**RESPONSE TO COMMENTS**
**NPDES PERMIT NO. NH0100790**
**KEENE WASTEWATER TREATMENT PLANT**
**KEENE, NEW HAMPSHIRE**

The U.S. Environmental Protection Agency's New England Region (EPA) and the New Hampshire Department of Environmental Services (NHDES) are issuing a Final National Pollutant Discharge Elimination System (NPDES) Permit for the Keene Wastewater Treatment Plant (WWTP) located in Keene, New Hampshire. This permit is being issued under the Federal Clean Water Act (CWA), 33 U.S.C., §§ 1251 et. seq.

In accordance with the provisions of 40 C.F.R. §124.17, this document presents EPA's responses to comments received on the Draft NPDES Permit # NH0100790 ("Draft Permit"). The Response to Comments explains and supports EPA's determinations that form the basis of the Final Permit. From May 20, 2020 through July 20, 2020, EPA solicited public comments on the Draft Permit.

EPA received comments from the City of Keene, the Connecticut Department of Energy and Environmental Protection (CTDEEP) and the Ashuelot River Local Advisory Committee (ARLAC) during the comment period.

Although EPA's knowledge of the facility has benefited from the various comments and additional information submitted, the information and arguments presented did not raise any substantial new questions concerning the permit that warranted the agencies exercising the discretion to reopen the public comment period. EPA does, however, make certain clarifications and revisions in response to comments. These improvements and changes are explained in this document and reflected in the Final Permit. A summary of the changes made in the Final Permit is provided below. The analyses underlying these changes are contained in the responses to individual comments that follow.

A copy of the Final Permit and this response to comments document will be posted on the EPA Region 1 web site: http://www.epa.gov/region1/npdes/permits_listing_nh.html.

A copy of the Final Permit may be also obtained by writing or calling George Papadopoulos, USEPA, 5 Post Office Square, Suite 100 (Mail Code: 06-1), Boston, MA 02109-3912; Telephone: (617) 918-1579; Email papadopoulos.george@epa.gov.

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Appendix B - Springfield, Massachusetts NPDES Permit comment letters

## I. Summary of Changes to the Final Permit

1. The final permit limit for aluminum has been revised from 108 to 109 ug/L. See Response 9.

2. Part I.G.4 of the Final Permit regarding phosphorus monitoring, has changed the term "biannually" to "once every two years". This monitoring is required once every two years, but the draft permit had mistakenly called this frequency "biannually," which is defined as twice per year. In addition, the requirement for State approval of this sampling plan has been eliminated upon request by the NHDES.

3. The Final Permit limits for total copper have been revised to a monthly average of 6.2 ug/L and a daily maximum of 8.2 ug/L. See Response 14.

4. The Final Permit has changed the Industrial Pretreatment Program (IPP) Annual Report due date from November 1st to December 1st. See Response 25.

5. EPA has modified the language in Part I.G.3.b to require tracking of nitrogen loading amounts based on all available data from the previous calendar year and the previous five calendar years. See Response 33.

6. The required beginning date for the electronic submittal of Industrial User and pretreatment related reports in Parts I.H.3 and I.H.6 of the Final Permit has been changed from 2020 to 2025 due to a change in federal regulations.

## II. Specific Comments and Responses

Comments are reproduced below as received; they have not been edited.

In addition to the specific responses below, please refer to the General Response in Appendix A.

### A. Comments from Elizabeth A. Dragon, City Manager for Keene, NH, by email on July 17, 2020.

**Comment 1**

Limitations Unsupported by Federal or State Law Are Impermissible because they are Arbitrary and Capricious

Rolling Annual Average Total Nitrogen and Special Condition I.G.3

The proposed Rolling Average Total Nitrogen limitation and Special Condition I.G.3 in the Draft Permit are not based on water quality standards, or site-specific data. The conclusion that a uniform 10 mg/L Total Nitrogen concentration for Keene and other NH permittees in the Connecticut, Housatonic, and Thames rivers watersheds is not based on sound and peer-reviewed science**.**

The assessment of a design flow-based Total Nitrogen concentration for NH WWTFs within the LISW is not linked to any study, research, or available data. The 10 mg/L concentration imposed upon Keene in the writing of their Draft Permit does not indicate how their discharge is similar or differs from that of the other five (5) WWTFs with design flows between 1.5 mgd and 6 mgd, how each specific discharge location and characteristics within the LISW. There is no published data indicating a specific Total Nitrogen concentration manifests itself into a particular outcome of benefit to the LISW. In short, there is no rationale for the imposition of this limitation**.**

EPA's inclusion of total nitrogen rolling annual average mass-based loading limits does not adhere to any of the available methods for establishing effluent limits. Though EPA acknowledges that the Total Maximum Daily Load (TMDL) target of a 25% reduction from 1998 baseline loading is currently being met – and that the overall loading from WWTF discharges in to the Connecticut River is actually 15% below the TMDL Waste Load Allocation (WLA) – EPA expresses concern that future hypothetical growth of cities and towns in NH may reverse the current reductions. Moreover, though Waste Load Allocations resulted in these reductions, EPA posits that these are not enough, in and of themselves, to protect the waters of the Connecticut River (as they have continually done) if cities and towns grow. Despite EPA's stated goal, the EPA must still comply with the requirements for setting effluent limits as required in 40 CFR § 122.44(d)(vi). This provision requires effluent limits to be established using: (1) the use of a calculated numeric water quality criterion, which is derived using a proposed state criterion or an explicit state policy or regulation interpreting its narrative water quality criterion; (2) using EPA's water quality criteria developed pursuant to Section 304(a) of the CWA on a case-by-case basis; or (3) an indicator parameter for the pollutant, provided certain requirements are met. EPA's proposed total nitrogen limit of 10 mg/L was developed using proposed future population growth as a critical criterion; this is not a listed basis for developing the effluent limitations, and therefore, is not a permitted approach under 40 CFR § 122.44(d)(vi).

Without such a foundation, these proposed permit limits are impermissibly arbitrary and capricious.

These issues are described in further detail below and therefore, Keene respectfully requests removal of the Rolling Average Total Nitrogen limit from the Final Permit.

**Response 1**

EPA observes that the comments overlap with technical and legal objections made by the Springfield (Massachusetts) Water and Sewer Commission in connection with its recent NPDES permit reissuance and appeal. These issues were resolved in EPA's favor by the Environmental Appeals Board in a 93-page decision. For purposes of efficiency, EPA

incorporates the following documents, which are responsive to the commenter's objections, into this response to comments:

> Response to Comments, Springfield Water and Sewer Commission, Springfield Regional Wastewater Treatment Facility, NPDES Permit No. MA0101613, September 30, 2020
>
> https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Attachments%20By%20ParentFilingId/F521C32ECFA926278525863E00715EBB/$FILE/EX_S%20Response%20to%20Comments.pdf
>
> Response to the Petition for Review, Springfield Water and Sewer Commission, Springfield Regional Wastewater Treatment Facility, NPDES Permit No. MA0101613, NPDES Appeal No. 20-07, December 11, 2020.
>
> https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Filings%20By%20Appeal%20Number/11443A888232A1C88525863B006D4491?OpenDocument
>
> *In re Springfield Water and Sewer Commission*, 18 E.A.D. 430 (EAB 2021).
>
> https://yosemite.epa.gov/OA/EAB_WEB_Docket.nsf/Filings%20By%20Appeal%20Number/61585EEC1C328394852586E20073D0FD/$File/Springfield%20Water%20&%20Sewer%20Commission.pdf

EPA disagrees with the commenter's assertions that there is no basis for the nitrogen limit. As discussed in section II.E of the General Response provided in Appendix A, EPA calculated the nitrogen limit in accordance with 40 C.F.R. § 122.44(d)(1)(vi)(A) (translation of narrative WQS into numeric effluent limitation),[1] 40 C.F.R. § 122.44(d)(1)(vii)(A)-(B)(requiring compliance with WQS and consistency with assumptions and requirements of an available for WLA), and Connecticut antidegradation requirements. *See* 40 C.F.R. § 122.44(d)(4), (5). EPA disagrees with the commenter's unsubstantiated assertion that EPA lacks "stud[ies], research, and [] data" to support the nitrogen limit. Please refer to the General Response, including Section III.E.

**Comment 2**

Total Nitrogen Numerical Limit is not based on Water Quality Standards

The Draft Permit indicates that the TMDL and associated WLA related to the Long Island Sound watershed (LISW) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL. However, the data provided in the Draft Permit indicates that the 25% reduction is "currently being met", with overall discharges from MA, NH, and VT WWTFs being 11% below the WLA.

[1] EPA assumes that this is the section commenter intended to cite (rather than "40 CFR § 122.44(d)(vi)".)

EPA utilized a 10 mg/L Total Nitrogen concentration to implement a Rolling Average Total Nitrogen mass-based limit in the Draft Permit based solely on its receipt of LISW stakeholder input expressing concern regarding theoretical, possible future loading increases. [*FN:* The documents cited in footnote 13 on page 26 of the Fact Sheet: Connecticut Department of Energy and Environmental Protection letters to EPA dated February 7, 2018 and April 27, 2018; Connecticut Fund for the Environment letter to EPA dated February 7, 2018; and Connecticut River Conservancy letter to EPA dated February 18, 2018 are not readily available for review by Keene. The propriety of reliance on these letters in developing the total nitrogen rolling annual average mass-based loading limits in the Draft Permit cannot properly be commented upon without provision of full and accurate copies of each.] EPA further indicates its intent to apply these limitations to all permittees within the above watersheds based on the design flow of the respective WWTFs.

This approach does not meet the standard set forth in 40 CFR § 122.44(d)(vi)(A) which specifies that effluent limits are to be established "using a calculated numeric water quality criterion for the pollutant". Thus, in order to properly impose a Total Nitrogen effluent limit, EPA must first establish a numeric WQS criterion. The 10 mg/L Total Nitrogen concentration included in the Draft Permit for the assessment of the Rolling Average Total Nitrogen limitation, and Special Condition I.G.3.a., are thus not founded on a proper basis. Permit effluent limits should be imposed to be protective of receiving water conditions with consideration for water quality characteristics in establishing criteria, not based on performance of permittee discharge. There has been no implementation plan developed based on the TMDL to allocate each discharger a portion of the allowable Total Nitrogen load, and therefore attempting to develop a WLA through individual permits is inappropriate.

**Response 2**

EPA extensively detailed its derivation of the permit limit for TN, including through the use of a calculated numeric criterion demonstrated to achieve designated uses under 40 C.F.R. § 122.44(d)(1)(vi)(A), in the General Response. *See, e.g.*, Section II. E. Upon an evaluation of years of ambient monitoring data and other relevant technical and scientific information, EPA has determined that the nitrogen load is exceeding the assimilative capacity of LIS and is causing or contributing, or has the reasonable potential to cause or contribute, to pervasive nutrient-related impairments and violations of water quality standards. EPA's conclusions are based on the weight of the evidence and draw on multiple lines of evidence. Although this is a simplified approach that does not attempt to quantify individual subprocesses involved in eutrophication, or to demonstrate cause and effect between each link in the eutrophic cycle, it is entirely appropriate for use in the context of NPDES permitting when assessing large scale nutrient load reductions over relatively long averaging periods. Capping the load based on historical plant performance is a reasonable approach and one that makes sense given one of the principal rationales underlying the limit—that is, antidegradation, which turns on new or increased discharges of pollutant, whether or not that discharge has been authorized under an NPDES permit.

While there will always be an irreducible amount of uncertainty given the varied sources of nitrogen loading into Long Island Sound and the size and complexity of that waterbody, EPA is nevertheless obligated to exercise its scientific expertise and apply its

technical judgment based on the information it has at the time of permit reissuance, which under the Act is called for at regular intervals not to exceed five years. *See Upper Blackstone Water Pollution Abatement Dist. v. U.S. Envtl. Prot. Agency*, 690 F.3d 9 (1st Cir. 2012), cert. denied, 133 S. Ct. 2382 (2013) ("[N]either the CWA nor EPA regulations permit the EPA to delay issuance of a new permit indefinitely until better science can be developed, even where there is some uncertainty in the existing data."); *Ethyl Corp. v. EPA*, 541 F.2d 1, 28 (D.C.Cir.1976) (en banc) ("[R]ecognizing ... the developing nature of [the field].... [t]he [EPA] Administrator may apply his expertise to draw conclusions from suspected, but not completely substantiated, relationships between facts, from trends among facts, from theoretical projections from imperfect data, from probative preliminary data not yet certifiable as 'fact,' and the like."). But here, once again, what remains clear on the record before EPA is the fact that large amounts of nitrogen contribute to water quality impairments throughout the LIS. *Miami–Dade County v. EPA*, 529 F.3d 1049, 1065 (11th Cir.2008) (holding that the "EPA is compelled to exercise its judgment in the face of scientific uncertainty unless that uncertainty is so profound that it precludes any reasoned judgment"). In light of this fact and applicable case law construing the Act, EPA is more than justified to proceed with the imposition of reasonable permit effluent limits, designed to cap the aggregate out-of-basin load, for dischargers contributing to severe ongoing water quality impairments. While the commenter might prefer that EPA follow a different analytical process than it did, or consider or rely on other sources of information, nothing in the CWA, its implementing regulations, or Board precedent requires EPA to conduct the type of modeling, planning or cause-and effect analysis that the commenters state or imply is lacking in order to determine the existence of a reasonable potential and to impose a necessary limit under 40 CFR § 122.44(d). *See In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 599, 601 (EAB 2010), aff'd. 690 F.3d 9 (1st Cir. 2012), cert. denied, 133 S. Ct. 2382 (2013).

The letters referenced by the commenter were available upon request during the public notice period, as described in the Fact Sheet (Section 8), the Public Notice and the Public Notice Extension. EPA received no such requests from commenter. The letters are attached hereto as Appendix B for your reference.

Please also refer to the General Response.

**Comment 3**

Total Nitrogen Numerical Limit is not based on Site-Specific Data

EPA determined that permittees in the LISW which experience population growth or new industrial discharges shall be subject to the 10 mg/L Total Nitrogen concentration. EPA further specifies in the Draft Permit that any WWTF within the LISW that has a design flow equal to or greater than 1.5 mgd and up to 6 mgd is subject to the 10 mg/L Total Nitrogen concentration. However, the Draft Permit contains no information linking design flow to either increased population or new industrial discharges in Keene.

Imposition of effluent limitations without site specific supporting data is impermissibly arbitrary and capricious. Further, Keene's data does not support EPA's underlying assumptions as described below:

- Assumption: only communities served by larger WWTFs can experience population growth or be the site of new industrial dischargers.

Response: There is no indication that this is accurate. Such projections are the result of numerous, individual demographic decisions and long-term societal shifts. These types of projections are further complicated by the availability of developable and redevelopable property in many communities in the region, including many not served by any centralized wastewater infrastructure. This is borne out by data derived from the U.S Census Bureau, Population Division which indicates that from 2010 to 2019, Keene's population dropped from 23,515 to 22,786.

- Assumption: Permittees and associated WWTFs that experience an increase in industrial dischargers will result in increased nitrogen loadings.

Response: A number of industrial users in Keene and elsewhere across the U.S. do not discharge greater concentrations of various forms of nitrogen. There is no documentation indicating that the mere presence of industrial users translates to increased nitrogen loading. In fact, the data indicates that increased residential and CSO discharge are more likely to increase nitrogen loading. The City is aware that the main contributors to the collection system are residential, with a total of 98% of users as residential. Further, data shows that the number of industrial users classified in the City have not greatly increased from 2015 to 2020. This period of societal disruption and comprehensive state-wide executive orders due to the COVID-19 pandemic can also be expected to negatively impact the number of industrial users. It is anticipated that there will be no increase in industrial users at this time due to the implications of this pandemic. The implications have already led to the discontinuation of one of the largest industrial users in Keene, and Keene State College has temporarily closed normal operations and seasonal activities.

- Assumption: The Draft Permit optimization requirements for nitrogen removal are insufficient to address increased nitrogen load from industrial dischargers to the WWTF.

Response: The Draft Permit requires documentation of nitrogen removal optimization efficiencies per Special Condition I.G.3.b. The annual report required under this condition documents actual nitrogen loadings to the WWTF and Total Nitrogen discharged from the WWTF. Keene implements an Industrial Pretreatment Program which requires industrial dischargers to obtain authorization for discharge to the WWTF. Significant Industrial Users from 2015 to 2020 have increased by one.

- Assumption: Increased nitrogen loadings to a specific WWTF will cause an exceedance of the 25% reduction required by the WLA.

