presents an alleged impairment threshold of 0.45 mg/L TN, estimates the TN loads from point and non-point sources entering the receiving waters, and concludes that the Taunton Wastewater Treatment Facility ("WWTF") must meet the limits of technology (3 mg/L TN) to mitigate exceedances of the dissolved oxygen ("DO") water quality standard in the Taunton River Estuary and Mount Hope Bay.

The basis for the TN threshold determination is limited to a consideration of water quality monitoring data collected over a three year period (2004 – 2006) from a single location in Mount Hope Bay. EPA determined this threshold by identifying a location, outside the Taunton River Estuary, where water quality standards for DO are not violated in order to identify a nitrogen concentration consistent with unimpaired conditions. EPA asserts that this approach is consistent with EPA guidance regarding the use of reference conditions for the purposes of developing nutrient water quality criteria. (Fact Sheet, at 29). Based on an examination of the available data, EPA determined that Station MHB16 was an appropriate sentinel site because DO standards were met at this site. This site had a growing-season average total nitrogen concentration of 0.45 mg/L for the 2004-2005 period. Therefore, EPA selected 0.45 mg/L TN as the threshold protective of the dissolved oxygen water quality standard of 5.0 mg/L and claimed that the Taunton River Estuary must meet this same TN concentration at Station MHB19 to achieve compliance with the DO water quality standard.

> **Response C1.** The characterization of EPA's analysis is inaccurate. The basis for the TN threshold is not "a single location" in Mount Hope Bay, but consideration of data from a full dataset of twenty-two monitoring stations in the Mount Hope Bay and the Taunton River Estuary system, along with information from scientific literature and research in other estuarine systems. These sources of information are appropriately considered by EPA in interpreting narrative criteria in accordance with 40 CFR § 122.44(d)(1)(vi).
>
> Using the full suite of data from this comprehensive monitoring of the Taunton River Estuary/Mount Hope Bay system, EPA was able to characterize the transition from unimpaired to impaired conditions associated with increasing TN concentrations, expressed in terms of a location in Mount Hope Bay which represented the highest TN concentration where impairments were not identified. This analysis is supplemented by consideration of TN thresholds identified in other systems (a range of 0.39 to 0.50 mg/l identified for SB waters in Massachusetts). Specifically, the frequency of DO violations and elevated chlorophyll-a concentrations at TN concentrations above 0.45 mg/l at multiple sites throughout Mount Hope Bay and the Taunton River Estuary provided a strong indication that the upper end of the range (0.39 to 0.50 mg/l) identified in the *Critical Indicators Report* is not sufficiently protective in this system and that a threshold of 0.45 mg/l is necessary to achieve dissolved oxygen and nutrient water quality standards.[17] EPA therefore used that threshold to calculate allowable loads to the system and associated permit limits to meet that load.

[17] EPA also notes that a probable range of criteria for total nitrogen "in the vicinity of 0.35 to 0.40 mg/l" is suggested in Deacutis & Pryor, *Nutrient Conditions in Narragansett Bay & Numeric Nutrient Criteria Development Strategies for Rhode Island Estuarine Waters* (2011). This document was provided by the City as Attachment D to their comments. While this range is lower than the endpoint identified by EPA for this analysis EPA believes the site specific information supports the 0.45 mg/l target. See Response C24 for further discussion.

Comment C2. Organic enrichment is not a nutrient impairment designation, therefore, there is no demonstration that a nutrient requirement under 40 C.F.R. § 122.44(d) is triggered for the Taunton River.

In the Fact Sheet, the Region concludes that an organic enrichment impairment designation is equivalent to designating that waters as nutrient impaired. (Fact Sheet, at 19). Based on this assumption, the Region concludes that nutrients and chlorophyll a levels are excessive and that stringent TN reduction is needed to address low DO occurring in the estuary pursuant to 40 C.F.R. § 122.44(d).[1] However, the Region's assessment addresses the wrong impairment in the draft permit; the Taunton River is impaired for *organic enrichment* which is *not* equivalent to a nutrient impairment. Because EPA has regulated an impairment that was not determined to exist by the agency that is given statutory authority to render such decisions (*i.e.,* MassDEP), EPA's proposed permit limitations for TN should be withdrawn as it is inconsistent with the adopted, EPA-approved impairment listing.

[FN1] *See* discussion on nutrients and chlorophyll a levels in DEP/SMAST Massachusetts Estuaries Project report, *Site-Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators – Interim Report* (Howes *et. al.*, 2003) ("Critical Indicators Interim Report").

Response C2. First, EPA disagrees with the main thrust of the comment, that water quality-based limits for a pollutant may only be included in an NPDES permit when the discharge's receiving water is listed on the state's list of impaired waters for that pollutant. There is no regulatory support for this contention. A 303(d) listing of impairment may require a TMDL for that pollutant in that receiving water, but absence of such a listing does not preclude a reasonable potential determination under 122.44(d), because of the differing standards applicable to these determinations. While the State includes in the list "the specific cause(s) of the impairment (if known)", see *Massachusetts Year 2012 Integrated List of Waters* at 18, effluent limits are based on a determination that pollutant discharges "cause, have a reasonable potential to cause, or contribute" to a violation. 40 CFR 122.44(d)(1)(vi). Even if the evidence is unclear that a pollutant is currently causing an impairment, a limit may be required if the pollutant has the reasonable potential to cause, or contribute to an exceedance of a water quality standard (i.e., the permit limit may be preventative). Similarly, the pollutant need not be the sole cause of an impairment before an NPDES limit may be imposed; an effluent limit may still be required, if the pollutant "contributes" to a violation. *See In re Town of Newmarket, NH*, NPDES Appeal No. 12-05, 16 E.A.D. __ (2013), slip op. at 54 n.23 ("The plain language of the regulatory requirement (that a permit issuer determine whether a source has the 'reasonable potential to cause or contribute' to an exceedance of a water quality standard) does not require a conclusive demonstration of "cause and effect.")

Second, the comment misstates both the conclusions set forth in the Fact Sheet and the actual impairment designation. The Fact Sheet's conclusion that nutrient and chlorophyll-a concentrations in the Taunton River estuary are excessive are based on (1) monitoring data for multiple sites in the Taunton River Estuary showing extremely high TN concentrations, elevated chlorophyll-a concentrations

and widespread DO depletion; (2) extensive scientific literature documenting the relationships among nutrient levels, primary production (evidenced by chlorophyll-a concentrations) and DO depletion; (3) thresholds for nutrient concentrations identified in guidance documents; (4) proposed and adopted criteria from other states; (5) thresholds identified in other Massachusetts estuaries; and (6) conclusions from research within the Taunton River estuary and Mount Hope and Narragansett Bays. The Region did not base its conclusions regarding nitrogen and chlorophyll-a, and the need for nitrogen reductions, on any "assumption" arising from the impairment designation.

The actual impairment designation is not "organic enrichment" but rather "organic enrichment/low DO", which is a broad category designation applicable to all DO-related impairments that has since been superseded by more specific listing categories. (See Response C3 with respect to the transition to more specific impairment designations and the revised 2012 impairment designation for these waters.) The Fact Sheet does not state that an organic enrichment impairment[/low DO] designation is equivalent to a designation of nutrient impairment. Rather, the Fact Sheet cites the impairment designation for "organic enrichment/low DO", among other evidence, in support of EPA's conclusion that dissolved oxygen standards are violated in the Taunton River estuary.

EPA disagrees that its conclusion regarding the need for nitrogen reductions is in any way inconsistent with or unsupported by the 2010 impairment designation for "organic enrichment/low DO". While EPA has not assumed that an "organic enrichment/low DO" impairment is equivalent to a nutrient impairment, such an impairment is certainly not inconsistent with nutrient impairments (indeed, the mechanism by which nutrients cause DO depletions is through increased organic matter). The State's 2010 "organic enrichment/low DO" designation does not amount to a conclusion that nutrients were *not* the cause of low DO conditions, or that the State has determined that something *other than* nutrient enrichment had been identified as the cause of DO violations in the water body. Furthermore in the 2012 303(d) list, not cited in the Fact Sheet as it had not yet been approved by EPA, the impairment designation does not refer to "organic enrichment" at all but has been revised to state simply "Oxygen, dissolved." (See discussion regarding transition in coding of cause designation in Response C3 below). EPA's conclusion that nitrogen discharges "cause, have the reasonable potential to cause, or contribute to" dissolved oxygen and nutrient impairments is amply supported by the record and does not address the "wrong impairment."

While Massachusetts in its 303(d) listing process has not yet designated the Taunton River estuarine segments for nutrient impairments, this does not control permitting decisions. The State does not have the "statutory authority to render . . . decisions" regarding the need for water quality-based effluent limits under 40 CFR § 122.44(d). That authority is specifically given to "the permitting authority," and EPA is the permitting authority for NPDES permits in Massachusetts.

Finally, even if the State disagreed with the need for water quality-based limits (which is does not) this would not control EPA's permitting decision. Where EPA is the permitting authority the State's formal role under NPDES permitting regulations is through the process for State certification under 40 CFR § 124.53 and 124.55, which do not allow a State to overrule EPA's determinations regarding the need for water quality-based effluent limits. *See* 40 CFR 122.55(c) ("A State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition."). Nor do EPA's regulations require that determinations on water quality-based effluent limits be consistent with, or even consider, state 303(d) listing designations. While 40 CFR § 122.44 does require consistency with some state determinations, for example requiring that effluent limit be "consistent with the requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA," 122.44(d)(1)(vii)(B), there is no such mention of State listing decisions pursuant to CWA sections 305 and 303(d). Indeed, the State listing materials are not even mentioned in the list of "relevant information" set forth in 122.44(d)(1)(vi)(A). It should also be noted that impairment designations are not made according to the same standard that governs NPDES permitting decisions; permitting regulations require the imposition of effluent limits whenever a pollutant discharge "causes, has the reasonable potential to cause, or contributes to" a water quality violation.

Further, it is likely that the impairment designations for the Taunton River watershed simply are not up to date. MassDEP commonly defers revisions in impairment designation until completion of new assessments of a particular watershed in connection with its rotating watershed monitoring and assessment schedule. As stated in MassDEP's responses to comments on the 2012 Integrated List:

> MassDEP follows a rotating watershed monitoring and assessment schedule that does not allow for new assessments to be completed for every watershed in each listing cycle. For example, since the time the 2010 Integrated List was prepared, new assessments have been completed for the Blackstone, Boston Harbor (including Mystic, Neponset and Weymouth/Weir), Merrimack and Parker watersheds and the Cape Cod coastal drainage areas, and these assessments furnished the majority of new information in support of the 2012 listing decisions.

Final Massachusetts Year 2012 Integrated List of Waters at 301. The last Taunton River Watershed Assessment Report was completed in 2001. *See* http://www.mass.gov/eea/agencies/massdep/water/watersheds/water-quality-assessment-reports.html. EPA, it its role approving the Integrated List of Waters, recognizes the resource constraints of the state agencies and accommodates MassDEP's rotating watershed assessment cycle.

Comment C3. EPA's action violates Clean Water Act ("CWA") procedures and requirements.

The Massachusetts 2010 § 303(d) list ("MA § 303(d) list" or "MA § 303(d) report") has the Taunton River, Segment MA62-02 listed as impaired due to pathogens.[2] The segments downstream of MA62-02 from the mouth of the River at the Braga Bridge in Fall River, are listed as impaired for pathogens and organic enrichment/low dissolved oxygen.[3] Further downstream, in Mount Hope Bay, a "nutrient" impairment is designated. An "organic enrichment" impairment designation is *not* equivalent to a "nutrient" impairment designation as evidence by MassDEP having two separate impairment designations for the pollutant causes. If MassDEP believes waters are "nutrient" impaired then such waters are designated as such. (*See, e.g.,* designations for certain sections of Mount Hope Bay). Thus, the state does not presently identify the Taunton Estuary as impaired by nutrients regardless of any potential "indicators" discussed in the Critical Indicators Interim Report. It is clear, EPA has unilaterally amended the state's published, EPA-approved impairment designation via this permit action. EPA had the opportunity to follow specific statutory procedures (discussed below) to amend the Massachusetts impairment listing; however, no such action was ever undertaken by EPA. EPA never notified MassDEP that the impairment designation was in error as required by Section 303(d)(2). Thus, EPA's action violates the requirements of the Act regarding designation and determination of impairments and their causes.

[FN2] Fact Sheet, at 4-5.
[FN3] *Id.*

Response C3. The comment correctly cites the impairments listed in the 2010 MA § 303(d) list for the Taunton River; however, these impairments have been updated in the 2012 MA § 303(d) list as follows: Taunton River, Segment 62-02 is no longer listed on the 303(d) list but has been moved to category 4a of the *2012 Integrated List of Waters* due to the completion and approval of a TMDL addressing the identified fecal coliform impairment (updated from the 2010 reference to "pathogen" impairment); and the segments downstream of MA 62-02 are currently listed as impaired for fecal coliform and "Oxygen, dissolved". One of the downstream segments, 62-04, is additionally listed as impaired for "Fishes bioassessment." The comment does not correctly cite the listed impairments in the Mount Hope Bay segments; while the 2008 MA § 303(d) list included a "nutrients" impairment, this was revised as of the 2010 MA § 303(d) list to impairments for "Nitrogen (total)" and "Chlorophyll-a".

The change in characterization of the impairments is consistent with an ongoing process to transition from the broad categories of impairment available for designations in an early EPA database (WDB) to more specific categories available in the current Assessment Database. This process is described in the *2010 Massachusetts Integrated List of Waters* as follows:

> For earlier listing cycles, up to and including 2002, MassDEP stored assessments in EPA's Water Body System (WBS). For each segment in

> the WBS a use-support determination was made and, whenever possible, causes and sources of impairment were specified. In doing so, MassDEP analysts could select from a list of approximately 30 pre-existing "causes" available from the WBS program.
>
> The EPA discontinued its support of the WBS after the 2002 listing cycle. Instead, the newly developed "Assessment Database" (ADB) was introduced as the preferred database application for tracking water quality assessment data, including use attainment, and causes and sources of impairment. . . . One of the many enhancements offered by the ADB is the availability of over 400 different "causes" that can be specified as contributing to the non-attainment of designated uses. This allows for more detail to be presented in the Integrated List with respect to the nature of the impairments. For example, the non-specific "nutrients" cause used by the WBS is further resolved in the ADB through the use of such causes as "Phosphorus (Total)", "Nitrogen (Total)", or even Nutrient/Eutrophication Biological Indicators". Likewise, specific metals available to ADB users, such as copper or nickel, now replace the general term "metals" used by the WBS.

2010 Massachusetts Integrated List of Waters at 17.

As discussed in Response C2, EPA agrees that an "organic enrichment/low DO" impairment is not automatically equivalent to a nutrient impairment, and EPA did not make such an assumption in developing the nitrogen limit in the Draft Permit.

EPA disagrees with the comment's suggestion that the lack of a specific impairment listing for nutrients reflects a considered state judgment that the available indicator evidence does not support a nutrient impairment listing in these segments. As noted in Response C2, impairment listings are updated in connection with the state rotating watershed monitoring and assessment schedule, and the updates have not included the Taunton watershed since completion of indicator monitoring in connection with the Mount Hope Bay assessment (2004-06). *See Massachusetts Year 2008 Integrated List of Waters* ("Featuring new water quality assessments for the Charles, Connecticut, Hudson, Housatonic and Ten Mile watersheds and the North Coastal Drainage Area"); *Massachusetts Year 2010 Integrated List of Waters* ("Featuring new water quality assessments for the Chicopee, French, Quinebaug and Nashua watersheds and the Narragansett Bay and Mount Hope Bay Coastal Drainage Areas"); and *Massachusetts Year 2012 Integrated List of Waters* ("Featuring new water quality assessments for the Blackstone, Boston Harbor (including Mystic, Neponset and Weymouth/Weir), Merrimack and Parker watersheds and the Cape Cod coastal drainage areas"). EPA's review of the 303(d) list recognizes the rotating nature of these updates. *See EPA New England's Review of Massachusetts' 2012 CWA Section 303(d) List* ("Massachusetts developed its 2012 Section 303(d) list (Category 5) by updating its 2010 Section 303(d) list using all Section 305(b) water quality assessments that have been completed since the 2010 Section 303(d) list was published.")

Further, even if the State had made a specific judgment that the available evidence did not support a listing for impairment caused by nitrogen this would not imply inconsistency with the permit determination, because of the differing standards applicable to these determinations. See Response C2. Thus, while EPA believes it likely that water quality assessments for the Taunton watershed, and future 303(d) listings incorporating such assessments, will support a nitrogen impairment listing for these segments, an explicit listing is not required to support the draft permit nitrogen limit.

Given the differing substantive standards governing listing and permit decisions, the entirely different regulatory processes, and the separate authority given to the permitting authority (EPA) as opposed to the entity responsible for listing (MassDEP), it is clear that this permit decision does not in fact "unilaterally amend the state's published, EPA-approved impairment designation," as claimed in the comment. EPA has not sought to amend the impairment listing, and has approved the state's 303(d) list updates with specific recognition of the use of rotating watershed assessments. The commenter's attempt to conflate two separate CWA processes with differing standards does not demonstrate any error in EPA's permitting determination.

Comment C4. EPA's action is inconsistent with adopted state procedures for narrative criteria implementation.
As the MA § 303(d) report makes evident, "organic enrichment" is linked to low dissolved oxygen impairment instead of a nutrient impairment. (*See* MA § 303(d) report, at 15-16, Table listing Water Body System cause codes with the accompanying Assessment Database cause code and "organic enrichment/low DO" is paired with "[d]issolved oxygen saturation; dissolved oxygen; and organic enrichment (sewage) biological indicators" while "nutrients" is paired with "nitrogen (total); phosphorus (total) and nutrient/eutrophication biological indicators").

There are no indications in the state's section 303(d) procedures that the low nutrient or chlorophyll a levels identified in the Critical Indicators Interim Report control whether or how organic enrichment designations are interpreted or nutrient impairment designations are rendered. According to Massachusetts impairment listing procedures, state waters are only identified as nutrient impaired where excessive algal growth *causes* DO related violations. *These procedures constitute the Department's methodology for interpreting it narrative criteria with respect to nutrients. In determining that Taunton was nutrient impaired, EPA abandoned those procedures and created a new approach to identifying nutrient impairments, presuming that nitrogen levels were excessive. Specifically, EPA's new approach assumed that elevated nutrients directly impair dissolved oxygen levels, which has no basis in state or federal law or the state's published approach to evaluating nutrient impacts via its narrative standard. Thus, EPA's action effectively amends existing state law, which is patently illegal.*[4] [Emphasis in original]

[FN4] *See, e.g., Iowa League of Cities v. EPA*, __ F.3d __, No. 11-3412, 2013 U.S. App. LEXIS 5933 (8th Cir. Mar. 25, 2013).

Response C4. EPA agrees that the specific impairment listing in Massachusetts current and previous 303(d) lists reflects a dissolved oxygen impairment, and that the State has not (yet) specifically listed nutrients as a cause of impairment in the Taunton River estuary. EPA has independently determined that nitrogen discharges "cause, have a reasonable potential to cause, or contribute to" violations of water quality standards, with respect to both dissolved oxygen criteria and narrative nutrient criteria. Dissolved oxygen impairments are not always related to nutrients and therefore are not automatically mapped directly to nutrient impairments; however the potential for nutrients to cause dissolved oxygen impairments is well-documented, and EPA's determination regarding nutrients is in no way inconsistent with a listing for dissolved oxygen impairments.

The comment is incorrect in stating that (1) the nitrogen and chlorophyll-a levels in the *Critical Indicators Interim Report* are not used in nutrient impairment designations; and (2) that waters are only identified as nutrient impaired where excessive algal growth *causes* DO related violations. Examination of the *2012 CALM* http://www.mass.gov/dep/water/resources/2012calm.pdf, refutes both of these claims. First, while the *2012 CALM* does not specifically cite the *Critical Indicators Interim Report,* nutrient assessments under the *2012 CALM* do utilize the MEP indicators process set forth in that document:

> For embayments in Southeastern Massachusetts the MEP has also generated a significant amount of enrichment indicator data based on a weight-of-evidence approach that includes several response variables (e.g., eelgrass, infauna, macroalgae, chlorophyll *a*, DO, Secchi disk, TN concentrations). Since this project is intended to develop site-specific nutrient (nitrogen) thresholds for these systems, their overall analysis of habitat health are utilized to make *Aquatic Life Use* attainment decisions.

Id. at 21. Second, the *2012 CALM* does not require a demonstration that "algal growth *causes* DO violations." Rather, the *2012 CALM* states:

> Nutrient enrichment is not considered to be problematic when indicators, as described above, are absent even if nutrient concentrations exceed their recommended criteria. However, when the multiple, supporting indicators show nutrient enrichment to be problematic and concentration data exceed their criterion, the nutrient is also identified as a cause of impairment.

Id. Under this procedure, the conjunction of multiple indicators and elevated nutrient concentrations is sufficient to support the designation of a nutrient impairment, without any specific causal demonstration. This interpretation of the state narrative standard, albeit in a different context involving the identification of "specific cause(s)" for listing purposes as opposed to the standard of "cause, reasonable potential to cause, or contribute" for permitting purposes, is consistent with EPA's approach in development of the draft permit limits.

The comment's characterization of a "new approach" by EPA that abandons the state interpretation and "assume[s] that elevated nutrients directly impair dissolved oxygen levels" has no basis in the record. The Fact Sheet describes the relationship between nutrients, primary production and dissolved oxygen as follows:

> When nutrients exceed the assimilative capacity of a water body, the ensuing eutrophic cycle can negatively impact in-stream dissolved oxygen levels. Through respiration, and the decomposition of dead plant matter, excessive algae and plant growth can reduce instream dissolved oxygen concentrations to levels that could negatively impact aquatic life. During the day, primary producers (*e.g.*, algae, plants) provide oxygen to the water as a by-product of photosynthesis. At night, however, when photosynthesis ceases but respiration continues, dissolved oxygen concentrations decline. Furthermore, as primary producers die, they are decomposed by bacteria that consume oxygen, and large populations of decomposers can consume large amounts of dissolved oxygen. Many aquatic insects, fish, and other organisms become stressed and may even die when dissolved oxygen levels drop below a particular threshold level.

Fact Sheet at 15-16. As the Fact Sheet clearly indicates, the mechanism of the impact of nutrients on dissolved oxygen is through an increase in algae and plant growth. DO is one of the indicators used by MassDEP in its interpretation of its narrative criteria. *See 2012 CALM* at 21.

Further, even if the process set forth in the *2012 CALM* differed significantly from that utilized in the development of the draft permit limits, this would not indicate error in the permit decision or an attempt to amend State law. As discussed in the Responses C2 and C3, impairment assessment and listings are subject to an entirely different standard than permit determinations; there is no regulatory requirement that permit water quality determinations be consistent with § 303(d) listings; and EPA as the permitting authority has authority to make determinations with respect to water quality-based limits even where the State disagrees with the need for such limits.

Comment C5. EPA failed to adhere to applicable statutory and regulatory requirements.

EPA's action compounds a series of legal and regulatory errors. EPA never adhered to its statutory responsibility of notifying Massachusetts and/or the public of its decision to reject the "organic enrichment" impairment determination made by the state and instead list the Taunton River as nutrient impaired. *See* 40 C.F.R. § 303(d)(2). Similarly, contrary to statutory procedures, EPA never notified Massachusetts or the public of its decision that Massachusetts' impairment identification procedures, as they pertain to nutrients, were insufficient or deficient in any matter. *Id.* Likewise, EPA never informed MassDEP that their application of state narrative criteria was misplaced and should instead allow

for a *presumption*, rather than an actual demonstration, that nutrients are causing excessive algal growth or low DO based on the Critical Indicators Interim Report. This theory was specifically challenged by the New England Interstate Water Pollution Control Commission as technically flawed. (*See* Attachment A- the Commonwealth of Massachusetts is part of the New England Interstate Water Pollution Control Commission).

Under the CWA, EPA must review and either approve or disapprove a state's § 303(d) list. 33 U.S.C. § 1313(d)(2); 40 C.F.R. § 130.7(d)(2). If EPA disapproves the list, then it must, amongst other things, identify the deficiency and propose a proper revision. *Id.* EPA is only authorized to modify a state listing after it expressly disapproves of a state determination. *Id.* Therefore, in this case, if EPA believed that the Taunton River was impaired for nutrients it should have rejected the MA § 303(d) list. It is improper for EPA, after approving the MA § 303(d) list to later, in a draft NPDES permit, attempt to change an impairment listing by creating a water quality criterion for nutrients when the waters are impaired for organic enrichment/low dissolved oxygen. Likewise, if EPA disagreed with the MassDEP approach to narrative criteria implementation with respect to nutrients, EPA should have raised that objection pursuant to procedures under CWA Section 303(c). The Critical Indicators Interim report, cited by EPA as a basis to indicate the water quality that would constitute nutrient impairment, is not even referenced in the MassDEP 303(d) procedures for rendering nutrient impairment determinations.

Section 122.44(d) plainly indicates that state regulatory interpretation regarding narrative criteria compliance need to be respected (unless obviously incorrect). *See Kentucky Waterways Alliance v. Johnson*, 540 F.3d 493, 469 n.1 (6th Cir. 2008) ("In interpreting a state's water quality standard, ambiguities must be resolved by consulting with the state and relying on authorized state interpretations."); *Marathon Oil Co. v. EPA*, 830 F.2d 1346, 1351-1352 (5th Cir. 1987) (EPA is merely an "interested observer" as to how a state interprets its WQS provisions); *American Paper Inst. v. EPA*, 996 F.2d 346, 351 (D.C. Cir. 1993) ("Of course, that does not mean that the language of a narrative criterion does not cabin the *permit writer's* authority at all; rather, *it is an acknowledgement that the writer will have to engage in some kind of interpretation to determine what chemical-specific numeric criteria--and thus what effluent limitations--are most consistent with the state's intent as evinced in its generic standard.*") (emphasis added)). EPA's entire permitting approach discards those technical and regulatory findings.

Adherence to the state's current procedures for confirming whether a nutrient impairment exists or that excessive algal growth is the cause of low DO readings is required by federal law. EPA has violated federal law and misapplied 40 C.F.R. § 122.44(d) by creating (or assuming) a nutrient impairment exists where one has not been determined to exist by the agency statutorily responsible for such determinations. *See, e.g., Ass'n of Pac. Fisheries v. EPA*, 615 F.2d 794, 811-812 (9th Cir. 1980) (As these records confirmed that EPA ignored the relevant information and "proceed[ed] upon assumptions that were entirely fictional or utterly without scientific support" EPA's action is not legally defensible). EPA has also violated federal law by substituting assumptions, unadopted numeric nutrient and chlorophyll a thresholds as the basis for presuming a

nutrient impairment exists in Massachusetts waters to trigger permit requirements under § 122.44(d). (*See infra* note 9). As the NPDES regulations provide no such authority to EPA, this permit action must be withdrawn pending a demonstration that (1) algal growth levels are excessive and (2) such excessive plant growth is the cause of low DO conditions in the Taunton Estuary.

> **Response C5.** The statutory and regulatory requirements the comment refers to are simply inapplicable to this permitting action. EPA has not rejected any Massachusetts impairment identification or related procedures through this permit action, which is an independent proceeding subject to a different substantive standard. This permit action does not indicate any disagreement with EPA with respect to MassDEP's application of state narrative criteria; the permit is consistent with the state's interpretation (including the use of critical indicators for nutrient impairment designations, see Response C4) and the regulatory standard.[18]
>
> EPA does not believe the New England Interstate Water Pollution Control Commission (NEIWPCC) position paper supports the comment. EPA understands the NEIWPCC objection to pertain to the "imposition of independent applicability of numeric nutrient criteria", see Comment attachment A at 2; the Commission expressed its concern by stating that "a waterbody that is meeting environmental response criteria should be listed as attaining standards even it if exceeds a numeric nutrient criterion." Id. The Taunton River/Mount Hope Bay system does not meet environmental response criteria and the permit analysis is response-based, as recommended in that document. ("We understand that EPA has concerns about implementing response-based criteria, but we feel that this is a question that is dealt with in permitting, not standards development. Further, the Northeast states have solid experience in crafting defensible and robust permits with effluent limits derived from these same response-based criteria.") Id.
>
> Nor is this a case of differences in resolving ambiguities in the meaning of a state narrative standard. Rather, the commenter attempts to supplant the clearly applicable regulatory burden of proof (that a pollutant discharge "causes, has reasonable potential to cause, or contributes" to a water quality violation) with a standard more to its liking – that a state must have already made a determination that the pollutant in question is actually causing a specific water quality impact. As this simply is not the applicable standard, and EPA's analysis meets the standard actually applicable to permit issuance, EPA rejects the comment.

Comment C6. EPA provides no rational or substantive demonstration of a DO-related, nutrient impairment occurring in the Taunton River.
As noted above, state and federal law require a demonstration that the nutrient is in fact causing the impairment to demonstrated that more restrictive water quality-based limitations are necessary. (*See e.g.,* CWA § 301(b)(1)(C) and 40 C.F.R. § 122.44(d) where both use the word "necessary" in authorizing the imposition of water quality-based

[18] Nor did EPA employ a "presumption"; see Response C8.

limitations). The federal Administrative Procedure Act also requires technical conclusions to be based on substantial evidence.[5] EPA's Fact Sheet (at 26), simply concludes that excessive nutrients are the cause of DO impairments in the Taunton River. The entire analysis is nothing more than a series of unsupported assumptions that nowhere demonstrates that (1) the nutrients are causing excessive plant growth in the Taunton River or (2) that periodic low DO occurring in the Taunton Estuary is significantly related to algal growth and not some other factor unrelated to algal growth (*e.g.,* organic loadings from wastewater or CSO discharges known to exist in the system, periodic system stratification, natural deposition of organic materials from the watershed, or low DO entering the estuary from Mount Hope Bay). Without consideration of these conditions, it is simply impossible to determine whether or how nutrients could possibly be responsible for any low DO conditions.

[FN5] 5 U.S.C. § 706(2)(E); *see Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 414 (1971) ("the agency action is to be set aside if the action was not supported by 'substantial evidence.'").

Response C6. This comment misstates the legal standard applicable to permit proceedings. Neither state nor federal law require a determination that a pollutant "is in fact causing the impairment"; the standard is whether the pollutant discharge "causes, has reasonable potential to cause, or contributes" to an impairment. 40 CFR § 122.44(d)(1)(i). *In re Town of Newmarket, NH,* NPDES Appeal No. 12-05, 16 E.A.D __ (2013). Further, while EPA's conclusions and determinations in this proceeding are amply supported by evidence, it is simply not the case that the APA "substantial evidence" standard of review on appeal applies to this proceeding; that standard of review applies to formal rule-making and adjudications with trial-like proceedings, not to administrative actions such as permit issuance. 5 U.S.C. § 706.

EPA provided a detailed description of both the well-established connection between nutrient, algal levels and DO, and the specific evidence indicating the problem in this system, including TN concentrations in the Taunton River Estuary well in excess of any recognized thresholds for nitrogen impairments, elevated chlorophyll-a concentrations consistently exceeding the range of concentrations considered acceptable for SB waters in Massachusetts, and widespread violations of water quality criteria for DO. See further discussion at Responses C23 to C29.

EPA notes that in complex systems such as estuaries, DO conditions are affected by a number of interacting factors and it is generally not the case that algal growth (or any other single condition) is the *only* factor influencing DO concentrations. Nor is it ever possible to establish actual causation to a scientific certainty, as that can be achieved only through controlled experiments that are impossible to conduct in a natural system. Despite these limitations, the consistent pattern of high TN concentration, elevated chlorophyll-a and depleted DO provide strong evidence that the well understood mechanism of nutrient overenrichment is operative in this system. EPA is not required to indefinitely defer permit limits to await the possibility of better quantifying the extent to which other factors are also contributing to the impairment.

Comment C7. Missing technical assessments preclude a determination that EPA's approach is rational and scientifically based.
Missing technical assessments needed to render a defensible permit evaluation include: (a) how TN affects algal growth in this part of the system; (b) how algal growth affects DO; (c) the form of nitrogen controlling plant growth; (d) where the algae found in the estuary are growing (upstream in fresh waters, in the Bay or in the tidal river); (e) the degree to which non-algal factors control DO in the system; (f) whether low DO is caused by SOD, diurnal DO variation or stratification; (g) how system hydrodynamics affect the occurrence of low DO; and (h) whether natural factors are responsible for the DO condition. Without such evaluations of these factors, which are well documented as affecting DO of any tidal river, EPA's contention that nutrients are the cause and, therefore, the solution to the DO condition is all presumption, pure speculation, and guesswork. In short, as there is no substantial evidence supporting this scientific conclusion and therefore is no objective way to know that it is scientifically correct, EPA's proposed TN limitation is arbitrary and capricious.[6]

[FN6] As noted before, a central presumption of EPA's effluent limit determination is that station MHB16 defines the level of nutrients (and presumably algal growth) that would be protective of the Taunton Estuary. *See supra,* at 1. It should be obvious to all that these open waters in a bay, highly influenced by the ocean, bear no objective resemblance to the physical setting occurring at Taunton River station (MHB19) where EPA chose to apply the Mount Hope Bay nutrient concentration. At a minimum, EPA would need to demonstrate that the conditions influencing TN dynamics and the DO regime at MBH16 are similar to the Taunton River site to support its position. No such demonstration is made because the physical conditions are radically different and there is no rational basis to believe that TN effects at MHB16 are similar in any way to TN effects at MHB19. Had EPA even conducted a cursory analysis it would have been obvious that (1) the algal growth in the Taunton River is *less than that occurring at MHB16* and (2) stratification, not algal growth, is the primary factor influencing DO levels in MHB16.

Response C7. This comment, like the previous comment, is premised on the misconception that EPA must rule out all other possible explanations for the observed water quality responses before it can include a nutrient limit. This is not the case. The need for permit limits is not restricted to situations where the pollutant is the single cause of a water quality issue and all other factors can be discounted or eliminated. Rather, a permit limit is required whenever a pollutant discharge "causes, has reasonable potential to cause, or contributes" to an impairment. 40 CFR § 122.44(d)(1)(i). EPA is not required to show that there are no other factors influencing DO in the Taunton River Estuary and indeed that would be impossible, as DO conditions are the result of interaction of a number of factors. The question for permit limits is whether the nutrient discharges and the accompanying elevated algal population (clearly seen in the Taunton River Estuary) contribute to the problem or have reasonable potential do so. Given the well understood effect of nutrients on algal and DO and the indicators that this mechanism is operative in this system, EPA's conclusion is amply supported and is neither presumption, speculation nor guesswork.

The comment footnote clearly overstates its case with the insistence that there "is no objective resemblance" between Mount Hope Bay and the contiguous Taunton

River Estuary, and that they are "radically different" with "no rational basis to believe [they] are similar in any way." Despite the hyperbole, these are in fact a series of segments of the same estuarine system, characterized by different levels of mixing of the same two source waters, continual exchange of waters among the estuarine segments, the same sources for sediment, the same climatic conditions, minor difference in depth range (Taunton River depths range from 4 to 10 meters; Mount Hope Bay from 3.5 to 12 meters) and different widths (the Taunton River is one-third to one-half mile across; while Mount Hope Bay is over 2 miles across at its widest point). More specifically, chlorophyll-a concentrations are not less at station MHB 19 than at MHB 16 in a normal year, see Response C21, and the hypothesis that stratification is the primary factor influencing DO in Mount Hope Bay, but not in the Taunton River, is entirely unsupported. See Responses C18 and C23.

Comment C8. EPA's claim that an impairment exists without demonstrating causation violates federal and state law.

EPA's approach (presuming a pollutant is causing a specific adverse ecological effect or causing a narrative criteria violation) is precisely what the CWA does not allow. *See* 40 C.F.R. § 131.11 (criteria determinations must be based on scientifically defensible information); 40 C.F.R. § 122.44(d) (demonstrating that limitations are necessary must be based on all available scientific information); *see also Natural Res. Def. Council v. EPA*, 16 F.3d 1395, 1398 (4th Cir. Va. 1993) ("The court agrees with EPA that its duty, under the CWA and the accompanying regulations, is to ensure that the underlying criteria which are used as the basis of a particular state's water quality standard, are scientifically defensible . . ."); *Chem. Mfrs. Ass'n v. EPA,* 28 F.3d 1259, 1265 (D.C. Cir. 1994) (stating, when challenged, EPA must provide a "full analytical defense of its model" and show "there is a rational relationship between the model and the known behavior of the… pollutant to which it is applied."); *Columbia Falls Aluminum .v EPA,* 139 F. 3d 914, 923 (D.C. Cir 1998) (EPA "retains the duty to examine key assumptions as part of its affirmative burden of promulgating a non-arbitrary, non-capricious rule."). Likewise, EPA may not rely on a flawed or inaccurate study to render decisions under the Act. *Texas Oil & Gas Ass'n v. EPA*, 161 F. 3d 923, 935 (5th Cir. 1998). In this case as basic information is missing to determine that EPA's approach is in fact necessary, the decision is *per se* flawed and unsupported.

EPA decisions may not be based on "sheer guess work". *Leather Indus. of Am. v. EPA*, 40 F.3d 392, 408 (D.C. Cir. 1994) (citing *Am. Petroleum Inst.,* 665 F. 2d 1176, 1186-87 (D.C. Cir. 1981)). EPA may not regulate based on "probabilistic evidence" or "correlations" without proving causation. *Tex Tin Corp. v. EPA*, 992 F. 2d 353, 356 (D.C. Cir. 1993). Likewise, EPA may not claim that nitrogen is the cause of impairment in the Taunton River because it has caused impairment in other waters. The CWA and applicable state law require a site-specific demonstration of an impairment and its cause. (*See, e.g.*, § 303(d), 40 C.F.R. § 130; 314 CMR 4.05(5)(c)). Consequently, evidence that a TN level in a remote section of Mount Hope Bay is apparently not associated with DO violations at that location does not provide any credible evidence that the same TN level is necessary for the Taunton River, a physically distinct area. Without an assessment of

the major factors known to affect DO in tidal estuaries and a demonstration of the degree to which TN is causing excessive algal growth and causing DO violation in the Taunton estuary, EPA's approach is pure guesswork and therefore, arbitrary and capricious. *Leather Industries of Am., 40 F.3d 392.* Consequently, EPA lacks a credible, objective scientific basis for imposing the stringent TN limitations proposed in the draft NPDES permit.

> **Response C8.** The contention that a demonstration of actual causation is necessary before instituting permit limits is simply wrong; that argument has been specifically rejected by the Environmental Appeals Board. *In re Town of Newmarket, NH*, NPDES Appeal No. 12-05, 16 E.A.D. __ (2013), slip op. at 54 n.23 ("The plain language of the regulatory requirement (that a permit issuer determine whether a source has the 'reasonable potential to cause or contribute' to an exceedance of a water quality standard) does not require a conclusive demonstration of 'cause and effect'."). EPA again emphasizes that the setting of NPDES limits, including the interpretation of narrative criteria and assessment of reasonable potential, is governed by the specific provisions of the NPDES regulations and CWA § 402 and not by regulations governing the adoption of water quality standards, 303(d) listing or other provisions. Thus (and although EPA's analysis is not inconsistent with state approaches), caselaw under other CWA sections are only relevant to the extent they are consistent with NPDES requirements.
>
> In any case, EPA did not rely on any presumptions; the available evidence regarding TN concentrations, algal levels and DO depletions strongly supports EPA's conclusion that the well-understood mechanism of nutrient enrichment and cultural eutrophication is operative in the Taunton River/Mount Hope Bay system. See Fact Sheet at 19-26; Responses C19 to C25. EPA disagrees that thresholds developed for other waters are irrelevant to the setting of permit limits under 40 CFR 122.44(d), but in any case performed a site-specific analysis using extensive data within this system. The Taunton River Estuary section is an integral part of the overall system, and the available evidence indicates that area is equally vulnerable to dissolved oxygen impacts from nutrient enrichment as other portions of the estuary. See Responses C18 and C23 regarding the role of specific physical conditions the commenter claims may vary within this system.

Comment C9. EPA's approach is inconsistent with accepted scientific methods for assessing nutrient and DO impacts in flowing waters.

The Fact Sheet indicates that EPA chose an area of Mount Hope Bay that was meeting DO criteria as a "reference station" and simply presumed that whatever TN level that existed at that station would be the necessary TN level to be achieved in the Taunton River. (Fact Sheet, at 30). This was a form of truncated "stressor-response" evaluation the likes of which have been previously expressly rejected by EPA's Science Advisory Board and EPA's own published guidance on nutrient criteria derivation. The claim that the method is appropriate is thoroughly unsupported, not scientifically defensible, objectively irrational and without any known basis in accepted scientific methods for

choosing necessary and appropriate nutrient controls for estuarine waters.[7] As such, this method for setting the nitrogen limit in the permit is arbitrary and capricious.

[FN7] Based on the Supreme Court's decision in *Daubert v. Merrell Dow Pharms*., no agency may base an analysis on scientific information that fails to meet minimum standards of reliability. 509 U.S. 579, 590 n.9 (1993). Daubert incorporates the administrative law principle that an agency cannot disregard the advice of its own experts or take action inconsistent with the facts demonstrated in the record. *Id.* at 593. Thus, for scientific evidence to be considered reliable for agency decision making, it must be based on an analysis that is accepted in the scientific community.

Response C9. EPA's approach examined the continuum of water quality conditions in the Taunton River Estuary and Mount Hope Bay to identify a transition point to from impaired to unimpaired conditions. It is not a stressor-response approach, "truncated" or otherwise, and the cited guidance documents on stressor-response analyses and criteria development are not applicable to reference-based approaches to site-specific analyses for permit limits.[19] Rather this approach is a form of reference-based approach and a similar approach has been widely applied in TMDLs developed under the MEP and approved by MassDEP and EPA. The results are consistent with ranges and thresholds for acceptable TN concentrations found in other estuaries within and outside of Massachusetts. Although this is a simplified approach that does not attempt to quantify individual subprocesses involved in eutrophication, it is entirely appropriate for assessing large scale nutrient load reductions over relatively long averaging periods. This is a scientifically defensible approach that is neither arbitrary nor capricious.

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[19] The Supreme Court decision in *Daubert v. Merrell Dow Pharms*., 509 U.S. 579 (1993), is not applicable to this proceeding. In *Daubert*, the Supreme Court established the standard by which judges must determine the admissibility of expert scientific testimony in federal trials. 509 U.S. at 592-93. The Court listed four factors for federal trial judges to consider when evaluating the reasoning or methodology underlying the expert testimony, including: (1) whether the theory or technique can be tested, (2) whether the theory or technique has been subject to peer review, (3) whether the technique has a high known or potential rate of error, and (4) whether the theory has attained general acceptance within the scientific community. *Id.* at 593-94. On its face, *Daubert* is inapposite to these permit proceedings, which involve not a trial, but an expert agency establishing an effluent limit under a statute it was charged by Congress with administering. Indeed, the Environmental Appeals Board has expressly concluded elsewhere that the "*Daubert* factors are not controlling principles" for administrative agencies, even in cases involving testimony. *In re Solutia Inc.,*10 E.A.D. 193, 211-12, n.22 (EAB 2001); *see Sierra Club v. Marita*, 46 F.3d 606, 621-22 (7th Cir. 1995) (rejecting the use of the *Daubert* test in determining whether to defer to agency decisions where petitioner asserted that the agency employed "bad" science); *see also Edison Elec. Inst. v. EPA*, 391 F.3d 1267, 1269 n.2 (D.C. Cir. 2004) (holding that *Daubert* standard for scientific evidence was inapplicable to EPA rulemaking and stating "Evidentiary rules govern the admissibility of evidence at trial, not the establishment of the processes whereby such evidence will be created"); *Sierra Club v. Marita*, 46 F.3d 606, 621-22 (7th Cir. 1995) (rejecting the use of the *Daubert* test in determining whether to defer to agency decisions where petitioner asserted that the agency employed "bad" science). Unlike a trial where a lay trier of fact must assess the expert testimony presented, a court must afford great deference to EPA decisions that involve technical analyses and scientific judgments within the Agency's expertise under the Act. *See Envtl. Def. Ctr., Inc.* v. *U.S. EPA*, 344 F.3d 832, 869 (9th Cir. 2003); *Am. Iron & Steel Inst.* v. *U.S. EPA,* 115 F.3d 979, 1006 (D.C. Cir. 1997) (per curiam). The comment's contention that Daubert (at page 593) incorporates an "administrative law principle" is simply untrue and there is no such statement in that opinion.

Comment C10. EPA ignored its own relevant guidance and procedures identifying the necessary analyses to establish a defensible nutrient criteria.
EPA has numerous documents showing how to relate nutrients to algae to DO in flowing waters. *See* EPA, *Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Marine Waters*, (Oct. 2001) ("Estuaries Guidance Document"); EPA, *Nutrient Criteria Technical Guidance Manual: Rivers and Streams* (July 2000).[8] Each of these documents requires EPA to account for the particular physical conditions influencing nutrient dynamics in the estuary to reasonably determine how the DO regime is impacted. These approaches all require detailed scientific data assessments and modeling. Likewise, EPA's 2010 document entitled "Using Stressor-Response Relationships to Derive Numeric Nutrient Criteria" ("Stressor Response Guidance") stresses that a proper assessment must account for the factors that could influence the endpoint of concern (*e.g.,* DO) to ensure that nutrient criteria are necessary and properly established. For estuarine settings, that means that the evaluation must account for the physical setting, water column transparency, hydrology, hydrodynamics (in particular stratification), factors affecting algal growth rate, temperature, and detention time. EPA's Fact Sheet did not present a single data plot or analysis to show any relationship exists between DO, chlorophyll a and TN for either the Taunton Estuary or Mount Hope Bay. Thus, there is nothing that shows the presumed conceptual model (TN caused excessive algal growth and low DO) is applicable to this estuary.

There is no evidence in the record showing that achieving a 0.45 mg/L TN level is required in the Taunton River is necessary or sufficient to achieve DO standards. No information showing that TN reduction is required to correct a 0.5 mg/L DO deficit occurring in frequently in the Taunton River. Finally, there is nothing in the record to show that other options, such as adding DO to Taunton and Brockton effluent would be insufficient to offset low DO in the River if the impairment in fact still exists.

[FN8] *See also infra* note 31.

Response C10. EPA's permitting regulations authorize and require EPA to interpret narrative water quality standards in terms of calculated numeric criteria in establishing permit limits, even where there is not sufficient data to permit the detailed scientific data assessment and modeling of all possible parameters influencing water quality conditions that the commenter contemplates. EPA's approach is not inconsistent with the nutrient criteria guidance documents, which recognize reference-based approaches as well as mechanistic models and stressor response analysis (EPA 2010). The guidance regarding stressor-response analyses is not applicable to the completely different approach used by EPA here. EPA notes that the data collected in the SMAST survey was intended for a MEP analysis and was not designed for stressor-response analyses. EPA therefore did not apply the data in that manner, and does not expect the dataset to support statistically significant analyses when used for that purpose. However dataplots that EPA developed in response to comments only support EPA's application of the conceptual model to this system, with correlations consistent with EPA's interpretation of the data. See Response C24.

> The evidence supports EPA's determination that 0.45 mg/l TN concentration, which is the midpoint of acceptable TN loadings in the Massachusetts *Critical Indicators Report*, is associated with the transition from impaired to unimpaired conditions within the Taunton River Estuary/Mount Hope Bay system. This approach does not attempt to model details in physical conditions. While there are variations in the physical settings within this system, there is no indication that the Taunton River Estuary is less sensitive than Mount Hope Bay in terms of DO response. See Response C24. EPA does not agree with the characterization of DO deficits as infrequent; while continuous monitoring is not available for characterization of the frequency and duration of DO deficits, the fact that violations are seen at all sites in the Taunton River Estuary and in all years, based on six monitoring dates per year, indicates a pervasive impairment. Where continuous monitoring is available in Mount Hope Bay, DO deficits are frequent and well-documented. See Response C29.
>
> Finally the proposal that the problem might also be addressed other ways, such as adding DO to effluent, is creative but unrealistic (treatment facilities' ability to add DO to effluent is limited by the saturation capacity of water and would not add appreciably to downstream DO levels given the level of dilution). In any case it does not indicate any error in EPA's implementation of a permitting program designed to reduce and eliminate pollutant discharges.

Comment C11. EPA's simplified method is not accepted in the scientific community. It is not accepted within the scientific community that stressor-response analyses used to identify numeric criteria, can be based on mere assumption. EPA has been harshly admonished by its own Science Advisory Board in drawing broad-based, unsupported and unverified conclusions with respect to nutrient control in similar circumstances:

> In order to be scientifically defensible, empirical methods must take into consideration the influence of other variables.

EPA, *SAB Stressor Response Review*, at 24 (Apr. 27, 2010).

> The statistical methods in the Guidance require careful consideration of confounding variables before being used as predictive tools…. *Without such information, nutrient criteria developed using bivariate methods may be highly inaccurate.*

Id. EPA's latest approach is fundamentally flawed because EPA seeks to compare areas with radically different ecological settings- enclosed tidal rivers and well flushed open bay waters, without any analysis of the relevant factors influencing nitrogen impacts and other related factors influencing DO at these different locations.[9] There is no treatise or EPA guidance manual that indicates such an assessment is scientifically defensible or in any way accepted in the scientific community. In fact, in April 2010, EPA's SAB has expressly stated the opposite- that only similar ecological settings should be evaluated

when developing nutrient criteria and conducting stressor/response analyses based on empirical evidence.

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

Id. at 36, 37.

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

Id. at 37. The analytical approach used by EPA to derive the required nutrient criteria and permit limits is also directly at odds with EPA's own 2010 Stressor Response Guidance[10] on proper derivation of nutrient criteria:

> "…, in 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."

Id. at 32.

> "… prior to estimating the stressor-response relationships, classes of waterbodies identified that are as similar as possible, except with regard to nutrient concentrations."

Id. at 56.

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

Id. at 67. EPA completed none of these necessary evaluations for producing a defensible nutrient objective for the Taunton River Estuary, assuming that the system even exhibits a nutrient-induced DO impairment.

As noted earlier, EPA itself has put out different guidance manuals for rivers, lakes (bays) and estuaries because of the need to consider the effects of such different settings

on nutrient impacts and criteria assessment.[11] None of these documents indicate it is acceptable to plot data from these different settings on the same chart to predict the impact of nitrogen or any other nutrient.

Because EPA has used procedures that are not demonstrated to be scientifically defensible in any published treatise, are directly at odds with the Science Advisory Board admonitions and are contrary to EPA's own published guidance on how to properly evaluate a claimed nutrient related DO impairment in an estuarine water, EPA's proposed approach is not scientifically defensible and cannot be ascribed to agency expertise. Consequently, these unproven and arbitrary procedures may not be used as a basis to establish water quality-based limitations under § 122.44(d).

[FN9] This is the same error Dr. Steven Chapra informed EPA was fundamentally flawed when reviewing the EPA supported approach to generate nutrient criteria for Great Bay. (Attachment B- Dr. Chapra Declaration). His expert affidavit is applicable here because the same error is made in this instance and is even more egregious as EPA did not even attempt to show that the TN level caused excessive algal growth or that such algal growth was the likely cause of low DO conditions when proposing the Taunton permit.

[FN10] EPA, *Using Stressor-Response Relationships to Derive Numeric Nutrient Criteria* (Nov. 2010).

[FN11] EPA, *Technical Guidance Manual for Developing Total Maximum Daily Loads Book 2: Rivers and Streams; Part 1: Biochemical Oxygen Demand/ Dissolved Oxygen and Nutrients/Eutrophication*, at 4-27 (Mar. 1997).

> **Response C11.** This comment is misdirected, as EPA did not perform a stressor response analysis in the development of these permit limits. Stressor response is a process of formal statistical analysis that is one of three "scientifically defensible empirical approaches [recommended by EPA] for setting numeric criteria to address nitrogen/phosphorus pollution," EPA, *Using Stressor-response Relationships to Derive Numeric Nutrient Criteria* (2010); the others are reference condition approaches and mechanistic modeling. EPA, *Nutrient Criteria Technical Guidance Manual: Rivers and Streams* (2001); EPA, *Nutrient Criteria Technical Guidance Manual: Lakes and Ponds* (2001). Stressor response analysis requires a substantial quantity of data to provide statistically significant results; the SMAST data collection was not designed for such an approach and more recent data collection is extremely limited, and EPA therefore did not apply such an approach. Therefore the comment's criticism regarding purported deficiencies in EPA's stressor response analysis are simply inapplicable.[20,21]

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[20] Indeed it appears that portions of this comment may have been intended for another proceeding entirely. E.g. the statement "[n]one of these documents indicate it is acceptable to plot data from these different settings on the same chart to predict the impact of nitrogen" is confounding, as the Taunton Fact Sheet contains no such dataplots (a fact noted and criticized in the prior comment).

[21] Dr. Chapra's affidavit, referenced in the comment footnote, is "an expert review of the New Hampshire Department of Environmental Services (DES) approach to nutrient criteria development for the Great Bay Estuary" and was "specifically directed at addressing whether the . . . use of the 'stressor-response' methodology in that document . . . employed scientifically defensible methods." Comment Attachment B at 1. The document addresses a different system in a different state analyzed using a different methodology and does not provide any specific support for the contentions in this comment.

Nor is the fact that EPA has put out "different guidance manuals for rivers, lakes (bays)[22] and estuaries" of any relevance. All of the settings for which nitrogen analysis was performed are in the estuary and fall under the same guidance manual. EPA presumes that the commenter's intent was to point out variability within this estuarine system as noted in other comments; variability does exist but the evidence does not support the contention that a different TN threshold would be necessary to meet SB criteria in the Taunton River as opposed to Mount Hope Bay.

In contrast, the approach taken by EPA is a form of reference-based approach that is consistent with the approach used in multiple TMDLs developed through MEP, and supported by the consistency of the results with published concentration ranges and thresholds in other systems. EPA acknowledges that it is a "simplified" approach in comparison to the extensive analysis and/or modeling of data (that in this case does not exist) that the commenter suggests should be pursued. This does not render it "not scientifically defensible".

Comment C12. EPA failed to account for existing treatment affecting Taunton River DO.

When determining the need for and level of nutrient control, EPA based all of its analysis on data and conditions occurring 8-9 years ago and did not account for any changed conditions occurring since then. (Fact Sheet, at 19 - 26). The Taunton River and tributaries to Mount Hope Bay have had extensive reduction of organic discharge due to CSO corrective measures and nutrient reduction since 2004. Effluent CBOD and nutrient levels have decreased dramatically from all discharges in the past 8 years. EPA's failure to account for these federally mandated actions impacting the need for TN reductions in the Taunton River, is a facial violation of applicable NPDES rules and the requirements of the Act.

It is axiomatic that an agency's permitting decisions should be based upon the latest available scientific information regarding the receiving water conditions and related regulatory efforts to address water quality. *See* 40 C.F.R. § 122.44(d)(1)(ii) (states in determining the need for permit limitations "the authority *shall* use procedures that account for *existing* controls on point and non-point sources…") (emphasis added); *see also Nw. Ecosystem Alliance v. Rey*, 380 F. Supp. 2d 1175, 1195-1996 (W.D. Wash. 2005) (finding an agency may not "simply rest on the previous EIS or [supplemental] EIS if there is new information that may alter the environmental analysis" and ultimately finding the agencies improperly relied upon outdated data in determining the supplemental EIS). Nowhere in EPA's analysis has the agency accounted for the extensive changes in facility operations that have reduced nutrients and CSO discharges impacting this estuary as well as Mount Hope Bay. Thus, EPA's proposed permit asserting a need for stringent TN limitations at the Taunton facility is plainly in violation

[22] EPA notes the parenthetical in the second to last paragraph of the comment is inaccurate, while a lake may have an embayment "bays" are not "lakes"; certainly the "bay" at issue here (Mount Hope Bay) falls within the scope of the estuarine criteria guidance document.

of federal law because it is not based on the latest available scientific information or even remotely current water quality information for either Mount Hope Bay or the Taunton River.[12]

FN12 As the preamble to § 122.44(d) states, when developing a defensible water quality based limitation the "permitting authority should use all available scientific information on the effect of a pollutant on human health and aquatic life." 54 Fed. Reg. 23,868, 23,876 (June 2, 1989). EPA Region 1 has admitted that NPDES permits must be based on "all available scientific information." *See* EPA Response to Newmarket EAB NPDES Appeal 12-05, at 47. If the information used is not based on current conditions and fails to reflect known improvements in water quality occurring in the past 8 years, the analysis is neither "reliable" nor "scientific".

Response C12. EPA did include information about current conditions in the Fact Sheet, including data that elevated chlorophyll-a concentrations and persistent DO depletion below 5 mg/l continue in Mount Hope Bay based on the most recent available monitoring data. Fact Sheet at 25-26. Data published subsequent to the Fact Sheet issuance also show continued impairments. For example, the datasonde data for 2011 show the same pattern of supersaturated daytime surface DO during algae blooms, accompanied by DO deficits in bottom waters – the same pattern EPA noted in the Fact Sheet for 2010 data.

Figure R2.

Figure R2a. Surface Chlorophyll and DO percent at MHB sonde, 2011

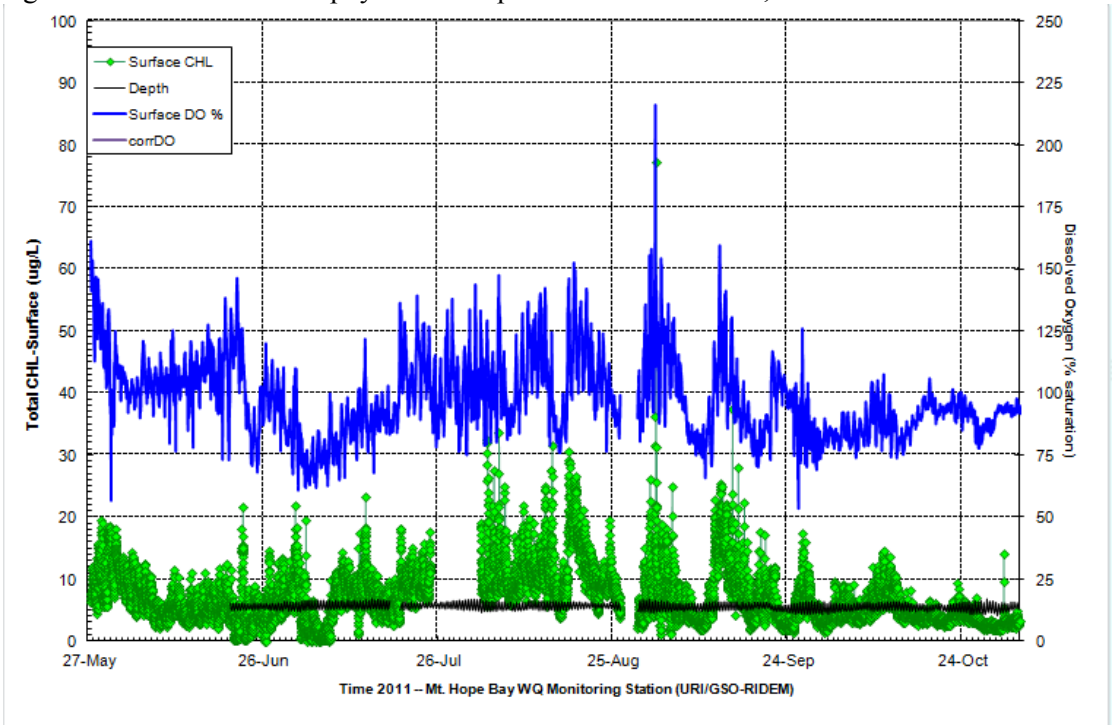

Chart by URI/GSO-RIDEM. Chart and data available at www.dem.ri.gov/bart

Figure R2b. DO concentration at surface and bottom, MHB sonde, 2011

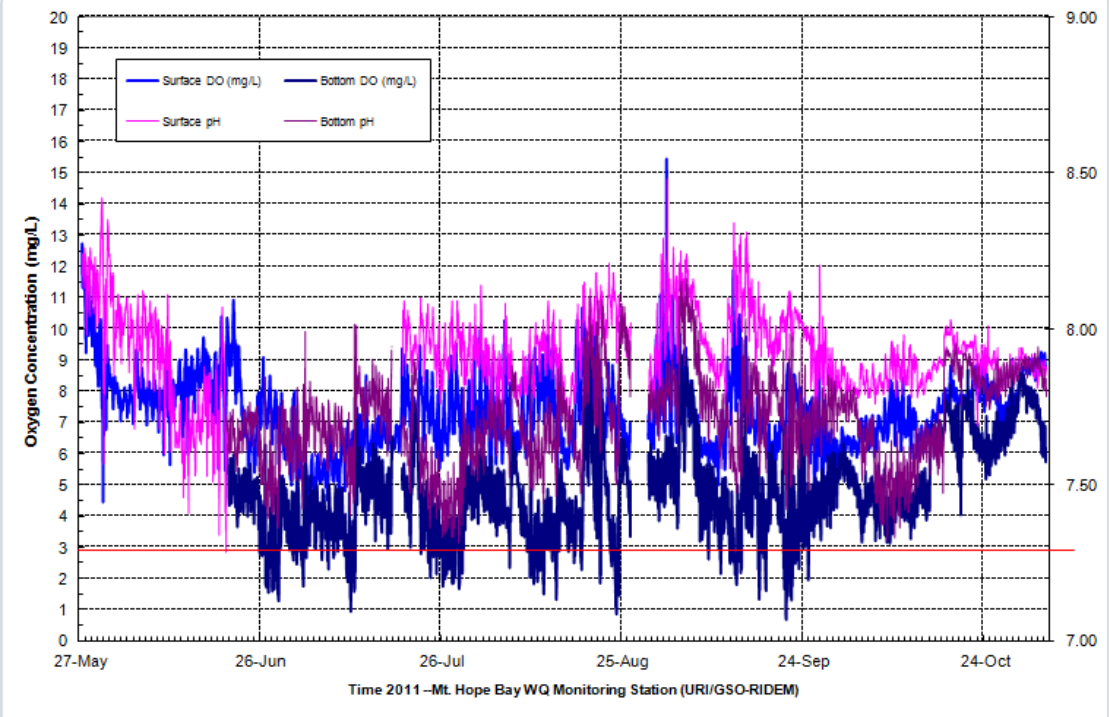

Chart by URI/GSO-RIDEM. Chart and data available at www.dem.ri.gov/bart

For 2013 only daily average data has been published, but these show long periods of daily average DO below the Massachusetts water quality standard of 5.0 mg/l, and among the highest chlorophyll concentrations on record. See further discussion at Response C29.

These recent data indicate that any reductions in pollutant loads that have been achieved through improved treatment have not been sufficient to achieve water quality standards, a result that is consistent with the prediction from EPA's analysis that a substantially greater reduction in nitrogen loadings would be necessary in order for water quality standards to be achieved. The reductions that have been achieved are neither as "extensive" nor "dramatic" as characterized in the comment, see Response C13 (CSO reductions have not significantly reduced organic and nutrient loads to critical areas, and reduction in nitrogen loads from treatment plants is smaller than characterized), and water quality continues to be impacted as reflected in the chlorophyll-a and DO indicators of eutrophic condition.

The analysis performed by EPA was based on the only comprehensive dataset available for determination of system-wide nutrient impacts; the recent data (from URI and the Narragansett Bay Commission) is limited both in location and in parameters monitored (one site in Mount Hope Bay with datasonde and sampling data; one site in Taunton River with no indicator data, and sampling for DIN/TDN and PO4 only until 2012). See Responses C13 and C29.

The commenter has provided references to additional data that EPA did not have in its possession in development of the permit limits (particularly unpublished data collected by the University of Rhode Island) and EPA agrees that these data should also be considered. This is an important aspect of the public comment process, and EPA appreciates this aspect of the commenter's input. The specific recent data sources are discussed where they are commented on individually below, see Responses C13 and C29, and as discussed in those responses the new data do not change EPA's conclusions regarding nitrogen impacts and necessary load reductions in the watershed. As noted above the more recent data are too limited to provide a basis for a new analysis (the data used by EPA continues to be the only comprehensive dataset available that is usable to determine watershed loads and reductions), but EPA's analysis is consistent with the recent data indicating continued water quality impacts.

Comment C13. Major improvements in water quality have occurred since 2004/5 that must be accounted for in setting permit limitations.

Under the structure of the Act and its implementing regulations, it is plainly inappropriate to exclude consideration of current information that provides insight on whether or not historical water quality has significantly improved and the proper derivation of a narrative translator. *See, e.g.,* CWA Section 304(a) (requiring EPA to use the latest scientific information); 40 C.F.R. Part 130 (requiring impaired waters list be updated every 2 years in order to be based on current information for the estuary).[13]

In this case, EPA relied upon data from 2004/5 to conclude that major nutrient reductions were required to address DO concerns in both the Taunton River and, indirectly Mount Hope Bay. (Fact Sheet, at 29-30). Since 2004/5 there has been dramatic reductions in organic and nutrient loadings to these waters, therefore, the readings from 2004/5 cannot possibly reflect current conditions.[14] The reports entitled *Spatial and Temporal Patterns in Nutrient Standing Stock and Mass-Balance in Response to Load Reductions in a Temperate Estuary* (Attachment C)[15] and *Draft Nutrient Conditions in Narragansett Bay & Numeric Nutrient Criteria Development Strategies for Rhode Island Estuarine Waters* (Attachment D)[16], discuss the extent of nutrient reduction measures implemented by both Rhode Island and Massachusetts. From October 2003 to June 2008, at least eight Rhode Island wastewater treatment facilities, including the bay's second largest, upgraded to tertiary sewage treatment to remove excess nitrogen.[17] The largest, Field's Point WWTF, plans to complete its tertiary treatment system by December 2013 which will further reduce the bay's nitrogen levels.[18] In fact, it is expected that once the Field's Point WWTF upgrades are complete, the bay will meet the nitrogen target goal set by Rhode Island General Law § 46-12-3(25).[19]

Between the years 2000 and 2010, both the Taunton River and Narragansett Bay experienced significant reductions in TN loads. In the Taunton River, the average annual load of TN dropped from 1.64 x 10^6 kg to 5.28 x 10^5 kg from the periods 2003-2004 to 2008-2010. Adjusting for the difference in average annual flow, this represents a TN concentration reduction of 48%.[20] These reductions have greatly decreased total nitrogen levels in Mount Hope Bay and such levels are now well below the level EPA has indicated would be protective for Mount Hope Bay – 0.45 mg/L. *Infra* at 37-40.

A comparison of nutrient and organic loadings for the Taunton River demonstrates that major reductions in both parameters have occurred since 2004/5. The City of Brockton is in the process of undertaking additional modifications that will reduce its nitrogen loading even further. Overall point source nitrogen loadings to the estuary have decreased by approximately 25% since 2005 (excluding the CSO related TN reductions).

WWTF	Design Flow (MGD)	Receiving Stream	EPA Calculation Average 2004-05 Summer TN Discharge (lb/day)	May to October BETA Calculation Avg. 2004-05 Summer Discharge (lb/day)		May to October BETA Calculation Avg. 2011-12 Summer Discharge (lb/day)	
				BOD	TN	BOD	TN
Taunton[2]	8.4	Taunton River Estuary	610	474	681	116	502
Somerset[1]	4.2	Taunton River Estuary	349.5	244	412	160	398
MCI Bridgewater	0.55	Taunton River	37	202	No Data	341	24
Brockton[2]	18	Salisbury River	1303	358	1,434	117	618
Bridgewater	1.44	Town River	137.5	43	164	43	208
Mansfield	3.14	Three Mile River	375.5	24	431	19	383
Middleboro[2]	2.16	Nemasket River	207.5	11	282	11	397
		Total Load:	3,020	1,355	3,404	807	2,530

Notes:

1: Nitrogen data provided was monthly maximum day value.
2: CBOD measured during summer reporting period.
3: Values calculated with reported monthly averages unless otherwise noted.

The algal levels have also dropped in Mount Hope Bay by approximately 25%. Moreover, the Cities of Taunton and Fall River (at the mouth of the estuary) have implemented extensive wet weather controls that have reduced organic loadings to the river since 2004. *See* chart below detailing the degree of CSO reduction occurring. (Personal communication between Joe Federico, Beta Inc. and Nancy Beaton, CDM Smith).

Description	Pre-CSO Program	Current	Reduction
Estimated Annual CSO Volume	1293 MG/year	278 MG/year (Overall) <65 MG/year (South/Central)	78% (Overall) >94% (South/Central)

EPA's analyses, frozen in time failed to account for how these changes would alter the DO conditions in the Taunton River, 8 years later. Finally, the Brayton Point generating facility (at the mouth of the estuary) has implemented two new cooling towers that will lower temperatures in the Bay and Taunton River. (*See* Attachment E- Brayton Point Station Fact Sheet). The lower temperature will have a direct impact on promoting higher DO by (1) increasing DO saturation and (2) reducing the organic deoxygenation rates of the system. EPA's failure to account for the impact of these changes in treatment affecting algal growth and the DO regime is contrary to the requirements of 40 C.F.R. § 122.44(d).[21] The effect of these measures since 2004/5 on DO in the Taunton River would be profound, assuming EPA's position regarding the factors controlling low DO is correct. The Bay delivers the vast majority of the water entering the Taunton River every day. EPA itself estimates that the salt water contribution is triple the fresh water component. (Fact Sheet, at 31). Improved DO would now be associated with these tidal flows as well as reduced algal levels. Likewise millions of gallons of untreated wastewater have been reduced since 2004 via CSO control. This would reduce the organic enrichment of the estuary and reduce the low DO load associated with those combined sewer overflows. Given the scope of pollution reduction efforts occurring since 2004/5, it is inappropriate for EPA to claim that nutrient controls are necessary based on data reflecting 2004/5 conditions. It is certainly possible, if not likely, that the minor DO violations found to occur in the Taunton River based on 2004/5 conditions, no longer exist. In any event, the failure to account for these changes influencing the need for and extent of TN reduction is contrary to applicable rules and norms of administrative agency decision making.

In summary, to support its claim that Taunton's nutrient discharge is the cause of narrative or DO criteria violation, EPA must utilize current data since numerous changes promoting improved DO have occurred since 2005. Therefore, EPA must update its

analyses to reflect the known water quality improvements occurring since 2005 and determine, based on current data, whether or not the Taunton River Estuary is actually still impaired for DO and, if so, what factors are controlling that impairment.

[FN13] The 11th Circuit Court of Appeals stated:
The CWA requires that states identify all waterbodies within their boundaries that do not meet or are not expected to meet water quality standards. *See* 33 U.S.C. § 1313(d)(1)(A); 40 C.F.R. §§ 130.2(j), 130.7(b)(1). EPA regulations require states to "assemble and *evaluate all* existing and readily available water quality-related data and information to develop [their impaired waters lists]." 40 C.F.R. § 130.7(b)(5) (emphasis added).
While § 130.7(b)(6)(iii) implies that Florida has a right to decide not to *use* certain data, it does not obviate the requirement in § 130.7(b)(5) that Florida *evaluate* all existing and readily available data. By taking the hard-line approach of not considering any data older than 7.5 years--even when there is no more current data for a particular waterbody--Florida has not fulfilled § 130.7(b)(5)'s evaluation requirement. Moreover, states are required by the CWA to identify *all* waterbodies that fail to meet water quality standards, 33 U.S.C. § 1313(d)(1)(A); states cannot shirk this responsibility simply by claiming a lack of current data. The district court misinterpreted the CWA's statutory and regulatory scheme when it held to the contrary, and we must therefore remand this issue for an analysis under the correct legal standard. *Sierra Club v. Leavitt*, 488 F.3d 904, 913 (11th Cir. 2007).
[FN14] After the 2003 fish kill in the Providence River, the Rhode Island legislature directed facilities to achieve a 50% reduction in nitrogen discharges. Tom Uva of the Narragansett Bay Commission indicated that the present TN discharges from Rhode Island have decreased by 48% and that ambient TN levels are the lowest measured to date. (Personal communication with John C. Hall on June 11, 2013).
[FN15] Jason Seth Krumholz, *Spatial and Temporal Patterns in Nutrient Standing Stock and Mass-Balance in Response to Load Reductions in a Temperate Estuary,* (2012).
[FN16] Christopher Deacutis and Donald Pryer, *Draft Nutrient Conditions in Narragansett Bay & Numeric Nutrient Criteria Development Strategies for Rhode Island Estuarine Waters* (June 2011).
[FN17] *Id.* at 2, 28.
[FN18] Krumholz, *supra* note 15, at 286.
[FN19] *Id.* at 97.
[FN20] *Id.* at 167.
[FN21] EPA was responsible, in part for mandating that nutrient reduction occur broadly in the Narragansett Basin and CSO reduction in Massachusetts. Those and other changes have produced major improvements in water quality such that the 2004/5 conditions referenced by EPA are no longer relevant.

Response C13. EPA did not "exclude consideration of current information" as claimed in the comment. EPA included charts and references to the 2010 published indicator data in Mount Hope Bay documenting continued nutrient impacts and water quality impacts in the Bay. Fact Sheet at 25-26. These impacts continue through 2013 as discussed in Responses C12 and C29. The most recent 303(d) lists, updated every two years, continue to cite impairments to these waters for dissolved oxygen in the Taunton River (MA 2012 Integrated List of Waters), nitrogen (total) and chlorophyll-a in MA segments of Mount Hope Bay, (id.) and nitrogen (total) and oxygen (dissolved) in the RI segments of Mount Hope Bay.

The references to reductions by Rhode Island treatment plants are not relevant to this system as those treatment plants discharge to Narragansett Bay proper and not to Mount Hope Bay.[23] The actual reduction in total nitrogen loads to Narragansett

[23] While Narragansett Bay proper and Mount Hope Bay are connected and part of a larger system, research indicates that Mount Hope Bay is a net transporter of nitrogen to Narragansett Bay proper, rather than vice

Bay achieved to date, as described in Krumholz (2012) (H&A Comment Attachment C) has been "only about 17% of the annual ecosystem budget," *id.* at 25, although it is expected to reach about 50% when all the larger plants have upgraded to tertiary treatment. *Id.* at 25 and 38. Krumholz concluded that there was no observable response in chlorophyll or primary productivity from the reduction to date but that a 50% reduction would warrant a reanalysis. *Id* at 25.

The comment's claim that TN concentrations in the Taunton River have decreased 48% is simply untrue. The comment cites to a Table in the Krumholz Ph.D dissertation comparing loads from the period 2003-04 and 2008-2010, but the comment does not include the information from the document text indicating that these loads were not calculated in comparable ways:

> The discrepancy in measurement comes in part from the fact that Nixon et al. (1995, 2008) scaled up the flow of the Taunton to account for the large un-gauged area between the measurement station, at State Farm in Bridgewater MA, and the mouth of the river. By land area, slightly more than half of the watershed is un-gauged because the river has tidal influence for about 10 miles from its mouth. This results in increasing the flow from the Bridgewater gauge by about 40%, as calculated by (Boucher 1991). We elected not to scale this flow up primarily because the Taunton River at Bridgewater, where it was sampled both for flow and for concentration, during low flow periods is more than half sewage effluent by volume. Even during high flow periods, the effluent from the Brockton WWTF, at a relatively constant 17-20 million gallons per day, is close to 10% of the total flow of the river. Therefore, we feel it may not be accurate to apply concentration data taken at the Bridgewater gauge, and assume that it will hold constant as the volume essentially doubles with 300 square miles of ungauged area below this station. This is much less of a concern for other rivers, where the volume of effluent is small compared to the volume of water, and the ratio of gauged to un-gauged area is small (for most of the other rivers, the ratio of gauged to total area is <1.2).
>
> When we calculate the Taunton River using Boucher's (1991) coefficient, we get 82 million moles TN and about 1.22 million moles TP. This TN estimate is still **a 30% reduction** over Nixon et al. and the phosphorus reduction is still about 77% of the earlier estimate. These numbers are probably a more accurate representation of the change which has gone on over time in that system. We expect the large phosphorus reduction, since Nixon et al.'s values are from data collected in the 1980's, before large scale reductions in phosphorus load became mainstream (Litke 1999). However, for the purpose of attempting to quantify as accurately as possible the total flows into and out of the system, we believe that adding

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versa, so that reductions to loads in Narragansett Bay proper are not expect to result in discernible improvement in Mount Hope Bay. SMAST, *Framework for Formulating the Mt. Hope Bay Natural Laboratory: A Synthesis and Summary* (2003) at 99.

> the un-gauged portion of the Taunton River to our 'unmeasured drainage' term, and representing it with the average load per acre across the entire system provides a more accurate picture of the actual contribution from the Taunton, though we admit there is a fair amount of uncertainty either way on this matter. [emphasis added]

Thus the dissertation calculates a 30% reduction in loads through 2010; even this however, is an overestimate because the location of sampling is different between the 2003-04 and 2008-2010 surveys. While the 2003-04 data was taken at the Bridgewater gauge (as indicated in the dissertation), the 2008-10 NBC data was collected at the Berkley Bridge in Dighton (snapshot.narrabay.com/app/MonitoringInitiatives/NutrientMonitoring), which is subject to dilution by both the flow from ungauged areas of the watershed (about 40% of total watershed) and by ocean water (this site is located in the estuary). Given the large contribution of the Brockton discharge, upstream of the Bridgewater gage, it would be expected that concentrations would be lower further downstream and that comparing loads calculated from the two sites would result in a spurious "reduction", although the presence of the Taunton discharge between these two sites complicates attempts to calculate what the true reduction might be.

This is not to say that there have not been reductions to nitrogen loads in connection with improved treatment, but just that they are not as substantial as the comment contends. In particular EPA agrees that the City of Brockton's upgrade to its treatment plant, completed in 2010, has resulted in a significant decrease in total nitrogen loads of about 700 lb/d as of 2010, although that reduction is not sufficient to meet the target thresholds in the estuary. EPA agrees that the total reduction in WWTP loads has been approximately 25%, although the reduction in total TN load (including nonpoint sources) is only about 17%.[24] These reductions would not be predicted to be sufficient to achieve the target TN concentration or achieve water quality standards, and in fact the available data indicates that elevated chlorophyll concentrations and DO depletions continued through 2010 consistent with EPA's analysis. See Response C29. EPA's analysis did in fact consider the impact of reductions in nitrogen discharges from Brockton and other WWTPs; indeed, the 3 mg/l TN permit limit is premised on new permit limits at all the other major dischargers in the Taunton River watershed, which will result in further reductions below those already achieved at those facilities.

The CSO reductions cited in the comment, while important in addressing other pressing water quality problems, are not expected to have a significant impact on DO conditions in the upper Taunton River estuary where the Fact Sheet analysis

[24] EPA notes that the comment contains estimates of TN loading in 2004-05 which are higher than those used by EPA in its loading analysis; this is because EPA's loads were calculated for June to September to match the data in the rest of the loading analysis (the period for which receiving monitoring data was collected), while the comment loads include May and October. The scale of reduction due to Brockton's treatment upgrade is approximately 25% of point source loads for either time period.

was conducted. While the comment portrays a lump sum of "1,293 MG/year" as being reduced by "the Cities of Taunton and Fall River," this volume, and the associated reductions, are related essentially entirely to reductions in Fall River CSO discharges and not to City of Taunton discharges. Within the Fall River system almost the entire reduction has occurred in discharges from the South/Central regions which discharge to the Quequechan River and Mount Hope Bay in connection with the South Tunnel construction.[25] *See* City of Fall River, *CSO Abatement Program North System Plan and Program Update Report – Supplemental Report* (2011). These Fall River CSOs are located more than 6 miles downstream of the station used as the locus for the loading analysis and discharge only during wet weather, when flows from the Taunton River are at their highest and flows move most strongly away from the mouth of the estuary. In addition, most of these CSO discharges addressed occur primarily in wet months and therefore have limited effect on the summer conditions that are analyzed in the Fact Sheet.

Moreover these CSO reductions did not eliminate organic and nutrient loadings from these flows. The flows did not disappear; the CSO reduction plan implemented by the City of Fall River involves primarily increased capacity at the treatment plant (particularly increased capacity for primary treatment of wet weather flows), storage, and satellite disinfection and screening. Thus a proportion of the flow (and the only treatment for CSO discharges in the North region) receive only screening and disinfection, which would not be expected to substantially reduce nutrient and BOD loads. Another portion of the flow receives only primary treatment, providing no substantial nutrient removal and limited BOD removal. Even for those flows now receiving secondary treatment it is unclear that any organic and nutrient reduction is being provided due to the dilute nature of the CSO discharges; based on monitoring provided in connection with the Cove Street screening and disinfection facility, the influent to that facility has quite low BOD (12-16 mg/l) and TN (3.4 to 3.8 mg/l) concentrations that are lower than the effluent from the WWTP. City of Fall River, *CSO Abatement Program North System CSO Control Plan and Program Update Report – Supplemental Report* (2011) at 1-1 to 1-3 and Table 2-2 Thus, while wet weather controls are providing important reductions in pathogen loads and other pollutants, there does not seem to be evidence that a substantial reduction in organic and nutrient loads can be expected from the CSO mitigation efforts to date.

Brayton Point thermal discharges may also have contributed incrementally to dissolved oxygen depletion in Mount Hope Bay, although the limitations on thermal discharges were not based on DO impacts, see EPA, *Clean Water Act NPDES Permitting Determinations for Thermal Discharge and Cooling Water*

[25] While not stated in the comment's table, of the 1,293 MG prior to the tunnel, 1,032 MG was from the South/Central sewer areas. Of the total reduction of 1,015 MG the vast majority (967 MG) was in the South Central area, with a much smaller amount (approximately 45 MG/yr or 0.12 mgd) was in the lowermost portion of the Taunton River.

Intake from Brayton Point Station in Somerset, MA (2002), and extensive modeling efforts in connection with the Brayton Point permit proceedings were unable to quantify the impact of those thermal discharges on DO concentrations. See EPA, *Response to Comments, Brayton Point Station NPDES Permit No. MA0003654* at III-10 (http://www.epa.gov/region1/braytonpoint/pdfs/finalpermit/sectionIII.pdf). However, the influence of the thermal plume is negligible in the Taunton River Estuary portion of the system, where temperatures are naturally higher than in Mount Hope Bay. Furthermore, while thermal loads have been dramatically reduced since 2011, DO depletions have continued within Mount Hope Bay as shown by continuous datasonde measurements from 2011 through 2013. See Responses C12 and C29.[26] This conclusion is also supported by ongoing monitoring performed by the Brayton Point Station, which found that the proportion of DO readings below 5 mg/l (indicating violation of the MA SWQS for DO in SB waters) is greater than the long-term mean in both the most recent year (2013) and in the most recent four year period (2010-2013). Brayton Point Energy, LLC, *Brayton Point Station Hydrographical and Biological Monitoring Program, 2013 Annual Report* (August 26, 2014). The commenter's theory that reduction in thermal loads from Brayton Point have resolved the DO issue in the upper Taunton Estuary is unsupported by any evidence at all.

In sum, EPA relied on the best available data (the only comprehensive data set and one collected through a MassDEP approved program) in performing its analysis. While there have been reductions in nitrogen loads since 2004-05 they are not as significant as the comments state, and nutrient-related water quality issues continue based on the limited more recent data. The draft permit limits are necessary both to reduce present loads and to address loadings as treatment plants reach their design flows in future years, when all available data from all time periods are considered.

Comment C14. EPA failed to provide a cause and effect demonstration as required by state and federal law.

As noted earlier, the Fact Sheet is bereft of analyses confirming that nutrients are the actual cause of low DO measured in the Taunton River in 2004/5. This is a fatal deficiency of EPA's proposed permit action. Rather, EPA has employed a simplified form of "reference waters" assessment to select the "protective" TN concentration that must be achieved in the Taunton River. (Fact Sheet, at 30). As noted earlier, EPA's selection of a TN end point for Mount Hope Bay was not based on a demonstrated impairment threshold needed to produce a minimum DO of 5.0 mg/L in the Taunton River. Moreover, the selection of the TN level failed to identify the relevant algal growth

[26] Results from monitoring done under the Brayton Power Plant NPDES permit are consistent with these results, with DO measurements in 2011, 2012 and 2013 below their long term mean in summer months with frequent results below 5 mg/l. *Brayton Point Station Hydrographical and Biological Monitoring Program – 2013 Annual Report* at 3-1 to 3-86; *Brayton Point Station Hydrographical and Biological Monitoring Program – 2012 Annual Report* at 3-1 to 3-85; *Brayton Point Station Hydrographical and Biological Monitoring Program – 2011 Annual Report* at 3-1 to 3-83.

response which is necessary to produce the specific level of DO improvement to meet applicable numeric standards (assuming that the algal component is significant in controlling DO in the Taunton River) as required by state law.[22] Choosing a TN level without confirming that it is (1) necessary to produce the protective algal level and (2) that it can ensure DO compliance violates the requirement that the approach is sufficient to ensure standards compliance. (*See* 40 C.F.R. § 122.44(d)(1)(vi)(A) (requiring a narrative standard-based effluent limitation to "fully protect the designated use")). This plainly fails to meet regulatory prerequisites.

[FN22] When EPA recently proposed estuarine nutrient criteria for Florida, EPA proposed chlorophyll a levels that were deemed sufficient to protect beneficial uses.
EPA is proposing this [reference] approach to derive numeric chlorophyll *a* criteria for Florida's coastal waters because the scientific data and information available were insufficient to establish accurate quantifiable relationships between TN and TP concentrations and harmful, adverse effects due to the limited TN and TP data available. Therefore, EPA is proposing to rely upon the reference condition approach to identify numeric chlorophyll-a criteria concentrations that protect the designated uses, and avoid any adverse change in natural populations of aquatic flora or fauna in Florida's coastal waters.
EPA, *Water Quality Standards for the State of Florida's Estuaries, Coastal Waters, and South Florida Inland Flowing Waters* (2012), at 87.

Response C14. The commenter again ignores the regulatory standard governing imposition of water quality-based limits. The governing standard is not that EPA "confirm[] that nutrients are the actual cause of low DO measured" in the receiving water. Rather, the regulations require an effluent limit if a pollutant discharge "causes, has reasonable potential to cause, or contributes" an exceedance of a water quality standard.§122.44(d); 40 C.F.R. *In re Town of Newmarket, NH,* NPDES Appeal No. 12-05, 16 E.A.D __ (2013). In the absence of detailed mechanical models EPA is obligated to rely on the best available information to derive an impairment threshold and has done so here. There is inevitably some scientific uncertainty associated with the analysis of complex systems, even when detailed models are available, and EPA has appropriately moved forward with permit limits in the face of uncertainty here. See *In re Upper Blackstone Water Pollution Abatement Dist.*, NPDES Appeal Nos. 08-11 to 08-18 & 09-06, at 40 (EAB May 28, 2010) ("scientific uncertainty is not a basis for delay in issuing an NPDES permit."). EPA disagrees with the contention, unsupported by any citation, that it is required under state law to identify a specific algal growth response that is associated with a specific level of DO improvement prior to instituting permit limits. EPA notes that TMDLs developed under MEP and approved by MassDEP do not engage in that sort of analysis.

Comment C15. The Clean Water Act requires a causal demonstration.
The CWA is a "science-based" statute that requires the establishment of criteria "accurately reflecting the latest scientific information" regarding "…the *effects* of pollutants on biological community diversity, productivity and stability…" 33 U.S.C. § 1314(a)(1); *accord*, 40 C.F.R. § 131.3(c) (criteria developed by EPA are based on "the *effect* of a constituent on a particular aquatic species"). No criteria (including a narrative criteria interpretation) can be approved unless it is "based on a sound scientific rationale". *Id.* § 131.11 (a).[23] Impairment listings only occur where it is demonstrated that the

applicable criteria are exceeded. *See* 33 U.S.C. §1313(d).[24] Given the language of the Act and the implementing regulations, it is not surprising that courts have determined "that neither the language of the Act nor the intent of Congress appears to contemplate liability without causation." *See Nat'l Metal Finishers Ass'n*, 719 F.2d. at 640; *Ark. Poul. Fed. v. EPA*, 852 F. 2d 324, 328 (8th Cir. 1988) (stating the discharge must at least be "a cause" of the violation).

[FN23] The Agency's guidance on nutrient criteria development broadly discusses the need to address how causal (nutrients) and response (algal growth) is documented for particular water bodies.
[FN24] It is a general principle of the CWA, or any environmental statute for that matter, that pollutants be regulated if, and only if, they are causing harm or impairment. In generating numeric water quality criteria, EPA must abide by the same principle. *See* 33 U.S.C. §§ 1313(c)(2)(A), 1314 (a); 40 C.F.R. § 131.3(b); *Leather Indus. of Am.*, 40 F.3d at 401 ("EPA's mandate to establish standards "adequate to protect public health and the environment from any reasonably anticipated adverse effects of each pollutant," does not give the EPA blanket one-way ratchet authority to tighten standards.").

Response C15. This comment relies on a variety of inapplicable standards. First, while EPA's analysis is based on sound science and the best available information, this is not a process for approval of water quality criteria under 40 CFR § 131.3(c) or 131.11(a). Second, the determination to include a water quality based effluent limit is not an impairment listing; permit limits are included not "only . . . where it is demonstrated that applicable criteria are exceeded" but whenever a discharge "causes, has reasonable potential to cause, or contributes" to an excursion. 40 CFR § 122.44(d); see Responses C1 to C5. Third, this permit action concerns the establishment of protective permit limits, not establishing liability. The cases cited by the commenter, *Nat'l Metal Finishers Ass'n*, 719 F.2d. at 640; *Ark. Poul. Fed. v. EPA*, 852 F. 2d 324, 328 (8th Cir. 1988), disapproved an EPA regulation that imposed liability for interference with POTW operations on indirect dischargers without any evidence that the indirect discharge caused the interference. The cases did not overturn the limit-setting aspect of the pretreatment regulations, which do not require a showing of causation; i.e. 40 CFR 403.8(f)(4) requires POTWs with pretreatment programs to set local limits unless the POTW "demonstrate[s] that they are not necessary."