Response: There is no evidence that an increased WWTF Total Nitrogen load will cause an exceedance of the LISW WLA. Facilities are designed to remove pollutant loadings to reach enforced criteria. The Draft Permit and the 2007 Permit outline requirements specific to industrial users to monitor the loadings received at the WWTF, of which the type of treatment can remove. Quantifying the relationship between influent loadings and removal success is specific to each permittee's type of treatment methods and should not be based on assumptions.

**Response 3**

EPA disagrees with the commenter's characterization of the assumptions made in setting effluent limits for total nitrogen for out-of-basin dischargers. A more detailed discussion of the approach used is provided in the General Response in Appendix A, particularly section I.

EPA also disagrees that it must project the impacts on LIS from each individual discharger prior to imposing a limit under Section 301 of the Act. Rather, EPA may address pollutant impacts on broader scales, such as watershed or basin level, in order to carry out the objectives of the Act, including achievement of WQS of downstream affected states.

EPA used site-specific data and information, including the size and location of facilities, from facilities throughout the LIS watershed when determining the need for a limit. For example, Appendix C of the Fact Sheet listed an average nitrogen loading value for each facility for the period of 2014-2018. The values for some facilities were estimated based on the average nitrogen concentration and flow from other years, or if no data were available for any other years, the assumed concentration of 19.6 mg/L. For Keene, there was no data available for previous years (as the 2007 permit did not include a nitrogen monitoring requirement) so the assumed concentration of 19.6 mg/L was used. This figure was based on data from 2004 and 2005 for secondary treatment facilities in Massachusetts that did not have nitrification requirements.

EPA does not assume that only communities served by larger WWTFs can experience population growth or accommodate new industrial dischargers. As described in the General Response, the imposition of numerical limits in the nitrogen permitting approach focuses on larger WWTFs because they represent the majority of nitrogen loading to the LISW. Also, as explained in the General Response, larger facilities are better able to spread the cost of any required upgrade over a larger user base. Although some industrial users (IUs) have temporarily or permanently suspended operations and associated discharges, there is a likelihood that these IUs could resume operations during this permit term, once COVID restrictions have been lifted. The commenter's doubt that nitrogen discharges from the Keene WWTP will cause an exceedance of the WLA and the commenter's implied assertion that the permit's optimization requirements are sufficient to address nitrogen loading are addressed in the General Response.

The commenter implies that the total nitrogen effluent limit for Keene is 10 mg/L. It is not. The effluent limit is 501 lb/day expressed as a rolling annual average. At current

annual average effluent flows of 2.4 to 3.4 MGD[2], this is equivalent to an annual average concentration limit of 18 to 25 mg/L.

The tiers in New Hampshire progress from monitoring only, to optimization, to a limit based on 10 mg/L and, finally, to a limit based on 8 mg/L. These tiers were listed in the Fact Sheet and are shown below:

**Annual Average Total Nitrogen Limits for New Hampshire WWTP Dischargers to the Long Island Sound Watershed**

| **Facility Design Flow, $Q_D$ (MGD)** | **Number of Facilities** | **Annual Average TN Limit (lb/day)** |
|---|---|---|
| $Q_D > 6$ | 0 | $Q_D$ (MGD) * 8 mg/L * 8.34 + optimize |
| $1.5 \leq Q_D \leq 6$ | 5 | $Q_D$ (MGD) * 10 mg/L * 8.34 + optimize |
| $0.1 \leq Q_D < 1.5$ | 14 | Optimize |
| $Q_D < 0.1$ | 6 | TN monitoring only |

The design flows for the New Hampshire facilities compared to the Massachusetts facilities are slightly higher for the upper tiers (i.e., 1.5 vs 1 MGD and 6 vs 5 MGD). These differences are based on a number of factors, including the fact that the New Hampshire dischargers are further from Long Island Sound than the Massachusetts dischargers, resulting in more attenuation, on average. By evaluating delivered load (instead of discharged load), the differences in attenuation were accounted for in the TMDL, and EPA also considered these differences in the overall permitting approach. The LIS TMDL did not assign individual WLAs for each of the out-of-basin POTWs, but instead assumed that the out-of-basin load would be reduced from the baseline, through the imposition of NPDES permit limits. Allocating the load among facilities is therefore necessary and basing those allocations on factors related to water quality and the circumstances of the individual facilities (such as a size) is a reasonable exercise of discretion. Regarding Keene specifically, EPA notes that this is the largest discharger in New Hampshire to the Long Island Sound and, as the comment notes, discharges to a tributary of the Connecticut River (i.e., not to the mainstem of the Connecticut River). As noted in the Keene Fact Sheet, the 7Q10 upstream of the facility is only 11.7 cfs, indicating that attenuation is more likely to occur immediately downstream of Keene's discharge than in much larger receiving waters. For these reasons and those presented in Appendix A, EPA has determined that it is appropriate to apply limits in the manner presented in the tiers above.

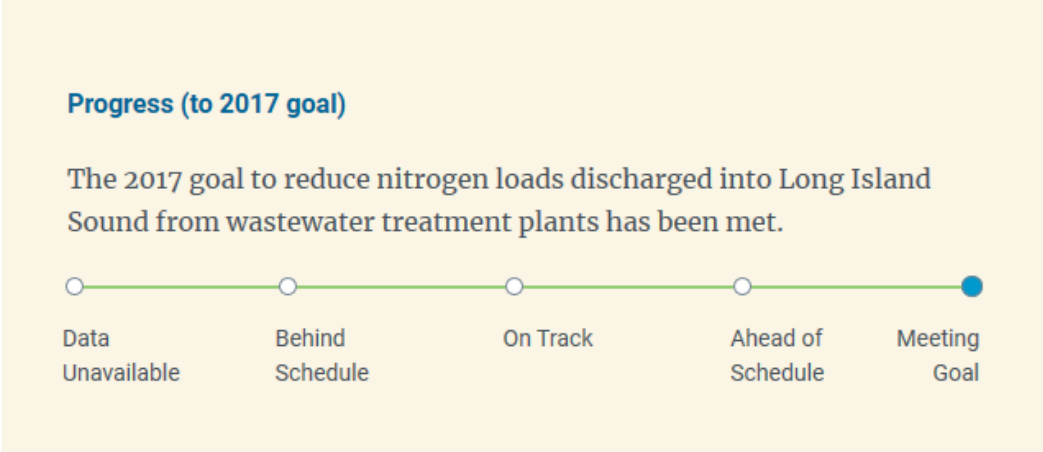
**Comment 4**

The Rolling Annual Average of Total Nitrogen limitation does not utilize sound and peer-reviewed science in the application of a WWTF design flow threshold 10 mg/L. Total Nitrogen concentration to this and other NH permittees within the LISW.

[2] Range of annual average flow for 2013 to 2019.

Table 3 of the Fact Sheet of the Draft Permit presents the methodology used to assess Annual Average Total Nitrogen limitations for NH WWTFs in the LISW. This methodology appears without science-based support. Specifically:

- There is no background data provided within the Draft Permit indicating why a Total Nitrogen concentration was selected or why a specific concentration or alternate optimization or monitor-only requirement is imposed.
- There is no indication that a specific Total Nitrogen concentration will provide a specific outcome to the LISW. The LISW TMDL and associated WLA do not indicate that such numeric Total Nitrogen concentrations from NH WWTFs are required, nor that the baseline loadings and associated 25% aggregate reduction is impacted by this numerical permit limitation.
- There is no WLA provision stating that further reductions in Total Nitrogen loadings are required at present.
- A review of available Long Island Sound Study (LISS) documents does not identify additional requirements or recommendations for numeric Total Nitrogen limitations to be imposed upon NH point source discharges. In fact, LISS published material indicates that the 2017 goal to reduce nitrogen loads into LISW from WWTFs has been met. (Graphic source: https://longislandsoundstudy.net/ecosystem-target-indicators/nitrogen-loading/)




Subsequent goals are focused on nonpoint sources and are therefore irrelevant to Keene's Draft Permit.

The Rolling Average methodology is an average of averages, which does not account for the variability from month to month, the number of weeks per month, and actual flow on a sample day versus other non-sampling days. All of this causes inaccuracies.

**Response 4**

The General Response in Appendix A describes the necessity of the nitrogen limit and EPA's process for calculating it, as well as issues relating to cause and effect, which is not a demonstration that EPA needs to make prior to imposing a protective effluent limitation.

Although EPA typically establishes monthly average limitations in NPDES Permits, the alternative 12-month rolling average loading limit that was established for total nitrogen in this Permit specifically accounts for variability from month to month. Whereas there could be individual monthly average values over a 12 month period that exceed the nitrogen loading limit, expressing the limit as a 12 month rolling average would allow for outlying months to be smoothed out by other months, thereby accounting for month to month variability. The effluent limit is a rolling average of the TN discharged for the reporting month (in lb/day) and the monthly average for TN discharged (also in lb/day) of the previous 11 months.

**Comment 5**

Special Condition I.G.3 requirements are Unsupported by the CWA

The one year requirement to conduct "an evaluation of alternative methods of operating the existing waste water treatment facility to optimize the removal of nitrogen in order to minimize the annual average discharge of total nitrogen and submit a report to EPA and NHDES documenting this evaluation and presenting a description of recommended operational changes" is not consistent with the goals of the CWA. It is also unclear by whom and to whom the recommendations are to be made, and what subsequent actions are expected in response to the recommendations.

As previously indicated, the basis of the Rolling Average Total Nitrogen limitation is arbitrary, and the further mandate to evaluate how to "minimize" the annual average mass discharge of total nitrogen is highly subjective. This condition is open to broad interpretation and therefore represents real financial risk to Keene and its users.

Given there is no WQS rationale for further reductions in nitrogen discharge loadings, the requirement for this evaluation, and more specifically the requirement to provide "recommendations", Keene respectfully requests Special Condition G.3. be removed in its entirety from the Final Permit.

**Response 5**

See Section III.C of the General Response in Appendix A for a description of EPA's authority to impose the optimization requirement and further clarification of EPA's intent for the requirement

As for the commenter's assertion that the Special Condition is "unclear" and "open to broad interpretation," EPA disagrees that the optimization requirement is vague. Optimization has been defined, for example, as the process of identifying the most efficient or highest quality outcome, given current constraints, by maximizing positive factors and minimizing negative factors. A permittee applying this or other definition in common usage would not be at risk of arbitrary enforcement. Rather, this condition gives a person of ordinary intelligence a reasonable opportunity to know what is prohibited and comply with the requirement by considering objective factors, so that they may act

accordingly. The operators of the facility, as evidenced by their comments, have a deep and nuanced expertise in nutrient removal capabilities and constraints of the plant, and of the factors that impact plant performance.

Additionally, permit Section I.G.3.a indicates that "[t]he methods to be evaluated shall include, but are not limited to, operational changes designed to enhance nitrification (seasonal and year-round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management." The Environmental Appeals Board recently held that a list of similar "discrete physical and operational activities are plain and clear in and of themselves," "quite specific", and – directly relevant to the Commenter's assertions here – not impermissibly vague. *See In re Springfield Water and Sewer Commission,* 18 E.A.D. 430 (EAB 2021) at 476-479. *See also Springfield,* EPA Region 1's Response to the Petition for Review, at 36-37; *see also Springfield,* Response to Comments, at 31-32.

The optimization requirement functions in tandem with the nitrogen WQBEL to ensure compliance with all applicable legal requirements. The WQBELs developed as part of the LIS Out-of-Basin Total Nitrogen Permitting Approach ensure that discharges from all out-of-basin dischargers, in the aggregate, do not violate the TMDL. Each permit's optimization requirement, in contrast, ensures that individual facilities take reasonable steps to minimize their nitrogen discharge levels to the benefit of LIS, which is above its assimilative capacity for nitrogen and is exhibiting signs of severe cultural eutrophication. In other words, although the nitrogen WQBEL and the nitrogen optimization requirement serve similar objectives, they are ultimately distinct, independent requirements. The permittee must achieve the WQBEL **and** comply with the permit's optimization requirements.

**Comment 6**

Reporting Requirements is Inappropriate for a WWTF in New England

Nitrogen removal during cold weather months is well understood to be a challenge. Operational modes vary greatly from summer months to winter months. All reporting requirements associated with all nitrogen effluent characteristics, with the exception of Rolling Average Total Nitrogen, which is addressed elsewhere in this section, and Ammonia Nitrogen as N, are respectfully requested to be modified to "Report Only" seasonal rolling averages bracketed for the periods May 1 through October 31 and November 1 through April 30.

**Response 6**

This factor was considered in the establishing of an annual average loading limit for nitrogen, which would allow for changing operational conditions between cold and warm weather months. Year-round data is necessary to project nitrogen loading levels. Therefore, EPA is denying the Permittee's request to change to a "Monitor Only" requirement for any effluent nitrogen characteristics.

See also Response 4.

**Comment 7**

Winter Ammonia Chronic Effluent Limit

The Draft Permit proposes a winter ammonia effluent limit of 9.9 mg/L, based on the criteria calculated using an assumed pH of 6.5 for both winter and summer, as well as a winter temperature of 5°C and a summer temperature of 25°C. The assumed pH of 6.5 represents the median value of the effluent monitoring data reported in Appendix A of the Draft Permit. pH has an indirect relationship with chronic ammonia based on the NHDES 2016 criteria calculation; a lower pH yields a higher ammonia criteria value. The development of criteria for each constituent, based on state and federal approved standards, should consider the receiving water characteristics in order to fully evaluate the amount of a specific parameter that the receiving water can take and maintain protective of the environment and its existing conditions. The assumed pH based on the effluent of the discharge fails to account for the receiving water conditions.

Keene collected ambient pH data in the receiving water upstream of the discharge in 2018 and is included as part of Appendix B of this report. The following table represents the median of the summer and winter months; this was a substantial commitment that resulted in a robust dataset, as indicated by the number of samples collected.

**Table 1.1 Upstream pH Data from 2018 Sampling**

| Months | Number of Samples | Median pH (S.U.) |
|---|---|---|
| Summer (June 1- Oct. 31) | 73 | 6.0 |
| Winter (Nov. 1- May 31) | 63 | 5.8 |

In addition to the data collected by the City, other Ashuelot River data is available as part of the Volunteer River Assessment Program (VRAP). The intention of this program, as referenced in the 2007 VRAP report, is ***"to assist NHDES in evaluating water quality throughout the state"***. NHDES provides reports and available data collected through VRAP for public viewing. The samples collected as part of VRAP are collected in the summer months (June 1- October 31). The annual reports published between 2007 and 2010 utilize collected data which is interpreted as they relate to the surface WQS; available data is also collected by VRAP and published through NHDES for the years 2011 through 2019. Sampling station locations are arranged by VRAP staff annually. In 2007, data was collected at a total of 13 sampling stations in the Ashuelot River Watershed.

The data presented in Table 1.1 was collected upstream of Keene's discharge at the Martell Court Bridge. Based on the description of VRAP sampling locations identified on the NHDES website, VRAP's sampling station 17-ASH is located at the Martell Court, similar to the location of Keene's 2018 data collection. However, there is no available data in the past 10 years collected at 17-ASH. Therefore, the data collected at sampling station 18-ASH, located at Route 101, was analyzed. A comprehensive review of the data collected through VRAP may be found in Table 3.1 of Section 3.0. Data collected over the past 5 years at sampling station 18-ASH may

be found below in Table 1.2. The data collected as part of VRAP confirm the low pH range values found as part of Keene's data collection.

| Table 1.2 VRAP Receiving Water pH Data at 18-ASH, 2015-2019 | | | |
|---|---|---|---|
| **Sampling Station** | **Year** | **Samples Collected** | **pH Data Range** |
| 18-ASH | 2019 | 5 | 5.94-6.15 |
| 18-ASH | 2018 | 5 | 5.97-6.35 |
| 18-ASH | 2017 | 5 | 5.08-5.99 |
| 18-ASH | 2016 | 5 | 6.30-6.57 |
| 18-ASH | 2015 | 4 | 6.36-6.68 |

Of the dataset shown in Table 1.2, 21 out of the 24 samples collected had a pH below the water quality standard of 6.5. There is a notable amount of variability in this dataset, likely due to the limited number of samples collected annually. Based on Keene's robust and comprehensive dataset throughout 2018, Keene is satisfied that the dataset presented in Table 1.1 most appropriately depicts receiving water conditions upstream of the discharge and therefore Keene evaluated the winter ammonia criteria based on the median of the pH values collected by the City.