The actual legal and regulatory standard governing this action is discussed in detail in Response C17.

Comment C16. The state narrative criteria required cause and effect and excessive plant growth demonstrations.

The state narrative criteria require a "cause and effect" demonstration that nutrients actually caused excessive plant growth and such growth caused the low DO condition to claim a narrative violation exists. The Critical Indicators Interim Report specifies that nutrients "shall not exceed site-specific limits *necessary* to control accelerated or cultural eutrophication." (Critical Indicators Interim Report, at 9) (emphasis added).[25] However, nowhere does EPA present an analysis showing the Taunton River is subject to "cultural eutrophication" or that the specific values chosen from station MHB16 are "necessary" to ensure control of such unacceptable conditions in the Taunton River. As no such analysis is presented in the fact sheet, it is apparent that EPA has not properly interpreted or

applied state law. Moreover, the Fact Sheet should have contained some demonstration that a specific reduction in algal level is needed to produce a specific improvement in DO in the Taunton River as state law is expressly intended to control excessive eutrophication (*i.e.,* excessive algal growth). No such analysis presented in this fact sheet. However, state rules do not regulate or prohibit "elevated nutrient levels" the applicable rules only prohibit such nutrient levels to the degree that they are the cause of "cultural eutrophication".[26] These are the required demonstrations under state law and EPA's analysis failed to provide them to support the proposed limitations.

[FN25] *See also* 314 CMR 4.05(5)(c) (Nutrients –"unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses …").
[FN26] This "reference station" approach was also used by EPA to develop numeric nutrient criteria for streams in Florida based on a narrative standard and was struck down by the Court (*Fla Wildlife Fed'n, Inc., et. al. v. Jackson*, Case 4:08-cv-00324-RH-WSC, Doc. 351; N.D. Fla., Feb. 18, 2012) as insufficient to show that the criteria were necessary to maintain designated uses.

Response C16. EPA properly implemented the state narrative criteria for nutrients. EPA's conclusion that nitrogen discharges are causing cultural eutrophication in the Taunton River Estuary and Mount Hope Bay is clearly described in the Fact Sheet:

> The Taunton River Estuary and Mount Hope Bay have reached their assimilative capacity for nitrogen and are suffering from the adverse water quality impacts of nutrient overenrichment, including cultural eutrophication. They are, consequently, failing to attain the water quality standards described above. The impacts of excessive nutrients are evident throughout the Taunton River Estuary and Mount Hope Bay.

The Fact Sheet goes on to describe the extensive evidence supporting EPA's conclusion that nitrogen is causing water quality standards violation, including extensive monitoring evidence indicating elevated chlorophyll-a concentrations and DO depletions and the conclusion of the SMAST technical report that recommended implementation of the MEP nitrogen loading approach focusing on restoration of the Taunton River Estuary. EPA did not base its permit limit approach on elevated nutrient levels in isolation but based on an analysis of impairment thresholds using indicators that have been accepted by the state for determining cultural eutrophication. The state has not required "demonstration that a specific reduction in algal level is needed to produce a specific improvement in DO" in determining cultural eutrophication and the comment cites no state document containing such an interpretation.

The development of the specific numeric TN threshold associated with nutrient impairment, for purpose of setting a water quality based permit limit, is not specifically addressed by the Massachusetts SWQS narrative nutrient criterion. Rather, that process is governed by EPA's permitting regulations regarding narrative criteria, which state:

> **(vi)** Where a State has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits using one or more of the following options:
> **(A)** Establish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Such a criterion may be derived using a proposed State criterion, or an explicit State policy or regulation interpreting its narrative water quality criterion, supplemented with other relevant information which may include: EPA's Water Quality Standards Handbook, October 1983, risk assessment data, exposure data, information about the pollutant from the Food and Drug Administration, and current EPA criteria documents; or
> **(B)** Establish effluent limits on a case-by-case basis, using EPA's water quality criteria, published under section 304(a) of the CWA, supplemented where necessary by other relevant information; or
> **(C)** Establish effluent limitations on an indicator parameter for the pollutant of concern, provided . . .

In this case EPA applied 40 CFR 122.44(d)(1)(iv)(A) and established the effluent limit based on threshold receiving water concentration that would comply with the narrative criterion for nutrients, based on a comprehensive evaluation of the entire Taunton River Estuary/Mount Hope Bay system to identify the transition point from impaired to unimpaired conditions. The state narrative standard does not impose a higher standard of causation for purposes of permit limits, and such an interpretation, if it existed, would not override the requirements of 40 C.F.R. § 122.44(d).[27]

Comment C17. Federal rules and guidance require a demonstration of causation. A "cause and effect" (*e.g.,* cause or contribute)[27] demonstration is necessary under 40 C.F.R. § 122.44(d) to regulate nutrients (*i.e.*, setting limits based on specific information confirming such effects actually occurred rather than generalizations regarding nutrient effects).[28] On its face, § 122.44(d) itself indicates that more restrictive limits only apply if the discharge "causes" a water quality criteria excursion.[29] The *Upper Blackstone* decisions repeatedly refer to the fact that nutrients were demonstrated to be "causing" extensive "cultural eutrophication" as the basis for imposing more restrictive limitations. Both the MERL model and the field measurements demonstrated that as nitrogen loadings increase, dissolved oxygen decreases and chlorophyll *a* increases, with both becoming less stable and subject to greater swings at higher levels of nitrogen. The EPA concluded that the basic causal relationship demonstrated in the MERL experiments "corresponds to what is actually occurring in the Providence/Seekonk River system." *Upper Blackstone v. EPA,* 690 F.3d 9, 25-26 (1st Cir. 2012).[30]

[27] With respect to the footnote regarding the Florida court decision, see Response C.19.

The Rhode Island narrative criteria at issue in *Upper Blackstone* were also based on preventing "cultural eutrophication" as evidenced by nutrients causing excessive algal growth, low DO and related effects. In that case, the court first looked to see if the effects of "cultural eutrophication" existed and were documented to be caused by nutrients: "An influx of nitrogen and phosphorus from sewage treatment plants is causing serious problems for the River's waters and those downstream. The Blackstone, Seekonk, and Providence Rivers, and Narragansett Bay, *all suffer from severe cultural eutrophication*." *Id.* at 11 (emphasis added). The court observed "[h]ere, the EPA states, and the record reflects, that the MERL *model demonstrated the relationship between nitrogen loading, dissolved oxygen, and chlorophyll a production* for a range of loading scenarios *in a water environment similar to the Bay's.*" *Id.* at 27 (emphasis added). Further, the court noted:

> *Subsequently,* in order to address the severe and ongoing phosphorus-driven cultural eutrophication in the Blackstone River, the EPA incorporated a more stringent phosphorus limit into the 2008 permit. In formulating this limit, the EPA considered the national and regional guidance criteria and recommended values it had recently published.

Id. at 31 (emphasis added).

The April 2010 SAB Report on EPA's stressor–response evaluations underscored the need for science-based "cause and effect" demonstrations when regulating nutrients: "Without a mechanistic understanding and a *clear causative link* between nutrient levels and impairment, there is no assurance that managing for particular nutrient levels will lead to the desired outcome." *Id.* at 4 (emphasis added). For criteria that meet EPA's stated goal of "protecting against environmental degradation by nutrients," the underlying *causal models* must be correct." *Id.* at 37 (emphasis added). As noted earlier, EPA's 2010 Stressor Response guidance issued in response to the SAB concerns recognized the need to establish the "cause and effect" relationship when regulating nutrients. No such analyses were presented in this permit action.

Because the proposed limits are not based on any demonstrated "cause and effect" relationship for the Taunton Estuary regarding "cultural eutrophication" and its current impact on the DO regime, the analysis is facially deficient and therefore, arbitrary and capricious and otherwise not in accordance with law. As discussed later in these comments, had EPA attempted to show a causal relationship between increasing nutrients, increasing algal levels and low DO for the Taunton River data, such an assessment would have shown those relationships do not exist in this estuary.

[FN27] The Region's claim that § 122.44(d) requires that *no* discharge cause or contribute to a violation is a facial misreading of the provision.

[FN28] EPA's latest position seems to be that it may impose nutrient requirements without such a demonstration. This, however, is a major reinterpretation of 40 C.F.R. § 122.44(d), without rulemaking and contrary to the structure of the Act. It is therefore illegal and may not be applied in this instance. *U.S. Telecom. Ass'n v. Fed. Commc'ns Comm'n*, 400 F.3d 29, 35 (D.C. Cir. 2005) ("a substantive change in the

regulation," requires notice and comment) (*quoting Shalala v. Guernsey Mem'l Hosp.*, 514 U.S. 87, 100 (1995)).

FN29 The "or contributes" language means it is contributing to the "cause" of the violation. The structure of the rule and "relevant" preamble discussion confirms this approach. Under §122.44(d)(1)(ii), the permit writer first determines if "a discharge… causes or contributes to an instream excursion". In the case of a narrative standard one looks to see if the characteristics that are intended to be prevented are evidenced in the waters (*i.e.,* cultural eutrophication causing some type of system imbalance). If it is determined that an excursion is occurring (or likely to occur) then, and only then, under § 122.44(d)(1)(iii) "the permitting authority must establish effluent limits using one or more of the following methods…" The structure of the rule is clear, the methods for picking an protective instream level are only used to set the effluent limits, *not* to decide that the waters are in violation of the narrative standard. The 1989 preamble discussion confirmed this sequence:

> Subparagraph (i) should assist the permitting authority in determining whether it is necessary, under Federal regulations, to establish limits for a pollutant. *Note, however, this is different from calculating water quality-based effluent limits*. …Proposed subparagraph (iv) addresses the situation in which…the permitting authority does not have a numeric criteria to use *in deriving a water quality-based limit.*

54 Fed. Reg. 1,303, 1,304 (Jan. 12, 1989) (emphasis added).

FN30 *Upper Blackstone*, 690 F.3d at 14 ("State water quality standards generally supplement these effluent limitations, so that where one or more point source dischargers, otherwise compliant with federal conditions, are nonetheless *causing a violation of state water quality standards*, they may be further regulated to alleviate the water quality violation. [30 U.S.C.] § 1311(b)(1)(C) …") (emphasis added).

Response C17. EPA's NPDES regulations do not require cause-and-effect proof between a pollutant discharge and an existing water quality impairment before the permit writer can derive a numeric in-stream target to interpret a narrative water quality criterion, or impose a water quality-based effluent limitation to implement that criterion. The comment simply misstates the plain text of 40 C.F.R. § 122.44(d)(1). *See In re Town of Newmarket, NH*, NPDES Appeal No. 12-05, 16 E.A.D. __ (2013), slip op. at 54 n.23 ("The plain language of the regulatory requirement (that a permit issuer determine whether a source has the 'reasonable potential to cause or contribute' to an exceedance of a water quality standard) does not require a conclusive demonstration of "cause and effect.") Under this regulation, permit issuers are required to determine whether a given point source discharge "cause[s], ha[s] the reasonable potential to cause, or contribute[s] to an excursion above" the narrative or numeric criteria set forth in state water quality standards. 40 C.F.R. § 122.44(d)(1)(i). Thus, the regulations require nothing more than a *reasonable potential to cause, or contribute to* an excursion of a numeric or narrative state water quality criterion; whenever such a potential exists, a permit must contain effluent limits to meet state water quality standards. *See id.* § 122.44(d)(1), (5) (providing in part that a permit must incorporate any more stringent limits required by CWA § 301(b)(1)(C)). "'Reasonable potential' requires some degree of certainty greater than a mere possibility, but it leaves to the permit writer's scientific and technical judgment how much certainty is necessary." *In re Upper Blackstone Water Pollution Abatement Dist*., NPDES Appeal Nos. 08-11 to 08-18 & 09-06, slip op. at 32-33, n.29 (May 28, 2010). As EPA's preamble to its final rulemaking promulgating 40 C.F.R. § 122.44(d)(1) explained:

> Some commenters said that the phrase "reasonable potential to cause" was too vague and could apply to permittees that are not actually exceeding a water quality criterion. EPA does not believe that it is appropriate to be more specific because a permitting authority has a significant amount of flexibility in determining whether a particular discharge has a reasonable potential to cause an excursion above a water quality criterion, taking the factors in subparagraph (ii) into account.

54 Fed. Reg. 23,868, 23,873 (June 2, 1989). This regulatory provision has been upheld as a reasonable, authorized approach of necessary gap-filling in the CWA statutory scheme as it provides permit writers with guidance on how to interpret state narrative water quality standards in deriving effluent limitations. *See Am. Paper Inst. v. EPA*, 996 F.2d 346, 348, 351 (D.C. Cir. 1993); *see also Am. Iron & Steel Inst. v. EPA*, 115 F.3d 979, 990-991 (D.C. Cir. 1997).

In addition, EPA specifically found that nitrogen discharges are in fact causing cultural eutrophication in the Taunton River Estuary and Mount Hope Bay. The Fact Sheet states:

> The Taunton River Estuary and Mount Hope Bay have reached their assimilative capacity for nitrogen and are suffering from the adverse water quality impacts of nutrient overenrichment, including cultural eutrophication. They are, consequently, failing to attain the water quality standards described above. The impacts of excessive nutrients are evident throughout the Taunton River Estuary and Mount Hope Bay.

The Fact Sheet goes on to describe the extensive evidence supporting EPA's conclusion that nitrogen is causing water quality standards violation, including the conclusion of the SMAST technical report that recommended implementation of the MEP nitrogen loading approach focusing on restoration of the Taunton River Estuary.

The comment's reference to stressor-response documents is not applicable, as the permit limit analysis was not based on stressor-response relationships. However, the causal relationship among nitrogen, chlorophyll-a and dissolved oxygen is in fact well understood and is supported by data in this system. See Response C29.

Comment C18. Natural conditions are not regulated as impairments and EPA lacks information confirming that DO conditions are anything but natural in the Taunton River.

The Fact Sheet confirms that natural conditions are not considered to be in violation of either numeric or narrative criteria (Fact Sheet, at 17). It is widely understood that low DO conditions may exist naturally in estuarine waters. Such low DO conditions due to natural factors have been confirmed in the Great Bay estuary (*see* Attachment F-Pennock, 2004 Lamprey River Dissolved Oxygen Study) due to periodic stratification of such waters. The studies of the Squamscott River (another Great Bay tidal river) also

determined that low DO was not caused by elevated algal growth. (*See* Attachment G- letter from University of New Hampshire Professors to Mayors of Great Bay communities and Attachment H- Hydroqual assessment). It is apparent that the Taunton River may be performing similarly to these other tidal rivers in the nearby estuary that have undergone detailed scientific assessment. There is no information in the record showing that the periodic low DO is not natural, given the stratification that occurs in this system which causes low DO to occur.

The existing analysis of DO and chlorophyll a and its relationship to TN concentrations confirms that the minor, infrequent low DO is not apparently algal driven (*i.e.,* this is not a situation where diurnal DO changes are causing the occurrence of low DO). The low DO is produced by stratification and the condition is influenced by (1) the low DO entering from the Bay and (2) the deoxygenation of stratified waters due to sediment oxygen demand in the tidal river.

Given the dramatic CSO reductions that have taken place over the past 10 years, SOD would have been reduced. There is no reason to know whether or not the remaining DO condition (to the degree that it exists) is anything other than natural. Therefore, there is no basis at this time to assert that the discharge is presently causing or contributing to either a violation of the DO criteria for the Taunton River or any narrative criteria related to nutrients. As in the Great Bay tidal rivers, the stratification condition is a natural occurrence that, under certain conditions, will inevitably produce lower DO conditions. However, until EPA can demonstrate that the existing DO still fails to meet applicable criteria and that the remaining DO condition is a result of man induced factors related to excessive algal growth, it is not reasonable to presume that nutrient regulation is necessary.

Response C18. The evidence supports EPA's conclusion that the low DO in the Taunton River Estuary and Mount Hope Bay do not represent a natural condition. The documented DO impacts are consistent with the algae enrichment that has also been documented in this system, and where data concerning the diel pattern of DO is available (continuous datasonde monitoring in Mount Hope Bay), periods of depleted and supersaturated DO coincide with elevated chlorophyll levels, consistent with the expected impact of algae on DO impairment. See Response C23. EPA notes that the state listing of a DO impairment in Category 5 of the 303(d) list indicates the state's conclusion that DO violations are pollutant-related; impairments that are not caused by a pollutant are listed in a different category (4C) of the 303(d) list.

The comment misstates the conclusions of the cited documents, which in any case concern an entirely different system; the comment provides no evidence that it provides an appropriate analog for the Taunton River Estuary/Mount Hope Bay system.

- The Pennock, 2004 Lamprey River Dissolved Oxygen Study (H&A Comment Attachment F), while documenting the impact of stratification

on DO conditions, **did not** conclude that DO conditions in the Lamprey were natural. That report states, "These results suggest that low dissolved oxygen is a concern for the upper tidal reaches of the Lamprey River. Whether this is a long-term (and natural?) characteristic of this system or whether human perturbation (e.g. historic dam building, dredging/deepening of the basin, enrichment of oxygen consuming organic or inorganic runoff/waste, etc. . . .) would require a detailed study of the biological and chemical oxygen demand in the system."

• The letter from certain UNH professors (H&A Comment Attachment G) similarly did not state that "studies of the Squamscott River . . . determined that low DO was not caused by elevated algal growth." Rather, the letter simply cited two studies that "did not reveal any extensive low (<5 mg/l) levels, and low DO levels that did occur were not correlated with chlorophyll a levels." One of the studies cited, Jones 2007, specifically addresses this question. While the study did not find a clear link between DO levels and nutrient and chlorophyll-a concentrations based on the specific dataset, the study states that this may be due to the complexity of the system and the potential for the "oxygen demanding processes that are stimulated by nutrients" to take place in areas other than the immediate vicinity of the outfall pipe. The report specifically states that "the widespread low DO levels on 8/19/05 downstream of the WWTF may have been caused by discharged nutrients, as well as the more confined low DO levels observed on 8/5/05. The elevated chlorophyll *a* levels observed downstream of the Exeter WWTF on two dates also supports this scenario." (Jones, 2007 at 37).

• Even the Hydroqual study (H&A Comment Attachment H) did not state that "low DO was not caused by elevated algal growth." Rather, Hydroqual claimed that in a specific figure used by NHDES to show diurnal DO variability in the tidal portion of the Squamscott River, measured diurnal variation was due to tidal translation rather than primary productivity. Hydroqual concluded that "[a]dditional data collection and the development of a mechanistic water quality model are required for the estimation of the DO balance components." As noted by EPA in the Great Bay permit proceedings in which this document was first generated, the relevant figure in fact shows a superposition of tidal and productivity-related diurnal variation, with a consistent pattern of lowest DO saturation at early morning low tides.

At most these studies call for more detailed analysis of the various components driving DO in an entirely different system located nearly 100 miles away. The comment's characterization of them as proof that DO violations are "natural" in the Taunton River is unpersuasive.

The comment's claim that low DO is not algal driven is based on selective use of data and is not accurate when the entire dataset is considered. See Response C24. The comment's alternative conjecture that "low DO is produced by stratification and the condition is influenced by (1) the low DO entering from the Bay and (2) the deoxygenation of stratified waters due to sediment oxygen demand in the tidal river" is conjectural at best. There are no data presented regarding stratification in the Taunton River Estuary (indeed the comments argue elsewhere that stratification is an issue in Mount Hope Bay and not the Taunton River, see Comment C23); further, while stratification is often a contributing factor to low DO, it is a physical attribute that tends to make the system more susceptible to nutrient-induced DO violations and does not eliminate the need for nutrient controls. The hypothesis that low DO is driven by waters entering from the Bay is contradicted by the fact that DO is consistently lower in the Taunton River than in Mount Hope Bay.

While SOD is generally a factor influencing low DO it is not independent of eutrophication impacts (decaying algae may contribute to SOD), and the comment's theorizing about sediment oxygen demand is unsupported by any data whatsoever. Similarly, the comment fails to provide any data, from this system or elsewhere, in support of the notion that "[g]iven the dramatic CSO reductions that have taken place over the past 10 years, SOD would have been reduced." Most of the CSO reduction to the system presented earlier in these comments (see Comment C13) relate to Fall River discharges. Reduction in Fall River CSO discharges are not likely to impact Taunton River SOD, as discussed in Response C13. With respect to the City of Taunton's CSO discharges, while EPA commends the City's progress in reducing CSO discharges, it is evident that impacts on sediment oxygen demand are not a significant water quality concern from the Taunton CSOs. Even in 2006, an extremely wet year prior to major reductions in CSO discharges, total CSO discharges were about 15 million gallons. This would average over the year to only 0.04 MGD compared to the 8.4 MGD design flow of the treatment plant, and those discharges took place under the highest flow conditions in the Taunton River, when there tends to be a net transport of sediment out of the river system rather than the settling of pollutants that would contribute to SOD. See also Response C13.

In sum, the comment's contention that EPA is barred from imposing permit limits unless it disproves every conjectural hypothesis that is presented without a scintilla of evidence from this specific system, despite extensive evidence that cultural eutrophication is occurring in these waters consistent with the well understood mechanism of nutrient enrichment, is incorrect and in conflict with the clear directive of EPA's permitting regulations.

General Technical Comments on TN Limits

Comment C19. The TN endpoint used to derive the TN effluent limit is not scientifically defensible.
The "sentinel station" approach is not a rational or scientifically defensible basis for establishing a water quality standard because:

- It is contrary to EPA's own guidance[31], and,
- It presumes, without any demonstration, that the factors influencing DO conditions at station MHB16 are the same factors that influence DO in the Taunton River Estuary.

EPA likens the selection of a sentinel station as being consistent with the use of reference conditions to establish water quality criteria for nutrients. The "reference station" approach was used by the EPA to develop numeric nutrient criteria for streams in Florida and was struck down by the Court (*See Florida Wildlife Federation, Inc., et. al. v. Jackson*, Case 4:08-cv-00324-RHWSC, Doc. 351) as insufficient to show that the criteria were necessary to maintain designated uses. As in Florida, the "reference" approach is also insufficient for use in Massachusetts. In this case, EPA cannot make a scientifically justified claim that the TN endpoint is necessary to meet a minimum DO concentration of 5.0 mg/L because EPA has not demonstrated that a TN concentration of 0.45 mg/L is a threshold, above which the DO criterion will be violated at station MHB16.

EPA's guidance documents on the development of numeric nutrient criteria and the development of wasteload allocations for dissolved oxygen in estuaries confirm that the primary effect of nutrients is to stimulate algal growth, which may influence DO in the estuary. However, many other factors influence DO levels and EPA presents no assessment to determine to what extent TN is causing the observed affects. Consequently, establishing a wasteload allocation for TN to address DO impairments in the estuary is arbitrary and capricious. Moreover, EPA has not demonstrated that DO at the Bay station (MHB16) responds in the same way as DO in the Taunton River Estuary (MHB19) or that the physical/chemical/hydrodynamic conditions at station MHB16 make it an appropriate reference site for the Taunton River Estuary. Consequently, the draft TN effluent limit based on this TN endpoint is arbitrary and capricious. EPA has not made any demonstration that the observed DO concentration is caused by the observed TN concentration. Without such a cause-and-effect demonstration, there is no reasonable assurance that controlling for TN will have any influence on minimum DO.

In developing the proposed TN endpoint, EPA noted that Massachusetts has not adopted numeric criterion for TN. (Fact Sheet, at 17). Rather, MassDEP uses a number of indicators to interpret its narrative nutrient standard. EPA asserts that MassDEP developed the Critical Indicators Interim Report for this purpose. However, the Critical Indicators Interim Report notes that the recommended ranges of appropriate TN thresholds must be further refined based on the specific physical, chemical, and biological characteristics of the system being evaluated. (*See* Critical Indicators Interim Report, at 20). No such consideration was made for the Taunton River

Estuary. Instead, EPA identified a threshold TN concentration for a site in *Mount Hope Bay* furthest from the Taunton River Estuary and assumed that this threshold concentration was appropriate in the Taunton River Estuary without any demonstration that the two locations behave in the same manner. In fact, the physical, chemical, and biological characteristics of the two areas are dramatically different. Station MHB16 is one of the deepest stations in the bay and is closest to the Ocean and Narragansett Bay while the Estuary consists of a very narrow channel of variable depth. These and other critical characteristics that dramatically affect how TN could possibly contribute to low DO via excessive algal growth were not considered in EPA's highly simplistic analysis. Thus, EPA's approach is not consistent with the methods described in the Critical Indicators Interim Report or with EPA's own guidance.

[FN31] *See* Estuaries Guidance Document; EPA, *Technical Guidance Manual for Performing Wasteload Allocations:Book III – Estuaries* (Part 1) (1990) ("WLA Guidance Document").

Response C19. The comment mischaracterizes the Florida court decision regarding reference based approaches. That decision struck down only nutrient criteria that were based on a statistical characterization of a set of unimpaired waters (the 90th percentile for four of the regions and at the 75th percentile for the fifth region), because the threshold had not been tied to actual impairment. *See Florida Wildlife Federation, supra* at 63. As the court stated:

> [T]he Administrator set the stream criteria based on naturally occurring ambient conditions—those that exist now, on average, in unimpaired streams—without building in an adjustment for increases in nutrients that are not harmful. Instead, a stream is deemed impaired—in four of the regions—if a nutrient level exceeds that of 90% of the sample set. This is the criterion even though the other 10% are apparently unimpaired at a higher nutrient level. The Administrator explained the 90% mark in terms that make sense if the target is a criterion that identifies *any* increase in nutrients and thus *any* change in flora and fauna: one can say with some confidence that a stream with a nutrient level that exceeds that of 90% of the sample set probably has suffered an increase in nutrients and a resulting change in flora and fauna. But if the target is a criterion that identifies a *harmful* increase in nutrients, there is an unexplained disconnect. The Administrator has not explained how the 90% mark correlates with a *harmful* increase in nutrients.
>
> . . . The stream criteria thus cannot be upheld as an appropriate means of identifying nutrient levels that will cause harmful effects.

Id. at 65-66.

In contrast, the type of reference approach applied by EPA here is specifically designed to identify the threshold concentration associated with a transition from impaired to unimpaired conditions. This approach is a rational and scientifically defensible basis for establishing a target TN threshold that is consistent with

numerous TMDLs and related studies in Massachusetts and with approved reference-based approaches to numeric nutrient criteria guidance. The approach uses a continuum of stations in the Taunton River Estuary/Mount Hope Bay system to establish the transition to unimpaired conditions in these subareas of a connection system and is the best available information for establishing a target threshold in this system. This type of analysis is consistent with the Florida court decision analyses because it is tied to actual impairment. Reference based approaches based on impairment thresholds are also being applied currently in Florida nutrient criteria analyses by Florida DEP. See Florida DEP Workshop Presentation: *Development of Numeric Nutrient Criteria for Florida's Estuaries* (April 2013) (http://www.dep.state.fl.us/water/wqssp/nutrients/)

The comment confirms that nutrients have a primary effect of stimulating algal growth that may influence DO. This confirmed relationship supports EPA's finding of reasonable potential for the Taunton WWTP nutrient discharge to cause or contribute to violation of the narrative nutrient criterion. EPA is not in fact required to determine to what extent TN, as opposed to other factors, is actually causing observed effects. Rather, EPA is charged with determining an effluent limit that is "necessary . . . [t]o achieve water quality standards," 40 CFR 122(d)(1) and "will attain and maintain applicable narrative water quality criteria and will fully protect the designated use."

The comment also mischaracterizes the *Critical Indicators Report*. The cited section of the report regarding classification refers to establishing generalized TN criteria that would apply to systems based on their particular physical, chemical and biological characteristics. The quoted section does not address site specific analysis of a single integrated system, which are appropriately addressed through the type of site specific analysis performed by EPA here.

While the comments repeatedly cite the "dramatic difference" between the sites in the Taunton River Estuary and Mount Hope Bay, the contention that the differences should result in significantly different TN criteria is entirely conjectural. These sites are all part of a continuous estuarine system characterized by different levels of mixing of the same two source waters, continual exchange of waters among the estuarine segments, the same sources for sediment, and the same climatic conditions. See Response C7. The areas differ physically in that the Taunton River Estuary is a linear feature, although characterizing this 2000 foot wide estuary as "very narrow" is questionable; depth variability is actually similar between the two areas at 4-10 meters for the Taunton and 3.5-12 meters for Mount Hope Bay. This would be expected to lead to higher tidal velocities in the Taunton River Estuary, although high velocities are also associated with the Sakonnet River inlet to Mount Hope Bay (this is the narrowest point in the estuary, while termed a "River" the Sakonnet is actually a main source of marine waters to Mount Hope Bay). How this would impact factors such as SOD is not indicated in the comment (in general sources of sediment to the system are the same since the Taunton River is by far the largest

freshwater source); and the comments are inconsistent about the level of stratification in the Taunton River Estuary. *Compare* Comment C18 ("It is apparent that the Taunton River may be performing similarly to these other tidal rivers in the nearby estuary that have undergone detailed scientific assessment. There is no information in the record showing that the periodic low DO is not natural, given the stratification that occurs in this system which causes low DO to occur.") *with* Comment C23 ("Far less stratification occurs in the Taunton River for a shorter period and far less frequently").

More importantly, there is simply no evidence that a higher target TN concentration would be sufficiently protective in the Taunton River Estuary. While some variability in response can be seen in dataplots, see Comment C24, the evidence indicates that the Taunton River Estuary is just as sensitive to eutrophication from nutrient enrichment in terms of DO depletion. Comparison to other tidal rivers would not lead to a different threshold. Tidal rivers leading to Narragansett Bay have not had numeric criteria set for nitrogen, but the Narragansett Bay Estuary Project document provided as Attachment D to the H&A comments, analyzes the gradient from the Providence/Seekonk River through lower Narragansett Bay and states that "if RI were to develop estuarine nutrient criteria, it is likely that Total Nitrogen would be the most useful nutrient measure, and target TN concentrations would probably be in the vicinity of 0.35-0.40 mg/l." Comment Attachment D at 27. (See Response C24 for discussion of impacts on permit limits under alternative TN thresholds).

Comment C20. EPA completely ignores the conceptual model of significant factors that affect DO.

As described above, EPA identified a sentinel station (MHB16) and merely assumed, without any analysis, that the average TN concentration at the station should equal the allowable TN endpoint. This approach does not demonstrate that the conceptual model identified in the Fact Sheet is applicable to the Taunton River. (*See* Fact Sheet, at 14). This conceptual model is based on a well-recognized progression of symptoms that begins with the excessive growth of phytoplankton and macroalgae. As discussed in the Fact Sheet, the "primary" symptoms of nutrient over enrichment include an increase in the rate of organic matter supply (*e.g.,* phytoplankton), changes in algal dominance, and the loss of water clarity. These primary symptoms are followed by one or more secondary symptoms such as the loss of submerged aquatic vegetation, nuisance/toxic algal blooms, and low dissolved oxygen. While such conditions *may* occur, the presented analysis in the Fact Sheet nowhere demonstrates that they are occurring in the Taunton River.

Response C20. The Fact Sheet specifically discusses the indicators of cultural eutrophication present in the Taunton River consistent with the conceptual model, including elevated chlorophyll-a concentrations (well above levels identified as acceptable for SB waters) indicating increased primary production, algal blooms as indicated by high (>30 ug/l) maximum chlorophyll-a, and low dissolved oxygen. Loss of submerged aquatic vegetation was identified as an issue in Mount Hope Bay but not the Taunton River portion of the estuary, as historical

records indicate that eelgrass was limited to Mount Hope Bay proper. Water clarity is also impacted in the Taunton River and Mount Hope Bay, see SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007) at 25 (secchi depths fair/poor to moderate) although not specifically discussed in the Fact Sheet. These symptoms are clearly occurring in the Taunton River and support the conceptual model applied by EPA. This evidence is discussed in a separate subsection of the Fact Sheet analysis (B.5.b-d, pages 16-26) and is independent of the process for determining the specific TN threshold to be used in determining the permit limit (Fact Sheet B.5.f, pages 29-30).

EPA also disagrees with the characterization of its TN threshold analysis, which is not based on a single site, see Responses C9 and C21.

Comment C21. Algal growth is *not* demonstrated to be excessive.
The primary effect of nutrient over enrichment is excessive algal growth. If algal growth is not excessive the secondary symptoms, particularly low DO, do not occur due to nutrient enrichment. Consequently, EPA must show that nutrients are stimulating algal growth (measured as chlorophyll-a), the levels of chlorophyll-a in the water column are excessive, and that the excessive levels of algae are, in fact, causing the observed low DO. In making this demonstration, EPA needs to identify a level of chlorophyll-a that is excessive and it must also include an evaluation showing that the nutrient reduction target selected will reduce algal growth to non-excessive levels that will raise DO levels to comply with the MassDEP water quality standards. The analysis presented in the Fact Sheet establishing the TN endpoint did not address *any* of these considerations. Rather, EPA identified a sentinel station that meets the DO standard and presumed that the annual average TN concentration at this station was the reason such compliance occurred. However, the average chlorophyll-a level found at this station (*i.e.*, the factor EPA presumes controls the occurrence of low DO) is 10.3 – 14.1 µg/L. (*See* Fact Sheet at 23, Table 5). This average algal level is *higher* than that present in the Taunton River at MHB19, which ranges from 5.5 – 10.5 µg/L. *Id.* Therefore, based on the DO response to algal growth at MHB16, it is apparent that excessive algal growth is (1) *not* occurring in the Taunton
River Estuary and (2) some other factor *must* be causing the DO to drop below 5.0 mg/L in that area.[32]

[FN32] This is the same conclusion reached by technical studies evaluating similar tidal rives in the Great Bay estuary. *See* Attachment G.

Response C21. Algal growth is excessive in the Taunton River Estuary and Mount Hope Bay. Average chlorophyll-a concentrations at all the Taunton River Estuary sites are above the range identified in the *Critical Indicators Report* for unimpaired SB waters (3-5 ug/l) and include high peak chlorophyll-a concentrations, associated with blooms that can result in greatest DO depletions. See *Site-Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators - Interim Report* (Howes et al., 2003) at 22.

The comment's contention that EPA "must show that nutrients are stimulating algal growth" and that the algae levels "are, in fact, causing the observed low DO" is not, in fact, the standard set forth in the CWA regulations. The actual test is whether the discharge of pollutants "causes, has the reasonable potential to cause, or contributes to" a violation of water quality standards. 40 CFR 122.44(d). This test does not require the strict proof of causation the commenter wishes to apply. If nutrient discharges are one of a number of identified contributors to low DO violations, 122.44(d)(1) applies and a permit limit must be set. If nutrient discharges are not currently causing or contributing to water quality violations but have the reasonable potential to do so in the future - such as where a facility is operating below its design flow and would be expected to cause water quality violations as its flow increases – 122.44(d)(1) applies and a permit limit must be set.

Nor do EPA's regulations require that EPA analyze with precision each step in a chain of impacts on water quality. The type of analysis the commenter suggests is often a goal of stressor-response approaches to nutrient criteria, although not specifically necessary even in those analyses. That is not the type of analysis that EPA needs to perform to determine reasonable potential to cause or contribute to an impairment in order to issue a NPDES permit. Rather, EPA examined the entirety of system data in order to identify a threshold associated with the transition to unimpaired conditions. EPA acknowledges that this is not a precise calculation but is intended to identify the scale of nutrient reductions required.

The contention that algal levels are higher at MHB16 is based on 2006 monitoring results. 2006 was an extremely wet year that was not used by EPA in its permit limit analysis. Examination of the monitoring data for 2006 indicates that MHB16 chlorophyll-a was indeed quite high (14.1 ug/l) but that TN concentrations were also high (0.50 mg/l). Fact Sheet Table 5. On the other hand chlorophyll-a concentrations at MHB19 were relatively low in 2006 (5.5 ug/l) despite high TN (0.99 mg/l), but orthophosphate concentrations were relatively low (0.047 mg/l, compared to the 2004-05 average of 0.63 mg/l) and the DIN/DIP molar ratio was 28, indicative of phosphorus limitation rather than nitrogen limitation. SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D. This indicates that the system was simply behaving differently under those wet weather conditions and that high flows and the resulting reduced salinity may have shifted the transition point of phosphorus- to nitrogen-limitation further down the estuary, so that in 2006 MHB 16 would not be a comparable site of MHB 19. EPA anticipates that the system might well respond differently under those extreme wet weather conditions, but has based its loading and permit limit analysis on the more typical years. These data are entirely consistent with EPA's permit analysis.

Comment C22. The conceptual model does not support the sentinel station approach.

This "sentinel station" approach is not scientifically defensible for numerous reasons. First and foremost, the sentinel station approach presumes that the observed DO is caused by the observed TN. However, the proposed limits on TN have not been demonstrated to be necessary to attain the dissolved oxygen water quality standard. Many non-nutrient factors influence dissolved oxygen in the receiving waters, including natural and man-made conditions. EPA did not provide any assessment to evaluate the cause of low DO or to assess what fraction of the DO deficit is attributed to TN versus those other factors. Consequently, the proposed effluent limit is merely a guess. The "sentinel station" approach is demonstrably incorrect based on a consideration of the conceptual model, as illustrated in EPA's Estuaries Guidance Document. TN has no direct impact on DO. Figure 2-4 (below) from the Estuaries Guidance Document illustrates the role of nutrients in phytoplankton growth:

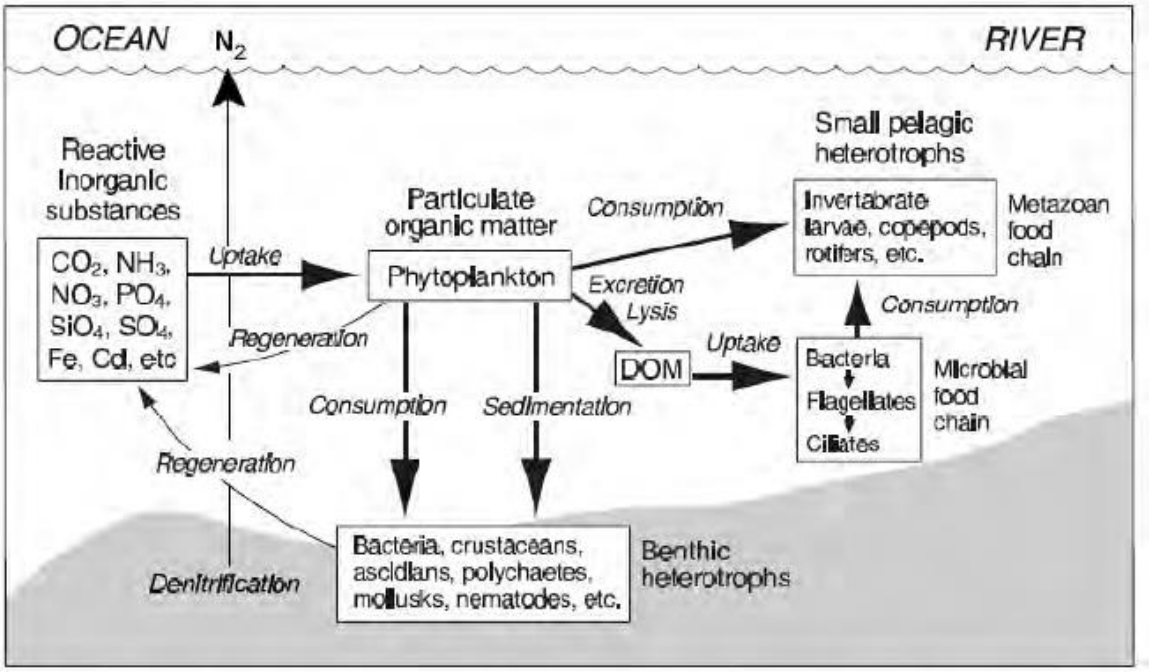


Figure 2-4. Schematic illustrating the central role of phytoplankton as agents of biogeochemical change in shallow coastal ecosystems. Phytoplankton assimilate reactive inorganic substances and incorporate these into particulate (POM) and dissolved organic matter (DOM) which support the production of pelagic and benthic heterotrophs. Arrows indicate some of the material fluxes between these different compartments. Denitrification has been added to the figure. Source: Cloern 1996.

Figure 2-9 (below) from the Estuaries Guidance Document illustrates the relationship between nutrients, phytoplankton and deep-water DO:

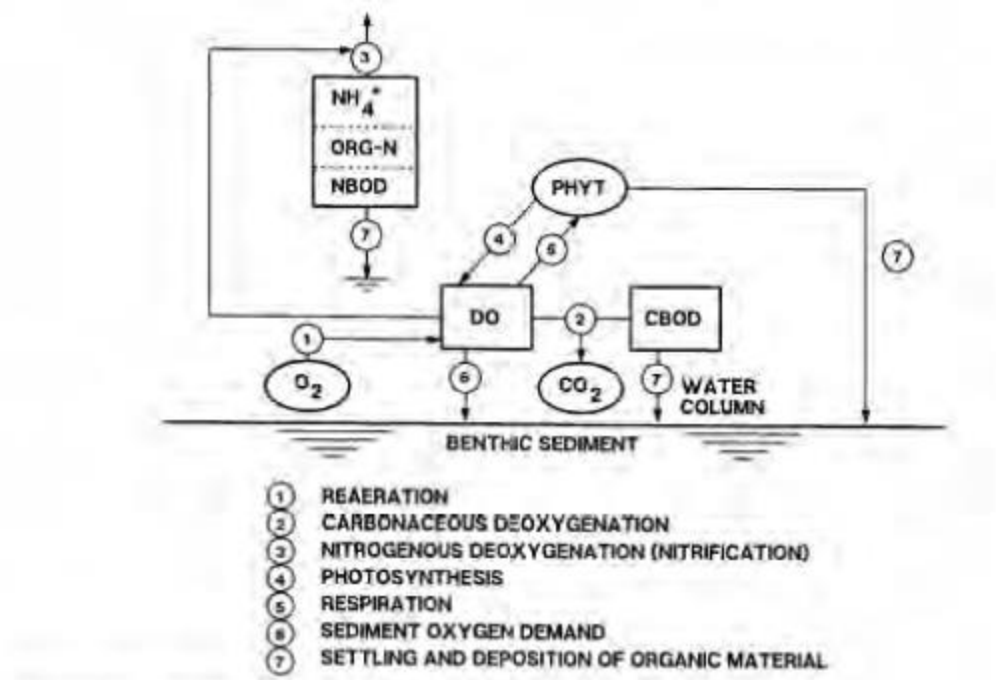


Figure 2-6. Basic variables and processes for dissolved oxygen.

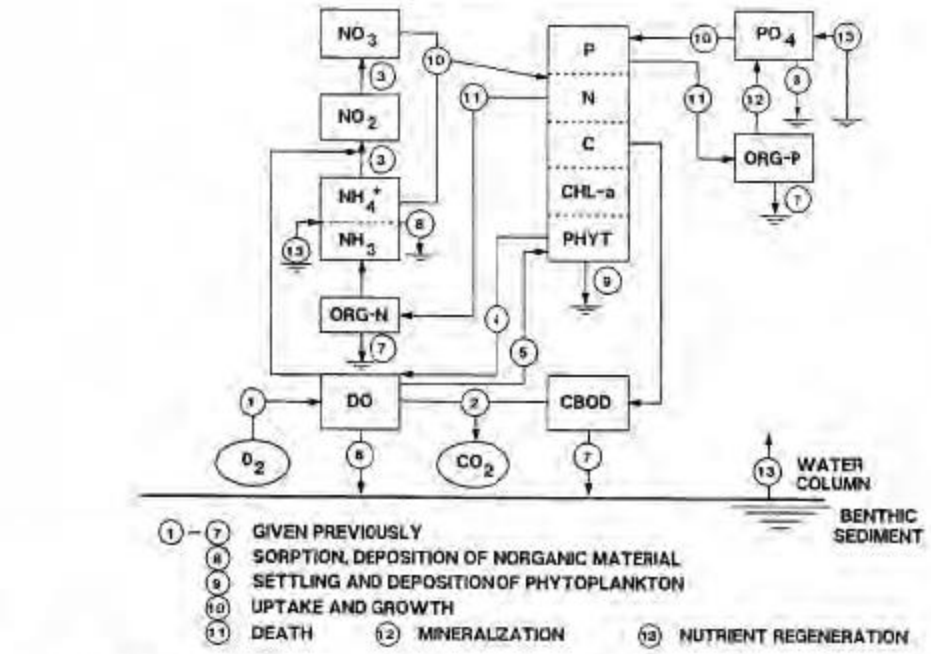


Figure 2-7. Standard variables for eutrophication and DO.