Since the winter chronic ammonia was the only parameter determined to require a more stringent limit based on the new criteria calculated with 6.5 pH, the criteria was recalculated using a site-specific pH of 5.8 representing seasonal receiving water conditions. The calculation for chronic winter ammonia criteria may be found below:

$$\text{Criteria} = 0.8876 * \left[\left(\frac{0.0278}{1+10^{7.688-5.8}}\right)+\left(\frac{1.1994}{1+10^{5.8-7.688}}\right)\right] * \left[2.126 * 10^{0.028*(20-7)}\right]$$

The criteria for chronic winter ammonia using the above equation yields a value of 5.2 mg/L. If a new limit were to be calculated based on the revised criteria, the chronic winter ammonia limit would be 11.5 mg/L. The 2007 permit established a chronic winter ammonia effluent limit of 12 mg/L. Keene respectfully requests that EPA review the site-specific calculations and considerations depicted in Section 1.1.7 below and that the effluent limits be re-evaluated considering the seasonal receiving water pH data. [*FN*: The new information available to complete these calculations justifies this revised limit as does good cause. 40 CFR 122.44(l)(2)(i)(B)(1); *Great Basin Mine Watch v. State of Nevada*, No. 43943, 2006 WL 1668890, at *3 (Nev. Apr. 19, 2006).]

**Response 7**

EPA and NHDES do not believe it is appropriate to use an impaired pH value to calculate permit limits, because such a value does not represent compliance with State WQS. Therefore, the draft permit limit of 9.9 mg/L, which was calculated using a pH of 6.5 S.U., has been maintained in the Final Permit.[3]

**Comment 8**

Alternative Low Flow on Ammonia Limit Development

Section 2.0 of this report (Comment 9 below) outlines comments requesting the use of an alternative low flow in place of the 7Q10. The 7Q10 calculated for the facility and identified in the Fact Sheet of the Draft Permit is used to establish the reasonable potential for a constituent to cause or contribute to an exceedance of WQS, as well as to developing permit effluent limits for constituents. If the request for the use of an alternative low flow is granted through the Final Permit, Keene respectfully requests that the Reasonable Potential Analysis Table in Appendix B of the Draft Permit reflect this modification, and that the pollutant effluent limits be adjusted.

**Response 8**

As explained in Response 9 below, NHDES has not granted the Permittee's request to use an alternate low flow which would result in a larger dilution factor.

**Comment 9**

7Q10 low flow

The City has assessed EPA's approach to developing the 7Q10 upstream flow conditions used to establish the permit limits and has included the following comments.

Alternative Low Flow
The permit includes a calculation for $WWTF_{ACTUAL}$ of 4.22 cfs. The correct value, based on a 2.65 mgd value, is 4.10 cfs. The value of 4.10 cfs should be used for $WWTF_{ACTUAL}$ through-out the calculations. This is noted in full recognition that the change in value does not drastically change the resultant calculations.

State of NH law supports use of August median stream flows in lieu of 7Q10 calculations to establish nutrient discharge limits for aquatic life and human health criteria. NH RSA 485-A:8(II). The NH. Department of Environmental Services (NHDES) published a presentation by the NH Water Quality Standards Advisory Committee, dated October 11, 2018, entitled "Alternatives to 7Q10 for Nutrient Permitting." This presentation (which discusses total phosphorus) includes extensive discussion of appropriate alternatives to 7Q10 to establish nutrient discharge limits. For instance, Vermont uses the Summer low median monthly flow (generally August) for an index flow. NHDES concludes:

[3] EPA additionally notes that the regulation cited by the commenter, 40 C.F.R. § 122.44(l)(2)(i)(B)(1), does not apply. The applicable source of law is CWA § 402(o) [33 U.S.C. § 1342(o)]. In any event, a "new information" anti-backsliding exception is inappropriate here because of the issues described above.

August median flow may be appropriate for NH nutrient permitting because it:

- Is similar to VT and ME (and other states);
- Addresses duration concern with the 7Q10; and
- Flow is less than or equal to the August median flow ~17% of the year (62 days) and ~ 0.5% (2 days) for the 7Q10 flow. 62 days is sufficient time for a river to respond to nutrients."

https://www.des.nh.gov/organization/divisions/water/wmb/wqs/meetings/2018/documents/20181011-7q10-alternatives.pdf

Based on August data at for the Ashuelot River at West Swanzey, USGS gage 01160350 for the years 1994 through 2019, and USGS gage 01158000 for the Ashuelot River below the Surry Mt Dam August data for 1946 through 2019, the dilution factor calculations would be modified as follows:

Permit unadjusted downstream = 26.3 cfs.

August 1994-2019 mean of monthly discharge, USGS gage 01160350 downstream = 255 cfs

Permit unadjusted upstream = 2.65 cfs.

August 1946-2019 median flow, USGS gage 01158000 upstream = 56 cfs

$$Q_{DSG,adj} = Q_{DSG} + (0.28)(Q_{WWTF,actual}) - (Q_{WWTF,actual})$$

$$Q_{DSG,adj} = 255 + (0.28 * 4.10) - 4.10 = 252.02 \text{ cfs}$$

$$7Q10_{unadj} = ((Q_{DSG,adj} - Q_{USG})\left(\frac{Q_{D1}}{Q_{D2}}\right) + Q_{USG} = 166.57 \text{ cfs}$$

$$7Q10_{unadj} = ((252.05 - 56)\left(\frac{10.6}{18.8}\right) + 56 = 166.57 \text{ cfs}$$

$$7Q10_{final} = 7Q10_{unadj} - (0.28)(Q_{WWTF,design})$$

$$7Q10_{final} = 166.57 - (0.28)(9.28) = 163.97 \text{ cfs}$$

$$\text{Dilution Factor} = (0.9) * (Q_s + Q_{WWTF,design})/Q_{WWTF,design}$$

$$\text{Dilution Factor} = (0.9) * \frac{163.97 + 9.28}{9.28} = \mathbf{16.88}$$

There are significant impacts from this calculation; namely, all WQBEL will need to be revised as a result of this change in methodology. Keene respectfully requests approval of this modified Dilution Factor calculation and further asked that it be incorporated into the Final Permit, with

reasonable potential analyses and WQBEL modified and adjusted accordingly and in accordance with the CWA.

Further, Appendix B outlines the Reasonable Potential Analysis Table, which identifies permit effluent limits for pollutants if a reasonable potential is found to cause or contribute to an exceedance to WQS. The upstream 7Q10 flow listed in the Reasonable Potential Analysis Table is listed as 11.4 cfs. Keene respectfully requests that the Reasonable Potential Analysis Table in Appendix B be modified in the Final Permit to represent 11.7 cfs to remain consistent with the 7Q10 set forth in the Draft Permit.

**Response 9**

EPA disagrees that it is appropriate to use August median stream flows in lieu of 7Q10 calculations to establish nutrient discharge limits for aquatic life and human health criteria. The requirement to use the 7Q10 flow to calculate permit limits remains in NH's WQS and any revision to these WQS would have to be reviewed and approved by EPA prior to its implementation.

NHDES' Water Management Bureau (WMB) is working to develop a policy with flows other than 7Q10 and a phosphorus criterion other than 100 ug/L, as this instream concentration target would not be appropriate with the use of a higher flow, but that policy has not been finalized yet. Regarding the assertion that the State of NH supports the use of August median stream flows in lieu of 7Q10 calculations to establish nutrient discharge limits for aquatic life and human health criteria, NHDES's position is that this is not necessarily true. It would be more appropriate to replace the word "supports" with "allows" or "does not prohibit". RSA 485-A:8.II simply says, "The commissioner shall not calculate nutrient discharge limits for aquatic life and human health criteria based on 7Q10 flow or such other flow criteria more restrictive than 7Q10." It does not say that the August median flow "should" be used in calculating nutrient limits.

The 7Q10 calculation in the Fact Sheet used the cited $Q_{WWTF,actual}$, which represents the actual average flow for the Keene WWTF for the past 5 years. As noted in Section 5.1.1 of the Fact Sheet, the median flow value over the past 5 years was 2.65 MGD, which is equivalent to 4.1 cfs. Although the calculation for $Q_{DSG,adj}$, representing the adjusted 7Q10 flow at downstream Ashuelot River at West Swanzey Gage (01160350), should have used the flow value of 4.1 cfs for $Q_{WWTF,actual}$, it mistakenly used the value of 4.22 cfs. However, the calculated value of $Q_{DSG,adj}$ is 23.3 cfs using either of these values and therefore, the final 7Q10 value would also be the same, or 11.7 cfs. This is the corrected calculation:

$Q_{DSG,adj} = Q_{DSG} + (0.28)(Q_{WWTF,actual}) - Q_{WWTF,actual}$

$= 26.3 + (0.28)(4.1) - 4.1 =$ **23.3**

where

$Q_{DSG}$ = unadjusted 7Q10 flow at downstream USGS gage 01160350 = 26.3 cfs
$Q_{WWTF,actual}$ = the actual average flow for the Keene WWTF for the past 5 years = 4.22 cfs

NHDES' Water Management Bureau (WMB) is working to develop a policy with flows other than 7Q10 and a phosphorus criterion other than 100 ug/L, as this instream concentration target would not be appropriate with the use of a higher flow, but that policy has not been finalized yet.

Although the 7Q10 calculation in Section 4.3 of the Fact Sheet resulted in a 7Q10 flow of 11.7 cfs, EPA acknowledges that the incorrect 7Q10 value of 11.4 cfs was used in the reasonable potential analysis presented in Fact Sheet Appendix B. A prior calculation had resulted in a 7Q10 value of 11.4 cfs. However, the period of record for the Ashuelot River gage at West Swanzey (01160350) was expanded to include data from the period of 2/21/2019 – 12/20/2019, which were excluded from the original calculation. The revised calculation resulted in a slightly higher 7Q10 value of 11.7 cfs.

As a result of this correction, the monthly average limit for aluminum has been revised from 108 to 109 µg/L in the Final Permit. There were no other changes in effluent limits associated with the revised 7Q10 value.

**Comment 10**

pH range

The Draft Permit includes an effluent pH range of 6.5 - 8.0 S.U. Keene has been operating since 1997 with an additional chemical feed system that adjusts effluent pH to achieve compliance with the low-level 6.5 S.U. effluent limitation. The receiving water pH has consistently been measured to have a pH well below that of the effluent, based on data collected in the upstream receiving water. See Appendix B. The implications of the varying pH levels may be causing an adverse effect by producing a pH "curtain wall" in the vicinity of Outfall Serial Number 001. Due to the drastic changes in water conditions, migration routes of native fish may be adversely impacted. In addition, the injection of caustic soda to the discharge pipe from Secondary Clarifier #1 for pH adjustment requires additional operational efforts by WWTF staff and approximately $140,000 annually (in FY20 dollars) in additional operational costs to meet the pH range.

The Draft Permit states in Part I.I.5 (page. 22 of the Draft Permit) that a change to the pH Range may be implemented if either of the following two cases are applicable and can be demonstrated to NHDES that the range should be modified: (1) due to naturally occurring conditions in the receiving water or (2) the naturally occurring receiving water pH would not be significantly changed by the Permittee's discharge. To determine whether Keene's discharge affects the naturally occurring pH in the receiving water, the City would need to conduct a pH demonstration study. This would entail developing proposed study parameters and NHDES approval prior to the initiation of the project. Accordingly, Keene respectfully requests the Final Permit include language indicating that the development of a site-specific study to evaluate if either of the written conditions apply to the City's discharge is an accepted approach. If the study determines either of the conditions apply, it is further requested that the Final Permit language include confirmation that EPA shall accept the results of the study.

Keene has collected data simulating the results of an unadjusted pH to the effluent. In 2018, Keene collected and performed Whole Effluent Toxicity (WET) tests on an unadjusted Secondary Clarifier #2 in parallel and concurrent with their typical testing requirements. There were no violations or failures in toxicity evaluated under the unadjusted pH. Refer to Appendix C for these parallel WET test results. The pH values recorded in the WET testing are notably high given the unadjusted condition, however, still did not fail a toxicity test. The pH analysis of the unadjusted data was conducted at a contract lab and therefore exceeds the 15-minute hold time of the samples given the currier travel time. The process that the lab takes to conduct the WET testing for pH includes warming the sample to test temperature and aerating to bring the dissolved oxygen (DO) into equilibrium. The process of warming and aerating a sample has major effects to a sample's pH level. Therefore, this lab analysis is not a representative indication of the level of pH at the time of collection. Keene requests that the receiving water pH data collected during 2018, attached to this document as Appendix B and mentioned in the winter ammonia comment, be considered.

NHDES provides reports for public viewing on the data collected in the Ashuelot River Watershed as part of VRAP. The intention of this program, as referenced in the 2007 VRAP report is *"to assist NHDES in evaluating water quality throughout the state"*. The annual reports published between 2007 and 2010 utilize collected data which is interpreted as they relate to the surface WQS; available data is also collected by VRAP and published through NHDES for the years 2011 through 2019. Sampling station locations are arranged by VRAP staff annually. In 2007, data was collected at a total of 13 sampling stations in the Ashuelot River Watershed. These stations are located both upstream and downstream of the Keene WWTF discharge point. It is notable that the majority of pH samples collected are below the NH surface WQS. As stated in the 2007 VRAP report, *"lower pH measurements are likely the result of natural conditions such as the soils, geology, or the presence of wetlands in the area"*; further, the report stated, *"it is important to note that the New Hampshire water quality standard for pH is fairly conservative, thus pH levels slightly below the standard are not necessarily harmful to aquatic life."* These statements are repeated verbatim in the 2008, 2009 and 2010 reports.

Data collected over the past 5 years through this program are presented in Table 3.1. Available data over the past 5 years is based on characteristics at 15 sampling stations. Data collected at sampling stations 16D-ASH and 16A-ASH are representative of conditions 40 feet upstream of the Keene WWTF and at the mouth of the South Branch, downstream of the Keene WWTF. VRAP reports and data from 2007-2010 are included as part of Appendix D.

A review of the available data from 2011 through 2019 confirmed that the majority of the data has consistently been below the surface WQS. Moreover, as partially depicted in Table 3.1, the sampling stations upstream of the Keene WWTF have lower pH measurements than those of the sampling stations downstream of the Keene WWTF.

**Table 3.1: VRAP Receiving Water pH Data, 2015-2019**

| Sampling Station | Year | Samples Collected | pH Range | Acceptable Samples Not Meeting WQS |
|---|---|---|---|---|
| 28-ASH | 2015 | 4 | 5.56-6.18 | 4 (100%) |
| 27-ASH | 2015 | 4 | 5.74-6.14 | 4 (100%) |

| Table 3.1: VRAP Receiving Water pH Data, 2015-2019 | | | | |
|---|---|---|---|---|
| **Sampling Station** | **Year** | **Samples Collected** | **pH Range** | **Acceptable Samples Not Meeting WQS** |
| 24A-ASH | 2015 | 4 | 5.87-6.43 | 4 (100%) |
| 23-ASH | 2015 | 4 | 6.01-6.73 | 0 (0%) |
| 20A-ASH | 2015 | 4 | 6.38-6.55 | 3 (75%) |
| 18-ASH | 2015 | 4 | 6.36-6.68 | 1 (25%) |
| 16D-ASH | 2015 | 5 | 6.34-6.72 | 3 (60%) |
| 16A-ASH | 2015 | 5 | 6.26-6.56 | 3 (60%) |
| 16-ASH | 2015 | 5 | 6.41-6.65 | 2 (40%) |
| 02B-SBA | 2015 | 4 | 6.08-6.56 | 3 (75%) |
| 02-SBA | 2015 | 4 | 6.38-6.56 | 2 (50%) |
| 15A-ASH | 2015 | 5 | 6.44-6.72 | 1 (20%) |
| 07-ASH | 2015 | 5 | 6.63-6.72 | 0 (0%) |
| 02-ASH | 2015 | 4 | 5.69-7.38 | 1 (25%) |
| 01-ASH | 2015 | 5 | 6.78-7.23 | 0 (0%) |
| 28-ASH | 2016 | 5 | 5.67-6.04 | 5 (100%) |
| 27-ASH | 2016 | 5 | 4.90-6.14 | 5 (100%) |
| 24A-ASH | 2016 | 5 | 5.09-6.22 | 5 (100%) |
| 23-ASH | 2016 | 5 | 6.04-6.59 | 3 (60%) |
| 20A-ASH | 2016 | 5 | 6.20-6.46 | 5 (100%) |
| 18-ASH | 2016 | 5 | 6.30-6.57 | 5 (100%) |
| 16D-ASH | 2016 | 5 | 6.40-6.75 | 1 (20%) |
| 16A-ASH | 2016 | 5 | 6.30-6.90 | 1 (20%) |
| 16-ASH | 2016 | 5 | 6.39-6.74 | 1 (20%) |
| 02B-SBA | 2016 | 5 | 6.31-6.61 | 3 (60%) |
| 02-SBA | 2016 | 5 | 6.21-6.73 | 3 (60%) |
| 15A-ASH | 2016 | 5 | 6.23-6.99 | 3 (60%) |
| 07-ASH | 2016 | 5 | 6.32-6.79 | 2 (40%) |
| 02-ASH | 2016 | 4 | 7.01-7.51 | 0 (0%) |
| 01-ASH | 2016 | 5 | 6.32-7.19 | 1 (20%) |
| 28-ASH | 2017 | 5 | 4.90-5.56 | 5 (100%) |
| 27-ASH | 2017 | 4 | 4.98-5.64 | 4 (100%) |
| 24A-ASH | 2017 | 5 | 5.10-6.01 | 5 (100%) |
| 23-ASH | 2017 | 5 | 5.11-5.85 | 5 (100%) |
| 20A-ASH | 2017 | 5 | 5.12-5.78 | 5 (100%) |
| 18-ASH | 2017 | 5 | 5.08-5.99 | 5 (100%) |
| 16D-ASH | 2017 | 5 | 6.28-6.51 | 3 (60%) |
| 16A-ASH | 2017 | 5 | 6.35-6.61 | 3 (60%) |
| 16-ASH | 2017 | 5 | 6.37-6.64 | 3 (60%) |
| 02B-SBA | 2017 | 5 | 5.17-6.07 | 5 (100%) |
| 02-SBA | 2017 | 5 | 5.01-6.04 | 5 (100%) |
| 15A-ASH | 2017 | 5 | 6.11-6.55 | 4 (80%) |