Together, these figures illustrate the complex relationship between nutrients, numerous other factors, and DO that must be address to competently determine what is causing a particular DO condition to occur. TN does not directly affect DO. Rather, any influence of TN is mediated through the growth of algae. Algae influences DO through photosynthesis (in the upper, photic zone), respiration, and decay (typically after

settling). The influence of sediment oxygen demand on DO may be exacerbated by stratification which limits mixing between the upper and lower layers of water. System DO is also influenced by the decay of organic substances entering the system and the DO entering the system. However, the Fact Sheet presents no evaluation to determine the degree to which each of these factors influence DO in the Taunton River Estuary or Mount Hope Bay. Consequently, it is not possible to determine whether TN reduction is necessary or appropriate to address DO conditions in the Estuary.

Response C22. The comment mistakenly presumes that a reference based approach must be able to specifically determine the factors influencing a particular DO condition at a high level of complexity in order to be "scientifically defensible" for the purpose of setting permit limits. This is not the case.

The highly detailed modeling the comment appears to contemplate is generally associated with mechanistic modeling, an approach that represents ecological systems using equations that represent ecological processes and parameters for these equations that can be calibrated empirically from site-specific data. These models can then be used to predict changes in the system, given changes in nitrogen and phosphorus concentrations. The mechanistic modeling approach requires sufficient data to identify the appropriate equations for characterizing a waterbody or group of waterbodies and sufficient data to calibrate parameters in these equations. While such complex models are sometimes preferable, they are not without drawbacks. A danger in complex mathematical models is that error propagation is difficult to explicitly measure, and there is a tendency to use a more complex model than required, which drives costs up substantially and unnecessarily. Another consideration that is gaining acceptance is that mathematical models need to be appropriately scaled to spatial and temporal processes, or they may suffer problems similar to empirical models when one extrapolates the results of scaled experiments to full-sized systems. Also, empirical coefficients introduced into equations often hide the degree of uncertainty concerning the fundamental nature of processes being represented. EPA, *Nutrient Criteria Technical Guidance Manual – Estuarine and Coastal Waters* (2001) at 9-1 to 9-2.

The comment does not, and cannot, contend that there is an existing model available to represent this system at this level of complexity, or even that there is actually sufficient data available for development of such a model. Rather, the comment seeks to characterize any less complex analysis as insufficient, so that permit limits would be deferred until a complex model can be developed. This is a recipe for inaction that is inconsistent with CWA requirements. As stated by the Environmental Appeals Board:

> The District has cited no law, regulation, or Agency policy that would allow a permit application to remain pending for an indefinite, unlimited extension of time to allow additional scientific data or analysis to be developed to support the applicant's claim that its discharges will not

> violate the water quality standards of affected states. To the contrary, scientific uncertainty is not a basis for delay in issuing an NPDES permit. The Board has specifically held that "[i]n the face of unavoidable scientific uncertainty, the Region is authorized, if not required, to exercise reasonable discretion and judgment." *In re Dominion Energy Brayton Point, LLC,* 13 E.A.D. 407, 426 (EAB 2007).
>
> The federal courts in reviewing Agency decisions have similarly recognized that scientific uncertainty is not a bar to administrative decisionmaking: "We do not demand certainty where there is none. There may be no strong reason for choosing [a particular numerical standard] rather than a somewhat higher or lower number. If so, we will uphold the agency's choice of a numerical standard if it is within a 'zone of reasonableness.'" *Small Refiner Lead Phase-Down Task Force v. EPA,* 705 F.2d 506, 525 (D.C. Cir. 1983) (citation omitted); *see also Hercules, Inc. v. EPA,* 598 F.2d 91, 116-17 (D.C. Cir. 1978). More than three decades ago, the D.C. Circuit aptly described the CWA's balance when confronted with a difficult situation and the obligation to eliminate water quality impairments: "* * * EPA may issue permits with conditions designed to reduce the level of effluent discharges to acceptable levels. This may well mean opting for a gross reduction in pollutant discharge rather than the fine-tuning suggested by numerical limitations. *But this ambitious statute is not hospitable to the concept that the appropriate response to a difficult pollution problem is not to try at all.*" *Natural Resources Defense Council, Inc. v. Costle,* 568 F.2d 1369, 1380 (D.C. Cir. 1977) (emphasis added) (finding unlawful a rule that would have exempted certain discharges from permitting requirements based on the difficulty in setting limits). Here, the District's "wait and see" approach would allow the District to continue discharging without any limit on total nitrogen discharges – effectively abdicating the responsibility to set permit limits when faced with difficulty establishing the limit.

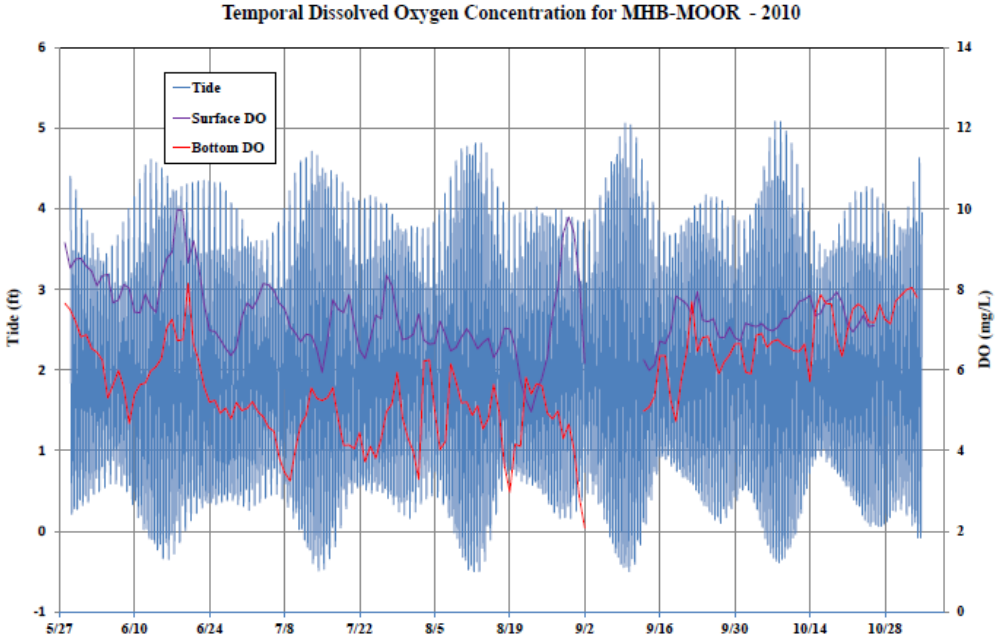
UBWPAD, 14 E.A.D. 577, 606.

Comment C23. EPA ignored the influence of stratification.

All of EPA's guidance and SAB-issued commentary, as well as MassDEP guidance, states that the physical conditions of the receiving water must be evaluated to determine whether or how nutrients may cause adverse impacts. Stratification is particularly important with regard to the development of minimum DO conditions in the Estuary and Bay. When fresh and saline waters interact, they may become stratified with the denser, cold bottom saline water isolated from the less saline and warmer surface water. This situation is demonstrated to occur in the Bay and to be the primary factor triggering low DO conditions where the waters are deeper and less subject to turbulent mixing. Under stratified conditions, oxygen exchange with the surface waters is reduced and the effect of sediment oxygen demand (affected by algal and non-algal particulates) is pronounced, particularly when stratified conditions are prolonged. Thus, (1) the depth of the water, (2)

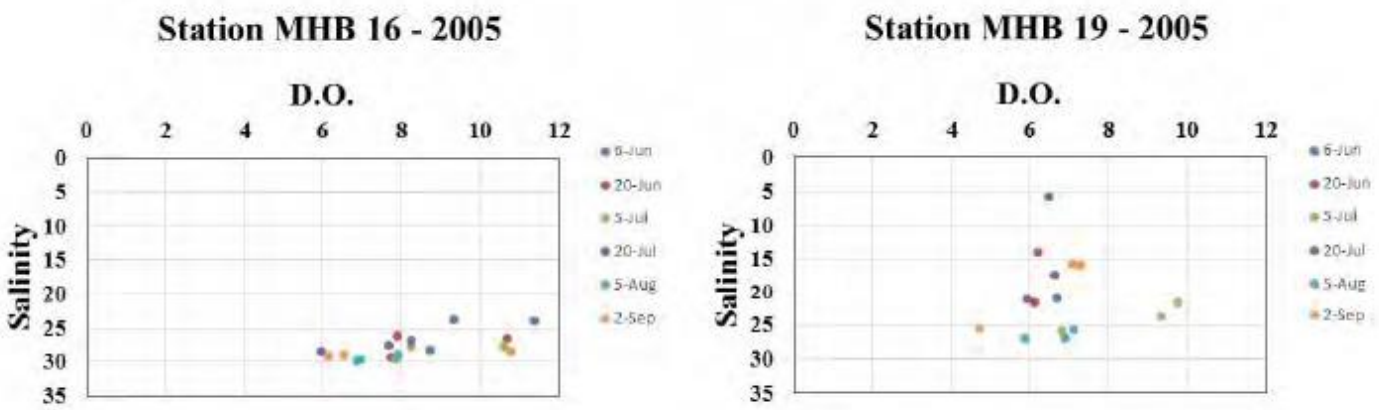
the duration of the stratification event, and (3) the degree of the SOD all act to control the resultant DO condition in the stratified segment. Figure 1 (below) illustrates the pattern of temporal DO at the MHB-"Data Sonde" station operated by the Narragansett Bay Water Quality Monitoring Network (near MHB13) in relation to the tidal cycle.[33] Based upon the figure, periods of low DO in the bottom waters and maximum difference in surface-to-bottom-water DO appear to coincide with neap tides, when tidal displacement in the Bay is at a minimum and stratification is prolonged.

Figure 1 – Tidal Stage versus Dissolved Oxygen in Mt. Hope Bay



Further upstream in the Estuary, stratification is far less intense and primarily caused by the tides. During the flood tide, marine waters rush in to the estuary with denser saline waters flowing below the less-dense fresh water. When the tide ebbs, these marine waters flow back into the bay. One consequence of this movement is that stratified conditions do not persist in the estuary because mixing and tidal exchange is much greater than at station MBH16 (the "sentinel station"). Consequently, the DO differences between the surface and bottom waters are far less than in the Bay and minimum DO concentrations tend to be associated with saline bay water that moves upstream during the flood tide. This means that DO in Mount Hope Bay has a *primary* control on the DO condition present in the Taunton estuary, *not* algal growth occurring in the Taunton River. Figure 2 (below) illustrates the differences in DO and salinity for the sentinel station in Mount Hope Bay (MHB16) and the upper Taunton River Estuary (MHB19) showing the physical condition are *not* comparable based on the 2005 database.

Figure 2 – Salinity and D.O. variability in Mt. Hope Bay and the Upper Taunton River Estuary



As discussed above, the conditions that create minimum DO conditions in the Bay are not the same as the conditions causing low DO in the Taunton River Estuary. Far less stratification occurs in the Taunton River for a shorter period and far less frequently. Consequently, the Taunton River station (MHB19) has a maximum DO variation of 0-3 mg/L (top to bottom). MHB16 has a variation of 1-5 mg/L. Therefore, unlike the Bay, the low DO condition and stratification in the Taunton River is very infrequent and far less intense. Consequently, the use of the Bay sentinel station to project the effect of TN on DO in the Taunton River estuary is arbitrary and capricious as the physical conditions controlling DO are markedly different at these two sites.

[33] Tidal stage data were obtained from NOAA for the Wickford gauging station. (Station I.D.: 8454538).

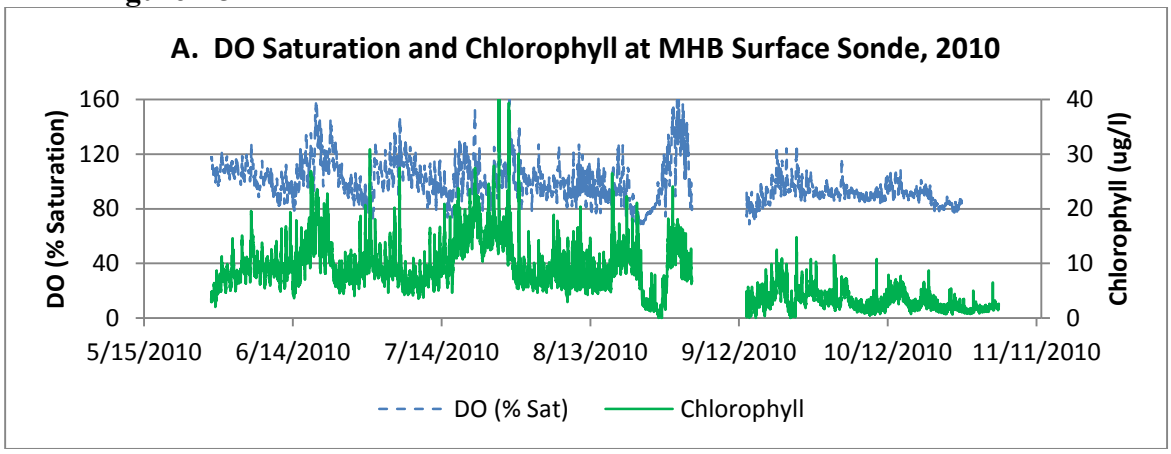
Response C23. EPA agrees that stratification is a factor in the development of minimum DO conditions, but disagrees with the commenter's contention that this factor plays a role in Mount Hope Bay but *not* the Taunton River Estuary, a contention unsupported by any evidence. EPA notes that in Comment C18 this commenter makes the contrary claim that stratification is actually the cause of DO depletion in the Taunton River. In general the available research indicates that stratification increases as you move up the estuary (i.e. from Mount Hope Bay into the Taunton River Estuary), consistent with the greater salinity-driven density differences, although stratified conditions appear in both Mount Hope Bay and the Taunton River Estuary.

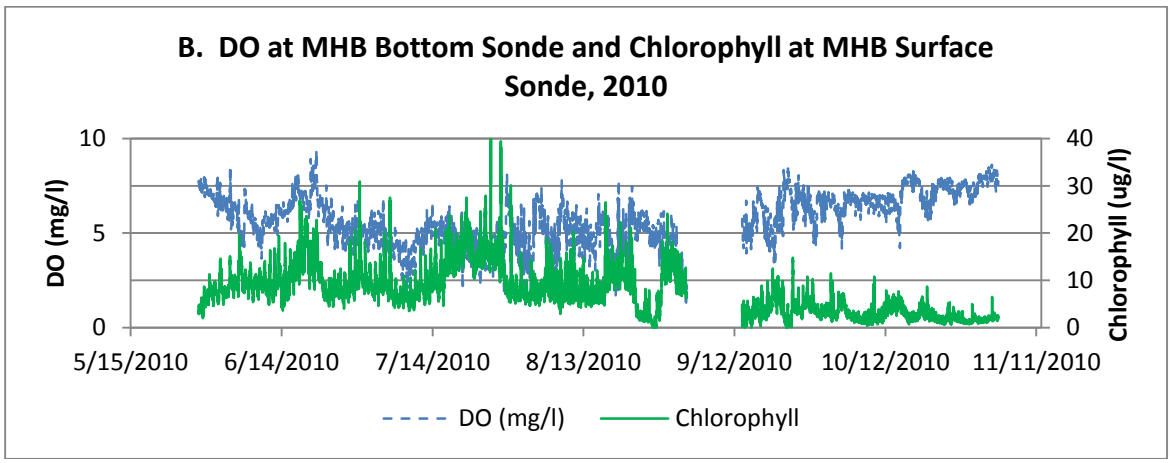
While EPA agrees that stratification and SOD are also factors influencing DO in estuarine waters, the commenter's hypothesis that stratification is "the primary factor triggering low DO" is unsupported by any evidence (and clearly not "demonstrated" as claimed in the comment). Stratification does exacerbate other processes that deplete DO, including algal blooms. High algae levels result in large diel swings between supersaturated and undersaturated conditions due to photosynthesis during the day and excess respiration at night (these are not

apparent in the comment figure because it is based on average daily DO data), and result in DO depletions in bottom waters as dead algae sink to the bottom and decompose (this occurs in the water column as well as potentially adding to sediment oxygen demand). Where waters are stratified bottom water depletion is intensified due to the lack of exchange with surface waters.

The comment's Figure 1 does not appear to demonstrate a consistent relationship with neap tides, as the September neap tides do not coincide with large differences in surface-to-bottom-water DO. In contrast, the full dataset from this datesonde provides evidence for DO impacts from high algae populations, as shown in Figure R3. Periods with chlorophyll consistently above 5 ug/l (mid June, mid-late July and early September) are accompanied by highly supersaturated DO peaks (over 120% saturation), and the elevated chlorophyll levels are also accompanied by depletion of DO in bottom waters. After September 13, when chlorophyll concentrations are low, no relationship to neap tide appears and DO is not supersaturated at the surface or depleted in bottom waters. While stratification may well be a factor in intensifying DO depletions at this site, the primary control appears to be algae.

Figure R3





Charts by EPA. Source data: Narragansett Bay Fixed-Site Monitoring Network (NBFSMN), 2010. 2010 Datasets. Rhode Island Department of Environmental Management, Office of Water Resources. Data available at www.dem.ri.gov/bart

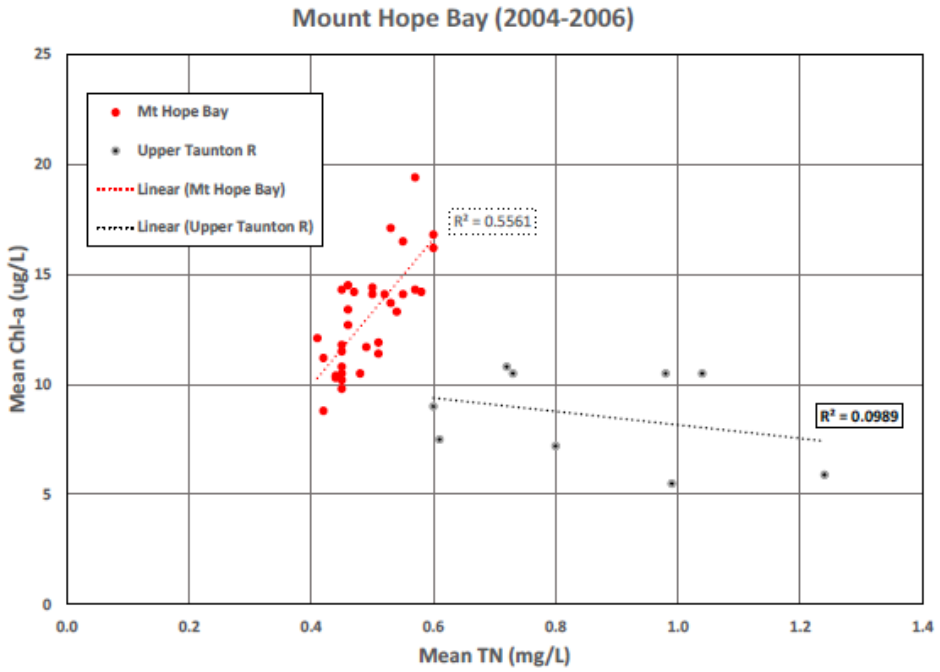
> The charts presented as Figure 2 in the comment also do not support the commenter's claims. First, the comment argues that the magnitude of DO variation is much higher at MHB16 (1-5 mg/l) than at MHB19 (0-3 mg/l); however this argument relies entirely on a single date of monitoring at MHB16, where DO concentration varied by 4.63 mg/l. Without that single data point the range of DO variation at MHB16 is between 1 and 3 mg/l, comparable to that at MHB19. No general conclusions can be drawn from a single monitoring datum – for example, the larger variation at MHB16 could be explained by the fact that the site was sampled two hours earlier in the morning (9:15 am, versus 11:30 am for MHB19), closer to the predawn hours generally recognized as the critical time for DO minima. Second, as noted by the commenter, stratification in estuaries is generally related to salinity differences; the charts show little salinity difference between surface and bottom waters at MHB16, while significantly more salinity variation at MHB19. This is consistent with the available research literature that indicates stratification is more prevalent in the upper estuarine waters. Finally, it should be noted that MHB19 also shows indications of stratification on the same date that MHB16 has the maximum DO variation; on September 2, 2005 the MHB19 station had a salinity variation of 10 ppt between surface and bottom (compared to 0.7 ppt at MHB16); both stations have very high surface chlorophyll-a concentration (31.5 ug/l at MHB19 and 33.3 ug/l at MHB16); and it is at MHB19 that a violation of the water quality criteria for DO (5 mg/l) occurred.

Comment C24. The response to TN differs in the Taunton River Estuary as compared to Mount Hope Bay.

EPA took the sentinel TN concentration at station MHB16 to prepare a mass balance analysis for the Taunton River Estuary at station MHB19. In doing so, EPA presumed, without any demonstration, that the conditions responsible for the DO readings in Mount Hope Bay are the same as in the Taunton River Estuary. Using the data presented in the Fact Sheet on Table 5 (Fact Sheet, at 23) it is apparent that Bay stations and Estuary stations do not respond in a similar manner. (*See* below Figure 3 and Figure 4). Figure 3 illustrates the apparent response of mean chlorophyll a to mean TN in the Mount Hope Bay stations in comparison with the response in the upper Taunton River stations (stations MHB18, MHB19, and MHB21). The apparent response in the Taunton River is flat over a wide range of TN concentrations while the response in Mount Hope Bay suggests a significant influence of inorganic nitrogen on plant growth.

Based on this comparison, it should be apparent that these systems behave very differently and the response at the sentinel station cannot be superimposed to predict how TN concentrations affect waters in the Taunton River estuary or the acceptable level of TN for the Taunton River.

Figure 3 – Mean Chlorophyll-a Concentration versus Mean TN in Mt. Hope Bay and Upper Taunton River (Stations 18, 19, 21)



As these analyses indicate that EPA's conceptual model does not apply in the Taunton River, application of that model to derive more restrictive TN limitations is inappropriate. (*See* EPA Stressor Response Guidance, at 37).

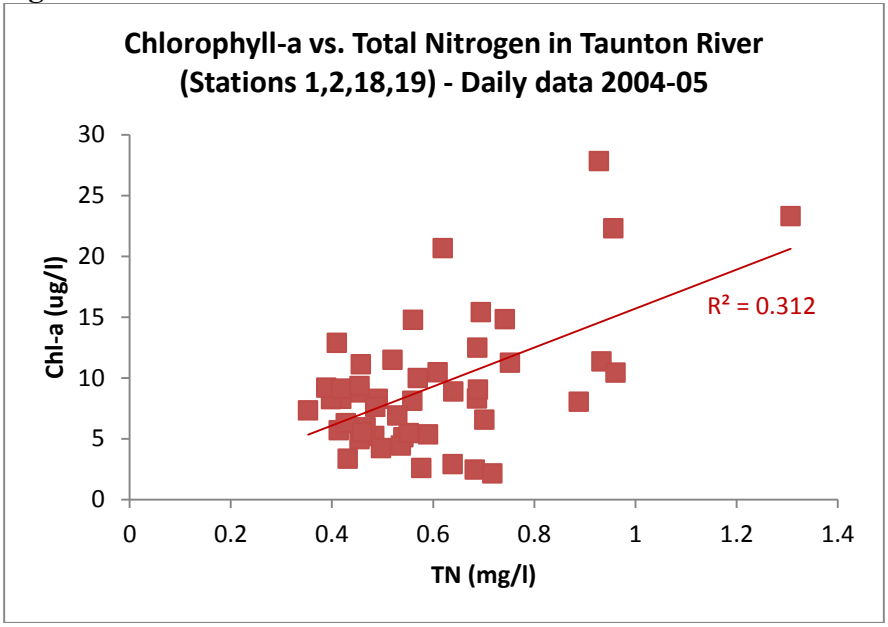
Response C24. EPA disagrees that the available data indicates that Mount Hope Bay relationships are inapplicable in the Taunton River Estuary or that the response in the Taunton River is "flat". EPA performed its own analysis of the data in light of these comments and concluded that the contentions set forth in the comments are based on a selective use of the available data and are not supported by a more thorough statistical analysis. The results of EPA's analysis are shown below; however EPA notes that the data collection effort for this dataset was not designed for the type of stressor-response analysis performed by the commenter and is generally expected to be insufficient to support statistically significant correlations. This is the reason EPA did not perform this type of analysis in its original permit development. EPA therefore emphasizes that the following analysis, while generally supporting EPA's conclusions when all appropriate data are considered, is not expected to provide statistically significant results for determining TN criteria for these waters.

First, EPA notes that the chart supplied in the comment includes data from Station MHB21, which was specifically excluded from EPA's analysis on the grounds that the location did not appear to be nitrogen limited based on the available data. In addition, the chart excludes data from Stations MHB1 and MHB2 that are located lower down on the Taunton River. This selection of data would be expected to (1) produce a flat response to nitrogen enrichment as Station 21 is

expected to be unresponsive to nitrogen and (2) create the illusion of a stark data gap between the Mount Hope Bay and Taunton River conditions.

EPA's own analysis of the available data does not indicate a "flat" response in the Taunton River. Examination of daily water quality data for stations other than MHB21 in the Taunton River in 2004 and 2005 (the period used in EPA's loading analyses) indicates an upward trend in chlorophyll-a with increasing total nitrogen concentrations, consistent with the conceptual model underlying EPA's analysis.

Figure R4.



Charts by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

Further, while EPA does not expect strong statistical results from the available DO data because of its limited nature and the sampling conditions (collected at different times of day rather than under critical near dawn conditions), the data appears to support the relationship between chlorophyll-a and DO, as shown in Figure R5 below.

Figure R5.

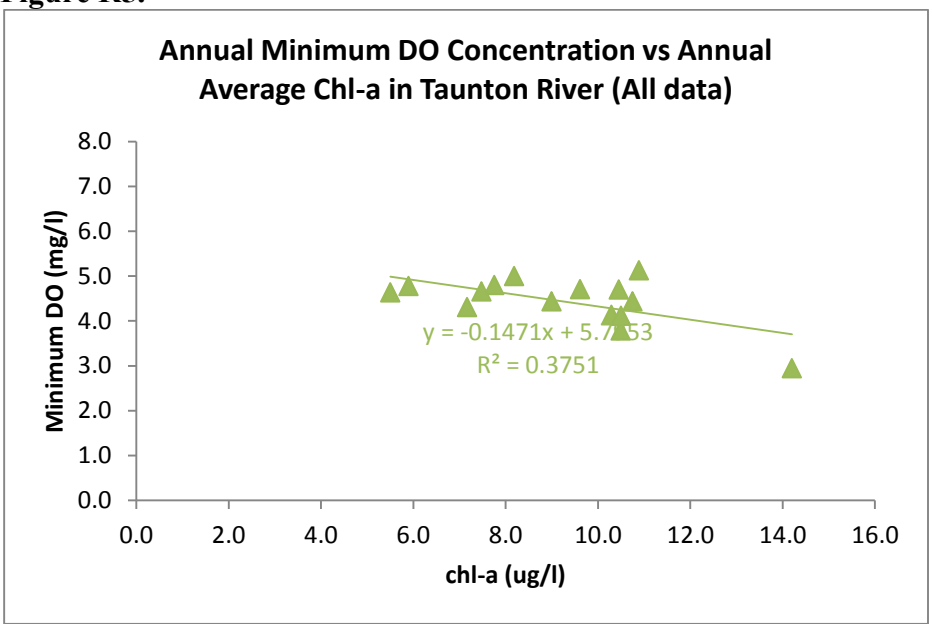


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

Again, EPA cautions against drawing firm conclusions based on such low power statistical relationships (particularly for these specific DO data), and did not use such regression analyses as the basis for its permit limits. However, to the extent that such data is informative as to processes operating in Mount Hope Bay and the Taunton River, these regression analyses support EPA's conceptual model regarding the relationship between TN and DO depletion through increases in primary productivity.

However, EPA agrees that there are differences between the Taunton River and Mount Hope Bay in these relationships; the differences appear to be related to other water quality conditions that differ in the two locations. As noted in other comments, the Taunton River appears to be more sensitive to oxygen depletion than Mount Hope Bay, likely due to the presence of other oxygen demands in the Taunton River. A comparison of regressions between the two locations, as shown in Figure R6, appears to support this conclusion (again, to the extent any conclusions can be drawn from such low power statistical relationships based on small datasets).

Figure R6.

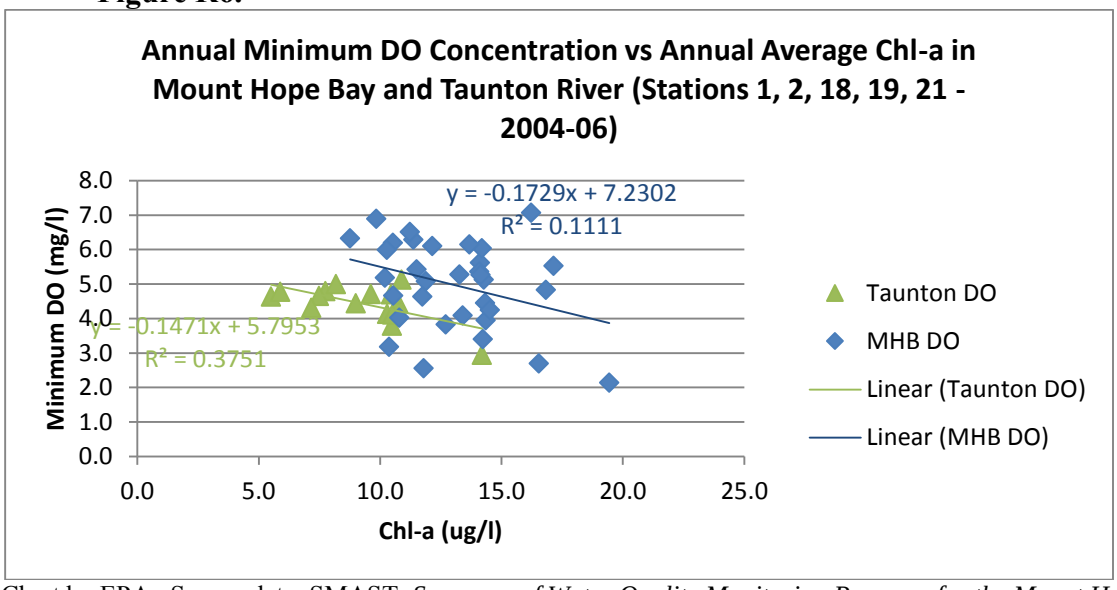


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

The chart appears to support a similar nature of response to increases in chlorophyll-a (the slopes of the two regression lines are similar), but with the Taunton River starting from a lower DO baseline.[28] On the other hand, Figure R7's comparison of TN/Chlorophyll-a relationships also shows a similar slope of response, but with chlorophyll-a concentrations in the Taunton River below that in Mount Hope Bay for a given nitrogen concentration. These results do indicate some difference in the detailed response, with a somewhat subdued response in terms of algal growth, but an offsetting greater sensitivity of DO to algal growth.

[28] Station 21 and 2006 is included in this dataplot because chlorophyll-a/DO relationships are not expected to differ significantly based on the difference in limiting nutrient (phosphorus v. nitrogen), while Station 21 and 2006 are excluded from nitrogen plots.

Figure R7.

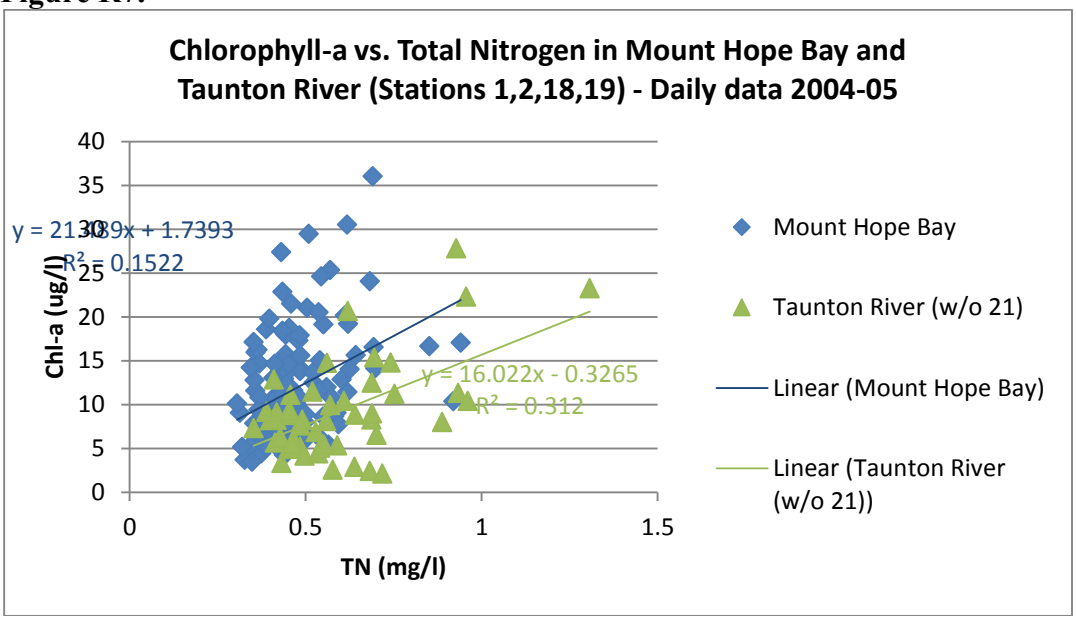


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

While clearly it would be preferable to have reference points within the Taunton River Estuary to determine the target nitrogen concentration at which standards would be met, it is unfortunately the case that the monitoring data indicates no station with the Taunton River Estuary where water quality standards were met. Indeed a significant challenge to establishing an appropriate water quality target is that nitrogen concentrations so greatly exceed the range associated with healthy ecosystems, with average concentrations over the three year monitoring period ranging from 0.6 to over 1.0 mg/l among the five Taunton River stations. This raises concerns about the extent to which relationships that currently exist in the Taunton River can be extrapolated to lower concentrations, such as the possibility that the system is nutrient-saturated and therefore may be unresponsive to increased nutrient concentrations once they reach a saturation threshold. A similar issue was raised in Deacutis and Pryor (2011), which was included in the commenter's submittal as attachment D; it notes that at high concentrations seasonal patterns in DIN "are effectively obliterated . . . as nutrient loads appear to overwhelm assimilative capacity." *Id.* at 23.

While EPA is reluctant to put much weight on simple regression relationships using a small dataset, EPA notes that the comment charts did not accurately reflect the data used in that Fact Sheet analysis. As noted above, the comment figure excludes two Taunton River monitoring stations (MHB1 and MHB 2) while including a Taunton River station (MHB21) that EPA indicated was not clearly nitrogen limited based on DIN/DIP molar ratios. See Fact Sheet at 30. The chart below sets forth data from the revised set of stations (1, 2, 18 and 19) in the Taunton River and in Mount Hope Bay in 2004-05 (the period used in the Fact

Sheet analysis). This analysis suggests that the comment is incorrect and that within the range of data used in the Fact Sheet analysis the response in the Taunton River is not "flat," and in fact appears to be responsive to TN concentrations, to the extent any conclusions can be drawn from relationships with such low R^2 (0.26 for Mount Hope Bay and 0.27 for Taunton River).

In contrast a "flat response" would be expected for stations that are saturated with respect to nitrogen and therefore not nitrogen limited. That appears to be the case not only for Station 21 for the entire monitoring period, but also under 2006 conditions for Station MHB19 (DIN/DIP ratio average > 15 over monitoring period) and Station MHB18 (DIN/DIP ratio > 15 for two out of five months) as well. The comment's conclusion is dependent entirely on the exclusion of certain Taunton River stations, while including data where conditions are not expected to be nitrogen limited and that were not used in the Fact Sheet analysis.

This is not to say that differences do not exist between Taunton River and Mount Hope Bay conditions that may impact eutrophication indicators. In general the Taunton River Estuary mean chlorophyll-a concentrations are less variable than in Mount Hope Bay and the range was lower than at the Mount Hope Bay stations. On the other hand, to the extent any conclusions can be drawn from these simple regression relationships it appears that DO may be impacted at lower chlorophyll-a concentrations in the Taunton River than in Mount Hope Bay proper, as shown below (note this is three year data consistent with the reporting of 20% low DO).

Figure R8.

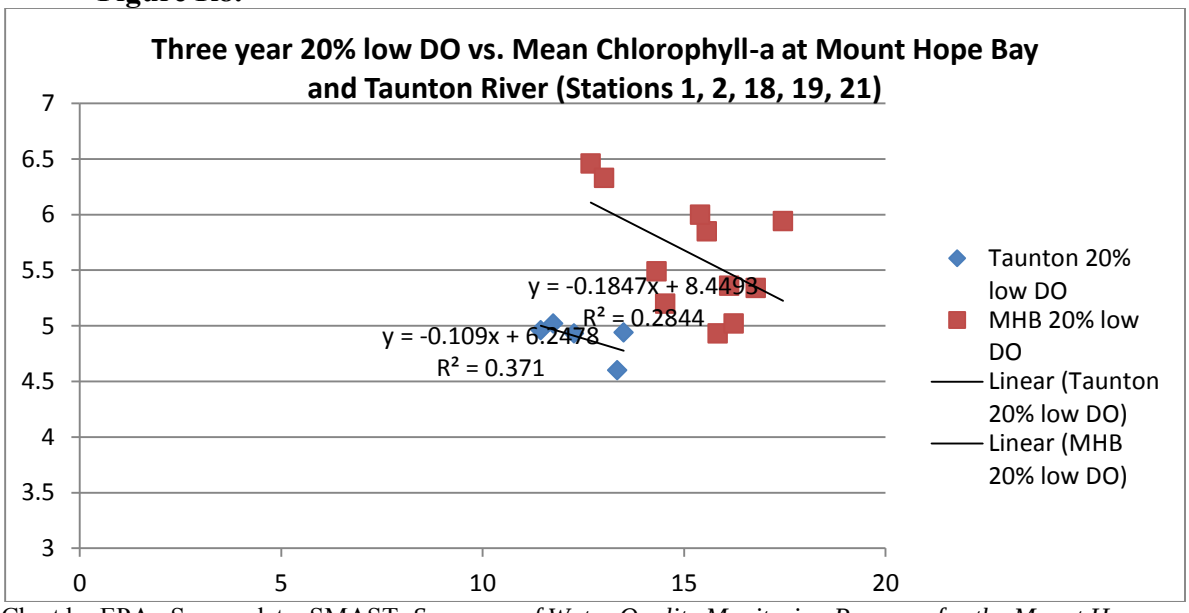


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

EPA emphasizes that it did not base its permit analysis on stressor-response relationships such as those set forth here, which are based on small datasets and have low statistical significance. Indeed these simple regression analyses demonstrate the ease with which statistical analyses of small datasets can be interpreted to support a range of positions. They certainly do not undermine EPA's analysis.

While EPA disagrees with the comment's interpretation of the statistical data, EPA is conscious of the fact that the use of a reference location in Mount Hope Bay to determine the target nitrogen concentration in the Taunton River estuary is simplified approach that nonetheless represents the best information available for determining a target nitrogen concentration. As noted above, EPA is required to include an effluent limit where discharges "cause, have reasonable potential to cause, or contribute to" an excursion from water quality standards, and in selecting a calculated numeric criteria must "demonstrate" that it "will attain and maintain applicable narrative water quality criteria and will fully protect the designated use." 40 CFR § 122.44(d)(1)(vi). To do so, EPA applied the reference location approach in the context of examining the range of applicable concentrations, comparison to other estuaries, and EPA guidance.

In applying the regulatory standard and examining all the available data EPA cannot conclude that a target concentration significantly higher than 0.45 mg/l will be sufficiently protective. There is strong evidence that TN concentrations just over 0.47 are associated with extensive algae blooms and DO deficits based on the single fixed monitoring station (the best source of information regarding DO conditions), which is located in Mount Hope Bay. There are numerous DO violations at stations with average TN concentrations just above 0.45 mg/l. While there is inherently some uncertainty with respect to the precise concentration there is no persuasive evidence that the threshold should be higher, and no evidence at all that a higher TN threshold would be protective of water quality standards in this system.

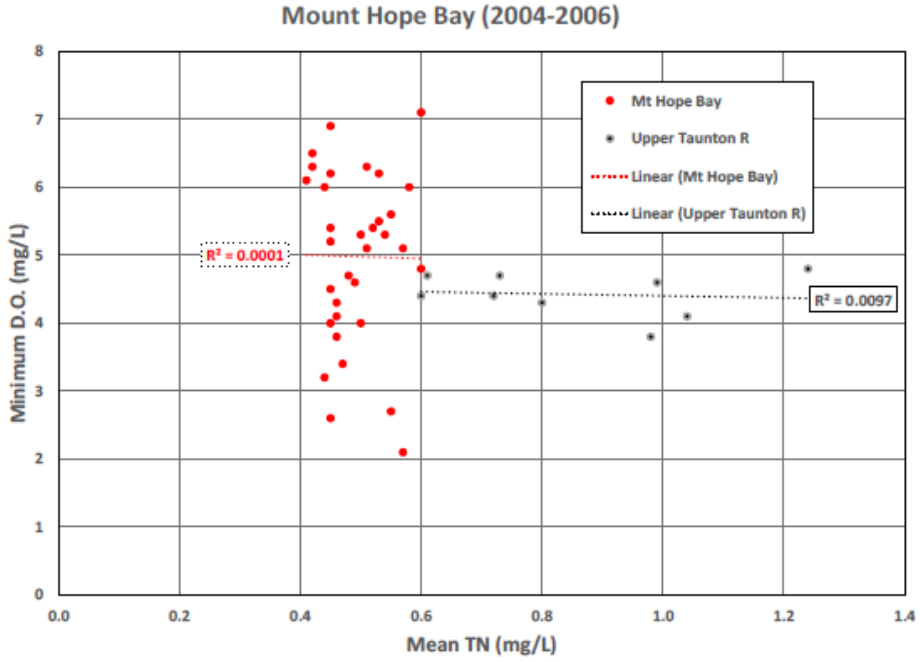
EPA also notes that the calculated permit limit for the Taunton WWTP would change little, if at all, under any remotely plausible calculated TN criteria. For example, if a target of 0.47 mg/l were used the allowable watershed load would be 2,253 lb/day with an allowable POTW component of 1,111 lb/day (compared to 2,081 and 939 lb/day under a 0.45 mg/l target); this would raise the average concentration allowable from all discharges to only 4.1 mg/l (from 3.4 mg/l in the original analysis). As the second largest discharge and a direct discharger to estuarine waters the Taunton WWTP would still be required to achieve a limit of technology 3.0 mg/l effluent concentration in this scenario, so that the permit limit of 210 lb/day would remain the same. Even under a 0.50 mg/l criterion, which is higher than the concentration at stations where clear eutrophication indicators occur and the high end of the *Critical Indicators* Report range, the average concentration allowable from all discharges would be 5.0 mg/l, with the allocation for the Taunton WWTP likely based on a lower effluent concentration. On the

other hand, lower target concentrations are also within the range of uncertainty; in those cases EPA would allocate reductions to other sources before reducing the Taunton WWTP permit limit to a load below that associated with the 3.0 mg/l limit of technology.

Comment C25. Unique conditions which exist in Mount Hope Bay are not relevant to Taunton River Estuary.

EPA is regulating TN in the Taunton NPDES Permit under the belief that such control will "cure" low DO conditions in the Taunton River Estuary. This presumption is plainly incorrect based on the available monitoring data. Figure 4 (below) illustrates the apparent response of minimum DO to mean TN in the Mount Hope Bay stations in comparison with the response in the upper Taunton River stations. Again, the apparent response in the Taunton River is flat over a wide range of TN concentrations while the response in Mount Hope Bay suggests no relationship between TN concentration and minimum DO. In Mount Hope Bay, minimum DO levels range from 2 – 7 mg/L for essentially identical TN levels, ranging from 0.4 – 0.6 mg/L, with an R2 = 0.0001. This exceedingly low R2 indicates that minimum DO varies randomly with regard to TN concentration (*i.e.,* the two parameters are unrelated). The Taunton River Estuary shows a much smaller range in minimum DO levels (3.8 – 4.8 mg/L) over a far *larger* TN range of 0.6 – 1.2 mg/L, with an R2 = 0.0097. This exceedingly low R2 means there is no apparent relationship between TN and minimum DO (*i.e.,* TN explains less than 1% of the variation in minimum DO in the Taunton River Estuary). EPA's failure to analyze such available data was itself, arbitrary and capricious.

Figure 4 – Minimum DO Concentration versus Mean TN in Mt. Hope Bay and Upper Taunton River (Stations 18, 19, 21)



This complete lack of any meaningful relationship between TN and minimum DO in the Mount Hope Bay stations confirms that other factors, unrelated to TN, are strongly influencing minimum DO and nitrogen control is not likely to achieve compliance with the DO standard. The data assessment also confirms it is improper to presume that the Taunton River Estuary would respond to TN inputs in the same manner that Mount Hope Bay does, as one data set (Mount Hope Bay) indicates vertical response while the Taunton River has a horizontal response.

EPA, itself, has noted that nutrient criteria should not be developed if the impairment is insensitive to changes in nutrient concentration. Endpoints that were found to be insensitive to changes in nutrient concentrations in a particular estuarine system were not considered further in deriving numeric nutrient criteria for a system. 77 Fed. Reg. 74,924, 74,950 (Dec. 18, 2012).

Site-specific data for Mount Hope Bay and for the Upper Taunton River Estuary show that the minimum DO concentration does not show a response to increasing TN concentration. Since the purpose of this TN endpoint is to significantly mitigate exceedances of the minimum DO criterion in the Taunton River Estuary, consistent with EPA's approach to numeric nutrient criteria development in Florida, the proposed endpoint for TN should be deleted from the permit. Consequently, the proposed effluent limit, which is based on restoring a use that is insensitive to increasing TN concentration, is arbitrary and capricious.

> **Response C25.** As noted in Response C24 above, the SMAST data collection efforts were not designed for stressor-response analysis and are not sufficient to produce statistically significant results. See Response C24. Further, minimum DO in particular is difficult to use for statistical analysis; without continuous DO monitoring the dataset clearly does not reflect actual "minima" and in this case was not even collected in a manner that would be expected to correspond to DO minima, since samples were collected at different times a day and not at critical predawn conditions. See Response C23. The commenter is confusing the lack of evidence of a relationship with proof of the lack of a relationship. This is a statistical fallacy.
>
> The comment is also internally inconsistent in stating that the statistical analysis shows no meaningful relationship, but then arguing that the analysis shows different relationships in Mount Hope Bay and the Taunton River (vertical vs. horizontal). There is no vertical or horizontal "pattern" to the data presented; as expected minimum DO concentrations are variable and the Taunton River data covers a much broader range of TN concentrations (with uniformly low DO concentrations).
>
> The comment's citation of 77 Fed. Reg. 74,924, the supporting document for the most recent proposed nutrient criteria for Florida waters, is inapposite. That document states the unexceptionable premise that, for those waters where a stressor response statistical analysis was used to develop relationships between

nutrient concentrations and specific endpoints, and the endpoints were "not sufficiently sensitive to increases in TN or TP concentrations . . ., then the statistical models were not used to derive candidate criteria for the particular nutrient." Here, however, EPA did not use a stressor response approach in determining the target nitrogen concentration. See Responses C9 and C11.

Moreover, the commenter's conclusions rely on a selective use of data. As discussed in Response C24, the commenter excluded two Taunton River stations from the analysis, essentially creating the illusion of a large break between the two datasets by omitting the stations located between the two areas. The comment chart also includes data from Station MHB21, which EPA determined not to use in its analysis because it appears that station may not be nitrogen-limited. See Fact Sheet at 30. Figure R9 below corrects those errors, and also removes the 2006 data points for Stations MHB18 and MHB19, which also appear do not appear (based on DIN/DIP ratios) to be nitrogen limited under the very wet conditions prevailing in that year. See Response C24. In the corrected analysis, the Taunton River data is a reasonable extension of the Mount Hope Bay data, while showing a stronger suggestion of the impact of TN concentrations on DO concentrations (albeit still at a low statistical significance).

Figure R9.

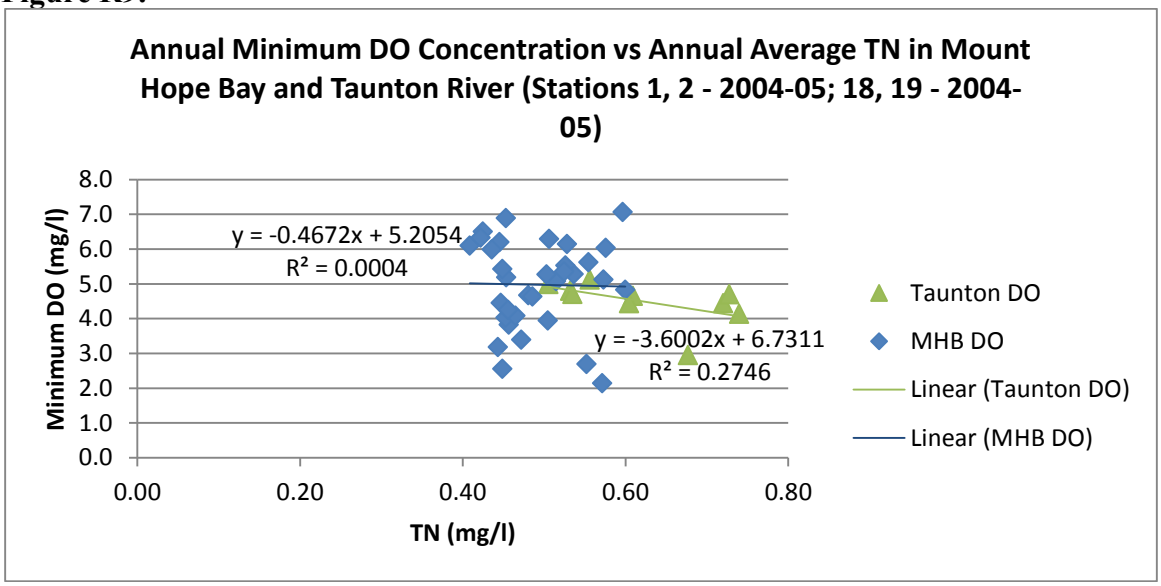


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007), Appendix D.

The comment's suggestion that EPA was arbitrary and capricious in failing to analyze the data in the manner suggested in the comment is without merit. EPA did not rely on a stressor-response statistical analysis in developing the nitrogen limit in the Draft Permit. Rather, EPA performed a reference location analysis that was consistent with the MEP process that the available data was designed to support. It was, and remains, EPA's opinion that the available data is not sufficient to establish statistically significant stressor-response relationships, both

because of the small dataset (three years of data) and because of the nature of the monitoring program (no continuous monitoring (fixed network data limited to a single site from a different program) and not designed to measure critical DO conditions). However, to the extent conclusions can be drawn from the statistical evidence, the data does not contradict – indeed tends to support – EPA's conclusions, and the comment's attempt to show otherwise is based on flawed analysis.

Other Technical Comments on TN Limit Derivation

Comment C26. The TN endpoint was miscalculated.
Assuming, arguendo, that the sentinel station method is appropriate for establishing a TN threshold, EPA miscalculated the appropriate TN endpoint. The purpose of the calculation was to establish a TN concentration to ensure compliance with the applicable DO water quality standard. The selected TN endpoint, 0.45 mg/L, corresponds with a minimum DO concentration of approximately 6.0 mg/L, but the actual criterion target is 5.0 mg/L. (*See* Fact Sheet, at 23, Table 5). The data for MHB16 in 2006 show a minimum DO of 5.3 mg/L with a mean TN of 0.50 mg/L. Using these data, the TN endpoint necessary to achieve the DO criterion of 5.0 mg/L is a TN concentration *greater than* 0.50 mg/L, assuming that the Taunton River Estuary responded to TN in the same manner as observed in Mount Hope Bay. If a sentinel approach is defensible, it requires adjustment to reflect the TN load required to meet applicable standards (5 mg/L DO), not a 6.0 mg/L DO criteria.

Response C26. The comment mischaracterizes the Fact Sheet analysis. The selected endpoint of 0.45 mg/l was selected based on the minimum DO criterion for SB waters of 5.0 mg/l. As described in the Fact Sheet, examination of the 2004-05 data showed numerous stations with DO results below the 5.0 mg/l criterion with average TN concentrations below 0.48 mg/l. FS at 29. The Fact Sheet specifically notes results from MHB13, a monitoring station close to the fixed monitoring data buoy that recorded numerous periods of DO below 5.0 mg/l in 2005-06; TN concentrations at that site averaged 0.473 mg/l in 2004-06, indicating that the target TN concentration must be below 0.473 mg/l. *Id.* at 30. Indeed, "minimum DO concentrations of less than 5.0 mg/l were encountered at all but one site (MHB16) during the three year monitoring program." *Id.* at 29.

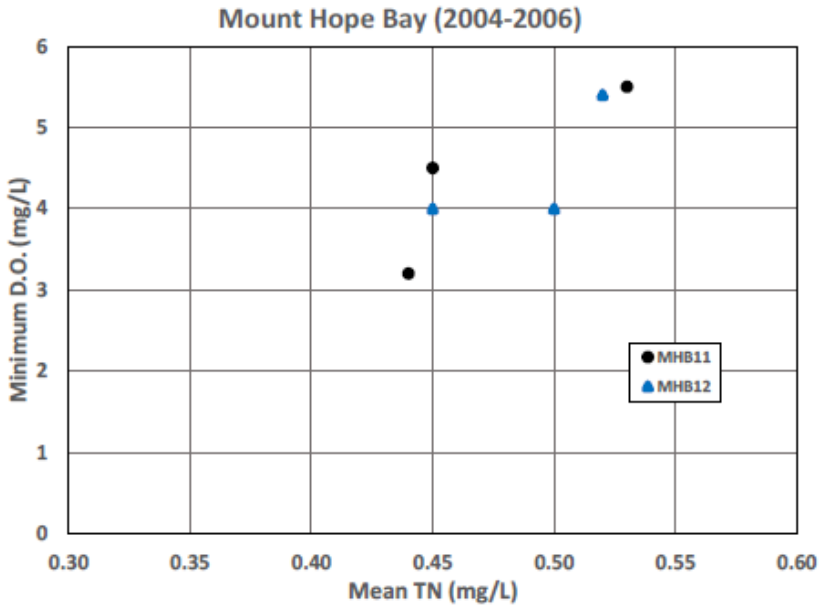
The comment's suggestion that an incorrect criterion of 6.0 mg/l was used appears to be based on the fact that minimum DO concentrations at MHB16 were above 6.0 mg/l in 2004-05 (although not in 2006). The comment further suggests that a TN target of greater than 0.5 mg/l is appropriate because minimum DO less than 5.0 mg/l was not measured at this specific site in a year when TN concentrations averaged 0.50 mg/l. The comment thus ignores that fact that EPA's analysis is *not* based on results from a single station considered in isolation, but on the spectrum of monitoring results throughout the system. *See* Response C1. The comment simply ignores EPA's thorough discussion of results

from *all* the monitoring sites in Mount Hope Bay and the Taunton River Estuary, which clearly indicate that the appropriate criterion of 5.0 mg/l was used and that violations of the 5.0 mg/l criterion are encountered at concentrations between 0.45 and 0.50 mg/l at numerous stations throughout the estuary. EPA did not establish a numeric target criterion based on a single station where water quality standards are being met. EPA's approach is designed to identify the threshold between impaired and unimpaired conditions by comparison of conditions representing the range of impairment conditions.

Comment C27. The proposed TN endpoint is insufficient to achieve the DO criterion.

Water quality data presented in Table 5 of the Fact Sheet (at 23) show that several Mount Hope Bay stations do not achieve the DO criterion while in compliance with the proposed "protective" TN endpoint. These stations, MHB 11 and MHB 12, are illustrated in Figure 5 (below). Station MHB11 achieved the TN endpoint in 2004 and 2005, but was significantly below the minimum DO water quality standard in both of those years. Conversely, in 2006 this station exceeded the TN endpoint by a significant margin but was in full compliance with the minimum DO criterion. Similarly, station MBH12 was below the TN endpoint in 2004, but was also well below the DO criterion. In the subsequent years, this station exceeded the TN endpoint but alternatively failed (2005) and then exceeded (2006) the DO criterion.

Figure 5 – Minimum D.O. Concentration versus Mean TN (Stations 11, 12)



These data indicate that the selected TN endpoint is not needed to be protective of the applicable water quality standard. Moreover, the trend exhibited by the data indicates that the minimum DO *improves* with increasing TN concentration, contrary to EPA's conceptual model. This discrepancy with the conceptual model is a clear indication that other factors control the DO response. It is arbitrary and capricious for EPA to ignore this

data confirming the simplified sentinel approach is not effective in controlling low DO conditions and chose a single "sentinel" location that fits EPA's regulatory theory.

> **Response C27.** The commenter's selective use of two out of twenty-two data stations as somehow establishing a different "trend" does not demonstrate a meaningful discrepancy with the overall causal model. There are of course other factors that influence DO, including in this case variability in sampling conditions relative to critical DO time periods as well as physical factors such as stratification, wind mixing, tidal variation (e.g. neap vs. spring tide), etc. It is quite likely that small selected subsets of data can be found that appear to support any number of theories. A defensible statistical approach, on the other hand, includes all data unless a clear basis exists for its exclusion. As shown in Response C24, the available data supports EPA's conceptual model of increased algal growth in response to TN and resulting low DO.
>
> EPA disagrees with the comment's contention that the proposed TN endpoint is insufficient. EPA's analysis was based on 2-year average concentrations. EPA acknowledges that a slightly different result may be reached if annual average TN is used as suggested by the comment's Figure 5. The use of a 2-year averaging period is intended to ensure that steady state conditions apply, consistent with the assumption of the loading model, and is a reasonable approach to balancing the need for a simplified model against the objective to achieve a load that is protective under all conditions.
>
> Further, even if there were merit to the claim that the TN endpoint is "insufficient", it would not change the TN permit limit for this facility. If the analysis were done based on a lower TN threshold, for example 0.435 mg/l, the target watershed load would be approximately 6% lower (1,952 lb/d) and would require a 3 mg/l permit limit from all facilities along with 21% NPS reduction (vs 20% NPS reduction in the fact sheet analysis). This would not impact the permit limit for the Taunton WWTF, which would still be based on the 3 mg/l limit of technology.

Comment C28. TN is the wrong parameter to regulate for DO control in short detention systems such as the Taunton River Estuary.

EPA selected TN as the parameter to regulate without any demonstration that TN control is the appropriate form of nitrogen to achieve compliance with the DO water quality standard. As discussed above, the conceptual model for eutrophication in estuaries and coastal waters utilizes loads of dissolved inorganic forms of nitrogen as the basis for limiting algal growth and subsequently improving benthic DO levels. Notwithstanding the fact that EPA ignored its own guidance (*e.g.,* the Estuaries Guidance Document and the WLA Guidance Document) regarding selection of the nitrogen form to regulate, a consideration of the system hydrodynamics confirms that TN regulation is not appropriate. Assuming the Taunton River Estuary actually exhibited excessive algal growth, the form of nitrogen to control is DIN, not TN because of the systems short detention time. If the permit limit was based on DIN, it would completely alter the degree

of treatment that would be required to reduce algal growth, since the background concentration of DIN in the ocean is negligible.

By regulating TN, EPA assumes that particulate and dissolved organic forms of nitrogen are available for stimulating algal growth in the Taunton River Estuary. The conversion of these organic forms to the form used by algae, DIN, requires that the residence time in the Taunton River Estuary and Mount Hope Bay is sufficient to allow this conversion. Based on the information presented in the Fact Sheet, Mount Hope Bay covers an area of 13.6 square miles, with a volume of 53.3 billion gallons at mean low water and a tidal range averaging approximately 4.5 feet. (*See* Fact Sheet, at 13). Assuming a tidal cycle of 12.3 hours, the total volume in the Bay is exchanged in 2.1 days. The exchange time in the Taunton River Estuary, itself, is projected to be less than one day based on the mean tidal exchange. This amount of time is insufficient to convert a significant amount of particulate and organic forms of nitrogen to DIN and EPA has provided no evaluation suggesting that such conversion occurs in the estuary or Bay to a significant extent. (*See* EPA, *Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling* (1985)).

If the regulated form of nitrogen is changed to the form controlling algal growth (*i.e.,* DIN), the necessary load reduction to meet DO standards would be significantly relaxed because the ocean boundary concentration of DIN is close to zero and the tidal exchange from the ocean provides significant dilution to the system.

> **Response C28.** EPA did not "ignore its own guidance." Neither document cited in the comment recommends using any form other than total nitrogen for regulation. See, e.g., EPA, *Nutrient Criteria Technical Guidance – Estuarine and Coastal Waters* at 2-24 ("If concentrations of nutrients are to be used as criteria, the total concentration is most likely to reflect the short-term phytoplankton growth potential (Boynton and Kemp 2000).")
>
> In addition, recent research has documented that forms of nitrogen once considered unavailable for plant growth are far more bioreactive than previously thought, further supporting the need to control total nitrogen rather than just the dissolved inorganic components suggested in the comment. (Wiegner et al., 2006; Sedlak, 2011 (portion of dissolved organic nitrogen (DON) that is not bioreactive is only 10 – 29% of the effluent DON); Filippino et al., 2010 (between 31% and 96% of the effluent derived organic nitrogen (EON) was removed during biotic bioassays within the first 2 days)).[29]

[29] Wiegner et al., "Bioavailability of dissolved organic nitrogen and carbon from nine rivers in the eastern United States, 43 *Aquatic Microbial Ecology* 277-87 (2006); Sedlak, D.L., J. Jeong and H.D. Stensel. 2011. Bioavailability of Dissolved Organic Nitrogen in Wastewater Effluent as Determined by Resin Separation. *Nutrient Recovery and Management 2011*. Water Environment Federation; Filippino, K.C., M. Mulholland, P. Bernhardt, G. Boneillo, R. Morse, M. Semcheski, H. Marshall, N. Love, Q. Roberts, D. Bronk. The Bioavailability of Effluent-derived Organic Nitrogen along an Estuarine Salinity Gradient, *Estuaries and Coasts* (2010), 34(2): 269-280.

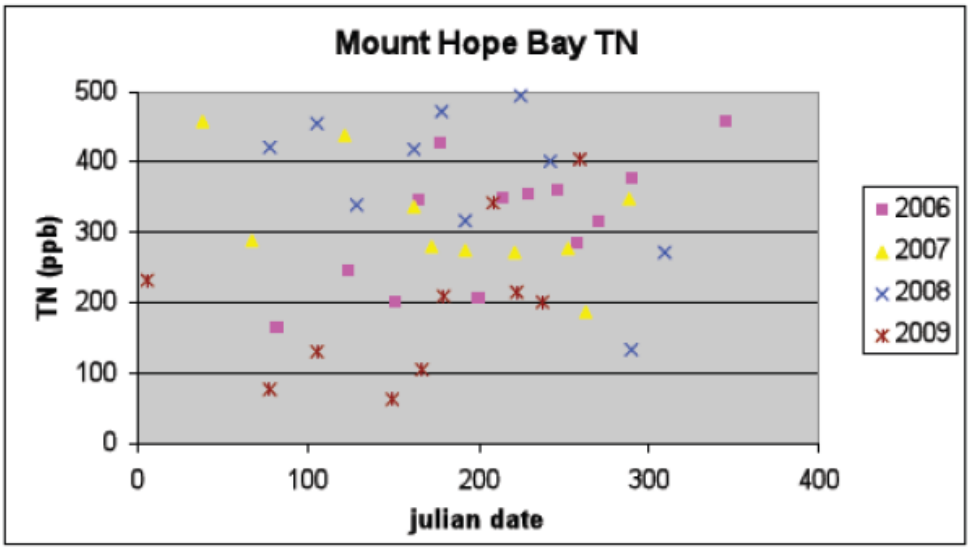
The actual exchange time in Mount Hope Bay and the Taunton River Estuary is much longer than the comment's estimate, which is based on a simple tidal prism analysis. More detailed studies have calculated significantly longer exchange times. See MacDonald, D.G., "Estimating an estuarine mixing and exchange ratio from boundary data with application to Mt. Hope Bay (Massachusetts/Rhode Island)," *Estuarine, Coastal and Shelf Science* 70 (2006) (exchange rate in Mount Hope Bay ranging from one week to two months during spring tide); Boucher, *Nutrient and Phosphorus Geochemistry in the Taunton River Estuary*, U.R.I. Ph.D. Thesis (1991) at 31 (freshwater residence times in Taunton River Estuary of about 3 days at low flows). Thus exchange times are sufficiently long for effluent derived organic nitrogen to be bioreactive, even for discharges directly to the Estuary, see Filippino et al., 2010. EPA notes that much of the load is from more distant points in the watershed with even longer detention times.

Nor is there any evidence that use of DIN as the parameter for regulation would reduce the degree of treatment required. A DIN-based threshold concentration would be much lower than the TN threshold concentration. For example, a dissolved inorganic nitrogen threshold of 0.15 mg/l is cited in EPA's Nutrient Criteria Technical Guidance Manual (EPA, 2001) and the dissolved inorganic nitrogen water quality standard for the State of Delaware is 0.14 mg/l. The commenter provides no citation in support of its contention that the background concentration of DIN in the ocean is negligible. DIN concentrations in ocean waters that have been reported for the Gulf of Maine (0.069 mg/l, NHDES, 2009) and Rhode Island Sound (approximately 0.05 mg/l summer average, NBERR 2011) are not insignificant relative to a threshold of 0.14-0.15 mg/l.

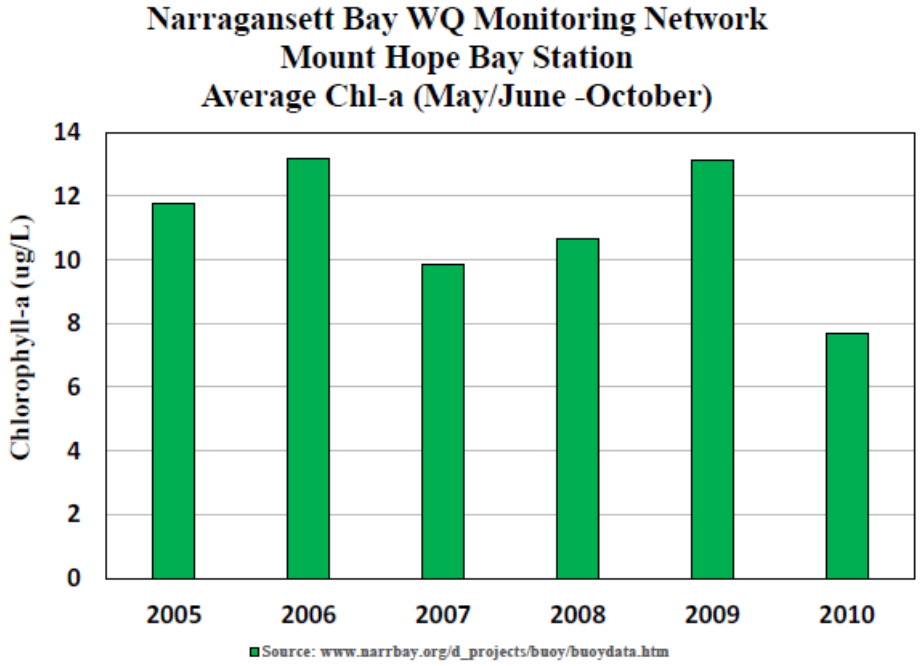
Comment C29. EPA's analysis is based on outdated information.
EPA relied on water quality data collected by The School for Marine Science and Technology (SMAST) at the University of Massachusetts – Dartmouth to develop the TN endpoint of 0.45 mg/L. These data were collected from 2004 – 2006, but EPA only used the data from 2004 –2005 for station MHB16 to calculate its protective threshold concentration. (*See* Fact Sheet, at 30). At the same time, SMAST collected data from 21 other stations that were summarized in Table 5 of the Fact Sheet (at 23). One of those stations, MHB-MOOR, centrally located in Mount Hope Bay, reported an average TN concentration of 0.48 mg/L over the same period.

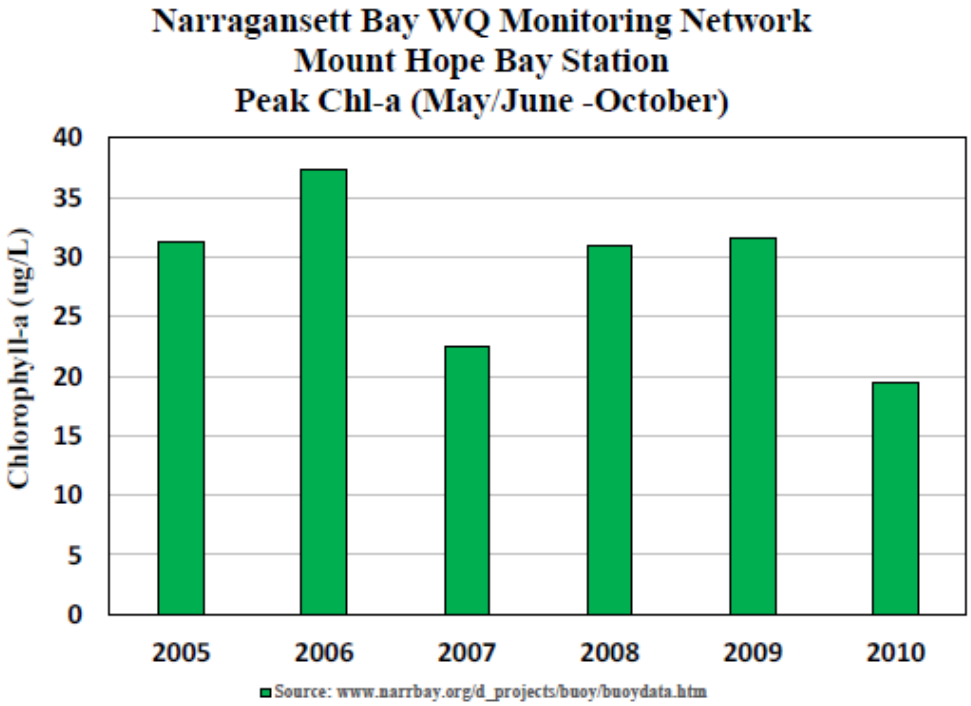
The TN endpoint for this draft NPDES permit is based on data that are seven to eight years old and fail to reflect current conditions regarding TN and chlorophyll a levels in this system. Since 2004/5, many facilities that discharge to Narragansett Bay have implemented nutrient control and reduced the overall concentration of nitrogen and organic loadings to the Bay. Additional extensive reductions in nutrient load are associated with CSO controls being implemented by the City of Taunton and Fall River.[34] Ongoing monitoring data at Station MHB-MOOR, contained in a report by the Narragansett Bay Estuary Program[35], demonstrate that annual average nutrient concentrations ranged from 0.3 – 0.4 mg/L from 2006 – 2009 (illustrated in the following

figure on page 35 of the report). The May – October average concentration (approximately, Julian date 120 – 304) are even lower, particularly in 2009. The 2009 TN concentration at the MHB-MOOR station was only 0.22 mg/L for the period from May – October. Thus, TN concentrations are within the range EPA has asserted reflect "excellent" water quality for Bay systems. (Fact Sheet, at 18). Under EPA's own characterization, TN levels should be considered "excellent." (Fact Sheet, at 28 - citing a 0.3 – 0.39 TN level as "excellent").



Algal levels in Mount Hope Bay have dropped significantly since 2004/5, as illustrated in the charts below based on daily data collected by the Narragansett Bay Water Quality Monitoring Network near MHB-13 over the period from 2005 - 2010.





Peak and average algal levels are at all-time lows. Assuming the algal levels are controlling system SOD and causing low system DO, these changes would produce far better DO conditions in the Bay, which greatly influences DO in the Taunton River. As noted earlier, the TN levels in the Taunton River have also dropped dramatically over this period of time. *Supra*, at 15. Significant TN reductions have been achieved by facilities tributary to the river. These data indicate at least a 25% reduction in direct point source TN loadings. BOD discharge, which affects DO, has also improved. CSO reductions have also reduced TN and organic loads. These changes in nitrogen loading have produced about a 50% reduction in the Taunton system TN concentrations based upon a recently published PhD thesis. (Krumholtz, *supra* note 15).[36] Based on this information, the Taunton River likely meets EPA's suggested TN objective of 0.45 mg/L at MHB19, since the average TN concentration at this location was 0.70 mg/L TN. A 50% reduction in TN concentration would place TN concentration levels well below the 0.45 mg/L target EPA has chosen. Therefore, the need for further reduction at Taunton is not evident based upon current data.

These data demonstrate that significant improvements in TN and algal concentration have occurred since the earlier SMAST study, with present annual average TN concentration of approximately 0.3 mg/L and average chlorophyll a less than 8 µg/L in the Bay. The conditions in the Bay will improve DO levels in the Taunton River Estuary because so much of the flow in the estuary originates from the Bay. At a minimum, the more-relevant new data must be used to assess current conditions in the Taunton River Estuary and the need for TN reductions at the Taunton WWTF.

[34] *See* Attachment I– Excerpts from: City of Taunton Infiltration/Inflow Summary Report Jan 1, 2012- Dec. 31, 2012.
[35] Deacutis and Pryor, *supra* note 16.
[36] The concentration of TN in the Taunton River has decreased from 1.74 mg/L in 2003-2004 to 0.91 mg/L in 2008-2010. Krumholtz, *supra* note 15, at 167, Table 3-2.

Response C29. EPA used the SMAST data for its analysis because it is the only complete and consistently collected dataset available, was collected in accordance with MassDEP quality assurance procedures, and represents the best available information for this system. More recent data are limited in scope and have issues with intercomparability (as discussed below), and do not provide the comprehensive data for all aspects of the system that is provided by the SMAST data. Table R1 shows a comparison of the SMAST with the more recent datasets and indicates the relative strength of the SMAST data set in terms of scope of data collected, number of monitoring sites, and parameters monitored.

EPA did not disregard more recent data; EPA's Fact Sheet includes a discussion of the 2010 monitoring data from the Narragansett Bay Water Quality Network fixed monitoring site in Mount Hope Bay, which indicates continued conditions of DO depletion, extended periods below 5.0 mg/l DO, and elevated chlorophyll at that location. The comment's general argument, that the load reductions achieved to date have resulted in some improvement in Mount Hope Bay, is not inconsistent with EPA's analysis for the permit limits. EPA would expect some improvement in conditions in connection with reduced loads, but the analysis indicates that the scale of load reductions achieved to date would not be expected to eliminate water quality violations (which has proven to be the case). See Responses A2, C12 and C13.

Table R1. Mount Hope Bay/Taunton River Estuary and lower Taunton River monitoring programs

Dataset	SMAST	URI-GSO	NBC	NBWQN	TRWA
Period covered	2004-06	2006-present	2006-present	2005-2010	?-present
Type of monitoring	Sampling	Sampling	Sampling	Datasonde	Sampling
Number of stations in MHB	11	1	0	1	0
Number of stations in Taunton River Estuary below Berkley Bridge	5	0	0	0	0
Number of stations in Taunton River, Berkley Bridge and above[1]	1	0	1	0	2
Monitor both DIN and TN?	Yes	Yes	No[2]	No	No
Monitor chlorophyll and DO?	Yes	No[3]	No	Yes	No
Monitor watershed loads?	Yes	No	Yes[1]	No	No
Monitor Taunton River Estuary conditions?	Yes	No	No[1]	No	No
Monitor Mount Hope Bay conditions?	Yes	Yes	No	Yes	No

[1] Sampling at Berkley Bridge is collected by NBC for determination of watershed loads; however this site is downstream of the Taunton WWTP in estuarine waters so that nutrient concentrations are influenced by seawater dilution.

[2] Began monitoring for TN in 2013; TDN and DIN before that.

[3] MHB site located at NBWQN datasonde site so allows comparison to NBWQN chlorophyll and DO data.

EPA did not previously have in its possession the data collected by the URI Graduate School of Oceanography (URI-GSO) that was included in the *Draft Nutrient Conditions in Narragansett Bay & Numeric Nutrient Criteria Development Strategies for Rhode Island Estuarine Waters* (June 2011) provided with the comments; EPA has therefore reviewed these data carefully to determine whether they provide a basis for reconsidering or modifying EPA's analysis.

EPA notes that the URI-GSO data do indicate significantly lower TN concentrations than those reported by the SMAST, including for the one year (2006) that the monitoring programs overlapped. EPA does not agree with the conclusions set forth in the comment based on those results, however. While the comment argues that these data indicates a trend toward lower concentrations, that is not in fact the case. While the data through 2009 might appear to reflect a lowering trend because 2009 had the lowest concentration of those four years, the full URI-GSO dataset shows that concentrations in 2010 and 2011 were similar to those in 2006 and 2007, so there is no actual decline shown in the URI-GSO data.

See Figure R10. There also clearly has not been a real drop in concentrations from the SMAST levels (in the 0.55 mg/l range) to the URI-GSO levels (in the 0.35 range), since the two datasets show the same discrepancy for the year of overlap between the two datasets, 2006. While EPA expects there will be some improvement in concentrations at this station from the reduction in loads to the Taunton River achieved to date, such reductions are not readily apparent from these data (they may be mitigated by the influence of the Sakonnet River or the Fall River discharge in this area). Nor does EPA agree that the recent monitoring indicates "excellent" conditions at the MHB station. As discussed in the Fact Sheet, see Reponses A2 and C23 and discussion below, the data from the Narragansett Bay Water Quality Network fixed monitoring site indicates continued elevated chlorophyll and depletion of DO through 2013.

Figure R10.

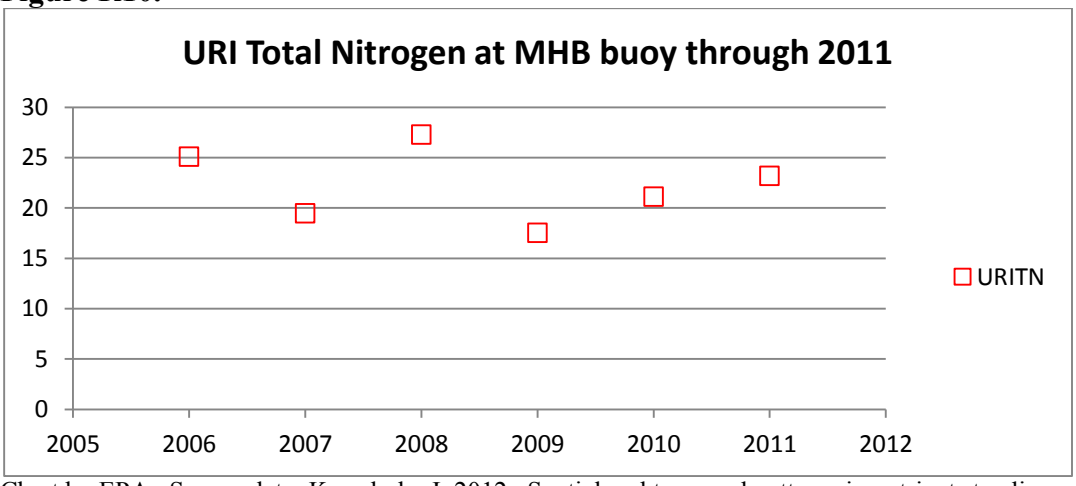


Chart by EPA. Source data: Krumholz, J. 2012. Spatial and temporal patterns in nutrient standing stock and mass-balance in response to load reductions in a temperate estuary. PhD Dissertation in Oceanography, University of Rhode Island, Kingston, RI. 380p; Data collected pursuant to NOAA Award Number: NA05NOS4781201 from 2005 to 2012; provided electronically by Dr. Candace Oviatt, personal communication, June 27, 2013.

EPA is however concerned that there is such a large discrepancy between SMAST data and URI-GSO data for the Mount Hope Bay buoy site for the one year overlap data, and EPA has attempted to determine the source of the problem. EPA notes that the issue of comparability among different datasets has been recognized and commented up by researchers in this system. Deacutis and Pryor (Comment Attachment D), at 39, quote the following discussion from Krumholtz (2011):

> [A] serious problem for interstudy data usage is that there is not a regular series of intercalibrations between labs. Each lab operates with its own sets of standards, which are handmade, and rarely checked against anything with a truly known concentration, and there is no standardized methodology for collecting, processing, and running samples (with respect to preservation, holding time, handling requirements, etc.) plus, many of

> us use different methodologies and chemical reactions depending on our instruments or the type of samples we run . . . . At a minimum, we should be doing regular (yearly) intercalibrations to ensure that these variations don't impact results.

EPA notes that the monitoring stations for the SMAST and URI data are not at precisely the same location. The SMAST station was located at 41° 41.142' N, 71° 12.198' W, while the URI databuoy is located 41° 40.808' N, 71° 12.913' W (NBERR, *NBFSN Final Report on Activities during 2005-2008* at 10. URI data also includes a third station location at 41° 40.84' N, 71° 12.45' W. While a half kilometer to kilometer difference in location might not be expected to produce such difference in concentration, in this area of Mount Hope Bay there may be variability in conditions due to the proximity to the Fall River discharge and to the Sakonnet River, which is known to create unusual flow patterns and reversals under some tidal conditions.

Another possible explanation might be differences in sampling conditions. For example, the reported SMAST data represents an average of surface, middle, and bottom sample concentrations, while the URI GSO data were all surface samples (Krumholz, H&A Comment Attachment C at 9). To test this explanation, EPA eliminated non-surface samples in the SMAST data for comparison. This did not eliminate the discrepancy; the average of the SMAST surface samples for 2006 is 0.58 mg/l TN, compared to the URI-GSO average of 0.35 mg/l TN (June-September 2006). (Interestingly, the DIN concentrations are very similar between the two datasets, at 0.057 mg/l DIN for SMAST and 0.054 mg/l DIN for URI-GSO). See Figure R11.

Figure R11.

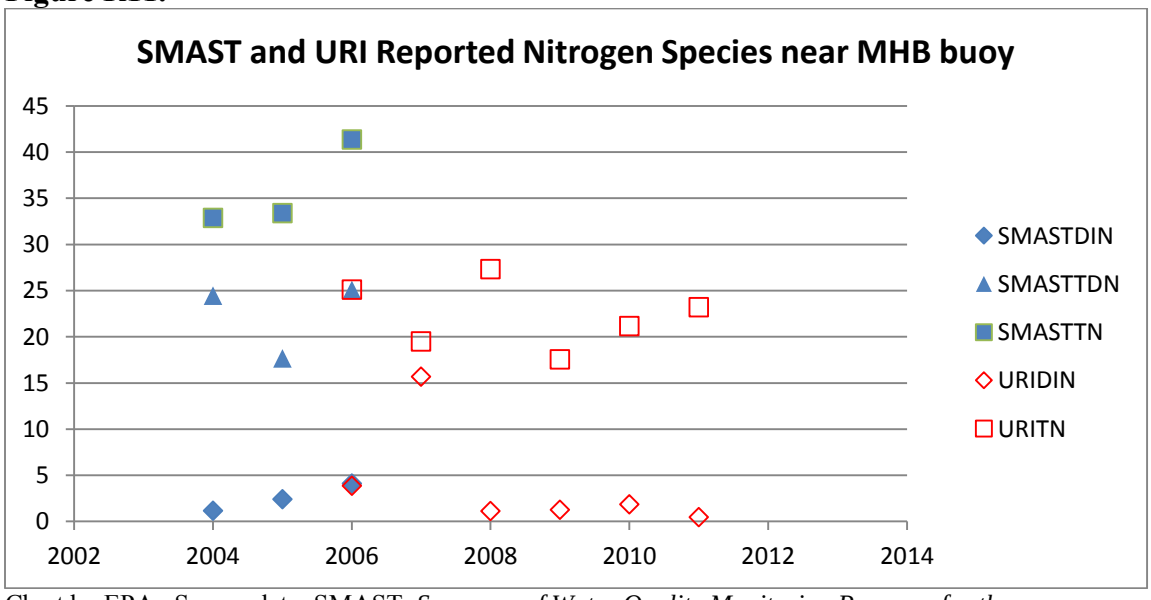


Chart by EPA. Source data: SMAST, *Summary of Water Quality Monitoring Program for the Mount Hope Bay Embayment System (2004 – 2006)* (2007); Krumholz, J. 2012. Spatial and temporal patterns in nutrient standing stock and mass-balance in response to load reductions in a

temperate estuary. PhD Dissertation in Oceanography, University of Rhode Island, Kingston, RI. 380p; Data collected pursuant to NOAA Award Number: NA05NOS4781201 from 2005 to 2012; provided electronically by Dr. Candace Oviatt, personal communication, June 27, 2013.

EPA also noted that the samples were taken under different tidal conditions and therefore different levels of dilution of the freshwater inputs by ocean water. SMAST data collection was timed to take place within two hours of mid-ebb tide, while the URI-GSO data was not limited to specific tidal conditions and may have taken place over a range of conditions. Figure R12 shows that salinity at mid ebb tide is in fact lower than average salinity, as expected, which would indicate less dilution by marine waters and thus potentially higher TN concentrations. However, the average salinity range over a single tidal cycle at the MHB buoy was 2.6 ppt in the 2006 datasonde monitoring period, so the difference from average conditions should be on the order of 1.3 ppt. This magnitude of variation would not be expected to result in a 0.2 mg/l difference in TN concentration.[30]

Figure R12

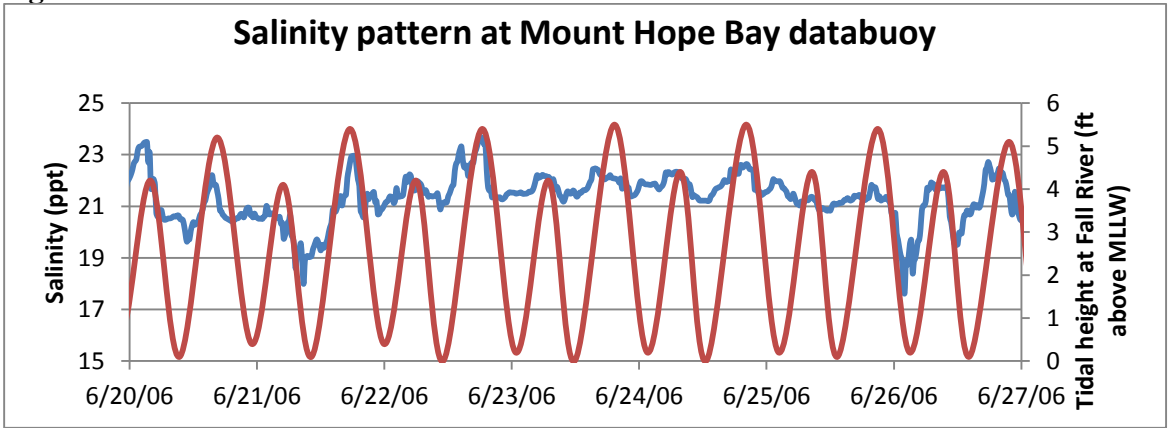


Chart by EPA. Salinity data from http://www.narrbay.org/d_projects/buoy/buoydata.htm; tide data from NOAA (http://old.tidesandcurrents.noaa.gov/get_predictions.shtml?year=2006&stn=2660+Newport&secstn=Fall+River,+Massachusetts&thh=%2B0&thm=18&tlh=%2B0&tlm=3&hh=*1.25&hl=*1.21)

EPA also notes that the low TN concentrations in some time periods appear questionable in light of other data. For example, the comment states that TN concentrations averaged 0.22 mg/l TN in May to October 2009, a period in which average chlorophyll concentrations measured at the datasonde were 13 ug/l. Information provided in the Comment Attachment D indicates that particulate organic nitrogen concentrations, a subset of TN, are generally 20 to 50 times the chlorophyll concentration. The expected PON in 2009 therefore should be at least 0.26 mg/l – higher than the reported TN concentration even without accounting

[30] While detailed dilution calculations for this site are not available, the Fact Sheet approach for analyzing salinity impacts in the Taunton River Estuary indicates that for a given freshwater flow, a salinity change of 1.3 ppt would result in a change in TN concentration of approximately 0.026 mg/l.

for dissolved organic nitrogen or inorganic components. Comment Attachment D at 25. Also in 2009, both URI and the Narragansett Bay Commission took samples near Conimicut Point. The average TN of the URI data was 0.29 mg/l, while NBC, which analyzed only for TDN, has an average of 0.33 mg/l. The data appears more consistent with an exclusion of certain nitrogen species, and in fact the URI data closely matches the total dissolved nitrogen reported by SMAST (as well as having similar DIN results). EPA notes again that the SMAST Mount Hope Bay data was collected under a MassDEP approved monitoring program in connection with the Massachusetts Estuaries Program under approved quality assurance procedures.

For these reasons EPA has concerns about the comparability of these data and is not revising its conclusions on this basis. However, EPA notes that elevated chlorophyll-a concentrations and dissolved oxygen violations have persisted, despite the claim of low (0.3 mg/l) TN concentrations in the URI data. If concentrations are as low as the comment claims, this would indicate that target TN concentrations should be set far lower than the 0.45 mg/l identified by EPA in this permit proceeding. This was the conclusion of the authors of Attachment D to the Comment, which suggests that total nitrogen criteria in the Narragansett Bay system would be "in the vicinity of 0.35 to 0.40 mg/l." While EPA does not believe the evidence supports such a lower threshold due to the data concerns described above, it clearly would not provide any relief from the 3 mg/l TN permit limit here. See Response C24 for discussion of permit limits under alternate TN threshold assumptions.