| Table 3.1: VRAP Receiving Water pH Data, 2015-2019 | | | | |
|---|---|---|---|---|
| **Sampling Station** | **Year** | **Samples Collected** | **pH Range** | **Acceptable Samples Not Meeting WQS** |
| 07-ASH | 2017 | 5 | 5.22-6.43 | 5 (100%) |
| 02-ASH | 2017 | 4 | 6.27-7.01 | 2 (50%) |
| 01-ASH | 2017 | 5 | 5.93-6.71 | 3 (60%) |
| 28-ASH | 2018 | 5 | 5.26-5.71 | 5 (100%) |
| 27-ASH | 2018 | 5 | 5.48-5.82 | 5 (100%) |
| 24A-ASH | 2018 | 5 | 5.53-5.92 | 5 (100%) |
| 23-ASH | 2018 | 5 | 5.88-6.44 | 5 (100%) |
| 20A-ASH | 2018 | 5 | 6.12-6.56 | 4 (80%) |
| 18-ASH | 2018 | 5 | 5.97-6.35 | 5 (100%) |
| 16D-ASH | 2018 | 8 | 6.05-6.66 | 4 (50%) |
| 16C-ASH | 2018 | 3 | 6.41-6.85 | 1 (33%) |
| 16A-ASH | 2018 | 5 | 5.78-6.62 | 3 (60%) |
| 16-ASH | 2018 | 5 | 6.12-6.50 | 4 (80%) |
| 02B-SBA | 2018 | 5 | 5.73-6.48 | 5 (100%) |
| 07U-SBA | 2018 | 3 | 5.85-6.59 | 2 (67%) |
| 08-SBA | 2018 | 3 | 5.84-6.52 | 2 (67%) |
| 02-SHK | 2018 | 3 | 5.55-6.48 | 3 (100%) |
| 02-SBA | 2018 | 5 | 5.64-6.37 | 5 (100%) |
| 15A-ASH | 2018 | 5 | 5.79-6.71 | 4 (80%) |
| 07-ASH | 2018 | 5 | 5.68-6.46 | 5 (100%) |
| 02-ASH | 2018 | 4 | 6.58-7.44 | 0 (0%) |
| 01-ASH | 2018 | 5 | 6.04-7.04 | 1 (20%) |
| 28-ASH | 2019 | 5 | 5.65-5.71 | 5 (100%) |
| 27-ASH | 2019 | 5 | 5.56-5.81 | 5 (100%) |
| 24A-ASH | 2019 | 5 | 5.57-6.05 | 5 (100%) |
| 23-ASH | 2019 | 5 | 5.93-6.35 | 5 (100%) |
| 20A-ASH | 2019 | 5 | 5.83-6.12 | 5 (100%) |
| 18-ASH | 2019 | 5 | 5.94-6.15 | 5 (100%) |
| 16D-ASH | 2019 | 5 | 5.95-6.71 | 2 (40%) |
| 16A-ASH | 2019 | 5 | 6.01-6.75 | 1 (20%) |
| 16-ASH | 2019 | 5 | 6.00-6.71 | 1 (20%) |
| 02B-SBA | 2019 | 5 | 6.04-6.24 | 5 (100%) |
| 02-SBA | 2019 | 5 | 6.04-6.21 | 5 (100%) |
| 15A-ASH | 2019 | 5 | 6.14-6.35 | 5 (100%) |
| 07-ASH | 2019 | 5 | 6.12-6.33 | 5 (100%) |
| 02-ASH | 2019 | 4 | 6.78-7.28 | 0 (0%) |
| 01-ASH | 2019 | 5 | 6.31-6.71 | 2 (40%) |

The percentages in the righthand column of Table 3.1 depict the percent of samples that did not meet the surface WQS of 6.5 to 8.0 S.U. Over the 5 years of data, the majority of the sampling stations yielded pH data below the surface WQS as representative by these percentages. **Keene**

**respectfully requests that this data collected through this program and in collaboration with the State be considered as part of this request.**

**Response 10**

As noted in the above comment, to allow for a pH demonstration and limit adjustment, the permittee must demonstrate to NHDES that either:

1. The range should be widened due to naturally occurring conditions in the receiving water; or
2. That the naturally occurring receiving water pH is not significantly altered by the Permittee's discharge.

Also as noted in the comment, State Permit Condition #5 on page 22 of the Draft Permit indicates that "the scope of any demonstration project must receive prior approval from NHDES-WD." NHDES utilizes conditions #1 and #2 to guide implementation of the pH requirements in its WQS. As described below, NHDES has determined that the permittee has not satisfied either condition and is therefore neither eligible to perform a pH study nor receive a pH adjustment at this time.

Regarding condition 1, the upstream pH values referenced by the commenter do not represent a "natural condition" because the receiving water is impaired for pH. At this time, NHDES is unable to precisely differentiate contributions of the natural and anthropogenic contributions to low pH. NHDES states that while there are signs of improvement there is ongoing anthropogenic acid deposition and that the long-term historical deposition has depleted the natural buffering capacity of soils and underlying geology. =

Regarding condition 2, the pH in the receiving water will be significantly altered by the Permittee's discharge. In general, as dilution decreases, the impact of effluent on river pH increases. Because Keene has a very low dilution factor, the discharge has a large impact. With regards to the WET test results, EPA refers the commenter to EPA's long-standing concept of "independent applicability" [4] regarding water quality criteria and biological assessments. One aspect of this policy is that water quality standards are to be independently applied. This means that any single assessment method (chemical criteria, toxicity testing, or biocriteria) can provide conclusive evidence that water quality standards are not attained. Therefore, a demonstration of water quality standards nonattainment using one assessment method does not necessarily require confirmation with a second method; nor can the failure of a second method to confirm impact, by itself, negate the results of the initial assessment.

Because biosurvey, chemical-specific, and toxicity testing methods have unique as well as overlapping attributes, sensitivities, and program applications, no single approach for detecting impact should be considered uniformly superior to any other approach. EPA recognizes that each method can provide valid and independently sufficient evidence of

[4] https://www.epa.gov/sites/production/files/2015-10/documents/final-policy-biological-memo.pdf

aquatic life use impairment, irrespective of any evidence, or lack of it, derived from the other two approaches. The failure of one method to confirm an impact identified by another method would not negate the results of the initial assessment. Therefore, appropriate action should be taken when any one of the three types of assessment determines that the standard is not attained. EPA has encouraged the States that administer the NPDES program to implement and integrate all three approaches into their water quality programs and apply them in combination or independently as site-specific conditions and assessment objectives dictate.

Therefore, even though the permit's WET limits have been met in the presence of pH values that were outside of the permitted range for pH, this alone does not provide a basis to request a less stringent pH for this permit, as another testing method may indicate the standard has not been attained.

**Comment 11**

TOTAL RECOVERABLE ALUMINUM

The City has evaluated the proposed effluent limit and associated compliance schedule outlined in the Draft Permit and has developed the following comments.

Numerical Limit and Compliance Schedule

The Draft Permit includes an Average Monthly (chronic) numerical effluent limitation of 108 µg/L for Total Recoverable Aluminum and a reporting requirement for the maximum day (acute) condition. The Draft Permit also includes a schedule of compliance for this limitation subject to modification depending on the status of NH's adoption of the revised aluminum criteria as well as EPA's approval of said criteria, along with several other considerations and mandated reporting requirements. The current permit does not include an effluent limitation for Total Recoverable Aluminum.

The compliance schedule set forth in the Draft Permit proposes a 3-year period to achieve the 108 µg/L. Once the scheduled period is commenced, the 108 µg/L limit will be enforced. There is limited understanding behind the effectiveness of the 108 µg/L permit limit and the benefits that the threshold imposes to the receiving water. There is longstanding and significant regulatory controversy on the validity of the aluminum chronic criterion of 87 µg/L. This criterion was published in 1988; Page 22 of the 1988 document states that the chronic criterion would have been 748 µg/L but was reduced to 87 µg /L to protect brook trout and striped bass. However, page 6 of the 1988 document states that 87.2 µg/L "did not kill any of the exposed organisms" (striped bass), and similar irregularities for the brook trout results.

Although the Draft Permit grants Keene the opportunity to modify the proposed limit if NHDES adopts the new criteria, the inclusion of the following language depicted below causes Keene immense concern:

"If new criteria are approved by EPA before the effective date of the final aluminum effluent limit, the Permittee may apply for a permit modification, pursuant to 40 C.F.R 122.62(a)(3), to revise the time to meet the final aluminum effluent limit and/or for revisions to the permit based

on whether there is reasonable potential for the facility's aluminum discharge to cause or contribute to a violation of the newly approved aluminum criteria."

Keene has calculated potential aluminum criteria scenarios utilizing the EPA aluminum criteria calculator available for public use. Keene has been sampling DOC, pH, and hardness levels simultaneously as part of this analysis. See Appendix E for sampling data. This data represents samples collected for both the Ashuelot River upstream (samples labeled as ASHUP*DATE*) and the secondary effluent (samples labeled as SEC*DATE*).

Based on these calculations, it appears that Keene would not have the reasonable potential to cause or contribute to an exceedance of WQS for aluminum. The data used and criteria calculated is presented in Table 4.1 below:

| Tale 4.1: EPA 2018 Aluminum Criteria Keene Estimate | |
|---|---|
| **Parameter** | **Value** |
| DOC (mg/L) | 4.10 |
| Hardness (mg/L) | 29.79 |
| pH (S.U.) | 6.43 |
| Aluminum (acute criteria) (µg/L) | 680 |
| Aluminum (chronic criteria) (µg/L) | 320 |

To impose a new limit based on superseded science would be an error and would prevent Keene the ability to take advantage of the newly developed and more appropriate criteria. The new EPA criteria accurately characterizes the bioavailability of aluminum by accounting for site specific data for parameters that directly impact the amount of aluminum that is bioavailable. pH, DOC and hardness each affect the toxicity level of aluminum in the receiving water. The current criterion does not consider these parameters, and therefore it is questioned if the existing criterion accurately depicts how much of the constituent is bioavailable. A review of the City's data indicates that Keene would be in compliance with the criteria calculated using the new EPA standard. Keene should be able to operate under a limit that is backed by the latest information in science and that is technically defensible in preventing any exceedances in WQS. Keene feels strongly that the limit set forth in the Draft Permit is inappropriate and unfair given the availability to provide a limit that is supported by the latest science, and the advancement of the requirements of the Draft Permit as is will not lead to any better environmental outcomes. Keene intends to continue to dispute the validity of the Draft Permit methodology for aluminum, if requested changes are not reflected in the Final Permit.

Keene is concerned that EPA is issuing a new aluminum limit given the recent adoption of new national guidance and the intention of NHDES to adopt the criteria. The criteria used to develop the 108 µg/L is an obsolete standard and should be delayed until such time as NHDES and EPA complete the process to adopt and approve the new WQS. If a new effluent limitation is

anticipated to be re-calculated within the period of the Draft Permit, then it is inappropriate to impose a brand-new effluent limitation using an obsolete method. Regardless of the use of dated methodology to determine the permit limit, the proposed 108 µg /L does not account for site-specific data on acid soluble and total recoverable aluminum. As described in the Draft Permit, the fraction of acid soluble to total recoverable was assumed to be 1.0. Keene respectfully requests that the Final Permit include language under a special condition that Keene has the option to submit a request to pursue a preliminary study evaluating the fraction of acid soluble aluminum to total recoverable aluminum. If Keene pursues this type of a study, additional language is requested to be in the Final Permit that the results of the study would be accepted and that a permit modification may be made to reflect site-specific limits.

Given the term of the Draft Permit, the anticipated timely adoption of a new criterion, and to avoid relying on an obsolete and thus arbitrary and capricious standard, Keene respectfully requests that the aluminum limit be removed from the Final Permit.

**Response 11**

As explained in the Fact Sheet, although EPA has promulgated new aluminum criteria recommendations, the State of NH has yet to revise State WQS to incorporate these criteria recommendations. An NPDES permit must ensure compliance with the state WQS currently in effect, not those which may be implemented in the future. *See* 40 C.F.R. §§ 122.4(d), 122.44(d). The Draft Permit established a limit for effluent aluminum because, as shown in Appendix B of the Fact Sheet, EPA determined that there is reasonable potential that the effluent levels could cause or contribute to a violation of New Hampshire's current aluminum criteria, *i.e.,* the WQS with which the permit must ensure compliance

EPA appreciates the instream sampling that the City of Keene has conducted which may be used to support a revised aluminum limit, if necessary, if and when New Hampshire adopts new aluminum criteria. These data use an approach which is based on EPA's new aluminum criteria recommendations, which have yet to be incorporated into the State WQS. If New Hampshire updates its WQS and EPA finds that there is no reasonable potential to violate those new WQS, the data may be used in the future to support an alternative limit or to revert to a monitor-only requirement

Because the aluminum limit is a new limit in the Final Permit, it includes a three-year compliance period. This means that, as noted in Permit Section I.G.2, the limit does not take effect until three years after the effective date of the permit. As also described in Section I.G.2, the permittee may apply to further extend the effective date and/or modify the limit under certain circumstances.

As an interim permit requirement during this three-year period, the permittee is expected to optimize its current treatment system with respect to aluminium, *i.e.* do the best it can within the treatment plant's current capability. This optimization does need to consider the eventual permit limit, which is scheduled to go into effect after three years unless the permittee applies for and receives a modification under qualifying circumstances.

DES would consider a study to evaluate the fraction of acid soluble aluminum to total recoverable aluminum. The scope needs to be reviewed and approved by the DES Watershed Management Bureau. If the result were also approved by DES, EPA would consider a permit modification to increase the limit based on this new information.

However, it is important to note that the new EPA aluminum criteria is for total recoverable aluminum. The DOC, pH, and hardness calculations account for the true toxicity of the acid soluble fraction on test species. Therefore, once the new criteria are in place in the NH WQS, any acid-soluble specific work becomes irrelevant. Therefore, it may not be worth Keene's resources to perform this study.

**Comment 12**

TOTAL RECOVERABLE ALUMINUM

Reporting Requirements
Keene also respectfully requests removal of the aluminum reporting requirements specific to developing an evaluation of alternative modes of operation at the wastewater treatment facility in order to reduce the effluent levels of aluminum from the Final Permit (Refer to page 17 of Draft Permit). Licensed operators are understood to be responsible for achieving mandated effluent limitations in accordance with the NPDES permit. The manner in which this happens is understood to be at the discretion of these professionals and not subject to EPA scrutiny or oversight. Conducting such evaluations as proposed in the Draft Permit reporting requirements can present a financial burden on Keene. The process of conducting these evaluations would entail hiring a consultant to evaluate the current dynamic of the treatment process and conducting research to determine alternative approaches that may be applicable. The system installed for Keene is an interconnected process, and the adjustments of one chemical addition to treat one parameter to meet effluent limitations can adversely affect the efficacy in meeting another parameter's effluent limitations. Due to the nature of the system, evaluating entirely new and formal approaches to meeting the aluminum limit can be both timely and costly, and thus must be reserved for situations in which WQS are unmet.