EPA disagrees with the contentions that the data presented demonstrate "[a]lgal levels in Mount Hope Bay have dropped significantly since 2004/5" and "[p]eak and average algal levels are at all-time lows." The comment attempts to draw conclusions from a single year of variation in the chart presented (2010, while 2009 was the highest year on record for average chlorophyll-a concentrations). Further, the 2010 chlorophyll-a average concentrations of 8 ug/l, while lower than those seen in 2004-05, are still significantly higher than the levels identified in the *Critical Indicators Report* as reflecting unimpaired conditions in SB waters (3-5 ug/l). While some reduction in algal levels might be expected given the moderate reduction in TN loads that has occurred, the data presented does not indicate compliance with water quality standards, even for 2010. The failure to meet water quality standards is also indicated by dissolved oxygen data from the same datasonde, which was presented in the Fact Sheet (see Fact Sheet Figure 6b, reproduced below), showing extensive periods with DO below the 5 mg/l Massachusetts water quality standard.

Fact Sheet Figure 6b.

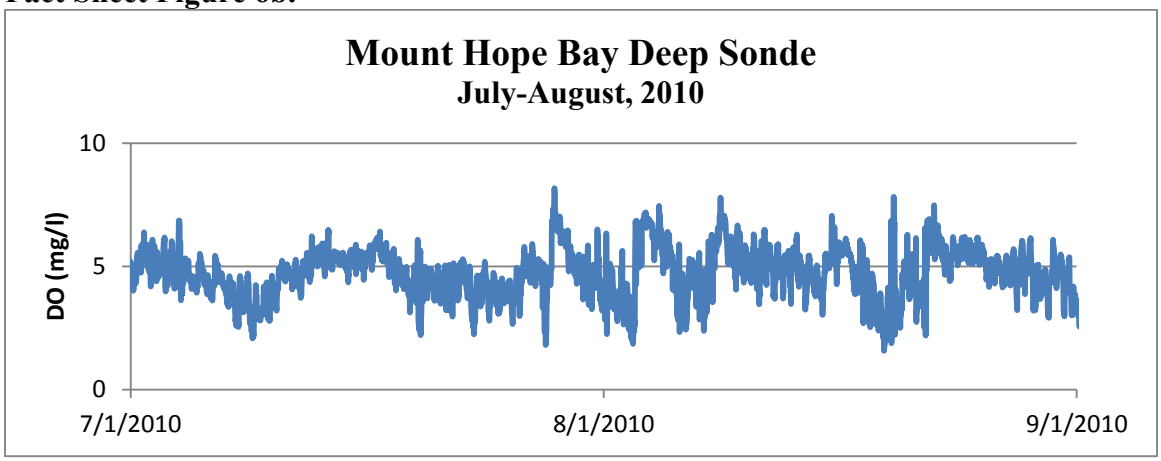


Chart by EPA. Source data: Narragansett Bay Fixed-Site Monitoring Network (NBFSMN), 2010. 2010 Datasets. Rhode Island Department of Environmental Management, Office of Water Resources. Data available at www.dem.ri.gov/bart.

In fact, more recent data is available from the same datasonde and indicates that in 2013 average chlorophyll was 10.53 mg/l over the entire monitoring season and 12.28 mg/l in the July to September period[31], while the highest daily average chlorophyll was 32.65 mg/l. URI/GSO, *B12.GSO Mt. Hope Bay Water Column Time-Series 2013* (data available at http://www.narrbay.org/d_projects/buoy/buoydata.htm). These values are comparable to earlier periods; in fact the 32.65 mg/l maximum is higher than any year recorded other than 2006. (See daily average data for all years at http://www.narrbay.org/d_projects/buoy/buoydata.htm). DO depletion is also evident in the 2013 data, with extensive periods again below the 5 mg/l Massachusetts water quality standards. See Figure R13. Thus the most recent data confirms continued water quality violations despite some inconsistent indications of improvements.

[31] EPA notes that the full season data are not strictly comparable from year to year as the starting and ending dates vary – from May 14 to June 29 for start dates and October 14 to November 9 for ending dates.

Figure R13.

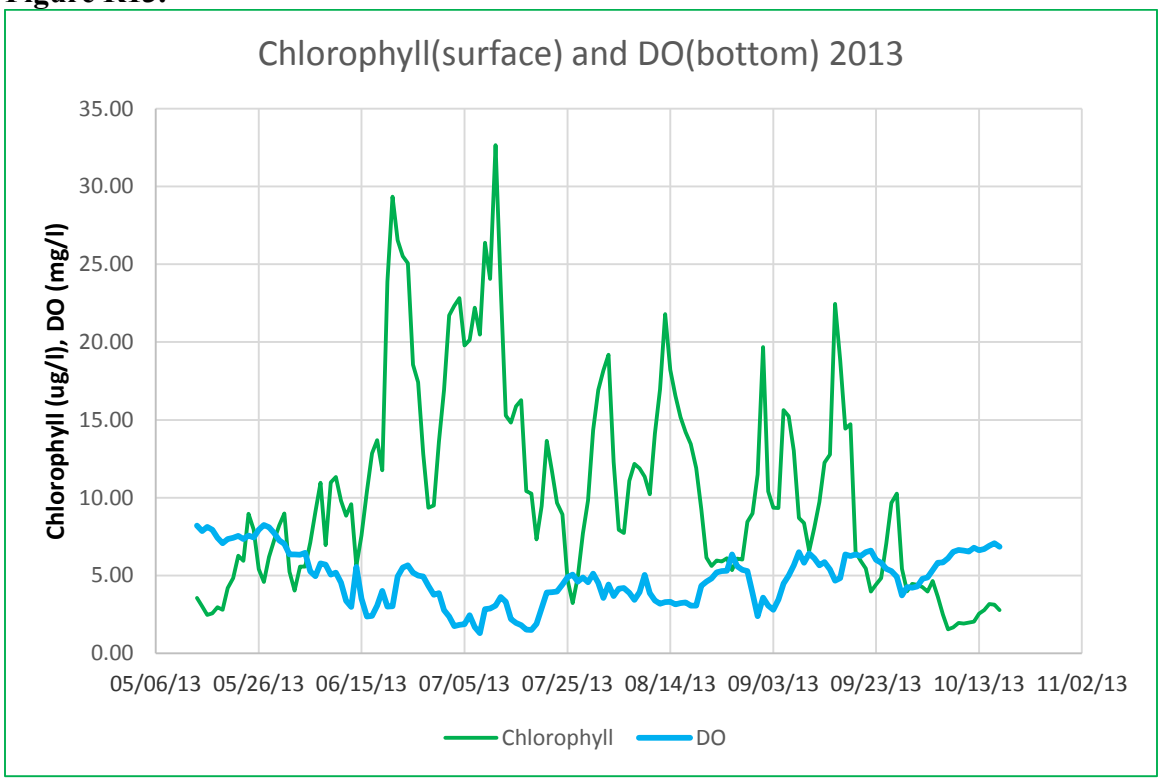


Chart by EPA. Source data: URI/GSO, *B12.GSO Mt. Hope Bay Water Column Time-Series 2013*. Data available at http://www.narrbay.org/d_projects/buoy/buoydata.htm.

Comment C30. Copper Limits not Necessary/Miscalculated.
The draft NPDES permit includes revised water quality-based effluent limits for copper of 0.008 mg/L (monthly average) and 0.015 mg/L (daily maximum). The rationale for these effluent limits is presented in the Fact Sheet (at 36).

> The current permit for this facility contains an effluent limit for total recoverable copper based on the freshwater criteria for class B waters. The correct criterion for SB wasters is set forth below in terms of dissolved metals (form used for water quality standard) and total recoverable metals (used for permit limits). See 314 CMR 4.05(5)(e).
>
> Permit limits are calculated based on the [sic] meeting the criteria in the receiving water under 7Q10 conditions after accounting for the background concentration in the receiving water.

The final limits were determined based on compliance with the SB criteria using a mass balance equation:

$$Limit = \frac{Criteria\ x\ (7Q10 + Taunton\ WWTP\ Design\ Flow) - Background\ x\ 7Q10}{Taunton\ WWTP\ Design\ Flow}$$

This approach is premised on the assumption that the copper present in the effluent is in a toxic dissolved form such that an exceedance of the effluent limitation could adversely affect aquatic life. (*See* EPA Streamline Water-Effect Ratio Procedure for Discharges of Copper (Mar. 2001)). However, research confirms that copper from municipal effluents is chelated with dissolved organic carbon present in the treated wastewater such that is it not present in a toxic form. Consequently, there is no basis to claim an ecological concern with the discharge. This is further confirmed through consideration of whole effluent toxicity testing performed by the facility. The facility conducts whole effluent toxicity testing using organisms that are very sensitive to copper (*i.e., Ceriodaphnia dubia*). The results of this testing confirms that the copper in the effluent is not present in a toxic form given that no acute effects are found at concentrations that would produce such effects if copper were in a toxic forms. Consequently, the existing copper discharge cannot cause an impairment of designated uses and the proposed limits are not necessary. Moreover, even if the copper was present in a toxic form, the limits were calculated using the wrong mixing flow.

Copper is not in a toxic form in the Taunton River Estuary.
Performance data provided in Table 1 of the Fact Sheet (at 48-51) shows that the effluent is not toxic to *C. dubia*. These data, along with the corresponding copper concentration present in the test water, are summarized in the table below.

Date	Acute WET	Chronic WET	Copper (Average) (mg/L)	Copper (Max) (mg/L)
08/31/2010	100	100	0.0058	0.007
11/30/2010	100	100	0.0102	0.012
02/28/2011	100	100	0.012	0.014
05/31/2011	100	100	0.006	0.008
08/31/2011	100	100	0.009	0.011
11/30/2011	100	100	0.009	0.012
02/29/2012	100	100	0.01	0.012
05/31/2012	100	100	0.0063	0.0063

In every case, the whole effluent toxicity test indicated no toxicity in 100% effluent, with copper concentrations ranging from 0.006 – 0.014 mg/L. These results confirm that the copper present in the effluent is in a non-toxic state and should not be regulated as if it was toxic. Given these results, it is arbitrary and capricious for EPA to propose effluent

limits assuming that the discharge has the reasonable potential to cause toxicity. The proposed limits for copper should be withdrawn.

Response C30. The comment mischaracterizes the premise of the copper limit analysis. It is not the case that the approach "is premised on the assumption that the copper present in the effluent is in a toxic dissolved form." Rather, the approach is based directly on numeric water quality criteria that have been adopted by the Commonwealth of Massachusetts. Where such criteria are in effect they are independently applicable – that is, they are applied without site-specific analysis of toxicity. The permit limits are based on numeric water quality criteria for copper that have been adopted by the Commonwealth of Massachusetts and incorporated in to the Massachusetts surface water quality standards (MA SWQS). EPA does not have authority in a permitting action to reject a duly adopted and approved numeric water quality criterion. The numeric water quality criteria are independent of any narrative standards for toxic discharges and must be applied independently of any analysis of toxicity in a particular location to determine permit limits.

Numeric criteria are also independent of whole effluent toxicity testing results, which are intended to provide a gross assessment of the toxicity of the overall makeup of the effluent. Therefore the facility's general compliance with WET permit limits does not obviate the need for permit limits based on the water quality criteria. However EPA notes that it is untrue that "no acute effects are found at concentrations that would produce such effects if copper were in a toxic forms [sic]." In fact the facility's copper concentrations are relatively low (the facility generally complies with its current copper limits which are only slightly higher than the Draft Permit limits) and are below the concentrations determined to be toxic for *C. dubia* in the EPA copper criteria documents, so that toxicity to *C. dubia* would not be expected.[32] See http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/copper/upload/2009_04_27_criteria_copper_2007_criteria-full.pdf, Table 1 at 24 and Table 2a at 34.

If the permittee wishes to present an argument that these water quality criteria are overly stringent for this receiving water, it must present such arguments to MassDEP in a water quality standards proceeding (e.g. development of a site-specific criteria). EPA notes that MassDEP has adopted site-specific criteria for copper for a number of inland (freshwater) water bodies and has not done so for any marine waters. Should MassDEP revise the copper criteria for this receiving water in the future, the permittee may request a modification to the permit, subject to antibacksliding and antidegradation requirements.

[32] EPA also notes that table provided in the comment gives only the monthly monitoring copper results and not the specific copper concentration found in the sample used for toxicity testing, which the permittee provides with its WET reports (for example the August 2010 copper concentration was 0.003 mg/l in the WET testing, as opposed to the 0.0058 monthly average and 0.007 daily maximum given in the table).

With respect to the mixing flow, see Response C31.

Comment C31. Effluent limits were calculated improperly.
As described above, the water quality-based effluent limits in the current permit were calculated under the assumption that the facility discharged to Class B (fresh) waters. If this was the case, it would be appropriate to calculate the WQBEL using the 7Q10 flow as the dilution flow since this is the only flow into which the effluent mixes. However, EPA notes in the Fact Sheet, that the effluent actually discharges into saline (SB) waters. (Fact Sheet, at 16). Saline water is tidal and the dilution flow includes a tidal component of the flow that also provides dilution. This tidal flow was estimated to be 1,192 cfs (Fact Sheet, at 31). If copper limits are required for this discharge, the calculated limits must include the tidal dilution flow as well as the 7Q10 flow, and the WQBEL must also factor in the water effect ratio associated with the effluent.

A revised average monthly limit was calculated to account for this additional dilution flow, assuming that the dissolved copper concentration present in the ocean is negligible.

$$Limit = \frac{Criteria\ x\ (7Q10 + Ocean\ Flow + \ Taunton\ WWTP\ Design\ Flow) - Background\ x\ 7Q10}{Taunton\ WWTP\ Design\ Flow}$$

$$Limit = \frac{\frac{3.7\mu g}{L}\ x\ (31.6\ cfs + 1{,}192\ cfs + \ 13\ cfs) - \frac{2\mu g}{L}\ x\ 31.6\ cfs}{13\ cfs}$$

$$Limit = 347\ \mu g/L$$

Given this limit is far greater than existing effluent quality no reasonable potential exists to exceed the saline copper criteria and this limitation should be deleted from the permit.

Response C31. The comment is incorrect in attempting to apply the dilution analysis done for nitrogen loads, which is based on a location several miles downstream of the discharge and a long term average concentration, to copper discharges.

First, the analysis of copper concentrations in the receiving water must be applied in the area of the discharge, where salinities are low and saltwater mixing is much lower. This is different from nitrogen load analysis, which was performed at a downstream point in order to address the portions of the receiving water where nitrogen was the limiting nutrient. While the salinity in the area of the nitrogen analysis averaged 22.35 ppt, at the point of discharge the salinity of the receiving water is in the range of 5 ppt. Using the same load balance equation that was applied for the nitrogen analysis in the correct location, and under the correct (7Q10) conditions, gives a tidal flow component of 6 cfs, not the 1,192 cfs cited in the comment:

Average salinity at ocean boundary (Rhode Island Sound) = 30 ppt
Average salinity at point of discharge = ~ 5 ppt
7Q10 flow = 31.6 cfs

(30 ppt * X cfs + 0 ppt * 31.6 cfs)/(31.6 cfs + X) = 5 ppt

X = 6 cfs ocean water

A revised calculation using this approach would result in a monthly average limit of 9.5 ug/l, not 347 ug/l as calculated in the comment. (The limit in the Draft Permit is 8 ug/l).

Second, EPA disagrees that the discharge should be presumed to undergo complete mixing with the tidal component of flow for the purposes of the copper analysis. While nitrogen loads were considered to be fully mixed on the long term (seasonal average) time scale under which nitrogen concentrations and loads were analyzed, the copper criteria are applicable at much shorter times scales of one hour (for the acute criterion) and four days (for the chronic criterion). At these time scales the potential for short term stratification of the fresh and salt water components and the tidal nature of the receiving water (flood, ebb and slack tides) may act to prevent full mixing with the (very small) ocean component of flow, so that it would not be correct to include that flow in the dilution calculation.

Therefore, EPA rejects the comment's contention that the copper limit was incorrectly calculated. The copper limit analysis remains the same except, as noted in Response B7, a modification to reflect an updated 7Q10 value of 33.2 cfs.

D. The Nature Conservancy submitted comments by letter dated May 23, 2013

Comment D1. The Nature Conservancy supports the draft NPDES permit, and we agree with EPA that these limits are necessary to achieve water quality standards in the Taunton River and are justified by the best available science. Requiring the City of Taunton and other upstream dischargers to meet these new limits will help to protect and improve water quality in the Taunton River watershed and associated estuary. We view this permit as a key piece of a comprehensive and watershed-wide approach to restoring the environmental conditions of the Taunton River estuary.

The Taunton River is the longest free flowing coastal river in New England, with tidal influence reaching nearly 20 miles inland from Narragansett Bay. This extent of tidal influence maintains large, high quality, and globally rare brackish and freshwater tidal marshes. The river supports populations of environmentally-sensitive species such as river otters and freshwater mussels; three globally rare species of plants and two globally rare fish, bridle shiner and Atlantic sturgeon, inhabit the watershed.

The river provides important habitat for one of the largest spawning populations of river herring in New England and populations of other fish that play a critical role in supporting marine food webs. The River was designated Wild and Scenic in 2009, to protect six outstanding resource values: agriculture, ecology and biodiversity, estuary, fisheries, history and archaeology, and recreation.

Nutrient pollution from wastewater is widely recognized as a major source of impairment for Narragansett Bay and other estuaries throughout the region. The Conservancy is committed to efforts to reduce reactive nitrogen levels in this region because of persistent problems related to excessive nitrogen including widespread algal blooms causing shellfish harvest closures, low dissolved oxygen levels, and loss of eelgrass.

From Nantucket Sound to Block Island Sound to Great South Bay, NY, The Nature Conservancy is investing in estuarine restoration focused on salt marsh, seagrass, oysters, bay scallops, hard clams, and diadromous fish habitat. However, monitoring and research have shown that to be truly effective at scale, restoration success requires improved water quality to support a diversity and abundance of native species and habitats. Limiting nitrogen from wastewater treatment facilities is a high priority for the Conservancy in our efforts to improve water quality and thus ecosystem health in the region's estuaries.

The Conservancy strongly supports the scientifically-derived 3.0 mg/l total nitrogen seasonal limit described in the draft permit. As the draft permit describes, recent monitoring by the University of Massachusetts School for Marine Science and Technology (SMAST) has shown elevated total nitrogen concentrations in the Taunton River Estuary and Mount Hope Bay. SMAST and Narragansett Bay Water Quality Network monitoring data have also shown other indicators of eutrophic condition, including low dissolved oxygen and elevated chlorophyll-a concentrations. Based on these data, EPA has concluded that excess nitrogen in the Taunton River Estuary and Mount Hope Bay has reached the level of a violation of state water quality standards for nutrients and aesthetics, and has subsequently determined a nitrogen limit is necessary to meet water quality requirements. The Taunton WWTP currently constitutes 14% of the total watershed nitrogen load; a 51% reduction in nitrogen from the watershed, allocated among several sources, is needed. We agree that a numerical limit on total nitrogen should be included in the permit, and commend the use of recent local data to determine the limit. The Nature Conservancy is also supportive of other source reductions and limits needed to reach the overall required load reduction, including reductions in nonpoint source pollution.

> **Response D1.** EPA acknowledges the support of the Nature Conservatory for the permit limits on total nitrogen and the Conservancy's agreement with EPA's findings regarding the presence of eutrophication and violations of state water quality standards in this system. EPA agrees that other source reductions and limits are need to reach the overall required load reduction, including reductions in nonpoint source pollution. EPA is pursuing such reductions through its permitting processes. See, e.g., *Final NPDES Permit for MFN Regional Water Pollution Control Facility (formerly Mansfield WPAF), NPDES No. MA0101702*

(131 lbs/day TN limit); *Final NPDES Permit for Middleborough WPCF, NPDES No. MA0101591* (90 lbs/day TN limit).

Comment D2. The Conservancy is supportive of measures to protect and restore the water balance in the Taunton River watershed, consistent with goals of the 2008/2011 Taunton River Watershed Study and the 2004 Massachusetts Water Policy. We encourage careful consideration of flow limits for wastewater treatment plants in the watershed, to restore water balance and promote groundwater recharge, as well as to maintain consistency with anti-degradation regulations to prevent increased discharge of pollutants to already impaired waters. Therefore, we support maintaining the current flow limit of 8.4 MGD for the Taunton WWTP. We are also supportive of eliminating the Combined Sewer Overflow at West Water Street through collection system improvements or additional options.

Response D2. EPA acknowledges the comment and the valuable goal of protecting and restoring the water balance in the Taunton River watershed, but notes that the terms of this permit are designed to meet Clean Water Act requirements and that NPDES permit terms are not aimed at water balance and are not governed by the state documents referenced in the comment. As stated in the Fact Sheet, EPA will not permit any flow increase unless it meets CWA requirements, including antidegradation. Necessary state antidegradation review procedures have not been initiated. Without the requisite antidegradation justifications made under 314 CMR 4.04 and State authorization for an increased pollutant discharge obtained, EPA is not in a position to grant a flow increase request. See MassDEP, *Implementation Procedures for the Antidegradation Provisions of the Massachusetts Surface Water Quality Standards* (2009). State approval processes such as Environmental Impact Report (EIR) proceedings also provide opportunity for public input and consider issues broader in scope than those addressed through NPDES permitting, and EPA encourages stakeholders to participate in those proceedings as well.

EPA acknowledges the Conservancy's support for elimination of the Combined Sewer Overflow at West Water Street; collection system improvements are ongoing and additional options shall be considered upon completion of the planned improvements, pursuant to the City of Taunton's administrative order.

Comment D3. In coalition with associations representing municipalities and water suppliers, The Nature Conservancy has supported public policy and funding for municipal infrastructure related to water quality including leading the legislative advocacy efforts to create a $20 million loan fund for dam removal and repair and advocating for capital funding legislation to implement the recommendations of the Water Infrastructure Financing Commission. The Conservancy will continue to help ensure public funding and incentives are available to help communities protect clean water to benefit people and the environment.

Response D3. EPA acknowledges the comment.

E. The Taunton River Watershed Alliance and Mass Audubon submitted joint comments by letter dated June 13, 2013

Comment E1. On behalf of the Taunton River Watershed Alliance, Inc. and Mass Audubon we submit the following comments on the Draft National Pollution Discharge Elimination System (NPDES) Permit #MA 0100897 for the Taunton Wastewater Treatment Plant (WWTP). Our organizations are committed to the protection and restoration of the water quality and natural ecosystems of the Taunton River. For the reasons explained below, we support the proposed effluent limits in the draft permit, including the proposed limit for Total Nitrogen (TN) of 3.0 mg/l and 210 lbs/day (monthly average), in effect for the period of May through October.

The Taunton River is the largest freshwater source to Mount Hope Bay. It supports habitat for 45 species of fish, globally rare freshwater and brackish tidal marshes and, together with its tributary the Nemasket River, the largest alewife run in Massachusetts. It was added to the National Wild and Scenic Rivers System in 2009. The Taunton Wastewater Treatment Plant discharges 8.4 million gallons per day of effluent to a saltwater portion of the Taunton River that is considered part of the Taunton River Estuary. This segment is classified under the Massachusetts Surface Water Quality Standards, 314 CMR 4.00 as SB waters with Restricted Shellfish Areas and impacted by discharge of Combined Sewer Overflows (CSOs). As such, it is designated as "habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation…" Under Section 303(d) of the Clean Water Act, the reach of the river immediately below the facility discharge is considered "impaired" for pathogens. Downstream reaches are impaired for organic enrichment/low dissolved oxygen as well as for pathogens. Mount Hope Bay is impaired for TN, dissolved oxygen (DO), temperature, fecal coliform and chlorophyll-a.

Information provided in the Fact Sheet that accompanied the draft permit demonstrates the scientific basis for the proposed discharge limits for TN. It describes a three-year water quality monitoring study conducted by the School for Marine Science and Technology at UMass- Dartmouth (SMAST). The study involved monthly sampling at 22 sites across Mount Hope Bay and the Taunton River Estuary from 2004 to 2006. The results showed pervasive low DO conditions in violation of the state standard throughout the Estuary and Bay, pervasive elevated concentrations of chlorophyll-a and elevated TN concentrations throughout the system. To determine the contribution of the Taunton WWTP and other facilities to the water quality violations, EPA analyzed nitrogen loading to the Taunton River Estuary and major tributaries using the USGS LOADEST program and focusing on the Estuary because "that area shows the greatest eutrophication impacts and greatest nitrogen concentrations." 40 CFR 122.44 (d)(1)(i) of the federal Clean Water Act states, "Limitations must control all pollutants or pollutant parameters which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause or contribute to an excursion above any state water quality

standard." Because nitrogen loading is well recognized as a major cause of nutrient enrichment, eutrophication and subsequent oxygen depletion, it is EPA's responsibility to establish TN effluent limits for facilities discharging to the Taunton River Estuary. For these reasons, we support the EPA's proposed effluent limits, including the proposed discharge limit for TN. We urge you to retain the effluent limits in the draft permit.

> **Response E1.** EPA acknowledges the support of the Taunton River Watershed Association and Mass Audubon for the permit limits on total nitrogen and the organizations' agreement with EPA's findings regarding the presence of eutrophication and violations of state water quality standards in this system. EPA agrees that it must include TN effluent limits for this facility because of the well-recognized causal connection between nutrient enrichment, eutrophication and oxygen depletion and the extensive evidence of such eutrophication occurring in the Taunton River Estuary. EPA's findings were based on a mass loading analysis and the nitrogen mass limit has been retained in the Final Permit; the concentration limit has been removed from the permit as discussed in Response B2.

Additional issues we would like to address include:

Comment E2. Phosphorus (P) discharge.
We commend EPA for including a requirement to report average monthly phosphorus discharge from the WWTP in pounds per day and concentration. On page 35 of the Fact Sheet EPA notes that salinities in the Taunton River in the vicinity of the WWTP discharge are "quite low" even though this segment is classified as marine waters and that P may cause or contribute to water quality violations under low-salinity conditions. We urge you to continue to review all future monitoring data regarding concentrations of P and other indicators of eutrophic conditions in the receiving waters in the vicinity of this discharge to determine whether an effluent limit for P for this facility should be developed.

> **Response E2.** EPA agrees with the importance of tracking both phosphorus concentrations and indicators of eutrophic conditions in the receiving water to determine whether an effluent limit for phosphorus should be developed. As noted in the Fact Sheet, phosphorus is recognized to be the primary nutrient of concern in freshwater and can be a concern in estuarine waters as well, although specific concentrations associated with impairments in transitional waters such as in the area of the discharge have not been established. While current information does not show reasonable potential for phosphorus discharges to cause, or contribution to, nutrient related impairments, further data or changes in conditions (e.g. nitrogen reductions leading to change in limiting nutrient) may in the future indicate the need for permit limits for phosphorus. EPA will continue to review future data and has encouraged the permittee to incorporate the potential for adding treatment for phosphorus in the future, should it prove necessary.

Comment E3. Flow limit. We urge EPA to maintain the existing flow limit of 8.4 mgd. We understand that the City has requested that the flow limit be increased to 9 mgd. Absent a demonstration that the requested increase in flow would not result in increased discharge of regulated pollutants, increased flow from the WWTP would violate the antidegradation requirement of the Clean Water Act (Section 303(d)(4)(B)).

> **Response E3.** As stated in the Fact Sheet, EPA defers consideration of a request for an increase in flow until completion ofState antidegradation review procedures, which have not been initiated. Fact Sheet at 8. EPA agrees that any requested increase cannot be authorized unless it meets the antidegradation requirements of the Clean Water Act and Massachusetts SWQS.

Comment E4. West Water Street Combined Sewer Overflow (CSO).
The West Water Street CSO is located in a section of the city where runoff from a large watershed drains to low-lying areas during heavy rainstorms, resulting in major flooding of streets and other areas. The draft permit allows continued discharge of storm water/wastewater from this CSO subject to several technology-based effluent limitations including implementation of EPA's "Nine Minimum Controls." The permit requires that the CSO discharges "shall not cause or contribute to violations of federal or state water quality standards." It also requires that the permittee record all discharges including estimated duration and volume and National Weather Service precipitation data from the nearest gages.

We commend the City for making progress in recent years on reduction of inflow and infiltration to the storm/sewer conveyance system. We understand that wet weather overflows from the West Water CSO have occurred in the last three years (2010 – 2012), with the most prolonged discharges occurring during the heavy rains in March and April of 2010 (5-20-13 phone conversation between Priscilla Chapman and Susan Murphy). The draft permit does not establish a limit on number of discharge events, total volume or duration of discharges, or a specific calculation of whether federal or state water quality standards were violated. We urge you to require the City to assess whether violations of water quality standards are occurring as a result of discharges, and the frequency and severity of such violations; also to include benchmarks in the permit to determine whether acceptable progress is being made on reducing discharges from this CSO, and if not, what additional steps must be taken. We would welcome the opportunity to work with the City to identify low-impact development techniques that would increase infiltration of stormwater and reduce flooding impacts city wide, at a reasonable cost.

> **Response E4.** EPA also commends the City's progress in reduction of stormwater flow to the combined sewer system and notes that three additional phases of work have received funding commitments from the SRF program. EPA has not required the City to assess whether violations of water quality standards are occurring, but has made such a finding of violation itself as the basis for issuing compliance orders to the City that have required ongoing measures to reduce CSO discharges. EPA believes that evaluations by the City regarding the extent to which water quality violations are occurring are not as useful as

objective analyses performed by independent observers and agencies and therefore is not adding such a requirement to the Final Permit. With respect to the request for benchmarks in the permit, the frequency and estimated volume of overflows is tracked pursuant to the permit and the City's compliance order. EPA does not believe it would be useful to include monitoring of pollutant parameters of CSO discharges or set benchmarks, due in part to the high variability of CSO discharges with precipitation, which makes discharge benchmarks of little value in assessing short term progress. As EPA's current approach, requiring implementation of a program of collection system improvements, has been effective to date EPA is continuing this approach for this permit term.

EPA acknowledges the commenters' willingness to work with the City on low-impact development techniques to address stormwater and flooding and refers them to contact the City directly with respect to those issues.

F. Save the Bay submitted comments by letter dated June 14, 2013

Save The Bay is writing to support the draft discharge permit for the City of Taunton's wastewater treatment plant. This permit will protect the health of the Taunton River and Narragansett Bay by decreasing nitrogen inputs to the estuary. We support the change in water classification to from B to SB, given that the Taunton River is tidal at this point, and is influenced by salt water. We also support the flow limit being maintained at 8.4 mgd. This wastewater treatment plant represents only one of several sources of nutrients to this watershed, and any increase in pollutant discharge would further impair water quality.

Save The Bay strongly supports a total nitrogen limit of 3 mg/l because the case for this limit was well articulated in the draft permit through the discussion of existing data. Low dissolved oxygen and high chlorophyll readings continue to impair the Taunton River estuary. In the absence of a TMDL and numeric criteria for total nitrogen, these other data represent important indicators of estuary health.

The compliance schedule of five years for nitrogen upgrades to the treatment plant seems reasonable. These upgrades should also take into consideration future needs for expansion of the sewer system as described in Taunton's Comprehensive Wastewater Management Plan. Additional flow limits should not be permitted until they can be adequately treated to ensure compliance. We continue to support this approach for the Brockton facility as well, and look forward to seeing a new permit for that plant.

As the largest source of fresh water to Narragansett Bay, the Taunton River is an important regional ecosystem supporting rare habitats and aquatic species. Habitat quality has increased significantly in Mount Hope Bay and Upper Narragansett Bay since the elimination of once-through cooling at Brayton Point Power. We are now seeing shellfish beds reopened in Swansea, the returning of bay scallops, and an increase in fish habitat. If eelgrass and other native species are to be restored in the Upper Bay, algae blooms need

to be reduced (as evidenced by high chlorophyll readings), and dissolved oxygen needs to maintain higher levels. Reduction in nitrogen from the Taunton River will allow this to happen.

> **Response F**. EPA acknowledges the support of Save the Bay for the permit limits on total nitrogen and its agreement with EPA's findings regarding the presence of eutrophication and violations of state water quality standards in this system.
>
> The compliance schedule for nitrogen upgrades to the treatment plant has been modified in the final permit in order to achieve the required nitrogen limits as soon as possible, having taken into account affordability as well as other considerations related to design (see Response B8 and B9 above).

G. The National Park Service and the Taunton River Stewardship Council submitted joint comments by letter dated June 17, 2013

Comment G1. Thank you for the opportunity to submit comments on the Draft NPDES permit for the City of Taunton (MA0100897). As you know, 40 miles of the Taunton River, from its headwaters to Mt. Hope Bay, have been designated as a National Wild and Scenic River. The River has been recognized because of its unique resource values including ecology and biological diversity, fisheries, estuarine resources, recreation, and history. The National Park Service, working with the Taunton River Stewardship Council, is responsible for protecting these resource values and the river in general. NPS has reviewed the Draft Taunton permit with the Stewardship Council, and submits the following comments for consideration as a joint comment of the NPS and Taunton River Stewardship Council.

Generally we believe that this draft permit strengthens the protection of water quality and dependent river resources and is an improvement over the current permit. The draft permit corrects and clarifies the water quality standard as Class SB – Shellfishing(R) and CSO. Class SB waters are designated as a habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation – these are all resource values identified in the Wild and Scenic River Stewardship Plan.

> **Response G1.** EPA agrees with the description of the Taunton River and its resource values and the commenter's support for the changes from the current permit.

Comment G2. We commend EPA and DEP for not increasing the permitted design flow until a thorough antidegradation review is completed. The Fact Sheet recognizes that The Taunton River is an effluent dominated river, that effluent has contributed to violations in water quality standards and that these violations (especially of nitrogen) have resulted in impacts on the river and in Mt. Hope Bay. All efforts should be placed on improving water quality to avoid these violations in the future. Perhaps with improved storm water

management and reduction of inflow and infiltration, additional flow capacity will not be needed.

> **Response G2.** EPA acknowledges the commenters' support for a thorough antidegradation review of any increase in permitted design flow, as discussed in the Fact Sheet. EPA agrees that improvements to the City of Taunton's system have potential to limit the amount of additional flow capacity that will ultimately be requested.

Comment G3. In addition we support the inclusion of a nitrogen limit in order to move towards meeting water quality standards. These limits will be beneficial both in the river and in Mt. Hope Bay. We recommend that ambient monitoring continue in order to assess the impact of these limits on the River and Bay. It would be helpful to have monitoring through the winter months as well when there will not be a limit imposed to confirm that the nitrogen moves through the system as expected. In order to fully address nitrogen issues, local communities must also address nonpoint sources of pollution.

> **Response G3.** EPA acknowledges the commenters' support for the nitrogen limit. EPA agrees that a continued ambient monitoring program will assist in assessing the impacts of these limits and EPA supports the monitoring efforts of MassDEP, the Taunton River Watershed Association and other parties. EPA notes that effluent monitoring for nitrogen is required during winter months, although at a lesser frequency.

Comment G4. Although phosphorus is not generally the limiting factor in nutrient enrichment of marine systems, the Taunton River at the point of discharge is only slightly saline, and phosphorus could in fact have an influence on eutrophication. We support the monitoring requirement for phosphorus and encourage this monitoring to be done year round. Data in other parts of Massachusetts indicates that phosphorus may remain in the water system through the winter months, so it would be important to track this.

> **Response G4.** EPA agrees that future data may show that phosphorus discharges could have an influence on eutrophication in the less saline portions of the Taunton River and has included monitoring requirements to assist in future assessment of the role of phosphorus discharges.

Comment G5. Addressing combined sewer overflows is another important part of helping to reach water quality standards. We support the added focus on working with the City of Taunton to minimize inflow and infiltration within the sewer system. System mapping and development of a maintenance plan may also help to decrease outfall flows, and may lessen the need for a permitted increase in design flows in the future.

We commend EPA and DEP for putting forth a permit that contributes to the attainment of water quality standards in the Taunton River. Good water quality helps to support the ecology, fisheries, biological diversity and recreational opportunities for which the river is so highly valued.

Response G5. EPA acknowledges the comments support for the operation and maintenance and other aspects of the permit.

H. The Rhode Island Department of Environmental Management (RIDEM) submitted comments by letter dated June 17, 2013

RIDEM supports the majority of the permit as drafted. However, RIDEM offers the following comments that we would like to formally submit as part of the record.

Comment H1. Given that the Rhode Island portion of the downstream receiving waters of Mt. Hope Bay are listed on RIDEM's 2012 303d list (Category 5 waters) as impaired for nitrogen and dissolved oxygen and that the discharge of nitrogen from the Taunton WWTP contributes to the unacceptably high nitrogen load to these waters, DEM strongly supports the Taunton WWTP TN limit of 3.0 mg/l.

Response H1. EPA acknowledges the support of RIDEM for the TN limit. EPA notes that the Final Permit limit is a load limit of 210 lb/day (calculated based on a 3 mg/l effluent concentration at design flow) as discussed in Response B2.

Comment H2. The draft permit authorizes the discharge from one Combined Sewer Overflow (CSO), located at West Water Street, and requires the implementation of Nine Minimum Controls for this CSO. Part I.F.1.c of the permit also requires that the discharge from this CSO "not cause or contribute to violations of federal or state Water Quality Standards." Page 7 of the permit Fact Sheet indicates that the City of Taunton (City) is working under an Administrative Order (AO) to evaluate its ability to eliminate discharges from the CSO through collection system improvements and that, if collection system improvements will not result in the elimination of CSOs, the AO requires the City to submit a plan and schedule for additional options by October 2013. Although the City is currently working towards elimination of CSOs and the permit requires that CSOs not cause or contribute to violations of Water Quality Standards, the permit does not include any CSO monitoring. Therefore, the permit does not allow a determination to be made if the CSO is causing or contributing to a violation of Water Quality Standards. As indicated in the permit Fact Sheet both the Massachusetts and Rhode Island downstream waterbodies are designated for primary and secondary recreation and shellfishing. In addition the permit Fact Sheet indicates that the Taunton River is impaired due to pathogens. Based on this information, if similar monitoring is not already in the AO, the permit should include requirements for 1) monitoring of the CSO discharge that include a) bacteria ambient water sampling up and downstream of the discharge point(s) as well as the combined sewage discharge itself, and b) flow measurements of the combined sewage discharge to determine the total volume of combined sweater, and 2) analysis of the collected data to document that the discharge is not impacting shellfishing use in downstream Massachusetts and Rhode Island waters.

Response H2. The comment is correct that the permit does not require sampling of the CSO discharge. EPA's view is that the nature of CSO discharges is generally well understood, particularly with respect to bacteria content. EPA has previously determined that the City's CSO discharges cause or contribute to a violation of water quality standards and current efforts are appropriately aimed at eliminating the conditions leading to discharges.

Comment H3. The draft permit has been updated to reflect the fact that the discharge from the WWTP is to a saltwater waterbody. However, the toxicity testing requirements in the permit are still based on freshwater species. Since the discharge is to a saltwater waterbody, with a salinity of 22.35 ppt (see page 31 of the permit Fact Sheet), the permit should either use saltwater species for toxicity testing or the fact sheet should further explain the basis for conducting toxicity testing using freshwater versus saltwater species. Since the permittee can obtain its dilution water from another source, the DEM does not believe that the source of the dilution water should dictate what species is used in the toxicity testing.

Response H3. The comment is incorrect about the salinity in the vicinity of the discharge, which has ranged between 0 and 5 ppt in water quality monitoring by the TRWA. The higher salinity is cited in the Fact Sheet in connection with the loading analysis for total nitrogen, which is based on a location downstream of the discharge. Freshwater toxicity testing is more directly applicable to waters of the salinities in the vicinity of the discharge; in fact saltwater toxicity testing would require adjusting the salinity of the receiving water upwards in order to be in the range required for testing. See EPA, *Marine Acute Toxicity Test Procedure and Protocol* at 4, 6 (2012) (requiring testing at 25 ppt ± 10% for all dilutions by adding dry ocean salts).

Continued use of freshwater toxicity testing has been requested by MassDEP to allow for comparability in results over the entire period of record. Changing testing protocols at this date would result in the inability to effectively compare results over the long term. Continued use of the freshwater protocol also allows for a continuous record of water quality parameters at the site used for collection of receiving water samples. On the other hand, while there may be some differences in response of saltwater organisms, the dilution of the discharge in the more saline portions of the estuary is much higher than in the more freshwater segment. For example, in the area where the salinity was 22.35 ppt EPA calculated average ocean flow of 1,192 cfs, which when combined with the freshwater flow would provide a dilution factor of about 100 (compared to about 3 in the vicinity of the discharge). Therefore freshwater toxicity is more critical for this discharge.

For these reasons, EPA is maintaining the requirement for freshwater toxicity testing in the Final Permit.

Comment H4. Finally, RIDEM noted some minor clerical errors that should be corrected. Specifically, Page 11 of the permit Fact Sheet indicates that bacteria "sampling is required three times per week", but page 2 of the permit includes a frequency of "2/week". This discrepancy should be corrected. Also, Table 11 of the permit Fact Sheet lists the median receiving water analytical data for nickel as 24.0 ug/l. At these levels a permit limit would be required. However, based on the data presented in Table 11, it appears that the correct median should be non-detect, which would result in a permit limit not being required as reflected in the draft permit. This typographical error should also be corrected to avoid confusion.

> **Response H4.** EPA apologizes for the typographical errors in the Fact Sheet. Bacteria sampling is required two times per week and the median receiving water nickel concentration is "non-detect". The Fact Sheet is a final document that is not subject to change after its release, but EPA notes these errors and corrections for the record.

I. The Upper Blackstone Water Pollution Abatement District submitted comments by letter dated April 18, 2013

Comment I1. The Upper Blackstone Water Pollution Abatement District (the "District") hereby comments on the co-permittee provisions of the draft National Pollution Discharge Elimination System ("NPDES") Permit No. MA0100897 issued on March 20, 2013 to The City of Taunton, for discharges from the Taunton Wastewater Treatment Plant ("Taunton"). The draft permit names the Towns of Raynham and Dighton (the "Towns") as co-permittees "for specific activities required in Sections I.B -Unauthorized Discharges and I.C- Operation and Maintenance of the Sewer System, which include conditions regarding the operation and maintenance of the collection systems owned and operated by the Towns."

The District was a party to, and challenged similar co-permittee provisions in its NPDES permit, in the matter of *Upper Blackstone Water Pollution Abatement District,* NPDES Appeal Nos. 08- 11 to 08-18 & 09-04, 14 E.A.D. _*(Order denying review in part and remanding in part,* EAB, May 28, 2010 *("Upper Blackstone* EAB Remand Order") in which the U.S. EPA Environmental Appeals Board ("EAB") remanded to Region 1 permit provisions that sought to regulate sewer lines owned, operated and maintained by separate municipalities as "co-permittees." In the *Upper Blackstone* EAB Remand Order, the EAB found that "[t]he Region has not sufficiently articulated in the record of this proceeding a rule-of-decision, or interpretation, identifying the statutory and regulatory basis for expanding the scope of NPDES authority beyond the treatment plant owner and operator to separately owned and operated collections systems that discharge to the treatment plant." Remand Order, at 18.

In the draft permit issued to Taunton, the Region again fails to identify a legal basis for its position that it has authority to regulate the Towns as co-permittees. While the draft Taunton permit fact sheet and document entitled *Analysis Supporting EPA Region I*

NPDES Permitting Approach for Publicly Owned Treatment Works that include Municipal Satellite Sewage Collection Systems ("Region 1 's Analysis") seeks to respond to questions raised by the EAB in the Remand Order concerning EPA's legal authority to regulate separately owned municipal collection systems, the Region simply sets forth a series of old and new arguments to justify the regulatory position it previously staked out: that satellite systems can be included in the POTW permit. At footnote 10 of Region I 's Analysis, the Region acknowledges that its "position differs from that taken by the Region in the *Upper Blackstone* litigation. There, the Region stated that the treatment plant was the discharging entity for regulatory purposes." Now, according to the Region, it "has clarified this view upon further consideration of the statute, EPA's own regulations and case law and determined that a municipal satellite collection system in a POTW is a discharging entity for regulatory purposes."

The Region makes this change with no basis to justify it. In the *Upper Blackstone* matter, and before the EAB, the satellite collection systems were not "discharging," but the Region could nonetheless regulate them. In the face of EAB's rejection of this argument, and in light of the Region's "clarified view," the Region now says satellite collection systems are "dischargers."

The Region's explanation for its change in position is insufficient and contrary to law. "[A]n agency changing its course must supply a reasoned analysis." Motor Vehicle Manufacturers Association v. State Farm Mutual Automobile Insurance Co., 463 U.S. 29, 57 (1983). In Region l's Analysis, it says only that it has "clarified [its] view." The Region, however, must "explain the evidence which is available" supporting that change and "must offer a 'rationale connection between the facts found and the choice made.'" Id. at 52. The Region does not, and cannot, identify new evidence or facts. The discharge point, at Outfall 001, has not changed. The owners or operators of the POTW and satellite collection systems have not changed.

In sum, the fact sheet and the Region 1's [sic] Analysis fail to demonstrate that EPA has legal authority under the Clean Water Act ("CWA") or any NPDES regulation or sound factual basis to include the Towns as "copermittees" to a NPDES permit. For the reasons set forth in this letter, EPA should strike the co-permittee provisions from the draft Taunton permit.

> **Response I1.** Region 1's Analysis ("Analysis") provided is in response to the remand order of the EAB. *See* Upper Blackstone 18-20. This fact is a sufficient basis for the Region's clarification of the legal basis for its permitting practice. Furthermore, any changes in the Region's position are only changes to the legal basis for its action, not a change to the action itself. *Motor Vehicle Manufacturers Association* deals with multiple changes to agency regulations instead of merely clarifications of the legal basis for action; therefore, the case is inapplicable here. 463 U.S. at 37-38.
>
> It is not clear why the commenter considers the EAB's rejection of one of the Region's previous arguments as an "insufficient" basis for EPA to reconsider and

clarify the legal basis for its policy. In light of the EAB's remand, the Region reexamined its policy and performed a thorough and reasoned analysis of the legal and policy bases for its determination that co-permitting is an appropriate and necessary approach to the issues raised by satellite collection systems. That Analysis has been documented in a 16 page explanation with supporting exhibits that was included at Attachment C to the Fact Sheet.

EPA agrees that the facts have remained the same, and that indeed that is why its determination that satellite collection systems should be regulated as co-permittees has also remained the same. EPA has simply proffered an alternative legal theory in light of the EAB remand. This is not an agency "changing its course" as suggested in the comment, but a revised legal analysis. That legal analysis demonstrates that EPA has legal authority to include the Towns as "copermittees". There is no change in substantive law or policy. Since it started imposing specific collection system requirements EPA has consistently expressed its view that satellite collection systems were in the scope of NPDES jurisdiction and that permit coverage could be required.

On February 4, 2015, the Environmental Appeals Board (EAB) upheld a Region 1 NPDES permit issued to a POTW treatment plant. *In re: Charles River Pollution Control District*, NPDES Appeal No. 14-01, February 4, 2015. The permit had included municipal satellite sewer collection systems conveying wastewater to the plant as co-permittees and subjected them to operating and maintenance requirements despite their opposition to inclusion on the permit.

The Towns of Bellingham, Franklin, Medway and Millis, and the Upper Blackstone Water Pollution Abatement District are the owners of satellite collection systems that convey wastewater to a wastewater treatment plant owned by the Charles River Pollution Control District. The Towns appealed the permit. They argued principally that the municipal collection systems (1) did not discharge pollutants to U.S. waters under the Act given their distance from the ultimate outfall point, as well as the existence of an intervening point source providing treatment (that is, the POTW treatment plant) and, (2) they did not, in any event, apply to be covered under the NPDES permitting program.

The Board disagreed and found that the Region has authority under the CWA and EPA's regulations to include the Towns as co-permittees on the permit, and the administrative record supports the Region's decision to include the Towns as co-permittees. In rejecting the Petitioners' claims, the Board upheld each of the Region's legal arguments and factual justifications on a range of interesting and important CWA issues. It found that the Region reasonably construed the NPDES regulatory definition of "publicly owned treatment works" to include the Towns' municipal satellite sewer collection systems. Because the Towns' sewer collection systems are components of the treatment plant that discharges into waters of the United States, the Towns are subject to NPDES regulation. Additionally, it held that under NPDES regulations pertaining to a

> discharger's "duty to apply," where there are multiple dischargers responsible for the same discharge, then an application from one of the dischargers constitutes an application from all.
>
> The decision confirms EPA's authority under the Clean Water Act to require independently owned systems discharging to a centralized POTW to obtain an NPDES permit, and adequately encompasses the objections raised by commenters on the permit's co-permittee provisions. The decision, along with EPA's Response to Petition are incorporated herein as they pertain to the legal authority to include portions of the collection systems as co-permittees.[33]

Comment I2. In Section III, Legal Authority, of its Analysis, EPA seeks to justify the imposition of co-permittee requirements upon the Towns based upon the definition of "publicly owned treatment works" or "POTW." Citing to the broad definition of "POTW" which includes the term "sewage collection systems," EPA contends that a POTW includes not only the treatment works, owned and operated by Taunton, but also the miles of sewers, pipes, equipment, and other systems owned, operated and maintained by the Towns. Based on the definition of POTW at 40 CFR 122.2, EPA concludes, "... a satellite collection system owned by one municipality that transports municipal sewage to another portion of the POTW owned by another municipality can be classified as part of a single POTW system discharging to waters of the U.S." Analysis, p. 10. "Under this approach, the POTW in its entirety will be subject to NPDES regulation as a point source discharger under the Act." Attachment I, p. 1.

Missing from EPA's Analysis is any acknowledgement of or reference to the operative terms of the CWA that trigger NPDES permitting: "discharge of any pollutant by any person" from a point source. CWA § 301(a). It is the act of discharging a pollutant from a point source that gives rise to NPDES permitting. The ownership of a collection system, as part of a greater POTW, does not require a NPDES permit under the CWA. The Towns' collection systems have no point source. The Towns do not own, operate or control any point source. Instead, the Towns send waste water to a separately owned treatment plant for treatment and discharge at a point source. Taunton, not any Town, is a person who discharges from a point source. Consequently, the reach of EPA's authority to regulate "dischargers" is limited to Taunton.

The CWA at Section 301(a) provides that "except in compliance [with a NPDES Permit] the discharge of any pollutant by any person shall be unlawful." The term "discharge of a pollutant" means "any addition of any pollutant to navigable waters from any point source." CWA § 502(12). The CWA authorizes EPA to "issue a permit for the discharge of any pollutant." CWA § 402(a)(I). Thus, under the CWA it is only those persons who

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[33] These the Board's decision is available at http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/F89699D1A0710BCF85257DE200717A93/$File/Denying%20Review....pdf and the Region's Response to the Petition is located at http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Filings%20By%20Appeal%20Number/C158D222DA78251E85257D63004CC1EA/$File/Region%201%20Response%20to%20CRPCD%20Petition%20(092614).pdf.

discharge a pollutant from any point source to navigable waters who are subject to NPDES permitting requirements. CWA § 502(14) (defining point source as "any discernible, confined and discreet conveyance ...to which pollutants are ... discharged").

EPA incorrectly states that the "NPDES regulations ... identify the "POTW" as the entity subject to regulation," citing to 40 C.F.R. § 122.21 (a). Analysis, p. 8. The "entity" subject to regulation is the "person who discharges or proposes to discharge." 40 C.F.R. § 122.21 (a)(l). Such persons are required make application for a permit and "[a]pplicants for new or existing POTWs must submit information required" by 40 C.F.R. § 122.21(j), using Form 2A. 40 C.F.R. § 122.2l(a)(2)(B).

EPA says "[w]hen a municipal satellite collection system conveys wastewater to the POTW treatment plant, the scope of NPDES authority extends to both the owner/operators of the treatment facility and the municipal satellite collection system, because the POTW is discharging pollutants. Analysis, p. 8. According to the permit, at Part I.A. I., "the permittee *[i.e.* Taunton] is authorized to discharge treated industrial and sanitary wastewater from outfall serial number 001 to the Taunton River," and at B, "[t]his permit authorizes discharge only from the outfall listed in Part I. A.1." The Towns do not own or operate outfall 001.

The Towns are not persons who discharge from a point source. The Towns do not "discharge a pollutant" as the term is defined under CWA. No doubt, the Towns "discharge"- as that term is commonly used- wastewater via conveyance systems to a point source. The CWA, however, is specific: persons who discharge pollutants from a point source need a NPDES permit to do so. The Towns have no "direct discharge." See 40 CFR 122.2 (defining "direct discharge" to mean "discharge of a pollutant").

At footnote 12 of the Analysis, EPA states that some municipal satellite collection systems have erroneously "argued that the addition of pollutants to waters of the United States from pipes, sewer or other conveyances that go to a treatment plant are not a "discharge of a pollutant" under 40 CFR § 122.2." See 40 CFR 122.2 (persons who "discharge[] through pipes, sewers, or other conveyances owned by a ... municipality which do not lead to a treatment works" are persons who "discharge of a pollutant" under 40 CFR 122.2. (emphasis supplied)). In support of this position, EPA says that there is "[o]nly one category of such discharges ...excluded: indirect discharges" and that "the satellite system discharges at issue here are not indirect discharges."

While it is true that the definition of "discharge of a pollutant" at 40 CFR 122.2 excludes pollutants from "indirect discharges," that does not mean that only "indirect dischargers" fall outside the scope of "discharge of a pollutant" or that an interpretation of the definition of "discharge of a pollutant" which excludes wastewater from separately owned collection systems to a treatment plant is not reasonable in light of the definition of other terms, described above, that require permitting from point sources. The use of the term "treatment works" as it appears in the regulatory definition of "discharge of a pollutant" does not preclude this interpretation.

EPA seeks to conflate the term "discharge" used in "discharge of a pollutant" with the "transfer of flow" or "conveyance" from a municipal conveyance system to the POTW treatment plant or works that has a point source "from which pollutants are discharged." The word "discharge" is a defined term: "when used without qualification [it] means the "discharge of a pollutant." 40 CFR § 122.2. There is no "discharge" from a municipal conveyance system. And in this case, there is but one discharge point from a POTW. See draft permit Part I.A. I. and B. It is that point source "from which pollutants are discharged" that triggers NPDES permitting, and only those persons who own or operate that point source are subject to such permitting. That point source is not owned by the Towns. In short, the jurisdictional reach under the CWA does not include persons, such as the Towns that own, operate and maintain sewer lines, that provide a conveyance for waste waters for treatment and discharge by another person from its point source.

Response I2. The commenter's objection relies on an overly narrow interpretation of "point source" that would restrict Region 1's permitting authority only to Outfall 001. However, a point source is "*any* discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit . . " 40 C.F.R § 122.2. "The definition of a point source is to be broadly interpreted." *See Dague v. City of Burlington*, 935 F.2d 1343, 1354 (2d. Cir. 1991) (*rev'd on other grounds, see City of Burlington v. Dague*, 505 U.S. 557 (1992)). The pipes and other conveyances comprising the satellite collection systems operated by the Towns fall within this broad definition of point source,[34] and the satellite collection systems that comprise a portion of the POTW discharge pollutants into the waters of the United States.[35] Under EPA's regulations, a POTW "means a treatment works as defined by section 212 of the Act, which is owned by a State or municipality (as defined by section 502(4) of the Act)." 40 C.F.R. § 403.3(q) (incorporated by reference in 40 C.F.R. 122.2).

The Towns may be subjected to NPDES permitting requirements because they operate portions of the POTW that discharges to U.S. waters. Section 212(2)(A) of the Act defines treatment works to mean, *inter alia*, "intercepting sewers, outfall sewers, sewage collection systems, pumping, power and other equipment, and their appurtenances." POTW also "includes *any* devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant." 40 C.F.R. § 403.3(q). Courts have upheld this broad interpretation of POTW:

> Section 1292 . . . gives a broad definition to the term 'treatment works' to include various appurtenances to a municipal sewage treatment plant . . . the EPA has defined the term 'publicly-owned

[34] *See* 40 C.F.R. § 403.3(q) ("POTW . . . includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant[.]").
[35] *United States v. City of Monominee*, 727 F. Supp. 1110, 1114 (W.D. Mich. 1989) ("The CWA recognizes two classes of direct dischargers: publicly owned treatment works (POTW), and point sources other than POTW's").

> treatment works' consistently with the statute. Specifically, the term 'means a treatment works as defined by section 212 of the Act, which is owned by a state or municipality. . . .' That definition goes on to provide that the term 'includes sewers, pipes and other conveyances only if they convey waste water to a POTW treatment plant,' . . . . Here, for example, the City of Burlington's sewer is included in the definition because it conveys waste water to the Massachusetts Water Resource Authority's treatment works.

United States v. Borowski, 977 F.2d 27, 30 n.5 (Oct. 7, 1992). The fact that the pollutants discharged pass through further portions of the POTW operated by others is immaterial to the status of the satellite collection facilities as point sources. *See Dague*, 935 F.2d at 1354-55; Analysis at 11. Dischargers do not need to own, operate or control the actual point source (outfall) to be subject to Clean Water Act jurisdiction. EPA has authority to require permits even when the discharge goes through a conveyance owned or operated by another discharger. *See, e.g.,* 40 C.F.R. § 122.44(m) (contributors to privately owned treatment works) and 122.26(a)(4)–(6) (stormwater associated with industrial activity that is discharged through a municipal or non-municipal separate storm sewers). Therefore, the Towns may be regulated as co-permittees because the satellite collection facilities constitute point sources that discharge pollutants under the CWA.[36]

The Towns are "persons" who "discharge" within the meaning of the Act and implementing regulations because they own or operate portions of the POTW and add pollutants to the waters of the United States. As discussed *supra*, the satellite collection systems constitute portions of a point source (the POTW) that discharges to U.S. waters; this interpretation is consistent with the definitions of "point source," "treatment works," "POTW" and "discharge" in the CWA and its regulations.[37] The commenter argues that the Towns merely "provide a conveyance for waste waters for treatment and discharge by another person from its point source." According to this comment, only the POTW Treatment Plant, and not other portions of the integrated treatment works, discharges pollutants from a point source. However, this claim relies on an overly narrow definition of point source that would exclude large portions of the POTW without any principled basis, as well as an overly restrictive definition of discharge. The Towns' "collection" and "conveyance" via connecting pipes and sewers of "waste

[36] This has been EPA's consistent position, applied in contexts other than co-permitting, *see, e.g.*, *EPA 2008 Construction General Permit,* and is essential to the effectiveness of the Clean Water Act. If dischargers were able to sidestep the requirements of the CWA by virtue of transferring ownership of the outfall to another entity, the CWA would be rendered ineffective. Indeed under the argument presented in the comment, it does not matter whether the co-permitted towns' sewage even receives treatment – they would be outside CWA jurisdiction so long as they do not own the last section of pipe where the raw sewage entered the water body.

[37] The Towns plainly fall within the definition of "municipality," as public bodies with jurisdiction over disposal of sewage and other wastes, and as such also fall within the express definition of "person," under 40 C.F.R. § 122.2.

waters" from one portion of the treatment works (the collection system) to another (the POTW Treatment Plant) before its ultimate discharge into the Taunton River is an addition of any pollutant or combination of pollutants to water of the US from a point source. *See* 40 C.F.R. § 122.2 (defining "Discharge" and Discharge of a pollutant"); *Id.* at 403.3(r) (defining POTW treatment plant as a subset of the POTW). *See supra* at Response #34.

Under the Act, a party does not cease to discharge pollutants merely because the pollutants pass through a third-party conveyance before reaching the waters of the United States. *See, e.g., Dague* 935 F.2d at 1355 (holding that leachate from a landfill constituted a discharge from a pollutant even though it passed through railroad culvert owned by a third party to reach the waters of the United States); *Puerto Rico Campers' Association v. Puerto Rico Aqueduct and Sewer Authority*, 219 F. Supp. 2d 201, 217 (D. Puerto Rico 2002) (holding that conveyance of pollutants from one waste water treatment plant to another constituted a "discharge" under the CWA); *United States v. Velsicol Chemical Corp.*, 483 F. Supp. 945, 947 (D.C. Tenn. 1976) (holding that discharges into a municipal sewer system are covered under the CWA because "[d]efendant knows or should have known that the city sewers lead directly into the Mississippi River and this is sufficient to satisfy the requirements of discharging into 'water of the United States,'"). *See generally Pepperell Assocs. v. United States EPA*, 246 F.3d 15 (1st Cir. 2001) (factory owner fined for oil that spilled from a boiler gasket, into an industrial drain, through a conduit, and eventually into a creek). EPA thus rejects the commenter's attempt to impose an arbitrary limitation on the reach of the Act and NPDES permitting, *i.e.*, that the permitted entity must own the actual outfall pipe. The municipal satellite collection systems are themselves operators of point sources that discharge pollutants to U.S. waters, even if their contribution to the combination of pollutants in the final discharge from the outfall at the POTW treatment plant operated by the City of Taunton cannot be easily distinguished.

Region 1 retains the option to treat a POTW comprised of a treatment plant and municipal satellite collection systems as a single, integrated discharger and to impose protective permit conditions on the several operators of satellite collection facilities, as appropriate to assure compliance with the Act, including but not limited through the prevention or minimization of SSOs, as explained more fully in the Analysis. The Region's decision to condition the permit for the discharge in this manner falls within its authority under the Act and implementing regulations. *See* CWA §§ 402(a)(2) ("The Administrator shall prescribe conditions for such permits to assure compliance with the requirements of paragraph (1) of this subsection, including conditions on data and information collection, reporting, and such other requirements as he deems appropriate."); 301(b)(1)(C) (requiring "any more stringent limitation, including those necessary to meet water quality standards …or required to implement any applicable water quality standard established pursuant to this Act"); 40 C.F.R. §§ 122.4(a) (no permit may be issued, "When the conditions of the permit do not provide for compliance with the applicable requirements of the CWA, or regulations

promulgated under CWA"); 122.43 ("In addition to conditions required in all permits (122.41 and 122.42), the Director shall establish conditions, as required on a case by case basis, to provide for and assure compliance with all applicable requirements of the CWA and regulations."); 122.44(d)(5) (requiring inclusion of "any more stringent limitations…in accordance with section 301(b)(1)(C) of the Act.)[38]

The comment appears to imply that the Towns should be treated as indirect dischargers. However, an indirect discharge is "the introduction of pollutants into a POTW from any *non-domestic* source" that is regulated by EPA's pretreatment regulations. 40 C.F.R. § 403.3(i). Non-domestic discharges are regulated separately because "Congress recognized that the pollutants which some indirect dischargers release into POTWs could interfere with the operation of the POTWs." *Environmental Protection Agency v. City of Green Forest*, 921 F.2d 1394, 1398 (8th Cir. 1990). Because of this, indirect dischargers are subject to separate pretreatment standards in order to avoid interfering with the operation of POTWs. *See Natural Resources Defense Council, Inc. v. Environmental Protection Agency*, 790 F.2d 289, 293 (Apr. 30, 1986). Unlike indirect dischargers, municipal satellite collection systems are not a non-domestic discharger "introducing pollutants" to POTWs as defined in 40 C.F.R. § 122.2. Instead, they themselves fall within the definition of "POTW," whose components consist of the municipal satellite collection system owned and operated by one entity and a treatment system owned and operated by another entity.

Comment I3. The Region's rationale for seeking to impose co-permittee requirements upon the Towns is not consistent with the references to "municipality" in the definition of POTW found at 40 C.F.R.§ 403.3(q), and the definition's statement that "[t]he term also means the municipality ... which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works." The final sentence of the regulatory definition of POTW in the pretreatment regulations at 40 C.F.R.§ 403.3(q), refers to municipalities that have "jurisdiction over . .. the discharges from such a treatment works." The term "municipality" as defined in CWA § 502(4) "means a city, town, borough, county, parish, district, association, or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes .. .. " (emphasis is supplied). The Towns have jurisdiction over only their collection systems. They have no jurisdiction over the treatment plant or point source of discharge. Thus, the Region's view that a satellite collection system is part of a POTW is inconsistent with the final sentence of the regulatory definition of POTW in the pretreatment regulations. That that sentence provides that "POTW" may "also" mean a municipality has no bearing on this limitation.

[38] This approach is analogous to EPA practice with respect to stormwater permits where multiple entities are treated as co-permittees when operating different portions of a storm sewer system. *See* National Pollutant Discharge Elimination system Permit Application Regulations for Storm Water Discharges, 55 Fed. Reg. 47,990, 48,044 (Nov. 16, 1990).

Response I3. Here the commenter relies on an overly restrictive interpretation of POTW. As stated *supra* at Response I2, these collection systems are point sources and constitute a portion of the POTW. Therefore, the Towns meet the CWA's definition of municipality because they have jurisdiction over a portion of the system for disposal of sewage.[39] *See also* Analysis at 12-13.[40]

The Region, in addition, does not interpret the word "also" to be a statement of limitation or exclusion.[41] It is immaterial to the question at hand that the Towns have no jurisdiction over the POTW treatment plant if they fall within other portions of the definition of POTW; as one example, the POTW "includes sewers, pipes and other conveyances . . . if they convey wastewater to a POTW Treatment Plant." 40 C.F.R. § 403.3(q). The Towns clearly operate their own collection systems, which expressly fall within the definition of "treatment works," s*ee* CWA § 212(2)(A), and are moreover encompassed by CWA § 212(2)(B) as well ("any other method or system for preventing, abating reducing, storing….separating, or disposing of municipal waste").

Comment I4. The absence of EPA authority to make the Towns co-permittees is borne out by the permitting process and EPA's regulations at 40 CFR § 122.21, Subpart1 B, Permit Application Requirements. 40 CFR § 122.2 l(a), entitled "Duty to Apply,"

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[39] "Disposal of sewage" is not limited to final discharge from the Treatment Plant outfall. "Disposal" is defined as the "the act or process of disposing" and an "orderly placement or distribution." *Webster's Ninth New Collegiate Dictionary* (1983). The Towns' collection system, or "the common lateral sewers, within a publicly owned treatment system, which are primarily installed to receive waste waters directly from facilities which convey waste water from individual structures or from private property," *see* 40 C.F.R. § 35.905, clearly fall within this definition. They are part of a method, process or system designed to receive sewage ("orderly placement") and convey it ("distribution") to the Treatment Plant.

[40] The Region's co-permitting rationale is consistent with the first part of the pretreatment program's regulatory definition of POTW, because the Region is only asserting NPDES jurisdiction over satellite collection systems that are owned by a "State or municipality (as defined by section 502(4) of the Act)." Again, the term "municipality" as defined in CWA § 502(4) "means a city, town, borough, county, parish, district, association, or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes…" Thus, in order to qualify under this definition, a wastewater collection system need only be "owned by a State or municipality." There is no requirement that the constituent components of a regionally integrated POTW, *i.e.*, the collection system and regional centralized POTW treatment plant, be owned by the same State or municipal entity. EPA does not believe that the commenter intends to argue that the copermittee Towns are not "municipalities" within the meaning of CWA § 502(4). To the extent that is the commenter's argument, it is not reasonable to suggest that Towns with sewer commissions and sewer departments running sewage collection systems under local sewer bylaws somehow do not have "jurisdiction over disposal of sewage" simply because they do not own the outfall. This is consistent with EPA's interpretation of the term "municipality" in other CWA contexts; for example, "grants for the construction of treatment works" under CWA § 201(g)(1) were available only to a "State, municipality, or intermunicipal or interstate agency."

[41] This sentence ensures that the municipality that owns the outfall, or has jurisdiction over the indirect discharges, shall be considered within the definition of POTW even if it is not responsible for the "devices and systems . . . or . . . sewers, pipes and other conveyances" referenced in the rest of the definition. This is the clear meaning of the word "also" (contrast this with the "only if" language in the preceding sentence of the regulatory definition), and the comment's argument that the use of the word also "has no bearing" is unpersuasive.

provides that "[a]ny person who discharges or proposes to discharge pollutants ... must submit a complete application . . . in accordance with this section [122.21] and part 124 of this chapter." 40 CFR § 122.2 l(a)(i). (emphasis supplied). Consistent with the CWA, EPA regulations require persons "who discharge pollutants" have a NPDES Permit. See CWA § 30l(a)("except in compliance with this section and [other sections] of this title, the discharge of any pollutant by any person shall be unlawful"), and CWA § 402(a) (authorizing EPA to issue a permit "for the discharge of any pollutant"). Throughout, the permit application regulations at 40 CFR § 122.21 contemplate that it is the "person" who discharges pollutants who must obtain a NPDES Permit. Nowhere in 40 CFR § 122.21 is there any reference to "co-permittee" or any suggestion that separately owned and operated conveyance systems are subject to NPDES permitting. Consistent with CWA, it is the person who discharges a pollutant from a point source who is subject to NPDES permitting requirements.

While 40 CFR § 122.21(a)(l) requires an application only from those persons who discharge from a point source, the regulations anticipate circumstances when a facility may be owned or operated by separate entities. The permit application regulations provide that "[w]hen a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit." 40 CFR § 122.2 l(b). Thus, it is operator of the "point source" that must have the permit. "Owner or operator" means "the owner or operator of any "facility or activity" subject to regulation under the NPDES program." 40 CFR § 122.2. "Facility or activity" means "any NPDES "point source" or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program." 40 CFR § 122.2. (emphasis supplied).

Nothing in 40 CFR § 122.21 requires or suggests that "satellite collection systems" need to make application for a NPDES permit. While the regulations contemplate that "[m]ore than one application form may be required from a facility," multiple applications are only required where there may be multiple point sources, not multiple owned parts of a POTW. See, 40 CFR § 122.21(a)(2)(i) ("More than one application form may be required from a facility depending on the number and types of discharges or outfalls found there."). Again, the regulations require persons who discharge from point sources to have the NPDES permit.

> **Response I4.** The Towns are owners and operators of the collection systems, which as portions of the POTW are facilities or activities subject to regulation under the NPDES program within the meaning of 40 CFR § 122.2. As municipalities (*i.e.*, public bodies with jurisdiction over disposal of sewage and other wastes), they are also "persons" within the meaning of that regulation. The Region's decision to impose NPDES conditions on these point source dischargers relies on statutory authorities underlying the NPDES permitting program—Section 301(b)(1)(C), 402(a)(1)-(2) and implementing NPDES regulations, *e.g.*, §§ 122.4, .44 and .43—and is in keeping with overall objectives of the Act to restore and maintain the integrity of the Nation's waters, including through the prevention and minimization of SSOs. EPA does not view the lack of any explicit reference to "co-permittees" or similar label in 40 C.F.R. § 122.21, or to "satellite

collection systems," to preclude it from framing an NPDES permit based on these authorities to encompass owners and operators of portions of the POTW that are "up system" of the ultimate outfall point but that nevertheless are point sources that add pollutants to U.S. waters.[42] It is sufficient that the Act and implementing regulations make reference to discharges of pollutants from point sources to U.S. waters, terms that encompass discharges from the POTW's collection systems. Accordingly, the permit application requirements are not dispositive of the question of whether the Region is legally authorized to impose NPDES permit requirements on portions of the treatment works beyond the POTW treatment plant.

Federal regulations implementing the NPDES program require that any person who discharges pollutants must submit a complete permit application to the NPDES permitting Director. Specifically, 40 C.F.R. § 122.21(a) applies to the Towns because they are a point source dischargers discharging pollutants through portions of the POTW operated by them. *See supra* at Response I2. The commenter claims that "multiple applications are only required where there may be multiple point sources. However, regulations only state that "[m]ore than one application form may be required from a facility depending on the number and types of discharges or outfalls found there;" there is nothing to indicate that EPA is barred from permitting each of the several operators of a regionally integrated POTW, where the combined discharge flows through a single outfall. *See* 40 C.F.R. § 122.21(a)(2)(i).

EPA regulations do not specifically address how NPDES permit coverage is to be obtained by satellite collection system components of POTWs. As explained in the Analysis, ordinarily the treatment plant operator applies for the POTW's NPDES permit, and discharges from the POTW, including those from the collection systems operated by others, are covered by the permit issued to the treatment plant. Satellite collection system operators have generally not submitted separate permit applications for coverage under the POTW permit, because the treatment plant operator generally submits the information necessary for the permit writer to write terms and conditions in the permit applicable to all components of the POTW on the basis of the treatment plant's application. Whether or not to require additional information from a satellite collection system by way of an application is separate and apart from whether the collection system should be named as a co-permittee on the POTW permit. Both are case-by-case decisions, one based on the information available to the permit writer; the second based on whether the permit writer determines that specifying co-permittees on

[42] The fact that standard forms do not precisely address the specific circumstances of one type of potential permittee is not indicative of the scope of CWA requirements, particularly where EPA has indicated its intent not to require separate permit applications from satellite collection systems. EPA notes that specifically tailored applications are not provided for other small subsets of facilities that do not have treatment plants, for example, the CSO discharges from the Cities of Cambridge, Somerville and Worcester.

the POTW permit is necessary for all terms and conditions of the permit to be implemented. Here, with respect to information, the Region determined that there was no need for any information from the satellite systems because it anticipated receiving substantially identical information from the City as it would from the Towns.. As a separate matter, the Region determined that naming the Towns as co-permittees was necessary for implementation of the POTW permit.[43]

Similarly, 40 C.F.R. § 122.21(b) has no bearing on whether satellite collection systems are subject to NPDES permitting requirements. That provision specifically addresses "a facility or activity [that] is owned by one person but is operated by another person." *Id.* Here, the City of Taunton does not own *or* operate the satellite collection systems. Instead, like the satellite communities, the City operates a component of the POTW. Contrary to the commenter's assertion, as operators of components of the POTW, the satellite collection systems – as well as the Taunton WWTP - are "a facility or activity" subject to NPDES permitting requirements.

This approach is similar to the approach applicable to contributors to privately owned treatment works. See 40 CFR §122.3 and §122.44(m). As with outlying jurisdictions contributing to a POTW, the NPDES regulations do not describe the process by which the contributors to the privately owned treatment works must apply for a permit or how to issue a permit to the treatment works if contributors do not apply.[44] Nothing in EPA regulations bars EPA from issuing a permit or requiring application information from more than one owner or operator of a point source. For example, in the case of the general permit that covers discharges of stormwater from certain construction sites, EPA requires both the owner and the operator of the site to be covered by the permit. While this situation is not expressly addressed in the regulation, EPA determined that both the operator and owner needed permit coverage to control discharges from construction sites where different entities have control over different aspects of the operations necessary to comply with the NPDES permit.

The Towns have had an opportunity to express their views during the public comment process on whether they should be co-permittees on this permit. EPA has not changed its conclusion that permit coverage is necessary in order to implement the NPDES permit requirements related to the collection system and ultimately to achieve the effluent limitations applicable to the integrated POTW system.

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[43] This comment as a whole reflects a flawed understanding of the Act. The commenter uses permit the application requirements as the basis for deeming satellite collection systems point source dischargers. The satellite collection systems are subject to permit application requirements because they are point source dischargers, not vice versa.

[44] But the regulations are clear that, as a point source that is discharging through a treatment system that they do not own or operate, the contributor's discharge may be addressed either in a permit issued to the Privately Owned Treatment System or in a permit issued to the contributor.

Comment I5. Nowhere in Application Form 2A is there any reference to a "co-permittee" or suggestion that a person may make application, with a treatment works applicant, as co-permittee. See http://www.epa.gov/npdes/pubs/fina l2a.pdf. At page 1 of 21 of Form 2A, applicants "must complete questions A.8. through A.8. A treatment works that discharges effluent to surface waters of the United States must also answer questions A.9. through A. l 2." Part A.1 through A.8. of Form 2A asks for information about the facility and applicant, and asks " is the applicant the owner or operator (or both) of the treatment works?" (A.l ., A.2.). Form 2A asks for collection system information; specifically, "information on municipalities and areas served by the facility ... type of collection system (combined vs. separate) and its ownership (municipal, private, etc.)." (A.4.). Form 2A asks for information about the "collection system(s) used by the treatment plant." (A.7.). If the NPDES regulations contemplated permitting of collection systems, one would expect to see in each of these parts of the NPDES Application Form 2A some reference to the owners or operators of collection systems as "copermittees." There is none. Form 2A also requires information on discharges. At Part A.8.a., Form 2A asks "Does the treatment works discharge effluent to waters of the U.S.?_ Yes_ No." Form 2A obviously contemplates "discharges" from a "treatment works," not a POTW. Finally, at Patt A. 1.8.a.(i)-(v), Form 2A seeks information on the "types of discharge points the treatment works uses." No "collection system" or "satellite collection system" is listed here. This should be no surprise; collection systems and satellite collection systems do not have "discharge points" under the NPDES regulations.

Response I5. The comment here erroneously presumes that Form 2A defines the scope of EPA's authority to require an operator of a point source to submit information and determines all situations for which a permit is necessary. Comments I6 and I7 further elaborate on this same theme. Form 2A is intended for gathering the requisite information, on a routine basis, in order to effectively issue NPDES permits; it is not designed to determine the scope of the NPDES program or to limit the information EPA is authorized to collect. *See* NPDES Application Requirements for POTWs and other TWTDSs [Other Treatment Works Treating Domestic Sewage], 64 Fed. Reg 42,434, 42,434 (Aug. 4, 1999) ("EPA is revising these regulations to ensure that permitting authorities obtain the information necessary to issue permits which protect the environment in the most efficient manner,"). As noted in response to the previous comment, requiring a satellite collection system to be a co-permittee is not the routine or usual situation. Therefore, the comment's reliance on Form 2A to define the scope of Region 1's authority in implementing the NPDES program is misplaced.

The commenter claims Form 2A "obviously contemplates 'discharges' from a 'treatment [plant],' not a POTW." This is unpersuasive. Form 2A requires information on the collection system beyond the POTW treatment plant. *See* Form 2A at A.4, A.7. This implies that a permitting interest more extensive than merely the POTW treatment plant. Furthermore, the regulations creating Form 2A state that it is applicable to POTWs instead of using the more restrictive term "POTW treatment plant." NPDES Application Requirements for POTWs and other TWTDSs, 64 Fed. Reg. at 42,434; *see also* 40 C.F.R. 403.3(r) ("[t]he term POTW

> Treatment Plant means that portion of the POTW which is designed to provide treatment,").[45]
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> The commenter's next claims that the failure of Form 2A to discuss the potential status of satellite collection systems as co-permittees implies that the NPDES program is not intended to cover satellite collection systems as co-permittees. Again, Form 2A is not intended to define the scope of the NPDES permitting program, or to deal with all possible permitting variations or configurations that may be necessitated by site-specific information or circumstances relative to a discharge in order to address compliance with the Act. Here, the Region has determined that it is important to frame the permit to include requirements on the POTW's collection systems in order to address, *inter alia*, SSOs resulting in part from poorly maintained and operated collection systems and in so doing to assure compliance with the requirements of Section 301 of the Act and applicable water quality standards.
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> The commenter finally claims that Form 2A's inquiries into the discharge points of a POTW treatment plant imply that it is not intended to cover operators of satellite collection facilities as co-permittees. Such an inference is misplaced. Form 2A requires information regarding many portions of the POTW including both the treatment plant and the satellite collection facilities.

Comment I6. In its Analysis, EPA would "waive" the Towns' permit applications and all requirements of 40 CFR § 122.21. In its effort to justify including the Towns as co-permittees, EPA both misapplies and takes 40 CFR § 122.21 (j) entirely out of context. First, waivers can only be granted to those persons who have submitted applications. Nothing in the fact sheet suggests that the Towns applied for any NPDES permit. § 122.21(j) provides that:

> Permit applicants must submit all information available at the time of permit application. ... The Director may waive any requirement of this paragraph if he or she has access to substantially identical information. (emphasis supplied).

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[45] *See also* NPDES Application Requirements for POTWs and other TWTDSs, 64 Fed. Reg. at 42,443:

> "The permit writer needs to know what areas are served and the actual population served in order to calculate the potential domestic sewage loading to the treatment plant. The information on the community served by the NPDES permittee is also useful for providing notice and public comment for permit reissuance and for public education. One commenter requested clarification of the term "population served." By this term, EPA means the number of users of the system. EPA has expanded this requirement from the proposal in order to obtain a more complete picture of the area served by the POTW. The additional information on the satellite systems will be used by the permit writer to identify areas where there is a potential for unpermitted discharges in the collection system prior to the treatment plant. The identified areas may necessitate further investigation."

40 CFR § 122.21(j) does not support the EPA's proposed waiver of any application by the Towns; it allows only for the waiver of certain information in a permit application submitted by the applicant.

> **Response I6.** The Region has not waived the application requirement relative to the POTW in its entirety (a facility or activity, or "point source" that is subject to regulation under the NPDES program") under 40 C.F.R. § 122.21, only as to the operators of the satellite collection systems. The Region still required and received an application for the POTW discharge by the City of Taunton. Receiving a single application from the operator of a portion of the discharging POTW is a reasonable way to structure the permit application process, particularly in the case of a regionally integrated treatment works where there is a centralized administrative entity responsible for operating the POTW Treatment Plant and coordinating wastewater flows from the multiple satellite collection system operators. The Region has determined that "requiring a single permit application executed by the regional POTW treatment plant owner/operator will deliver 'substantially identical information'" to any application submitted by the Towns. Exhibit C at 26**.** Therefore, Region 1 decided to "waiv[e] NPDES permit application and signatory requirements applicable to the . . . municipal satellite collection systems." *Id.* These requirements—including signatory requirements—are present at 40 C.F.R. § 122.21(j); therefore, the Region may waive any or all of these requirements as to the municipal satellites. *See* NPDES Application Requirements for POTWs and other TWTDSs, 64 Fed. Reg. at 42440. The purpose of the waiver provision is to "allow the Director to waive *any requirement in paragraph (j)* if the Director has access to substantially identical information." NPDES Application Requirements for POTWs and other TWTDSs, 64 Fed. Reg. at 42440 (emphasis added). This broad waiver authority is intended to reduce the inefficiency of redundant information submissions by regulated entities. *Id* at 42,435. The Towns' interpretation of the waiver process would undermine this goal by requiring that the Region receive either an incomplete or redundant application before stating that the application is unnecessary. See Response I7.

Comment I7. Second, EPA cannot unilaterally waive requirements of an application without a request to do so; the person must seek a waiver and that waiver must be approved by EPA. 40 CFR § 122.21 (e) requires a complete application before EPA may issue a permit "([EPA] shall not issue a permit before receiving a complete application for a permit"), and a "waiver application" must be made, and approved, or not acted upon by EPA. 40 CFR § 122.21(e)(2) provides:

> A permit application shall not be considered complete if a permitting authority has waived application requirements under paragraphs (j) or (q) of this section and EPA has disapproved the waiver application. If a waiver request has been submitted to EPA more than 210 days prior to permit expiration and EPA has not disapproved the waiver application 181 days prior to permit expiration, the permit

> application lacking the information subject to the waiver application shall be considered complete.

Nothing in the fact sheet suggests that the Towns have made application for a waiver from the application requirements. 40 CFR § 122.21(j) says only that the "Director may waive any requirement of this paragraph if he or she has access to substantially identical information." This provision, in context, is obviously designed to allow waiver of some of the detailed and often duplicate information required under Section 122.21 and in EPA's permit application forms. As noted above, Form 2A consists of 21 pages and requires detailed information about the "treatment works." See Form 2A at http://www.epa.gov/npdes/pubs/final2a.pdf. Nothing in Section 122.21(j) suggests EPA may waive the requirement at 40 CFR § 122.21(a)(J) mandating an application from those persons who discharge from a point source. Likewise, nothing in Section 122.21(j) suggests EPA may waive the requirement for application signatures and certifications and authorizations required by 40 CFR § 122.22, none of which the Towns have provided. EPA seeks to ignore its own regulations and to issue a permit to Towns who have not applied for an NPDES permit.

> **Response I7.** "The goal of the application requirements is to provide the permit writer with the information necessary to develop appropriate NPDES permits consistent with requirements of the CWA." *See* NPDES Application Requirements for POTWs and other TWTDSs, 64 Fed. Reg. at 42440. In this case, a timely re-application for an NPDES permit for the discharge from the POTW has been received, signed and certified by operator of the POTW Treatment Plant. As the recipient of contributing discharges from outlying portions of the POTW for ultimate discharge into the receiving water as well as the primary coordinator of the member communities, the City is uniquely positioned to provide information regarding the wider treatment works. EPA has the necessary information relative to the POTW's collection system and system-wide I/I from the City of Taunton's application and the City's Annual I/I Report (a summary of all actions taken to minimize I/I and includes flow data, I/I trend analysis and unauthorized discharges from the collection system) to process the permit.
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> The commenter claims that Region 1 may only waive permit application requirements after receiving a waiver application from the permit applicant. EPA disagrees, as 40 C.F.R. § 122.22(j) states, "The director may waive *any requirement of this paragraph* if he or she has access to substantially identical information." The phrase "any requirement of this paragraph" includes the requirement to submit a waiver application in the first place. The commenter further argues that the waiver provisions of part 122.21(j) are "obviously designed to allow waiver of some of the information required" but may not be used to waive the signatory and certification requirements. However, the signatory requirement is intended to certify that the information provided is—to the best of the signatory's knowledge—complete and accurate. 40 C.F.R. § 122.22(d). Such a certification and signature have been received from the operator POTW

Treatment Plant. The information receiving certification adequately characterizes data and operations relative the wider treatment works, and EPA has deemed this sufficient to process the permit. In the case of permitting municipal satellite collection systems where the Region is not requesting any information from a contributing discharger, the Region has determined that certification and signature of the POTW Treatment Plant operator is sufficient. The signatory and certification requirement serves no purpose if the preceding information has been waived.

As a general matter, EPA does not foresee the need to require individual permit applications from each municipal satellite collection system operator, and anticipates that information in the POTW Treatment Plant operator's permit application and other information in the administrative record will be sufficient to establish permit terms for the entire treatment works. As EPA moves forward with its practice of co-permitting, as appropriate, municipal satellite collection facilities, it will indicate whether it requires additional material from those entities operating the outlying portions of the treatment works to render the permit application "complete" under 40 C.F.R. § 124.3(c) after receiving and reviewing the re-application for the permit from the primary permittee, typically the operator of the POTW Treatment Plant.

Comment I8. EPA would further seek to cause the Towns to "consult and coordinate with the regional POTW treatment plant operators to ensure that any information provided to EPA about their respective entities is accurate and complete." Exhibit C to Analysis. EPA would then use its authority, under CWA § 308, to compel information from the Towns, should EPA deem information provided by the permit applicant incomplete. CWA § 308, however, applies to "the owner or operator of any point source." CWA § 308(a) (A). Information may be obtained only from such owner or operator of the "point source," the "effluent source" or "the owner or operator of such source." CWA § 308(a)(B)(i) and (ii). Again, because the Towns do not own or operate any point source, CWA § 308 would not apply to them. Under EPA's Analysis, it would read out of the regulations the entire Section 122.21. EPA's cobbled approach and legal analysis toward finding authority where there is none is not supported by its own regulations.

Response I8. The Towns are operators of a point source because the POTW itself is a point source and the Towns operate portions of that point source. *See* Response I2. Therefore, the Region may use its § 308 authority to request information.

Comment I9. Nothing in the EPA's permit writers' manual evidences any authority to permit satellite collection systems as part of a greater POTW. Indeed, EPA's pennit writers' manual make no reference to permitting of satellite collection systems or to the owner of such systems being subject to a NPDES permit as a co-permittee. See EPA NPDES Permit Writers ' Manual, September 2010 http://www.epa.gov/npdes/pubs/pwm 2010.pdf.

Instead, the Permit Writers' Manual supports the analysis provided above. It says: "Under the national program, NPDES permits are issued only to direct dischargers." Permit Writers' Manual Section 1.3.4. (emphasis supplied). As noted above, a "direct discharge" means the "discharge of a pollutant" and "discharge of a pollutant" means "any addition of any pollutant to navigable waters from any point source." CWA § 502(12). 40 CFR 122.2. Section 4.1 of Permit Writers' Manual addresses "Who Applies for a NPDES Permit?" No mention is made in this section to satellite collection systems or to the owners of such systems. Instead, the Permit Writers Manual states:

> The NPDES regulations at Title 40 of the *Code of Federal Regulations* (CFR) 122.2 1(a) require that any person, except persons covered by general permits under § 122.28, who discharges pollutants or proposes to discharge pollutants to waters of the United States must apply for a permit. Further, § 122.21 (e) prohibits the permitting authority from issuing an individual permit until and unless a prospective discharger provided a complete application. This regulation is broadly inclusive and ties back to the Clean Water Act (CW A) section 301 (a) provision that, except as in compliance with the act, " ... the discharge of any pollutant by any person shall be unlawful." In most instances, the permit applicant will be the owner (e.g., corporate officer) of the facility. However, the regulations at§ 122.2 1(b) require that when a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit. The regulations also require the application to be signed and certified by a high-ranking official of the business or activity. The signatory and certification requirements are at § 122.22. Permits (and applications) are required for most discharges or proposed discharges to waters of the United States; however, NPDES permits are not required for some activities as specified under the *Exclusions* provision in § 122.3.

Section 4.3. of the Permit Writers' Manual addresses what forms must be submitted and at Exhibit 4-3 describes "the types of dischargers required to submit NPDES application forms, identifies the forms that must be submitted, and references the corresponding NPDES regulatory citation." Again, in Section 4.3 there is no mention of satellite collection systems or need for the owners of such systems to have a NPDES permit.