**Response 12**

The Permittee is required to document the measures it will take to achieve the permit limit, including identifying influent sources of aluminum to the WWTP and considering treatment options. These options can include pilot scale testing or alternatives that have been implemented at other treatment plants, and therefore would not necessarily require full-scale treatment modifications and associated expenses.

The information reported under this requirement serves an important purpose, *i.e.*, compliance with permit requirements. EPA has broad authority under the CWA and NPDES regulations to prescribe the collection of data and reporting requirements in NPDES Permits. *See* CWA § 308(a)(A), 33 U.S.C. § 1318(a)(A) (specifying that permittees must provide records, reports, and other information EPA reasonably

requires); CWA § 402(a)(2), 33 U.S.C. § 1342(a)(2) (requiring permittees to provide data and other information EPA deems appropriate); 40 CFR § 122.41(h) (permittees shall furnish "any information" needed to determine permit compliance); 40 CFR § 122.44(i) (permittees must supply monitoring data and other measurements as appropriate); *see also, e.g., In re City of Moscow*, 10 E.A.D. 135, 170-71 (EAB 2001) (holding that EPA has "broad authority" to impose information-gathering requirements on permittees); *In re Town of Ashland Wastewater Treatment Facility,* 9 E.A.D. 661, 671-72 (EAB 2001) (holding that CWA confers "broad authority" on permit issuers to require monitoring and information from permittees).

**Comment 13**

TOTAL RECOVERABLE ALUMINUM

Alternative Low Flow on Total Recoverable Aluminum Limit Development

Section 2.0 of this report outlines comments requesting the use of an alternative low flow in place of the 7Q10. The 7Q10 calculated for the facility and identified in the Fact Sheet of the Draft Permit is used to establish the reasonable potential for a constituent to cause or contribute to an exceedance of WQS, as well as to developing permit effluent limits for constituents. If the request for the use of an alternative low flow is granted through the Final Permit, Keene respectfully requests that the Reasonable Potential Analysis Table in Appendix B of the Draft Permit reflect this modification, and that the pollutant effluent limits be adjusted.

**Response 13**

See the Response 9, which denies the request to use an alternate low flow to calculate the aluminum limit.

**Comment 14**

TOTAL RECOVERABLE COPPER

The Draft Permit includes average monthly (chronic) and maximum daily (acute) effluent limitations of 5.9 µg/L and 7.9 µg/L, respectively, for total recoverable copper. Based on the permit review period comprised of 5 years of data, exceedances to copper effluent limitations occurred on two occasions. The data evaluated within the permit review period is assessed against the effluent limits that the City has been operating under. Appendix A indicates effluent limits as 5.9 µg/L and 7.9 µg/L for the review period. Keene would like to clarify that the modified permit effluent limits for copper that the City has been operating under were carried over from the 1994 permit**,** as 6.2 µg/L and 8.2 µg/L**.** See Appendix F attached to this document. The 1994 permit limits carried forward for copper, zinc, and lead are as follows: 6.2 µg/L chronic and 8.2 µg/L acute, 55.7 µg/L chronic and 61.5 µg/L acute, and 0.92 µg/L chronic and 23.8 µg/L acute. The violations determined for total copper were evaluated against incorrect effluent limitations as they are listed as 5.9 and 7.9 µg/L. Keene requests that this clarification be reflected in the Final Permit and that EPA acknowledge that the 1994 permit effluent limits of

6.2 µg/L and 8.2 µg/L are appropriate; these requests are made notwithstanding the results of any site specific studies and alternative low flow discussed in this section below.

The criteria were developed using the water quality standards equation dependent on the hardness (Env. Wq. 1703). The Reasonable Potential Analysis Table is outlined in Appendix B and identifies the acute and chronic limits for copper. Although reasonable potential no longer applies to copper since limits have previously been enforced, Keene re-calculated limits based on the new criteria utilizing a hardness of 36.7 mg/L.

The Draft Permit states that limits may be developed utilizing a rearrangement of the mass balance equation and the use of the criterion in place of the downstream concentration. Keene reviewed EPA's approach to calculating the limits using the equation as understood below:

$$\text{Limit} = \frac{(Q_d * \text{Criteria} * 0.9 - Q_s C_s)}{Q_e}$$

Solving for this equation using the values given in the Reasonable Potential Analysis Table, an acute limit would be 10.91 µg/L and a chronic limit would be 8.01 µg/L. These limits are appropriately adjusted based on new data collected during the review period which established a higher hardness concentration. 40 CFR § 122.44(l)(2)(i)(B)(1); *Great Basin Mine Watch v. State of Nevada*, No. 43943, 2006 WL 1668890, at *3 (Nev. Apr. 19, 2006). Recalculated limits accounting for current effluent and receiving water conditions is a proper consideration in establishing permit limits.

Although the current approach is hardness-dependent, the toxicity of copper is characterized by other parameters that are not considered by this approach. Keene has never failed a toxicity test even when operating under less stringent effluent copper concentration limits. Specifically, Keene has operated under a 20 µg/L copper concentration administrative testing, and never failed a toxicity test. In fact, due to the testing performance, EPA approved a reduction of WET testing frequency from four times annually to once annually.

There are additional studies that incorporate more data to characterize copper concentrations. NHDES water quality standards regulations allow for the use of approved methods including the Water Effect Ratio (WER) and the Biotic Ligand Model (BLM) to characterize copper concentrations based on site-specific conditions (Env-Wq 1703.22 (d)). These are two options that NHDES specifies in their regulations, and therefore the opportunity is made available if Keene decides to advance with a site-specific approach. Accordingly, Keene respectfully requests that language be included as a special condition in the Final Permit indicating that Keene may submit a permit modification request to apply for site-specific effluent copper limits, including the WER and the BLM. If Keene decided to move forward with a site-specific approach, Keene also respectfully requests that additional language be included in the Final Permit indicating that the results of a site-specific approach will be accepted and a permit modification may be made to reflect revised effluent limits. Keene applied the BLM model previously in 2004 and the results confirmed that the corresponding criteria reflected in the state water quality standards are excessively conservative. Keene commented on the 2007 Draft Permit's proposed copper limits on a similar basis of toxicity and bioavailability stating that the

limit: "…fails to take into account the fact that copper in municipal wastewater treatment facility effluents is not toxic…. Studies overwhelmingly support the conclusion that copper in biologically treated effluents exists in organo-complexes and is not bio available." Keene reiterates these arguments.

**Response 14**

On September 28, 2007, the City of Keene filed a petition for review of the 2007 Final Permit with the Environmental Appeals Board ("Board"), pursuant to EPA permitting regulations at 40 C.F.R. § 124.19(a). In its appeal, the City challenged the new, more stringent effluent limitations set forth in the Permit for the Keene WWTP discharges of total phosphorus, measured on an average monthly basis, and total recoverable copper, lead, and zinc, measured on maximum daily and average monthly bases. On November 20, 2007, the Region filed a notice with the Board withdrawing the disputed metals limits pursuant to 40 C.F.R. § 124.19(d). The Region reported that it intended to prepare new draft permit conditions for the three metals to replace the withdrawn provisions and would release the new conditions for public notice and comment at a future time. EPA's withdrawal of the permit conditions did not reflect agreement at the time with the City's alternative proposed limits; only that the withdrawal of the contested permit conditions would be appropriate to ensure that the record fully supported and adequately explained the permit requirements. Due to resource limitations and lengthy expired permits backlog, permit modification proceedings were not commenced.

The total copper Draft Permit limits of 5.9 µg/L and 7.9 µg/L were carried over from the proposed Final Permit that was issued in 2007. However, since these limits were appealed and were never put into effect, the limits that were previously established in the 1994 Permit of 6.2 µg/L and 8.2 µg/L are still in effect. As described in Part 5.1.10.2 of the Fact Sheet, for any metal with an existing limit in the 2007 Permit, a reasonable potential determination was not carried out again, so the table in Appendix B of the Fact Sheet indicated "N/A" for reasonable potential.

For any pollutant(s) with an existing WQBEL, EPA notes that the analysis described in 40 CFR § 122.44(d)(1)(i) has already been conducted in a previous permitting action demonstrating that there is reasonable potential to cause or contribute to an excursion of WQS. Given that the permit already contains a WQBEL based on the prior analysis and the pollutant(s) continue to be discharged from the facility, EPA has determined that there is still reasonable potential for the discharge of this pollutant(s) to cause or contribute to an excursion of WQS. Therefore, the WQBEL will be carried forward unless it is determined that a more stringent WQBEL is necessary to continue to protect WQS or that a less stringent WQBEL is allowable based on anti-backsliding requirements at CWA §§ 402(o) and 303(d)(4). For these pollutant(s), if any, the mass balance calculation is not used to determine whether there is reasonable potential to cause or contribute to an excursion of WQS, but rather is used to determine whether the existing limit needs to be more stringent in order to continue to protect WQS.

From a technical standpoint, when a pollutant is already being controlled as a result of a previously established WQBEL, EPA has determined that it is not appropriate to use new effluent data to reevaluate the need for the existing limit because the reasonable potential

to cause or contribute to an excursion of WQS for the uncontrolled discharge was already established in a previous permit. If EPA were to conduct such an evaluation and find no reasonable potential for the controlled discharge to cause or contribute to an excursion of WQS, that finding could be interpreted to suggest that the effluent limit should be removed. However, the new permit without the effluent limit would imply that existing controls are unnecessary, that controls could be removed and then the pollutant concentration could rise to a level where there is, once again, reasonable potential for the discharge to cause or contribute to an excursion of WQS. This could result in an illogical and inefficient cycle of applying and removing pollutant controls with each permit reissuance, to the detriment of water quality. EPA's technical approach on this issue is in keeping with the Act generally and the NPDES regulations specifically, which reflect a precautionary approach to controlling pollutant discharges.

In this case, for copper, the same mass balance equation that is used to determine whether there is reasonable potential to cause or contribute to an excursion of water quality standards for other parameters was used to determine if a more stringent copper limit would be required to meet WQS under current conditions. In Appendix B of the Fact Sheet, EPA mistakenly used the limits of 5.9 µg/L and 7.9 µg/L in this calculation. Using the higher limits of 6.2 µg/L and 8.2 µg/L, the result is that these limits should be carried forward and that more stringent limits are not necessary. Therefore, the limits of 6.2 µg/L and 8.2 µg/L are carried forward in the Final Permit. Even if these limits were to be made less stringent based on an analysis of the data on the record, they would still need to satisfy applicable anti-backsliding requirements at CWA §§ 402(o) and 303(d)(4), including the requirement that the discharge not cause a violation of water quality standards.

EPA also cited the incorrect limits of 5.9 µg/L and 7.9 µg/L in the DMR summary of Fact Sheet Appendix A and noted two violations of these limits during the review period. Even if the limits of 6.2 µg/L and 8.2 µg/L had been used in Appendix A, there still would have been two violations (one monthly average violation and one daily maximum violation) during the review period.

Keene may submit a study plan for site specific-copper criteria to NHDES for review, in accordance with Env-Wq 1703.22(d). If the plan and results are approved by NHDES, the revised criteria may be used to modify the permit limits. NHDES interprets Env-Wq 1703.22(d) for WER or BLM dependent criteria in a manner similar to Env-Wq 1703.22(i) for hardness dependent metal criteria. That is, once the WER, BLM or hardness dependent criteria is determined for a certain waterbody (or portion thereof), it automatically becomes the enforceable ambient criteria for that waterbody (or portion thereof) and can be used for computing effluent limits in WWTP discharge permits. There is no need to first formally adopt the criteria in the regulations. However, since conditions in the river and WWTP can change over time, all hardness, WER or BLM ambient criteria should be re-evaluated approximately every five years when NPDES permits are reissued. However, EPA notes that any potential change in the permit limit based on site-specific copper criteria would also be subject to anti-backsliding requirements at CWA §§ 402(o) and 303(d)(4).

EPA does not believe that it would be reasonable to include a special permit condition accepting a future permit modification request, without first having the opportunity to evaluate that request. To do otherwise would be conjectural. EPA's mind is open and it has not prejudged the merits of a future request, if any.

**Comment 15**

Alternative Low Flow on Total Recoverable Copper Limit Development

Section 2.0 of this report outlines comments requesting the use of an alternative low flow in place of the 7Q10. The 7Q10 calculated for the facility and identified in the Fact Sheet of the Draft Permit is used to establish the reasonable potential for a constituent to cause or contribute to an exceedance of WQS, as well as to developing permit effluent limits for constituents. If the request for the use of an alternative low flow is granted through the Final Permit, Keene respectfully requests that the Reasonable Potential Analysis Table in Appendix B of the Draft Permit reflect this modification, and that the pollutant effluent limits be adjusted.

**Response 15**

See Response 9, which denies the request to use an alternate low flow to calculate the copper limit.

**Comment 16**

TOTAL PHOSPHORUS

Alternative Low Flow on Phosphorus Numerical Limit Development

Section 2.0 of this report outlines comments requesting the use of an alternative low flow in place of the 7Q10. The 7Q10 calculated for the facility and identified in the Fact Sheet of the Draft Permit is used to establish the reasonable potential for a constituent to cause or contribute to an exceedance of WQS, as well as to developing permit effluent limits for constituents. NHDES has discussed the potential benefits of using alternative low flows in establishing nutrient effluent limits, as depicted in Section 2.0. If the request for the use of an alternative low flow is granted through the Final Permit, Keene respectfully requests that the Reasonable Potential Analysis Table in Appendix B of the Draft Permit reflect this modification, and that the pollutant effluent limits be adjusted.

Further, NHDES regulations allow mixing zone studies dependent on department approval. In conjunction with the request for an alternative low flow, Keene respectfully requests that language be included as a special condition of the Final Permit that allows Keene the option to conduct a CORMIX Mixing Zone model. If Keene decides to move forward with CORMIX modeling, it is requested that Keene be granted the ability to utilize alternative low flow conditions as described above. Further, additional language is requested to be included in the Final Permit indicating that the results of the study would be accepted, and a permit modification may be made to reflect the results.

**Response 16**

See the Response 9, which denied the request to use an alternate low flow to calculate the phosphorus limit.

CORMIX modeling may not be used to calculate an alternative low flow. Per Env-Wq 1705.02(d), "For non-tidal rivers and streams, permit limits for all aquatic life criteria and human health criteria for non-carcinogens shall be based on the 7Q10 flow."

**Comment 17**

Numerical Effluent Limit

The Draft Permit includes Average Monthly (chronic) effluent limitations of 0.18 mg/L and 1.0 mg/L, respectively, for the periods April 1 through October 31 and November 1 through March 31. The acute condition is report only. These are based on the NHDES narrative WQS for Class B waters which, including the 10% held in reserve for assimilative capacity, targets an instream concentration of 0.09 mg/L based on 7Q10 flow conditions. The 2007 permit enforced a summer average monthly effluent limit of 0.20 mg/L. As confirmed in Appendix A of the Draft Permit, Keene has been successful in complying with both seasonal effluent limits with no violations during the permit review period. Further, ortho-phosphorus monitoring confirmed that minimal dissolved phosphorus was detected during the review period.

The criteria is based on nationally recommended values since there is no site-specific criteria adopted by NHDES. However, the nationally recommended Gold Book criteria does not justify receiving water conditions and characterize the accepted amount of the constituent that would be protective of the receiving waters.

NHDES provides reports for public viewing on the data collected in the Ashuelot River Watershed as part of VRAP. The intention of this program, as referenced in the 2007 VRAP report is *"to assist NHDES in evaluating water quality throughout the state"*. The annual reports published between 2007 and 2010 utilize collected data which is interpreted as they relate to the surface WQS; available data is also collected by VRAP and published through NHDES for the years 2011 through 2019. Sampling station locations are arranged by VRAP staff annually. In 2007, data was collected at a total of 10 sampling stations in the Ashuelot River Watershed. These stations are located both upstream and downstream of the Keene WWTF discharge point.

Although NHDES does not provide a numeric WQS for total phosphorus, the NHDES "level of concern" is 0.05 mg/L. Based on this threshold, it is noted in the 2007 VRAP, that the majority of the samples *"had total phosphorus levels that were always below the NHDES "level of concern""*. This statement also applies to the data collected as part of the 2008, 2009 and 2010 reports. Data collected at sampling stations 16D-ASH and 16A-ASH are representative of conditions 40 feet upstream of the Keene WWTF and at the mouth of the South Branch, downstream of the Keene WWTF. Presented in Appendix D are the VRAP annual reports from 2007-2010, as well as an analysis of the total phosphorus data collected from 2015-2019. The data confirms that the receiving water conditions consistently remain below the NH "level of concern", with only 5 samples of data exceeding the "level of concern" over 5 years. [*FN*: It is the City's understanding that receiving water total phosphorus sampling conducted in support of

the VRAP was discontinued in 2020 because the in-stream phosphorus concentrations are consistently below WQS concentrations.]