> **Response I9.** The commenter's attempt to read the quoted language from the Manual as some sort of limitation on permit coverage, or the extent of EPA's legal authority under Section 301 and 402, is unconvincing. The Permit Writers Manual does not address every permitting scenario. For example, it does not address the procedures by which dischargers into privately owned treatment systems may be designated as needing permits. Nor does it discuss the permitting of industrial discharges into a separately permitted municipal storm system. Moreover, the Permit Writers' Manual (the "Manual") is a guidance document and does not contain legally binding standards concerning the issuance of NPDES permits:

> CWA provisions and regulations contain legally binding requirements. This document does not substitute for those provisions or regulations. Recommendations in this guidance are not binding; the permitting authority may consider other approaches consistent with the CWA and EPA regulations. When EPA makes a permitting decision, it will make each decision on a case-by-case basis and will be guided by the applicable requirements of the CWA and implementing regulations, taking into account comments and information presented at that time by interested persons regarding the appropriateness of applying these recommendations to the situation. This guidance incorporates, and does not modify, existing EPA policy and guidance on developing NPDES permits. EPA may change this guidance in the future.

U.S. EPA, *NPDES Permit Writers' Manual*, at inside cover page (Sept. 2010) (*available at* http://cfpub.epa.gov/npdes/writermanual.cfm). Therefore, the discussion of EPA regulations at Response I2 takes precedence over any inferences drawn from the Manual. Furthermore, the Manual's discussion of POTWs makes clear that it intends to cover the entirety of the POTW and not merely the treatment plant:

> The federal regulations at § 403.3 define a POTW as a treatment works . . . that is owned by a state or municipality [as defined in CWA section 502(4)]. The definition includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It *also includes sewers, pipes, and other conveyances* only if they convey wastewater to a POTW.

NPDES Permit Writers' Manual at § 2.3.1. The Permit Writers Manual's discussion of the definition of "point source" also demonstrates that the term has a broad reach and includes the POTW:

> Pollutants can enter water via a variety of pathways including agricultural, domestic and industrial sources. For regulatory purposes, these sources generally are categorized as either point sources or nonpoint sources. The term point source is defined in CWA section 502(14) and § 122.2 to include *any* discernible, confined, and discrete conveyance from which pollutants are or may be discharged. *Point source discharges include discharges from publicly owned treatment works (POTWs)*, industrial process wastewater discharges, runoff conveyed through a storm sewer system, and discharges from concentrated animal feeding operations (CAFOs), among others (see Exhibit 1-2). Return flows from irrigated agriculture and agricultural stormwater runoff specifically are excluded from the definition of a point source.

NPDES Permit Writers' Manual at § 1.3.4 (emphasis added). The preceding passages demonstrate that, to the extent that inferences may be drawn from the Permit Writer's Manual, any inferences ultimately support the Region's approach.

Comment I10. EPA's position that the collection system is part of the POTW does not advance its argument that "satellite collection systems" should be deemed "co-permittees" in NPDES permits. If the collection system is part of the POTW, it should matter not who owns what part or portions as it is the "person" who owns or operates that portion of the POTW that "discharges a pollutant" from a point source who is required to have a permit for that discharge. EPA acknowledges that the Towns do not own or operate the entire POTW. While EPA seeks "to refashion permits issued to regionally integrated POTWs to include all owners/operators of the treatment works *(i.e.,* the regional centralized POTW treatment plant and the municipal satellite collection systems)," permit conditions "pertain only to the portions of the POTW collection system that the satellites own." Analysis, p. 7. See Permit I.l.C. Because the Towns do not own or operate the point source - Outfall 001 -they are not a person who may be subject to a NPDES permit.

Response I10. The comment relies on an overly restrictive definition of point source. The point source in question here is not merely Outfall 001, it is the entire POTW. See Response I2.

Comment I11. While the Analysis addresses generic problems associated with municipal sanitary sewer collection systems, including SSO's and I/I, nothing in the fact sheet or Analysis indicates that SSO's or I/I are not being appropriately addressed by the Towns or is a problem that requires or calls for the Towns to be identified as a copermittee in this permit, or that co-permittee status may advance any I/I or SSO problem. Exhibit B of the Analysis, entitled" Analysis of extraneous flow trends and SSO reporting for representative systems," has nothing to do with Taunton or the Towns. EPA improperly seeks to use information not material to Taunton or the Towns to justify imposition of co-permittee requirements.

Nor does the fact sheet or Analysis explain why operation and maintenance of the Towns' sewer systems are not being adequately regulated by under State regulations at 310 CMR 12.00. 312 CMR 12.02 defines "Sewer Systems" to mean "pipelines or conduits, pumping stations, force mains, and all other structures, devices, appurtenances, and facilities used for collecting and conveying wastes to a site or works for treatment or disposal" The purpose of 314 CMR 12.00 is to insure "proper operation and maintenance of ... sewer systems within the Commonwealth," and sets forth numerous requirements for the proper operation and maintenance of such systems. See 314 CMR 12.03(4), (10), and (11); 12.04(4); 12.05(5), (6) and (12); and 12.07(7).

Response I11. In the case of the Taunton WWTP, the satellite communities represent approximately 25% of the population served. Fact Sheet Table 2. The City of Taunton states that it has no power to address operation and maintenance

and I/I in this extensive portion of the POTW collection system; the City's Comment B10 states: "Taunton's inter-municipal agreements with contributing communities only regulate the quantity and character of the wastewater that enters the Taunton collection system to ensure that the integrity and performance of its wastewater infrastructure are protected. Taunton assumes no further responsibility." In this case, copermitting is a necessary tool to meet EPA's objective of establishing a comprehensive and preventative POTW-wide approach to a POTW operated by multiple persons that does not necessarily turn on the performance of any particular Town:

> Because ownership/operation of a regionally integrated POTW is sometimes divided among multiple parties, the owner/operator of the treatment plant many times lacks the means to implement comprehensive, system-wide operation and maintenance ("O & M") procedures. Failure to properly implement O & M measures in a POTW can cause, among other things, excessive extraneous flow (*i.e.*, inflow and infiltration) to enter, strain and occasionally overload treatment system capacity. This failure not only impedes EPA's national policy goal concerning preservation of the nation's wastewater infrastructure assets, but also frustrates achievement of the water quality—and technology-based requirements of CWA § 301 to the extent it results in sanitary sewer overflows and degraded treatment plant performance, with adverse impacts on human health and the environment.

Analysis at 1. Given that the sewer system is interconnected, and in order to address I/I issues before they worsen and result in adverse impacts on the receiving waters, EPA has determined that this protective, comprehensive approach makes sense.

EPA's experience with other collection systems and satellite collection systems in the state are material to its assessment of the relative strength of alternative approaches to operation and maintenance requirements for satellite collection systems in general through permit requirements. EPA again notes that the City itself is not arguing that operation and maintenance of satellite systems is or can be adequately addressed through requirements placed on it as owner of the treatment plant.

Similarly, EPA's analysis does not depend on the sufficiency or insufficiency of State regulations. State regulations, while welcome, are not subject to EPA enforcement and are not a substitute for permit requirements.

EPA notes that its treatment of satellite collection systems is a subpart of a much larger effort to ensure adequate operation and maintenance of collection systems in general through permit requirements. The importance of the collection systems components has been the subject of a great deal of attention, and progressively

more stringent standard permit requirements, over the last decade. The majority of collection systems are owned by the treatment plant owner and are subject to the same operation and maintenance requirements that EPA seeks to impose here, due to the importance of these systems in overall treatment works performance. The pertinent question therefore is not whether there is a specific reason that Towns are subject to these requirements, but why a simple division of ownership should excuse important portions of the treatment works from these requirements.

Comment I12. In its Determination on Remand issued to the District on July 7, 2010, the Region indicated it would "coordinate broadly within EPA in developing a response" to the *Upper Blackstone* EAB Remand Order. Nothing in Region I's Analysis indicates this was done. Because EPA's authority to permit satellite collection systems impacts not only the Region, but is of national significance, and because the issues raised by the EAB concerning EPA's legal authority to regulate co-permittees were limited to those raised by the District, the Region's effort to permit satellite collection systems as co-permittees or otherwise through separate permits should be presented to the public for review and comment on a national level.

In June 2010, EPA did seek through "listening sessions" information from the public concerning permitting of satellite collection systems. See 75 Fed. Reg. 30395 (June 1, 201 0) ("EPA is considering whether to propose modifying the (NPDES] regulations as they apply to municipal sanitary sewer collection systems"). In contemplating a potential regulatory change, EPA asked specifically for input on the question: *Should EPA propose to require permit coverage for municipal satellite collections systems?* Because EPA was "considering clarification of the framework for regulating municipal satellite collection systems under the NPDES program," and doing so via a regulatory change, the Region should not include at this time, and based on unsupported legal authority outlined above, the Towns as co-permittees in this permit. Until such time as EPA addresses this issue on a national level and gives the public the opportunity review and comment on the legal Analysis set forth by the Region, it should not include co-permittee provisions in this permit.

Response I12. The Analysis does not signify a binding change in EPA national policy and does not require comment on the national level. First, the Analysis merely interprets existing legal authority; it neither changes nor purport's to change EPA's power with respect to NPDES permitting. *See* Analysis at 1 ("This interpretative statement provides an explanation to the public of *EPA Region 1's* interpretation of the Clean Water Act," (emphasis added)). Second, the Analysis does not establish binding changes to EPA's permitting practice in the future. The Analysis explicitly provides that "Region 1's decision will be made by applying the law and regulations to the specific facts" and not by automatically regulating operators of satellite collection systems through the co-permittee system." *Id.* Third, the Analysis is distinguishable from EPA's previous inquiries into permitting satellite collection facilities. In 2010, EPA inquired into whether it should "propose to *require* permit coverage for municipal satellite collection systems." National Pollutant Discharge Elimination System (NPDES) Permit

Requirements for Municipal Sanitary Sewer Collection Systems, Municipal Satellite Collection Systems, Sanitary Sewer Overflows, and Peak Wet Weather Discharges From Publicly Owned Treatment Works Treatment Plants Serving Separate Sanitary Sewer Collection Systems, 75 Fed. Reg. 30, 395, 30,401 (June 1, 2010). The Analysis, however, makes no binding changes to national NPDES regulations. Finally, even if Region 1's analysis of its legal authority is of national significance, the Towns cite no authority for the proposition that this significance alone should subject Region 1's analysis to national commentary if such commentary is not required by the Administrative Procedure Act. *See infra* response to comment I13 for discussion of the APA.

The Region coordinated within EPA, including with EPA Headquarters, in developing a response to the remand. EPA did not at any time state that it would defer this issue to a national rulemaking, and the Region has a strong basis for determining that a specific local approach is required in the two states for which EPA is the permitting authority. New England states are unusual nationwide for the strong level of local control exercised by relatively numerous cities and towns (351 in Massachusetts), leading to at times to extensive collection systems controlled by local authorities but discharging via a regional or semi-regional treatment plant such as Taunton's. EPA Region 1 also has extensive experience in permitting of these facilities as the direct permitting authority in two states. In this context this issue is both distinctive and a high priority for the Region, apart from any national rulemaking.

Comment I13. EPA's attempt to change the legal requirements applicable to satellite systems is a legislative rule that EPA is issuing without formal notice and comment rulemaking in violation of the Administrative Procedure Act ("APA"). In trying to distinguish between legislative rules and policy statements, courts have found that "if a document expresses a change in substantive law or policy the agency intends to make binding, or administers with binding effect, the agency may not rely upon the statutory exemption for policy statements, but must observe the APA's legislative rulemaking procedures." *Gen. Elec. Co. v. E.P.A.,* 290 F.3d 377,383-84 (D.C. Cir. 2002. *See also Appalachian Power Co. v. EPA,* 208 F.3d I 015 (D.C. Cir. 2000) (finding that an EPA guidance document that imposed new monitoring requirements relating to the operation of permit programs under the Clean Air Act was a legislative rule because it was treated as binding), *Nat'/ Mining Ass 'n v. Jackson,* 816 F. Supp. 2d 3 7, 42-49 (D.D.C. 2011) (finding a violation of the Administrative Procedure Act where EPA sought to impose a new process for obtaining section 404 permits without notice and comment rulemaking), *New Hope Power Co. v. US. Army Corps of Eng'rs,* 746 F. Supp. 2d. 1272, 1283-84 (S.D. Fla. 2010) (striking Corps guidance purporting to amend the prior converted croplands exclusion because it amounted to new legislative rules that created a binding norm and the Corps failed to comply with the APA).

In the case of the draft Taunton permit, there is no question that EPA intends its new position regarding satellite system to have binding effect. Moreover, it is telling that in 2001, EPA began a rulemaking that purported to give the agency direct authority over

satellite systems, in the context of a propose rule pertaining to sanitary sewer systems. *See* National Pollutant Discharge Elimination System (NPDES) Permit Requirements for Municipal Sanitary Sewer Collection Systems, Municipal Satellite Collection Systems, and Sanitary Sewer Overflows (proposal signed Jan. 4, 2001) (formerly available at http://cfpub.epa.gov/npdes/regresult.cfm?program id=4&view=all&tvpe=3, but now withdrawn from EPA's website). EPA later withdrew that proposed rule.

Response I13. The commentor claims that the Region's Analysis is a legislative rule that ought to be subject to notice and comment under the Administrative Procedure Act ("APA"). Under the APA, there are no procedural requirements when an agency promulgates "interpretative rules, general statements of policy, or rules of agency organization, procedure, or practice." 5 U.S.C. § 553(b). The Analysis here is an interpretative statement utilized by the Region in the context of NPDES permit proceedings. The decision of whether to include co-permittees in any given NPDES permit is adjudicated on a case-by-case basis in light of the facts and circumstances surrounding the discharge and receiving waters. Therefore, it is not subject to the "notice and comment" requirements of the APA. *See* Approach at 1.

The D.C. Circuit has identified four factors that that may render an ostensibly interpretive rule legislative: "(1) whether in the absence of the rule there would not be an adequate legislative basis for enforcement action or other agency action to confer benefits or ensure the performance of duties, (2) whether the agency has published the rule in the Code of Federal Regulations, (3) whether the agency has explicitly invoked its general legislative authority, or (4) whether the rule effectively amends a prior legislative rule." *Syncor International Corp. v. Shalala*, 127 F.3d 90, 96 n. 8 (D.C. Cir. 1997) (citing *American Mining Congress v. Mine Safety & Health Admin.*, 995 F.2d 1106, 1112 (D.C. Cir. 1993)). However, "[t]he critical distinction between legislative and interpretative rules is that, whereas interpretative rules 'simply state what the administrative agency thinks the statute means, and only 'remind' affected parties of existing duties,' a legislative rule 'imposes new rights or duties.'" *Iowa League of Cities v. Environmental Protection Agency*, 711 F.3d 844, 873 (8th Cir. Mar. 25, 2013).

Determining whether a document is binding depends on the specific language used and tends to be a highly fact-specific inquiry. *See Iowa League of Cities*, 711 F.3d at 863-64; *South Dakota v. Ubbelohde*, 330 F.3d 1014, 1028 (8th Cir. 2003). In *Iowa League of Cities*, the Eighth Circuit found that a letter to Senator Grassley constituted a binding rule because it purported to state "the EPA's position" and spoke in mandatory terms that certain actions "should not be permitted." 711 F.3d at 864. Similarly, in *South Dakota v. Ubbelohde*, the Eighth Circuit found that the Corps' manual for implementing the Flood Control Act was binding because it "speaks of what 'is' done or 'will' be done." 330 F.3d at 1028. However, in *Catawba County v. Environmental Protection Agency*, the D.C. Circuit found that an EPA memorandum was non-binding because it left the Agency free to exercise discretion; the memorandum spoke of the Agency's

"current views," but left those views open to revision. 571 F.3d 20, 33-34 (D.C. Cir. 2009).

Based on its language, the Analysis constitutes an interpretative statement and not a legislative rule. The Analysis describes the process of listing municipalities as "EPA Region 1's practice" and not as an immutable, binding rule for all permitting authorities. Analysis at 1. This statement is similar to the memo at issue in *Catawba County* because it describes only the Region's current practices and views of the law; it is not a change to the Agency's underlying regulatory/statutory structure. *See* 571 F.3d at 33-34. Furthermore, the Analysis does not signify a change in the Region's regulatory practices, it merely "details the legal and policy bases" for prior practices. Analysis at 2; *see also* Exhibit A (showing 25 permits since September 25, 2000 where the municipality operating a satellite collection facility was made a co-permittee on a NPDES permit).

While the key factor in whether a rule is interpretative or legislative is whether the rule is binding, the four *Syncor* factors are still informative on this question. *See Syncor*, 127 F.3d at 96l. Factor one asks whether the absence of a rule would take away the legal basis for agency action. Here, the absence of the analysis would not affect Region 1's authority to regulate municipal operators of satellite collection systems because the rule merely interprets existing statutes and regulations. *See e.g.*, Analysis at 7 ("Region 1 has decided to supply a clearer, more detailed explanation regarding its use of a co-permittee structure when issuing NPDES permits,"). Furthermore, the Analysis explicates the legal basis for a permitting practice that Region 1 has generally employed since 2005. Analysis at 7. Factor two, whether the rule has been published in the CFR, does not apply to the Analysis. Factor three, whether Region 1 has invoked its legislative rulemaking authority, also does not apply here. Finally, factor four, whether the rule amends a prior legislative rule, does not apply because the Agency has never fully promulgated any rules on permitting practices for separately owned satellite collection facilities. Furthermore, response to comment I12 provides further discussion of proposed rules on satellite collection facilities by the Agency. In sum, the practice of including municipal satellite collection system owners/operators as co-permittees on the NPDES permit issued to the POTW Treatment Plant is simply one way that a permit can be framed to assure compliance with the Act. The Analysis merely outlines the legal and technical bases for this approach, which the Region undertakes at its discretion on a case-by-case basis, and does not mandate either Region 1 (or other Regions) to follow it.

Comment I14. For these reasons, the co-permittee provisions of the draft Taunton permit should be stricken.

Response I14. EPA has maintained the co-permittee provisions in the Final Permit.

J. The Town of Bridgewater submitted comments by letter dated June 10, 2013.

The Town of Bridgewater hereby submits comment on the draft National Pollutant Discharge Elimination System (NPDES) Permit, No. MA0100897, for the Taunton Wastewater Treatment Plant (WWTP), as issued by EPA for public comment. The draft permit fact sheets and attachments discuss nutrient loading and permit conditions for wastewater treatment facilities with NPDES discharges to the Taunton River, including the Bridgewater WWTF. Based on past discussions with EPA, and as described by the information presented in the Taunton permit fact sheets, the current round of NPDES permitting will include new total nitrogen effluent limits for WWTFs in the based that have not had total nitrogen limits in the past (including Bridgewater).

The Bridgewater WWTF treated the least flow of the facilities proposed for a total nitrogen limit in the fact sheet, with the facilities discharging less than one million gallons per day being considered "de minimium." The Bridgewater WWTF is designed for nitrification, but not for dentrification, and based on the WWTF process, nitrogen removal will be difficult and costly to implement. Because other WWTFs with discharges to the Taunton River are larger than Bridgewater, we believe it is critical to address the nitrogen issues in those discharge permits before issuing a new permit for the Bridgewater WWTF. Therefore, we request that the Bridgewater draft permit be held for issuance until permits for the larger plants are final.

> **Response J.** EPA agrees that the nitrogen analysis in the Draft Permit and Fact Sheet includes nitrogen limits for WWTFs in the Taunton River basin, including Bridgewater. EPA notes that the size of facility is one of a number of factors impacting prioritization of permits for issuance. While EPA makes no commitments regarding timing of Bridgewater's draft permit and believes it would be inappropriate to do so, EPA notes that the draft permit for Bridgewater has not yet been issued.

K. Mr. Tim Watts submitted comments by undated letter.

Comment K1. We are submitting the following comments in regard to Draft NPDES Permit MA0100897.

In regard to phosphorus, phosphorus limits as we pointed out in our comments on the previous draft permit which was scraped are required for this permit. Our concerns in regard to phosphorus are not limited to the immediate vicinity of the plant. Our concerns and the responsibility of EPA are to achieve water quality standards throughout the watershed. Phosphorus is a pollutant being discharged by the Taunton WWTP. It is a pollutant being discharged to an "effluent dominated river", a river which is clearly, both by simple on the water observation and by way of water quality sampling suffering from eutrophication. System wide eutrophication brought about primarily by excessive nutrients discharged into it by wastewater treatment plants up and down the river.

EPA attempts to justify their non action on phosphorus.

1. "However, upstream facilities have implemented permit limits on their phosphorus discharges since 2005."

Is this referenced upstream facility the Brockton WWTP? Please be specific on this question. If EPA is going to reference a site and use it to help justify non action in regard to a discharged pollutant at Taunton WWTP, EPA at the bare minimum has the responsibility of specificity so that commenters can address the issue directly.

What does the above quoted #1 statement mean and what data does EPA have which demonstrates that these limits at "upstream facilities" have been effective in achieving water quality standards in the respective receiving waters?

The following information is from the MA DEP 2012 list Massachusetts Category 5 Waters "Waters requiring a TMDL"

Salisbury Plain River MA62-06 From the Brockton Advanced Water Reclamation Facility (A WRF) discharge, Brockton to the confluence with Beaver Brook forming the Matfield River, East Bridgewater.
2.262 MILES
(Debris/Floatables/Trash*)
Aquatic Macroinvertebrate Bioassessments
Excess Algal Growth
Fecal Coliform 40308
Oxygen, Dissolved
Phosphorus (Total)
Taste and Odor
Turbidity

Matfield River MA62-32 Confluence of Beaver Brook and the Salisbury Plain River, East Bridgewater to the confluence with the Town River and the Taunton River, Bridgewater.
6.662 MILES
Aquatic Macroinvertebrate Bioassessments
Excess Algal Growth
Fecal Coliform 40308
Oxygen, Dissolved
Phosphorus (Total)

If as EPA implies these "upstream facilities" upgrades have in fact had a positive and significant impact on improved water quality, and if in fact the referenced upgrades are relevant in regard to this permit they are not demonstrated in this the most recent MA DEP assessment of the respective waters! The Matfield River simply is the dominant contributor of effluent/water to the Taunton River, especially during low flow periods. If

the Matfield is still in the sorry state that the most recent MA DEP 2012 list of Category 5 Waters claims then so goes the Taunton. The two are one, inseparable.

The following is also troubling.
"The Taunton River Watershed Association (TRWA) monitors sites upstream (Plain Street, Taunton) and downstream (Center Street/Berkley Bridge). TRWA phosphorus data for April to October 2010 averaged 0.12 mg/1 at both the upstream and downstream sites. In 2011, the average concentration was 0.08 mg/1 at both sites.[13] The 2011 concentration is below the EPA –recommended Gold Book concentration of 0.1 mg/1, which has been used by EPA as the basis for permit limits in numerous permit proceedings as an interpretation of the Massachusetts narrative water quality standard for nutrients."

It seems not 'protective' of the receiving water to average the P data over the sampling season- what is pertinent are the concentrations in the vegetation peak growing months. It seems best not to average in March/ April/May/Oct and November data (though these can sometimes be high because there is less uptake of the dissolved fraction in the water outside prime growing times/biomass though the spring months having lots more dilution probably compensates). Seems far more important to consider the June-July-August concentrations when plants are maximizing their use of available P. If the water column concentration is high, despite plants maxing out their annual uptake of nutrients, than it seems best to consider P an issue. Furthermore, TRWA is not collecting data under an approved QAPP, the checks and balances needed to make sure the data results meet a minimum of quality control are not in place. Without blank and duplicate samples one cannot be sure of the accuracies of the results- the results may be under reporting the concentrations in the river. Furthermore the 2012 TRWA sampling data for the referenced sites are as follows

TNT 01 TP ..... March 0.14/ April 0.09/ May 0.11/ June 0.12/ July 0.22/Aug 0/ Sept 0.14/ Oct 0.06/Nov 0.12

TNT 02 March 0/ April 0/ May 0.08/ June 0.09/ July 0.13/ Aug 0.13/ Sept 0.111
Oct 0.09/ Nov 0.11

TNTO1 readings going from .22 mg/1 in July to 0 in August. This zero is likely either a typo (did not finish typing in that entry) or a sampling or lab error. I would not believe a concentration of P in the mainstem Taunton falling to zero. This again raises the issue of data quality and assurance. If it is quality data then it appears that the 2011 data was an aberration because 2012 reflects elevated phosphorus which appeared as the norm previous to the 2011 data.

"While the Taunton WWTP does not monitor phosphorus discharges under its current permit, these data do not indicate discernable increases in total phosphorus concentrations attributable to the Taunton WWTP." The 2012 data demonstrating the higher phosphorus values appears to come from sample site TNT01 which is downstream of the Taunton WWTP outfall.

"Receiving water quality data is limited with respect to other indicators of eutrophic conditions in the immediate vicinity of the discharge."

Why does EPA in the fact sheet insist on using the phrase "immediate vicinity of the discharge?" Since when and where in the CWA do NPDES only apply to the "immediate vicinity" of a discharge?

Once again the whole mainstem river system from the outfall of the Brockton WWTP to Mount Hope Bay is suffering the effects of being "effluent dominated." The river being eutrophic both upstream and downstream of the Taunton WWTP is a reliable indicator that the river in between at the Taunton WWTP site is also eutrophic. The most reliable indicator and data being a simple walk or paddle along the river to observe the discolored water and over abundant filamentous algae. These opening comments in addition to discussing the phosphorus issue also serve to demonstrate that many of our comments on the previous draft permit that was scrapped remain relevant and have yet to be addressed. It appears that EPA is attempting to sidestep the whole phosphors issue by drawing from one season of questionable sampling at 2 sites and at best using anecdotal, unsupportable assumptions that "upstream facilities" are doing a swell job.

As EPA correctly states and demonstrates in the fact sheet for this permit, "It is clear that this is an effluent dominated watershed". As such the quality of the water in the river can be no better than the quality of effluent which dominates it. Currently and for many years water quality data gathered from the Taunton River has demonstrated that the quality of effluent dominating it is not of sufficient quality to allow attainment of its water quality standard. We offer the simple proposition that there are two solutions to this ongoing dilemma.

1.) Reduce volume of effluent discharged.
2.) Improve quality of effluent discharged.

Unfortunately this draft permit addresses neither option# 1, nor, option #2 in regard to phosphorus. In fact it does little more than require the permittee to monitor an illegal discharge of pollutants into an already polluted waterbody. Therefore, this draft permit as written violates the United States Clean Water Act, 33 U.S.C. § 1251, Section 301(b)(1)(C), Massachusetts Clean Water Act, M.G.L.c.21, § 26, 314 CMR 4.05(5)(c), 314 CMR 4.04. This is not good.

Although the segment discharged too is tidal, it is primarily freshwater tidal at and above the point of discharge. Therefore EPA must establish phosphorus limits in this permit. In the decision of MWRC dated 8/4/2003 regarding the Aquaria desalinization plant on the Taunton River in Dighton the commission states that under 7Q10 conditions modeled salinity at the plant site ranges from 0 ppt to 23ppt depending on tidal cycle. In fact because of a lack of salinity at the desal plant site the reverse osmosis process will only be needed to remove saltwater for drinking water between the months of July and November. The desal plant is approximately one mile downstream from the discharge of

the Taunton WWTP therefore there is likely to be less saltwater intrusion one mile upstream of the desal plant. Furthermore, in the fact sheet for the Taunton Municipal Light Plant NPDES permit # MA0002241 EPA states the following regarding salinity at that discharge site, "The salinity of the Taunton River as measured at the cooling water intake is dominated by freshwater. The highest salinity is found in the salt wedge at the river bottom. The salinity as measured on July 30, 1991 was 1 part per thousand (based on conductivity equivalence)". The site of the TMLP is approximately one half mile downstream of the Taunton WWTP therefore there is likely to be less if any saline water there.

Plume studies undertaken regarding the discharge of TMLP demonstrate that because of tidal influence the discharge of TMLP does what one expects in a tidal zone, it migrates upstream during the incoming tide cycle. We expect the same to be true of the Taunton WWTP discharge. That during incoming tides the discharge of Taunton WWTP will migrate upstream impacting an even greater segment of the freshwater tidal system.

We believe the available data clearly indicates that despite the sb classification the Taunton WWTP discharges to freshwater. Therefore phosphorus limits are not only appropriate but required to attain/maintain/protect water quality standards in the receiving waters.

EPA clearly establishes in other NPDES permits which discharge into the Taunton River and its tributaries that excessive phosphorus is a limiting factor in regard to attaining, maintaining and protecting water quality standards in the Taunton and its tributaries. For example, draft Brockton WWTP, 0.2 mg/1 average monthly P, Bridgewater WWTP, average monthly summer 1.0 mg/1 P, Middleboro WWTP, average monthly summer 0.2 mg/1 P.

The 2004 NPDES permit for Oak Point development which discharges to the Taunton River segment upstream of Taunton WWTP segment is instructive; here average monthly phosphorus has been limited to a 1mg/l and 0.7 kgs/day summer limit. In the fact sheet for this permit EPA states the following regarding phosphorus.

Instream water quality information for this segment of the Taunton River is scarce. In 2001 and 2002, the Taunton River Watershed Alliance (TRWA) collected water quality samples throughout the Taunton River Watershed. The nearest downstream site was at the Sturtevant Bridge, Green Street, Middleborough/Bridgewater. Results of the sampling can be found in the documents: Annual Water Quality Report for the City of Taunton, Taunton River and Tributaries, 2001 (Domingos, January 2002) and Annual Water Quality Report for the City of Taunton, Taunton River and Tributaries, 2002 (Domingos, January 2003). Instream total phosphorus concentrations ranged from 0.09 mg/1 to 0.39 mg/1. All of the samples exceeded the ecoregion criteria of 0.024 mg/1 and all but one sample exceeded the less stringent "Gold Book" criteria of 0.1 mg/1. The draft permit includes a monthly average limit of 1 mg/1. At this concentration the discharge would be expected to contribute about 1 0 ug/1 to the instream concentration of phosphorus (1mg/l!DF= l/95+0.01 mg/1). If, in the future, the state should adopt numeric criteria, or

water quality monitoring should show the need for a more stringent limit, this permit may be re-opened and modified.

If EPA is establishing phosphorus limits for a discharge of less than 1 mgd and putting language such as this in that same permit "If, in the future, the state should adopt numeric criteria, or water quality monitoring should show the need for a more stringent limit, this permit may be re-opened and modified." Why does EPA refuse to establish phosphorus limits for the Taunton WWTP which discharges 8.4 mgd?

Furthermore, The Commonwealth's water quality standards include a narrative criterion which provides that nutrients "shall not exceed the site specific limits necessary to control accelerated or cultural eutrophication." 314 CMR 4.05(5)(c). Massachusetts' standards also require that "any existing point source discharges containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practicable treatment to remove such nutrients." 314 CMR 4.04.

The Taunton WWTP discharge without limits on phosphorus will clearly encourage further eutrophication of this river segment therefore we recommend monthly average total phosphorus limit of 0.2 mg/L which is based on the "highest and best" practical treatment as defined by the MA WQS.

In addition to the above it should be noted that in NPDES permit #MA0101893 for the Wareham WWTP EPA establishes a summer phosphorus limit of 0.2 mg/1. The Wareham WWTP discharges to the Agawam River which is classified as sb at the point of discharge. In fact the discharge point of Wareham WWTP displays higher salinity levels than at the site of the TMLP on the Taunton River, which is one half mile downstream of the Taunton WWTP discharge. Therefore it appears that phosphorus limits have and can be established for waterbodies classified sb. Does EPA agree that P limits can be established in waters which are class sb?

> **Response K1.** EPA agrees that phosphorus limits are required if there is reasonable potential for a discharge to cause or contribute to a water quality violation. As discussed in the Fact Sheet, EPA's review of the evidence does not show reasonable potential with respect to phosphorus discharges from this facility.
>
> EPA's discussion of the imposition of phosphorus permit limits on upstream facility did not specify individual facilities because nearly all of the upstream facilities have implemented phosphorus reductions. The upstream facilities are listed on pages 9 and 33 of the Fact Sheet; their respective total phosphorus limits are shown below.

Discharger	River or Tributary	TP limit (mg/l)	Design Flow (mgd)
BROCKTON AWRF	SALISBURY PLAIN RIVER	0.2	18.0
MANSFIELD WPCF	THREE MILE RIVER	0.2	3.14
MIDDLEBOROUGH WPCF	NEMASKET RIVER	0.2	2.16
BRIDGEWATER WWTF	TOWN RIVER	1.0	1.44
MCI-BRIDGEWATER WPCF	SAW MILL BROOK TO TAUNTON	1.0	0.55
WHEATON COLLEGE	RUMFORD RIVER	0.2	0.12
OAK POINT HOMES	TAUNTON RIVER	1.0	0.185
EAST BRIDGEWATER SCHOOLS	TRIBUTARY BROOK TO TAUNTON	none	0.012

In addition, more stringent limits are being implemented on several of these facilities in connection with their permit reissuances. Final Permits have been issued for the Mansfield and Middleborough WPCFs with total phosphorus limits of 0.17 and 0.15 mg/l respectively. The Brockton AWRF permit is due for reissuance and the City of Brockton has been informed that they should expect a total phosphorus limit lower than their current 0.2 mg/l limit based on conditions in the Salisbury Plain River, and the Bridgewater WWTP has been issued a draft permit with a limit of 0.2 mg/l.

EPA has not stated that “these limits at "upstream facilities" have been effective in achieving water quality standards in the respective receiving waters” as suggested in the comment. Rather, EPA is engaged in a continuing process of revisiting such limits and, where necessary, establishing more stringent limits to meet water quality requirements in the tributaries to which these facilities discharge. These tributaries are free flowing freshwater, to which the Gold Book standard of 0.1 mg/l can be directly applied. Limits designed to achieve a 0.1 mg/l target at upstream locations will result in far lower concentrations downstream where dilution is higher, so that more stringent limits designed to eliminate water quality violations upstream are expected to improve conditions in the downstream area affected by the Taunton WWTP discharge.

EPA did not limit its analysis to the immediate vicinity of the discharge, but emphasizes that the region of concern is the area impacted by the Taunton discharge. The comment’s citation of conditions well upstream of this discharge (Salisbury Plain and Matfield River) do not establish reasonable potential as the Taunton WWTP discharges clearly do not reach those impaired segments. Downstream from the Taunton WWTP (clearly the Taunton discharges reach downstream areas) are estuarine areas that have been documented as nitrogen-limited. Thus there is a limited area of transition from phosphorus to nitrogen related eutrophication that is the focus of analysis for reasonable potential, and it is this area that was considered by EPA. The facts remain that there is limited data available in this transitional area, that EPA does not have target thresholds for phosphorus in these estuarine waters, and that there are substantial reductions in

phosphorus discharges being implemented at upstream facilities that are expected to result in improvements to conditions along the entire Taunton River, so that the potential for the Taunton WWTP phosphorus discharges to contribute to impairments is uncertain at best. In this context further monitoring, but no permit limit, has been required in this permit.

The inclusion of both total nitrogen and total phosphorus limits in the permit for the Wareham, MA WPCF was based on a specific study identifying both nitrogen and phosphorus as contributing to water quality degradation in the Agawam River Estuary. See Fact Sheet, NPDES No. MA0101893 at 8-9 (http://www.epa.gov/region1/npdes/permits/2008/finalma0101893fs.pdf). Phosphorus limits are appropriate in SB waters where evidence indicates that such discharges are causing or contributing to nutrient related impairments. That evidence is not available here.

Comment K2. Nitrogen discussion:
The Fact Sheet does not mention this watershed importance as an anadromous fishery- one of the strongest remaining in the Commonwealth. The needs of the spawning adults and juveniles must be considered- the resource can't afford any further decreases in numbers.

In the SMAST Data there does seem to be a strong correlation between high N levels (of almost all the species of N, too) and lower salinity samples. Just look at the dissolved to particulate N ratio versus salinity. The lower salinity samples also have depressed DO but interestingly some of the lower Chlor A concentrations. All this seems to indicate it is the fresh water inputs coming down the river contributing the nutrients and the incoming tide offering some modest dilution. This all strengthens the argument for lower nutrient levels in the permit.

A N limit of 2 mg/1 is a good start but it needs to be recognized (and stated) that the allowable load may need to be revisited as more information and more progress toward meeting WQS to see if the crude calculations are proving to be good enough estimates to make a difference in receiving water conditions.

Also will there be some potential legal posturing associated with the EPA's approach to give the smallest treatment plants (less than 1 mdg) a complete bye on limits and the smaller ones a less stringent 5.5 mg/limit? Would not want to see these limits abandoned on appeal because of perceived inequities.

EPA imposing a mass daily limit of 210 pounds. We like that there is an actual daily max (THOUGH THEY ARE ONLY TESTING 3X PER WEEK) so the rolling average EPA is imposing will not be abused. It is not that much higher than the max loading if they maintained the 3 mg/1 and had a max flow rate. If they increased flow this number (daily max) should not be allowed to go up under anti-deg so getting it as low as possible is important.

The claim that Nitrogen Nov- March is not especially critical given there is often a fairly large phytoplankton bloom in early spring or late winter. This timing should be justified - are there papers on Narragansett Bay that address the plankton cycle?

In looking at the N numbers, Taunton WWTP is going to have a tough time meeting the permit limit. EPA must not build in some contingency should Taunton need to ratchet the concentrations down even more. There needs to be a stronger statement that the 3 mg/1 is the target but the target is a moving one based on the true goal of reaching acceptable water quality in the receiving waters.

Response K2. The importance of the Taunton River Estuary as an anadromous fishery is part of the Endangered Species Act discussion at pages 41-42 and Attachment D of the Fact Sheet. The total nitrogen limit is expected to provide improved conditions for all aquatic life, including juvenile and spawning anadromous fish.

EPA agrees that the data indicates that the freshwater inputs have higher concentrations of nutrients and that the marine water is providing dilution, and that this supports the imposition of permit limits for total nitrogen on dischargers to the Taunton River. The pattern of chlorophyll-a concentrations is discussed at Responses C23-24 and C29.

The permit limit based on 3 mg/l TN (not 2 mg/l) is designed to ensure that discharges from the Taunton WWTP do not cause or contribute to nutrient-related water quality impairments. EPA does not view this as simply "a good start" but as a nitrogen loading level that is stringent enough based on current data when coupled with reductions from other sources as discussed in the Fact Sheet. EPA does agree that there is a need for continuing monitoring and that the understanding of allowable loads may be revisited as these load reductions are implemented. Such new data will be considered in connection with every permit reissuance and could result in a modification of the permit limit in future permits.

The commenter is incorrect in stating that the draft permit includes a maximum daily TN limit of 210 lbs/day. The mass limit of 210 pounds is imposed as a rolling seasonal average. The Draft Permit expressed this limit as a monthly average (not a daily maximum limit) but was unclear as to the rolling seasonal average; this has been clarified in the final permit. A maximum daily limit is not appropriate due to the seasonal averaging periods used in the nitrogen threshold and loading analyses.

The seasonal nature of the permit limit is consistent with the time frame for the analysis performed by EPA and is consistent with all other permit limits for the Narragansett Bay system. A 2009 general review of phytoplankton dynamics for Narragansett Bay in general concluded:

> Phytoplankton primary production is also highly variable both within and among years, and different results are reported from different studies—in part a reflection of different methods of measuring production. For example, Durbin et al. (1975) reported that primary production was highest during the winter-spring bloom as well as during the summer nanoplankton (tiniest plankton) blooms. Later, Durbin and Durbin (1981) found that compared to summertime values, production was relatively low even during the winter-spring bloom due to the effects of low temperatures (Durbin and Durbin, 1981). More recently, Oviatt et al. (2002) found that production was generally highest during the summer but differences in timing were apparent depending on location within the Bay. A review of all available data at the time, however, concluded that production is generally highest during mid- to late summer, while lowest production values occur from November through January and are approximately an order of magnitude lower than summer values (Hinga et al., 1989).

Narragansett Bay National Estuarine Research Reserve. 2009. *An Ecological Profi le of the Narragansett Bay National Estuarine Research Reserve.* K.B. Raposa and M.L. Schwartz (eds.), Rhode Island Sea Grant, Narragansett, R.I. 176pp, at 110. This review indicates that conditions are critical in mid- to late summer; this is also the period of time when wastewater treatment plant discharges are most significant because of lower freshwater flows.

EPA acknowledges that the Taunton WWTP is not currently capable of meeting the permit limit and that a substantial upgrade will be required. EPA is not clear on the intent of the statement that "EPA must not build in some contingency should Taunton need to ratchet the concentrations down even more," or what sort of contingency the commenter believes should not be built in. In any case, EPA has imposed a permit limit that it has determined, based on the best available information, will ensure that the Taunton WWTP discharges do not cause or contribute to nutrient-related water quality impairments. As noted above there is a need for ongoing water quality monitoring to determine the response of the Taunton River Estuary and Mount Hope Bay, and that given the complexity of the system there is potential for changes in the understanding of the correct TN concentration or loading thresholds for this system that may ultimately effect the permit limit. Given the lengthy time frame required to implement upgrades and assess responses EPA expects that any such changes may be incorporated upon reissuance of the permit on the usual five year cycle. However, the 3 mg/l is not a "target" but an enforceable permit limit. It is not a "moving target" but is in effect until reissuance of this permit.

Comment K3. Why, in 2006, did the city go and drill holes in all its manhole covers? Was there any action taken by regulators for this step backward to a mini-combined sewer state? It is interesting that the max flow was in 2005 which was before the manhole drilling.

Response K3. The City did not drill holes in manhole covers in 2006. The commenter appears to have misunderstood the Fact Sheet statement: "**As of 2006**, at least 300 manhole covers in the system had holes drilled in them so that they act as catch basins during storm events . . .." This statement presents the number of such manhole covers existing in the system as of the year 2006; the actual drilling of holes occurred prior to that time. The current number is smaller than 300 due to the City's ongoing I/I remediation work.

Other Changes to the Final Permit

The Final Permit revises the Monitoring and Reporting requirements to reflect the fact that the Taunton WWTP is already using NetDMR for filing of its DMRs and to clarify the requirements for submittal of hard copies of DMR attachments and other reports and notices. Also in the Monitoring and Reporting section (Section I.G.), EPA has become aware that the requirement to submit reports as electronic attachments to DMRs using NetDMR has created confusion as to report due dates, as report due dates generally differ from the DMR due date (the 15th of each month) and NetDMR does not allow submission of a report without a concurrently submitted DMR. Therefore, to assist in electronic reporting, EPA has added language to the Final Permit (Section I.G.1.a) stating that such reports shall be considered timely so long as they are electronically submitted with the next DMR submitted by the permittee no later than the next DMR due date following the permit report deadline.

The MassDEP website at which the sanitary sewer overflow (SSO) reporting form and instructions are found has changed. The final permit now lists the correct website location.

The final permit clarifies the whole effluent toxicity testing requirements and incorporates the most current test protocols. The draft permit had inadvertently included two separate acute testing requirements.

EXHIBIT D
AR A2

Attachment 1.C Calculation of Allowable Total Nitrogen Load/Concentration Using June-August 2004-2006 Data

Corrected by EPA to use 2004-06 loads; original used 2004-06 flows but 2004-05 loads

I. DATA

Taunton River Flow at Bridgewater Gauge (CFS)	Estimated Taunton River Flow at Mouth (CFS)	Three Mile River Flow at North Dighton Gauge (CFS)	Three Mile River Flow at Mouth (CFS)	Segreganset River Flow at Dighton Gauge (CFS)	Segreganset River Flow at Mouth (CFS)	Assonet River based on Segreganset (CFS)	QuequechanRiver based on Segreganset (CFS)	Total Fresh Water Flow (CFS)
417.3	655.5	129.6	131.1	14.9	20.9	30.8	42.9	881.3

II. Calculations

Salinity	18.7	ppt	(from 2007 SMAST report)	
Ocean Flow	1458.4	CFS		
Target N Conc.	0.45	mg/l		
Target N Load	5672.4	lb/day		
N Conc. At Sea Boundary.	0.28	mg/l		
Ocean N Load	2200.0	lb/day		
Allowable Load from Watershed Sources	3472.3	lb/day		
Actual Load from Watershed Sources	4,228	lb/day	(EPA)	5,919 lb/d if 2006 loads are included
Required Load Reduction	755.7	lb/day		2,447 lb/d required load reduction
Required Percent Reduction	17.9	percent		41.3% required reduction
Non Point Source Load	1428.0	lb/day	(EPA)	3,119 lb/d NPS [= 5,919 lb/d – 2,800 lb/d WWTP load from Fact Sheet]
Assumed reduction from non-point sources	20	percent		[results in 2,495 lb/d NPS load in allowable total load]
Available load for Wastewater Discharges	2329.9	lb/day		977 lb/d available for WWTP discharges
Uniform N Concentration	8.8	mg/l		3.58 mg/l if uniform N limit for all WWTPs

Note: Calculated Value