Based on Keene's success in meeting effluent limitations and the levels of total phosphorus in the receiving water, Keene believes that it would be appropriate to maintain the existing effluent limitations. For these reasons, Keene respectfully requests that the summer average monthly effluent limit remain 0.20 mg/L; notwithstanding, and subject to, the results of any site-specific studies and alternative low flow discussed in this Section 6.1.

**Response 17**

EPA appreciates the City's efforts to meet the permit's effluent phosphorus limits. However, the instream level of a pollutant is not the sole criterion that EPA uses to determine whether there is a reasonable potential to violate instream WQS or to establish a protective WQBEL.The monthly average summer limit has been changed from 0.20 to 0.18 mg/L due to the State of NH's assimilative capacity requirement and the slightly lower dilution factor.

As noted in Section 2.2.24 of the Fact Sheet:

> Limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the permitting authority 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 water quality standard, including State narrative criteria for water quality." 40 C.F.R. § 122.44(d)(1)(i). To determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent by the receiving water. *See* 40 C.F.R. § 122.44(d)(1)(ii). If the permitting authority determines that the discharge of a pollutant will cause, has the reasonable potential to cause, or contribute to an excursion above WQSs, the permit must contain WQBELs for that pollutant. *See* 40 C.F.R. § 122.44(d)(1)(i).

Because there was an existing phosphorus limit in place from the 2007 Permit, EPA considered whether that limit would cause or contribute to a violation of water quality standards. EPA used a mass balance equation presented in Appendix B of the Fact Sheet to project the concentration downstream of the discharge assuming effluent concentration equal to the 2007 effluent limit of 0.20 mg/L. This equation accounted for effluent and upstream levels of phosphorus as well as dilution available to the discharge. As noted in the Fact Sheet, samples taken 40 feet upstream of the Keene WWTP (Station 16D-ASH) for phosphorus yielded the following results:[5]

[5] https://www.des.nh.gov/water/rivers-and-lakes/river-and-lake-monitoring

**Instream Total Phosphorus Data –Ashuelot River (Station 16D)**

| Year | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|
| Total Phosphorus, µg/L | 18, 19, 27 | 15, 14, 21 | 12, 13 | 26, 19, 22, 19, 23 |

The effluent limit would be the more stringent of either (1) the existing limit or (2) the calculated effluent concentration ($C_d$) allowable to meet WQS based on current conditions. For phosphorus, EPA made a technical determination that a seasonal effluent limit of 0.18 mg/L (vs. the prior limit of 0.20 mg/L) was necessary to meet WQS. This reduction was not based on a change in EPA's criterion, but rather the NHDES requirement to reserve 10% of the receiving water assimilative capacity, as noted in the comment.

**Comment 18**

**Sampling Requirements**

The Draft Permit proposes that Keene sample and collect data for ambient monitoring of total phosphorus to provide EPA with data for future use in their total phosphorus evaluation. Keene remains responsible for compliance with enforced effluent limitations to reduce potential to impair the receiving water. Keene does not believe that it would be appropriate to be required to sample and analyze data of the receiving water to confirm if EPA's enforced limits are protective. Monitoring of receiving water conditions is annually completed by state or volunteer organizations, such as the Volunteer River Assessment Program as discussed on page 30 of the Fact Sheet. Additional sampling requires operational efforts and monetary contributions from Keene. **For these reasons, the City respectfully requests that the monitoring requirement for ambient total phosphorus data be removed from the Final Permit.**

**Response 18**

The Final Permit maintains this monitoring requirement because it serves an important purpose and because it ensures monitoring will continue even if the Volunteer River Assessment Program (VRAP) were to stop its monitoring activities during the permit term. The purpose of the ambient monitoring requirement for phosphorus is to track upstream conditions over the life of the permit. These data will be used in the next permit reissuance to ensure that appropriate limits are in place to protect water quality standards.

EPA has broad authority under the CWA and NPDES regulations to prescribe the collection of data and reporting requirements in NPDES Permits, including instream monitoring of a discharge's impact. *See* CWA § 308(a)(A), 33 U.S.C. § 1318(a)(A) (specifying that permittees must provide records, reports, and other information EPA reasonably requires); CWA § 402(a)(2), 33 U.S.C. § 1342(a)(2) (requiring permittees to provide data and other information EPA deems appropriate); 40 CFR § 122.41(h) (permittees shall furnish "any information" needed to determine permit compliance); 40 CFR § 122.44(i) (permittees must supply monitoring data and other measurements as appropriate); *see also, e.g., In re City of Moscow*, 10 E.A.D. 135, 170-71 (EAB 2001) (holding that EPA has "broad authority" to impose information-gathering requirements

on permittees); *In re Town of Ashland Wastewater Treatment Facility,* 9 E.A.D. 661, 671-72 (EAB 2001) (holding that CWA confers "broad authority" on permit issuers to require monitoring and information from permittees).

The ambient phosphorus monitoring is required for seven (7) months every other year and is not believed to be burdensome, based on EPA's experience with other permits. Additionally, any future, ambient phosphorus monitoring that is conducted by VRAP can be used to satisfy the permit's monitoring requirement. VRAP sampling follows appropriate QA/QC procedures and is therefore acceptable for the purposes of this permit. VRAP coordinates regular water quality sampling by volunteers. These citizen scientists assist NHDES in evaluating river water quality throughout the state. To ensure the data collected are of the highest quality, volunteers use forms to track calibration, confirm sampling process steps, weather conditions, and other data aspects.

ADDITIONAL DRAFT PERMIT COMMENTS

The City evaluated the Draft Permit requirements for parameters that do not constitute numerical effluent limits. Based on the evaluation, the City has developed several comments in response to the requirement changes set forth in the Draft Permit.

**Comment 19**

**Technical Based Industrial Limits**

Keene has previously conducted a study to develop specific effluent local limits for Industrial Users compliant with the requirements set forth in the Administrative Order, Docket No. 04-47. The comments were completed and submitted to EPA for review and approval in 2015. There was no further correspondence of comments or questions following the original submission. A re-evaluation of local limits should not be reiterated in this permit. The City is aware that the main contributors to the collection system are residential, with a total of 98% of users as residential. See Appendix G for significant industrial users list attached to this document. Further, data shows that the number of industrial users classified in the City have not greatly increased from 2015 to 2020. Given that the City has already completed such an assessment and that the number of users has primarily remained the same, a reassessment would not be appropriate. **Accordingly, Keene respectfully requests that the Reassessment of Technically Based Industrial Discharge Limits (Attachment C) be removed from the Final Permit.**

**Response 19**

EPA acknowledges that the City of Keene submitted a local limits review for its Industrial Users following the issuance of the 2007 Permit. On December 18, 2020, EPA placed on a 30-day public notice its intent to approve the City of Keene' s proposed modifications as part of its approved industrial pretreatment program (IPP). The purpose of the public notice was to provide interested parties an opportunity to comment on the proposed modifications as required by 40 C.F.R. 403.18. As there were no comments submitted on the proposed modifications to Keene's IPP, EPA

approved the modifications to the IPP by letter to Eric Swope, industrial pretreatment coordinator, on January 20, 2021.

The local limit reassessment requirement of the Draft Permit only requires that the City complete Attachment C of the permit and does not require a full evaluation of the local limits that the City had previously completed and which have been reflected in the modifications to Keene's IPP noted above. This is required due to the time that has passed since the City's last submittal and the City acknowledging that there have been some changes to the list of Industrial Users. This requirement applies to all reissued permits that have an approved IPP.

**Comment 20**

**Dissolved Organic Carbon (DOC)**
**Keene respectfully requests clarification on Section 13 (Page 8, Draft Permit), which requires the addition of testing DOC as part of the Chemical Analysis for WET testing.** Is data collection for DOC required for solely the initial effluent sample or for all three effluent samples?

In addition, the Draft Permit does not outline the minimum level for DOC in Attachments A and B for chronic and acute toxicity in the Part VI. Chemical Analysis table. **Keene requests that clarification on the minimum level be provided, and that language be included in the Final Permit's Attachment A and B identifying DOC.**

**Response 20**

Monitoring for DOC in the ambient (receiving water) is only required one time for each chronic and acute WET test. These data will be used in conjunction with pH and hardness data to assess whether Keene's effluent has the reasonable potential to violate the revised aluminum criteria which are expected to be adopted by NHDES during the permit term.

As noted in footnote 13 on Page 8 of the Permit, DOC monitoring is not required by either the chronic or acute WET test protocol. Attachments A and B are standard protocols for WET testing in all permits that will not be revised. Please refer to the following excerpt from Footnote 2 on Page 6 of the Final Permit, regarding how to determine the minimum level (ML) for a particular parameter:

> The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

If the commenter has additional questions on this provision, which in EPA's experience have found to be reasonably clear and not a source of confusion in the regulated

community, it should contact the permit writer for any necessary clarification on how it is to be implemented.

**Comment 21**

**Alternate Dilution Water**

Keene contracts out to a laboratory to conduct the WET Testing and has done so for years. They have been using laboratory soft water as the dilution water as part of the WET Testing procedure. Keene was previously granted the ability to use an alternate dilution water as EPA approved a request dated January 23, 1996, from the City. **Keene respectfully requests that the existing practices for utilizing an alternate dilution water be written into the Final Permit.**

**Response 21**

As noted in an email from Janet Deshaies of EPA to Mary Ley of the City of Keene on July 30, 2020, there is not enough information in the most recent toxicity test reports to support the continued use of an alternative dilution water (ADW) at this time.

The use of ADW is authorized in two conditions under EPA's WET Alternative Dilution Water (ADW) Guidance policy: (1) where repeating a test due to toxicity in the site dilution water requires an **immediate** decision for ADW use be made by the permittee and toxicity testing laboratory; and (2) where two of the most recent documented incidents of unacceptable site dilution water toxicity require ADW use in future WET testing.

Because the current WET test reports indicate that the receiving water meets the criteria listed in the WET protocols, the City must submit a new request to use ADW on an ongoing basis with evidence that demonstrates the receiving water is toxic or unreliable in accordance with our regional guidance. See Part IV of the WET testing protocols in Permit Attachments A and B for guidance on how to request the use of ADW.

**COLLECTION SYSTEM**

**Comment 22**

**Maintenance Staff**

The Draft Permit includes the following information specific to Operation and Maintenance of the Sewer System:

"The Permittee and co-Permittees shall each provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit."

This statement is vague and there is no regulatory authority cited for this requirement. The phrase "adequate staff" is unclear as there is no determination set forth that quantifies adequacy

for staffing. **Without a defined regulatory authority as part of this requirement, Keene respectfully requests that Part C.1. requirement be removed from the Final Permit.**

**Response 22**

Although there is no specific definition of "adequate staff" in the permit, "adequate" and "staff" are both words in common usage, and they are sufficiently clear to apprise a person of reasonable intelligence of their obligations under the terms of the permit. The condition sets out a clear standard ("adequate") and a clear endpoint ("compliance with the permit"). EPA expects that Keene and its co-Permittees will maintain sufficient personnel to "to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit." Permit Part I.C. This includes compliance with the Standard Conditions, Part II.B.1 of the Permit:

> The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures…

The specific details of maintaining "adequate staff" are left to the discretion of the City of Keene and its co-Permittees, as they are most familiar with the facility, its staffing, and other pertinent factors. EPA notes that the permit requirement does not prohibit staff from filling multiple roles.

As for EPA's legal authority to require "adequate staffing", the requirement is consistent with EPA's statutory authority to include in NPDES permits any conditions "[EPA] deems appropriate" to "assure compliance" with all applicable Act requirements. CWA § 402(a)(2) (33 U.S.C. § 1342(a)(2)). Generally, EPA has the authority to impose conditions in an NPDES permit where the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA. 40 C.F.R. § 122.44(k). If not for adequate staff, the WWTP would not be able to, among other things, "properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit." 40 C.F.R. § 122.41(e). Thus, it is necessary to ensure compliance with the Act and its regulations.

This requirement shall remain in the Final Permit. If the permittee has continuing questions over interpretation of the permit, or if questions arise during the permit term, it may contact the permit writer for clarification.

**Comment 23**

**Operation and Maintenance Plan**

Section 5 of the Draft Permit (Pages 11-12) outlines requirements of the permittee and co-permittees regarding the Collection System Operation and Maintenance Plan. The annual summary reports and O&M Plan are required to be submitted to EPA and NHDES based on scheduled time frames as depicted in the Draft Permit. There is no authority cited for the

submission of these items. This section does not consider authority of approval of the documents. Licensed operators and operations staff are understood to be responsible for achieving mandated effluent limitations in accordance with the NPDES permit. Therefore, operators are bound by effluent outcomes, not by the process to achieve that performance. The manner in which this happens is understood to be at the discretion of these professionals and not subject to EPA or NHDES scrutiny or oversight. **Without a defined regulatory authority as part of this requirement, Keene respectfully requests that the requirements set forth under Section 5 of the Draft Permit, Collection System Operation and Maintenance Plan be removed from the Final Permit.**

**Response 23**

NPDES Permit conditions are not solely limited to effluent limits and standard conditions in Part II. EPA Region 1 has included mapping as a standard requirement in NPDES Permits issued in New Hampshire since 2007. EPA has broad authority under the CWA and NPDES regulations to prescribe the collection of data and reporting requirements in NPDES Permits. *See* CWA § 308(a)(A), 33 U.S.C. § 1318(a)(A) (specifying that permittees must provide records, reports, and other information EPA reasonably requires); CWA § 402(a)(2), 33 U.S.C. § 1342(a)(2) (requiring permittees to provide data and other information EPA deems appropriate); 40 CFR § 122.41(h) (permittees shall furnish "any information" needed to determine permit compliance); 40 CFR § 122.44(i) (permittees must supply monitoring data and other measurements as appropriate); *see also*, *e.g.*, *In re City of Moscow*, 10 E.A.D. 135, 170-71 (EAB 2001) (holding that EPA has "broad authority" to impose information-gathering requirements on permittees); *In re Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. 661, 671-72 (EAB 2001) (holding that CWA confers "broad authority" on permit issuers to require monitoring and information from permittees). The Collection System O&M Plan requirements in Part I.C.5 readily fall within the bounds of these broad provisions. The commenter should be aware that the Board has upheld collection system and mapping provisions in *In re Town of Concord Dep't of Pub. Works*, 16 E.A.D. 514, 543-45 (EAB 2014).

Additionally, EPA has regulatory authority to require that the Permittee properly operate and maintain the treatment plant pursuant to 40 C.F.R. § 122.41(e). Furthermore, 40 C.F.R. § 122.41(h) allows EPA to require permittees to furnish "any information" needed to determine permit compliance, and EPA believes that the mapping, operation and maintenance planning, and annual reporting requirements fall within the bounds of these provisions. The reported information will allow the City of Keene and its co-Permittees to assess the adequacy of the City's sewer system and the co-Permittee's collection systems, respectively, to better understand vulnerabilities and deficiencies, and more quickly react to any operational issues that need attention.

**Industrial Pretreatment Reporting Requirements**

**Comment 24**

**Clarification on Language**
**Keene requests clarification on the following language:**

"The permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR Chapter I, Subchapter N or O, for the analysis of pollutants parameters (except WET)."

Does the requirement for sufficiently sensitive test procedures apply solely to the pollutants identified in the Part I.A Table? The City is seeking clarification on if the language also applies to "NPDES Requirement for IPP Annual Report", item 5, pages 50-51 of the Draft Permit document.

**Response 24**

As noted in the Fact Sheet, NPDES Permits include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods (SSTM) for Permit Applications and Reporting Rule*.[6] This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. Therefore, SSTM would apply to all sampling required in Part I.A of the Permit, including sampling associated with the annual WET testing.

The SSTM rule applies to only direct dischargers (those applying for an individual NPDES permit) and state/EPA NPDES permitting authorities. The rule does not apply to indirect dischargers. POTWs with approved pretreatment programs may at their discretion (as authorized by their local ordinances and regulations) require their indirect dischargers to achieve specific minimum levels when performing analyses or may require the use of specific methods to enable them to better characterize contributions into their system.

The City is asking specifically about a requirement to sample the influent to and the effluent from the POTW in Attachment D of the Draft NPDES Permit. Therefore, the effluent sampling required in Attachment D would require the use of SSTM whereas the influent sampling would not. However, EPA encourages all sampling to be conducted using SSTM for consistency.

[6] Fed. Reg. 49,001 (Aug. 19, 2014).

**Comment 25**

**Clarification on Language**
**Keene respectfully requests clarification on the following language:**

The Draft Permit stipulates the Pretreatment Year as "… twelve (12) month period ending 60 days prior to the [report] due date…" of November 1st each year. Considering the 60 days prior to the report date, the Pretreatment Year would be from September 1st- August 31st. The City currently operates under a Pretreatment Year of October 1-September 30th. The City requests clarification on this change. **To remain consistent with current operating practices, Keene respectfully requests that the Pretreatment Year period remain the same.**

**Response 25**

EPA acknowledges that the City of Keene's pretreatment year runs from October 1 to September 30**.** Therefore, the Final Permit has been revised to require that the IPP Annual Report is due on December 1 instead of November 1 to allow the City sixty (60) days after the end of the City's pretreatment year to complete and submit the report.

**Comment 26**

**Section G.3 Nitrogen**
Section G.3.b of the Draft Permit states, "… the annual report shall include a detailed explanation of the reasons why TN discharges have increased, including any changes in influent flows/loads and any operational changes." The City is not required by the permit to report or monitor data on influent TN. **Therefore, Keene respectfully requests that the requirement to report on changes in influent TN be removed from the Final Permit.**

**Response 26**

Section G.3.b also requires "[t]he Permittee [to] submit an annual report to EPA and the NHDES, by February 1st each year, that summarizes activities related to optimizing nitrogen removal efficiencies, documents the annual nitrogen discharge load from the facility, and tracks trends relative to the previous year." As noted in Response 33, EPA has expanded the trend-tracking requirement to the previous 5 years. In the event that TN discharges are found to have increased, an assessment of influent TN loadings will allow for a complete evaluation and understanding of the source of such increased loadings and potential strategies to reduce them in future years. As more thoroughly described in Responses 18 and 23, EPA has broad authority under the CWA and NPDES regulations to prescribe the collection of data and reporting requirements in NPDES Permits.

**Comment 27**

**Notice of Bypass or Upset**
**Keene respectfully requests clarification on the following language included under Notice of Bypass or Upset of the Draft Permit (Page 22 Draft Permit).**

"…all public or privately owned water systems drawing water from the same receiving water and located within 20 mile downstream of the point of discharge regardless of whether or not it is on the same receiving water or not it is on the same receiving water or another surface water to which the receiving water is tributary."

This language does not provide a definition for "drawing water." **Does this requirement apply to both surface water withdrawals and groundwater withdrawals?** Keene is aware that there are no surface water withdrawals within 20 miles downstream of the effluent discharge. **If this requirement pertains to only surface water withdrawals, and since Keene is aware that there are no existing surface water withdrawals within the defined distance, then Keene respectfully requests that this requirement be removed from the Draft Permit.**

This section of the Draft Permit also requires that "a written notification, which shall be postmarked within 3 days of the bypass or upset." Keene does not have the ability to bypass their WWTF; accordingly, **Keene respectfully requests the removal of the word "bypass" from this article. Further, Keene requests clarification on the term "upset" that would trigger this notification in advance of the issuance of the Final Permit such that the City can respond formally depending on the revised language and associated definition of the word "bypass."**

**Response 27**

The term "drawing water" only applies to surface water withdrawals. This is standard permit language that has been maintained in the Final Permit, in case any new water system initiates water withdrawals within 20 miles downstream of the facility during the permit term.

The term bypass is defined by the State of NH as "the intentional diversion of waste streams from any portion of the wastewater facilities.". Bypasses can occur for various reasons, for example, during construction or due to equipment failure. For this reason, the "bypass" language will remain in the Final Permit. As defined by the State of NH, the term upset is "an exceptional incident in which there is unintentional and temporary noncompliance with permit effluent limitations because of factors beyond the reasonable control of the permittee." *See* RSA 485-A:2. These requirements are included pursuant to Section 401 of the Act, and they are also necessary to meet 'other requirements' of state law under Section 301(b)(1)(C), and the corresponding provision under 40 C.F.R. § 122.44(d)(1)(v).

Both these terms are also defined similarly, but not exactly the same, in Part II (General Conditions) of the Permit, which are drawn verbatim from federal permitting regulations. This bypass language is part of the State Certification requirements listed in Part I of the Draft and Final Permit. The State of NH will adopt EPA's issued Final Permit as a State Permit and items in Part I.4, referring to "bypass" and "upset," will also be conditions of the State Permit.

**Comment 28**

**Water Reservoirs and Wells**

Section 2.3, Available Dilution, of the Draft Permit's Fact Sheet distinguishes Keene's water sources as two wells and the Babbidge Reservoir.

In Keene, there are three separate water supplies, with two surface water reservoirs located in Roxbury, NH. Surface water is conveyed from the Babbidge Reservoir to the Water Treatment Facility. The City's surface water supply is supplemented by four groundwater wells located on West Street and Court Street. **Keene respectfully requests that the water sources be updated in the Final Permit to reflect the correct number of wells and reservoirs.**

**Response 28**

Although the Fact Sheet cannot be changed after the public comment period, EPA acknowledges the correction regarding the City of Keene's drinking water sources for the record and this information is reflected in the administrative record.

**B. Comments from Jennifer L. Perry, P.E. of the CTDEEP, by email on July 13, 2020.**

**Comment 29**

As a downstream state, Connecticut has a keen interest in WWTP discharges and potential impacts to both the major receiving tributaries and LIS. LIS is affected by hypoxic conditions, which occur annually in the summer. Hypoxia in LIS has been well documented to result from excessive amounts of nitrogen. Discharges from wastewater treatment plants contribute to the nitrogen loading and subsequent hypoxic conditions in LIS.

In response to the occurrence of hypoxia in LIS, Connecticut and New York jointly developed a Total Maximum Daily Load (TMDL) for nitrogen which was approved by the Federal Environmental Protection Agency (EPA) in April, 2001. In addition to a number of nitrogen reduction efforts required of Connecticut and New York, the TMDL specified a 25% reduction in the baseline nitrogen load from WWTPs located upstream of Connecticut with discharges that ultimately flow to LIS (MA, NH, and VT). At that time, nitrogen monitoring data was not available and the baseline load for the upstream state's WWTPs was determined using design flows and an average discharge concentration (15 mg/L). It is important to note that very few, if any, WWTPs were operating at design flow capacity at that time. Because of this, the baseline load estimated in the TMDL for WWTPs located upstream of Connecticut was grossly overestimated.

Nitrogen loads from the upstream state's WWTPs were later determined using 2004-2005 monitoring data and average flows. In cases where nitrogen monitoring data were not available, an assumed concentration was used that varied based on the level of treatment. Based on this analysis, it was stated that the upstream states "are meeting" the TMDL target nitrogen load. However, little if any actual nitrogen removal efforts were implemented at that time. The total nitrogen load estimate was used as a "not to exceed" cap in WWTP discharge permits. We believe the 2004-2005 nitrogen load estimate more accurately reflects actual total nitrogen discharges from WWTP's located in the upstream states. As such, this estimate represents the baseline load from which a 25% reduction target should be established in accordance with the TMDL. Additionally, it is a misrepresentation to state or infer that the upstream states are meeting the LIS TMDL.

**Response 29**

EPA acknowledges the comment and agrees that there is uncertainty regarding the baseline loading that existed at the time the TMDL was written. The total nitrogen loading limit, monitoring requirements, and optimization requirement will be maintained in the Final Permit, consistent with the "out-of-basin total nitrogen permitting approach" outlined in the General Response in Appendix A. Nitrogen loading limits may be decreased in future permitting actions if it is determined that nitrogen limits and optimization measures are not assuring WQS are being met in LIS. Also see General Response, Section II.E.

**Comment 30**

The states of Connecticut and New York met the TMDL target reductions for nitrogen in 2014 and 2017, respectively. Currently, Connecticut's WWTPs discharge 5.2 mg/l of nitrogen in aggregate, including WWTPs that have not pursued technology upgrades for nitrogen removal. In 2016, Connecticut initiated additional reductions in nitrogen at WWTPs, which will exceed the TMDL target nitrogen load when completed.

As Connecticut continues to achieve greater nitrogen reductions at its WWTPs, the load from the upstream states consequently becomes a greater portion of the total load to LIS and warrants full attention. A study of nitrogen loading trends to LIS from New England states found that approximately 50% of the nitrogen load to LIS comes from areas north of Connecticut (Mullaney and Schwarz, 2013). This study was based on 10 years (1999-2009) of data and compared computed nitrogen loads from four gaging stations located along the Connecticut-Massachusetts border to the total nitrogen load computed from gages (and estimates) within Connecticut. Based on Mullaney et al. 2018, Connecticut's nitrogen load to the CT River continued to be about 50% of the total nitrogen load to LIS and ranged from 31-52% based on 5 years (2009-2014) of monitoring data collected at two locations in the Connecticut River. Both of these studies include nonpoint source nitrogen loads as well as point source. Finally, a study conducted by Smith et al. 2008 found that very little to no attenuation occurs in the Connecticut River, so this entire total nitrogen load from the upstream states is essentially transported directly to LIS.

**Response 30**

EPA acknowledges the comment.

**Comment 31**

CTDEEP notes that the draft Keene permit includes a total nitrogen limit in pounds per day as a monthly average based on the twelve month rolling average. This total nitrogen limit of 501 pounds per day exceeds the annual average loading of 465 pounds per day determined using 2014-2018 data. It has been assumed that this permit limit will not result in an increase of total nitrogen above the target TMDL load. However, as stated in the above paragraphs, the TMDL baseline total nitrogen load for upstream states was overestimated and therefore, the TMDL target for plants such as this, is an overestimate. WWTPs located in the upstream states have initiated little nitrogen removal efforts, none of which would result in a 25% reduction. Any increase in total nitrogen loading from the WWTP likely represents an actual total nitrogen increase since the TMDL was established in 2001, and such increased load has the potential to adversely impact LIS.

While we greatly appreciate the initial steps taken by EPA to include an enforceable nitrogen load limit, we have concerns that any allowable increase in nitrogen loads will exceed the actual nitrogen load that was occurring at the time the TMDL was developed. Because any increase in nitrogen loads will impact LIS, we request that EPA assure that no increase in total nitrogen loads from the upstream states be allowed.

**Response 31**

EPA does not agree that this Permit will allow an increase in nitrogen loads from what the facility has historically discharged. Although the average nitrogen loading for the period of 2014 through 2018 was estimated based on assumed effluent concentrations of 19.6 mg/L to be 465 lb/day, the total nitrogen loading limit established in the Draft Permit of 501 lb/day is based on the design flow of the facility and assumed total nitrogen concentration of 10 mg/L, which is consistent with EPA's total nitrogen permitting approach. As discussed in the General Response, EPA's permitting approach is intended to cap the aggregate load of total nitrogen from out-of-basin point sources to the LIS rather than prohibiting any load increase from individual facilities.

**Comment 32**

The draft permit contains a condition for the WWTP to complete an evaluation of optimization methods in order to achieve the greatest performance of nitrogen removal and submit a report to EPA within one year. We concur with this condition and would like to see a requirement for the permittee to incorporate nitrogen reduction methods specifically, in the event of an increase in flow and subsequent nitrogen loads.

**Response 32**

As the commenter notes, the Draft Permit requires the City of Keene to evaluate nitrogen optimization methods. It also requires the City to implement recommended changes. Specifically, the Draft Permit states in Section G.3, paragraph 1:

> Within one year of the effective date of the permit, the permittee shall complete an evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen in order to minimize the annual average mass discharge of total nitrogen and submit a report to EPA and MassDEP documenting this evaluation and presenting a description of recommended operational changes. **The Permittee shall implement the recommended operational changes in order to minimize the discharge loading of nitrogen.**

(Emphasis added.) The intention of Section G.3 is to require that the permittee take actions to implement operational changes that will minimize nitrogen loadings, consistent with the optimization approach described in Section II.E of the General Response.

Because the permit includes a nitrogen loading limit and ongoing reporting of nitrogen loading amounts, EPA expects that the Permittee would implement measures to reduce future nitrogen loadings if year-to-year nitrogen loading increases for a reason not due to

seasonal/annual variability. EPA expects that the annual reports to be submitted by the City required by Part I.G.3.a. of the Permit would identify optimization measures that were taken to reduce nitrogen loadings.

**Comment 33**

Also specified with the optimization study, is a condition for the WWTP to report annually on the nitrogen load discharged from the facility and track changes in the load relative to the previous year. CTDEEP requests that the observation of trends in total nitrogen loading be expanded to include the entire record of available total nitrogen data.

**Response 33**

EPA agrees with the comment that tracking trends in nitrogen removal on a longer-term basis than simply comparing to the most recent calendar year is appropriate. Therefore, EPA has modified the language in Section I.G.3.b to require tracking based on all available data from the previous calendar year and the previous five calendar years.

EPA notes that all effluent data are also publicly available on EPA's website, Environment and Compliance Data Database (see EPA ECHO Database, https://echo.epa.gov).

**C. Comments from Barbara Skuly of ARLAC, by email on July 20, 2020.**

The Ashuelot River Local Advisory Committee (ARLAC) convened in 1994 with the acceptance of the Ashuelot River into the NH Rivers Management and Protection Program. ARLAC represents the ten corridor towns of the Ashuelot River and acts in an advisory capacity to NHDES. ARLAC has implemented a river monitoring program since 2001 with the assistance of the NH Volunteer River Assessment Program. Our total phosphorus data is cited in the current draft permit. We have also commented on the 2006 draft NPDES permit for this facility. It is with this background that we offer our comments on the proposed NPDES permit for the Keene Wastewater Treatment Plant (WWTP).

**Comment 34**

The proposed average monthly phosphorus limit of .18 mg/L with a dilution factor of 2, results in an instream concentration of .09 mg/L in the receiving water. Thereby this limit maintains the similar effect as the current permit limit of 0.2 mg/L with a dilution factor of 2.08 also resulting in an instream concentration of 0.096 mg/L. ARLAC has found significant improvement in the River total phosphorus levels since Keene WWTP has managed for this nutrient. As cited in the fact sheet, river levels upstream of the WWTP are below the Gold Book criterion of 0.1 mg/L. Levels downstream of this site, which includes some dilution from the South Branch, are also below the Gold Book criterion and would indicate the effect of the existing phosphorus limit for the WWTP has been protective using that standard. The following table shows phosphorus levels in mg/L from samples at the Cresson Covered Bridge, downstream of the WWTP and the South Branch confluence.

| July, Aug, Sept 2015 | July, Aug, Sept 2016 | Aug, Sept 2017 | July, Aug 2018 | July, Aug 2019 |
|---|---|---|---|---|
| 0.018, 0.021, 0.023 | 0.015, 0.026, 0.020 | 0016, 0.012 | 0.025, 0.024 | 0.044, 0.018 |

However it is worth noting that NHDES Water Quality Standards (WQS) define levels of 0.026 - 0.049 mg/L as more than desirable. As the chart above shows, there are instances where readings have approached this level. Ideally a lower permit limit would help to achieve this standard.

**Response 34**

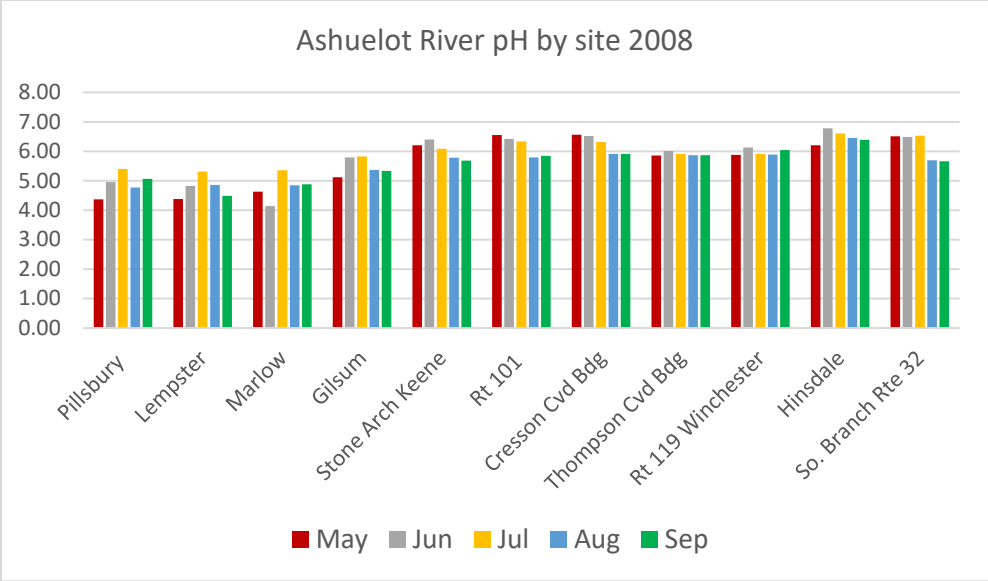
As described in the Draft Permit, EPA does not have a basis to establish a permit limit more stringent than one based on current WQS. As noted in the Fact Sheet, EPA implemented the state's narrative nutrient water quality criteria by relying on a range of relevant information, including EPA's *Gold Book*, which recommended a threshold-based value of 0.1 mg/l. This is intended to be an upper limit not to be exceeded during critical conditions, such as those occuring during low flow (7Q10) and treatment plant design flow. The NHDES has the authority to certify a more stringent limit into the Final Permit based on the range cited in the comment above, if supported by the data and necessary to meet WQS, but has not chosen to do so.

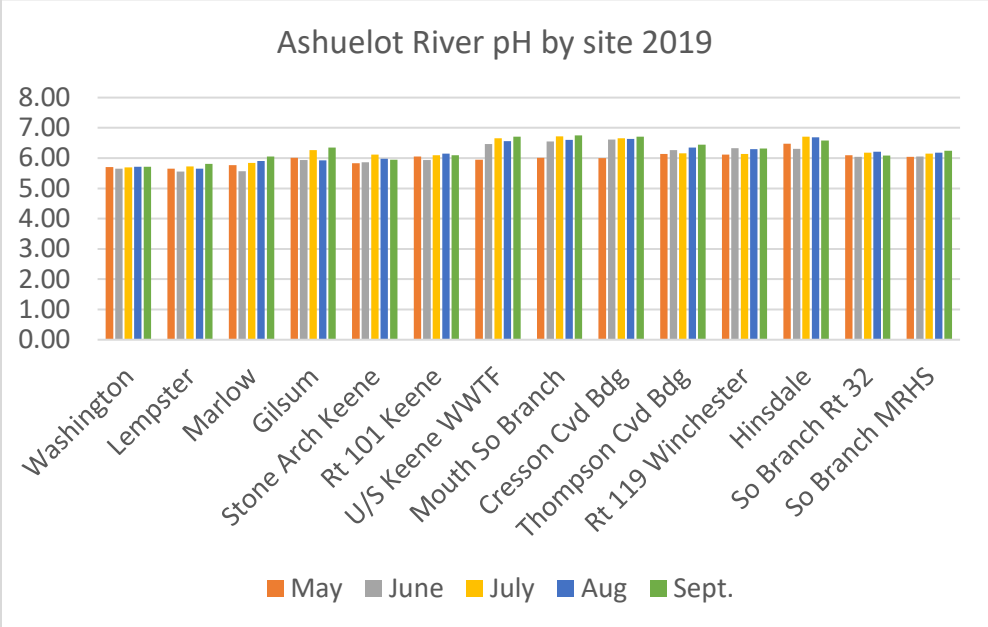
The commenter states that the NHDES WQS define levels (of instream phosphorus) of 0.026 - 0.049 mg/L as more than desirable. EPA believes that the commenter is referring to the NHDES' 2018 Consolidated Assessment and Listing Methodology (CALM) document, which is not a WQS.[7] In this document, NHDES determined that a waterbody is potentially attaining WQS if there are no dissolved oxygen impairments and the median total phosphorus (instream) concentration is below 50 µg/L based on data collected for the seasonal period of May 24 – September 15 that are five years of age or less (pp. 95-96). This indicator is not intended to assess a surface water as impaired for infrequent or minor occurrences of elevated total phosphorus. NHDES has never used this analytical methodology to determine whether to classify a river or stream in the state as impaired. Rather, this indicator is intended to address more significant and/or chronically elevated total phosphorus levels. EPA notes that New Hampshire has not adopted a numeric total phosphorus criterion into its WQS.

**Comment 35**

The Ashuelot River continues to be listed as impaired for low pH. The trend shows a lower pH in the upper reaches of the River upstream of Keene, but with readings increasing as the River flows through and downstream of the City. Following are charts showing the values obtained during our 2008 and 2019 monitoring seasons.

[7] https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/r-wd-19-04.pdf




Over the years the pH of the Ashuelot River has been slowly trending closer to the NH WQS of 6.5-8, the cause for this increase remains debatable. As the WQS provides the optimum range for aquatic life and the Ashuelot has been slowly approaching this standard, ARLAC supports the continuation of its application to the Keene WWTP as a basis for pH limits.

**Response 35**

EPA agrees and the pH range of 6.5 – 8.0 S.U., which is consistent with State WQS, will remain in the Final Permit. Also see Response 10 above.

**Comment 36**

Ideally a TMDL would better establish a basis for determining limits for the WWTP's effluent. The draft permit states it will be in effect for 5 years from the date of issuance. The current permit has been in effect for now 13 years. It is hoped a more timely review will occur for the next permit, and perhaps a completed TMDL will enable limits to be established in line with the actual conditions on the Ashuelot. But in the meantime we need to maintain limits that honor the standards established by the State.

**Response 36**

NHDES is not currently prioritizing any TMDL work for the Ashuelot River. If NHDES completes a TMDL for this segment of the Ashuelot River in the future that is approved by EPA, such TMDL's recommendations would be reflected in the subsequent permit issuance for the City of Keene.

In general, EPA has committed to improve the timeliness of our NPDES permit issuance and has established a goal that all permitting-related decisions will be made within six months.[8]

[8] https://www.epa.gov/sites/production/files/2019-09/documents/fy-2018-2022-epa-strategic-plan.pdf

# APPENDIX A

# GENERAL RESPONSE TO COMMENTS ON LONG ISLAND SOUND ("LIS") NPDES OUT-OF-BASIN TOTAL NITROGEN PERMITTING APPROACH IN NEW HAMPSHIRE

Numerous comments were received regarding the new total nitrogen ("TN") effluent limits. This General Nitrogen Response ("General Response") provides a comprehensive explanation of the overall approach EPA has adopted to address TN effluent limitations for out-of-basin POTWs discharging to Long Island Sound, taking into account the Clean Water Act (CWA or "the Act"), implementing regulations, case law and varied technical and policy considerations. It addresses the comments received regarding the new TN effluent limits and is referenced in many of the responses to those specific comments.

While this permitting approach governs the application of TN effluent limits in the specific permit here and allows EPA to place those limits within a wider frame of reference in order to explain their derivation, EPA underscores that NPDES permits are adjudicated on a case-by-case, permit-specific basis. The limits imposed here, in other words, do not set a precedent for other permittees, and do not bind the Region, or other regulated entities, in future permit proceedings, which will be adjudicated based on their own administrative records.

## I. Introduction and Description of Permitting Approach[1]

EPA has adopted a systemic, state-by-state approach to reduce out-of-basin loading of nitrogen pollution into Long Island Sound from POTW point sources in Massachusetts, New Hampshire, and Vermont, through the coordinated issuance of individual NPDES permits ("Out-of-Basin Permitting Approach"). These out-of-basin facilities have not been assigned waste load allocations ("WLAs") under the Long Island Sound Total Maximum Daily Load[2] ("TMDL") approved by EPA in 2001. The task of allocating nitrogen loads among these facilities in a

[1] The NPDES out-of-basin permitting approach described here is distinct from the Long Island Sound Nitrogen Reduction Strategy. In December 2015, EPA sent a letter to the environmental agency commissioners of MA, CT, NY, VT and NH setting forth a post-TMDL EPA Long Island Sound Nitrogen Reduction Strategy (the "LIS Strategy") for waters in the LIS watershed. The strategy recognizes that more work may need to be done to reduce nitrogen levels, further improve dissolved oxygen ("DO") conditions, and attain other related water quality standards in LIS, particularly in coastal embayments and the estuarine portions of rivers that flow into the Sound. EPA is working to establish nitrogen thresholds for Western LIS and several coastal embayments, including the mouth of the Housatonic River. Currently, EPA is responding to comments on our threshold modelling methodology from the public, external technical reviewers and our state and county partners. Documents regarding the LIS Strategy are available for public access on EPA's Long Island Sound website (http://longislandsoundstudy.net/issues-actions/water-quality/nitrogen-strategy/). Upon completion of establishing thresholds and assessing the water quality conditions of the estuarine waters of the Connecticut River, allocations of total nitrogen loadings may be lowered if further reductions are necessary. Thus, while EPA's current systemic NPDES permitting approach discussed in this general comment, and embodied in this permit, does not currently rely on data from the LIS Strategy, future efforts to establish permit limits could be informed by relevant data and recommendations that result from the LIS Strategy effort. If reductions are needed for this particular discharge, a lower water quality-based effluent limit will be added in a future permit cycle. If so, EPA anticipates exploring possible trading approaches for nitrogen loading in the Massachusetts portion of the Connecticut River watershed.

[2] Connecticut Department of Environmental Protection and New York State Department of Environmental Conservation, *A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound* (LIS TMDL), December 2000.

manner that ensures compliance with water quality standards, as required under Section 301 of the Act, falls to EPA. That EPA would implement any necessary reductions through the issuance and oversight of NPDES permits was expressly assumed by the TMDL. Uncontested on the record before EPA in this permit proceeding are two facts: first, that significant amounts of nitrogen from out-of-basin facilities are discharged to the LIS watershed (as much as 6 million pounds per year, based on the sum of the maximum annual discharge from each out-of-basin discharger from 2013 to 2017), and, second, that ongoing nitrogen-driven water quality impairments exist in LIS.

When confronting the difficult environmental regulatory problem of controlling or accounting for dozens of discharges into a complex water body like Long Island Sound, EPA was presented with a variety of potential permitting approaches. Long Island Sound is a nitrogen-impaired water body spanning 1,268 square miles that implicates the sometimes divergent interests of five states, dozens of municipalities and numerous non-governmental organizations ("NGOs"), along with interested members of the public. In developing its overarching permitting approach, as well as each individual permit, EPA carefully considered, but ultimately rejected, several possible alternatives, on two principal grounds: (1) that they were not sufficiently protective to assure that all the applicable requirements of the Act would be met (*i.e.*, they lacked enforceable TN effluent limitations to *ensure* as a matter of law that nitrogen loads would be maintained at protective levels), or (2) that they would entail unwarranted uncertainty and delay (*i.e.*, they called for the development of new or revised TMDLs or for development of extensive new data collection or modelling in an attempt refine or pinpoint necessary targets and loads, even though the permits at issue have long-since expired and water quality impairments are ongoing).

Rather than approach this complex permitting task on an *ad hoc* basis, EPA instead fashioned a systemic permitting approach designed to comprehensively regulate nitrogen loading from out-of-basin nitrogen sources on a gross, basin-level scale. EPA addressed the existing TN loading to ensure achievement of the following overarching objectives:

- the overall out-of-basin TN load does not increase, given that the LIS is already nitrogen impaired;
- effluent limits are annual average mass-based, consistent with the assumptions of the TMDL;
- no individual facility is left with an effluent limit that is not achievable using readily available treatment technology at the facility's design flow; and
- smaller facilities can achieve their limits through optimization.

EPA's derivation of effluent limitations to implement these objectives, based on its best professional judgment and information reasonably available to the permit writer at the time of permit issuance, consists of three essential parts:

- First, EPA *identified* the existing aggregate load from all contributing facilities in a given state.

- Second, because Long Island Sound is already nitrogen impaired and failing to achieve applicable water quality standards,[3] EPA *capped* that load to avoid contributing to further impairments and fully protect existing uses.

- Third, EPA *allocated* the load according to a water quality-related consideration rationally related to achieving water quality standards in Long Island Sound and carrying out the objectives of the Act.

In the case of New Hampshire, that consideration was facility *size*. In deriving design-flow-based effluent limitations, EPA utilized the following methodology:

- EPA estimated the current maximum out-of-basin annual point source load using data for the five years prior to the year of the Draft Permit, consistent with Region 1's ordinary practice of using the most recent five years of data in the derivation of effluent limits for permits, which is in accordance with the recommendation in EPA guidance to use three to five years and, by use of the longer timeframe, is intended to more fully capture a representative data set[4] (see estimate of recent effluent loadings appended to the Fact Sheet);

- It prioritized effluent limits for major POTW facilities with design flow greater than 1 MGD, consistent with the definition of major facility in 40 CFR §122.2;[5]

- It developed mass-based rolling annual average TN effluent limits based on design flow (consistent with 40 CFR § 122.45(b)(1)) and an effluent concentration, 10 mg/L, that can be achieved by means of currently available nitrogen removal technology for all facilities and the design flow for each facility, where effluent limit (lb/day) = Concentration (mg/L) x Design Flow (MGD) x 8.345;

EPA's intention in establishing a total nitrogen limit in this and future permits for out-of-basin dischargers is not specifically to achieve greater nitrogen reductions, but rather to cap the out-of-basin contribution in a manner that provides assurance to the downstream state that total nitrogen loading will not increase with population or economic development. That assurance is provided by means of enforceable effluent limits.

Although EPA considered caps for individual dischargers at their current loadings, that approach was rejected because these effluent limits are subject to statutory antibacksliding requirements of CWA § 402(o) which would prevent a limit from being increased if flows increase due to new residential or industrial development. Therefore, a facility currently discharging well below its design flow, could be unable to meet the loading limit if, for example, a new industrial discharger were to tie in, even if that discharger were willing to invest in readily available treatment technology. EPA examined out-of-basin loads across the watershed and developed effluent limits that are achievable through optimization or readily available treatment

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[3] CTDEEP, Interstate Environmental Commission, EPA, *2019 Long Island Sound Hypoxia Season Review*, available at: http://www.iec-nynjct.org/sites/default/files/2020-07/FINAL_LISound-Hypoxia-2019-Combined-Report_april2020.pdf

[4] *NPDES Permit Writer's Manual*, EPA-833-K-10-001, September 2010, page 5-30, available at: https://www.epa.gov/sites/production/files/2015-09/documents/pwm_2010.pdf, page.

[5] *NPDES Permit Writer's Manual*, EPA-833-K-10-001, September 2010, page 2-17, available at: https://www.epa.gov/sites/production/files/2015-09/documents/pwm_2010.pdf

technologies for all facilities, even if they are operating at their design flow. EPA has determined that this approach will be protective of water quality and will monitor receiving water response over the permit term and adjust as necessary in future permit cycles. EPA believes that this approach reasonably balances the need to hold overall TN loadings constant to avoid exacerbating ongoing nitrogen-driven environmental degradation against the inherent scientific and technical uncertainty associated with receiving water response in a water body as complex as LIS.

EPA chose the 1 MGD cut off because that corresponds to the definition of major POTW under NPDES regulations. Facilities above 1 MGD account for approximately 80% of the total out-of-basin load. Because the majority of facilities in New Hampshire (18 of 27) are 1.0 MGD or smaller and collectively account for a relatively small amount of the total load, EPA believes that optimization is a reasonable point of departure for these facilities, given their comparatively small loads and user bases.

Finally, those facilities under 0.1 MGD are required to monitor and report data that may be used in future permitting cycles.

Thus, in arriving at its tiering determination, EPA considered a series of technical and environmental factors within its expertise, and also took into account equitable considerations. EPA acknowledges that the chosen tiers are not the only way to divide the out-of-basin TN allocations, but was not presented with any alternatives that capped the existing load based on design flow through the imposition of enforceable permit limits.

## II. Statutory, Regulation and Environmental Context for EPA's Chosen Out-of-Basin Permitting Approach

Below, EPA explains the applicable statutory and regulatory structure, as well as the rationale for adopting this particular approach in lieu of others advanced on the record.

### A. National Pollutant Discharge Elimination System Permits Generally

NPDES permits use two statutory mechanisms to protect water quality: (1) water quality standards, and (2) effluent limitations. *See generally* CWA §§ 301, 303, 304(b); 40 CFR pts. 122, 125, 131. Water quality standards are promulgated by states and approved by EPA. *See* CWA § 303(c)(2)(A); 40 CFR §§ 131.10-.12. The CWA and its implementing regulations require permitting authorities to ensure that any permit issued complies with the CWA and the water quality standards of all states affected by the discharge, which in this case are comprised of Massachusetts, Connecticut and New York. *See* CWA §§ 301(b)(1)(C), 401(a)(1)-(2); 40 CFR §§ 122.4(d), .44(d)(1).

Effluent limitations serve as the primary mechanism in NPDES permits for ensuring compliance with a state's water quality standards by imposing limits on the types and amounts of particular pollutants that a permitted entity may lawfully discharge. *See* CWA §§ 301(b)(1)(C), 401(a)(1)-(2). Effluent limitations for pollutants are based on the control technology available or are based on achieving the water quality standards for the receiving water. CWA § 301(b)(1)(a)-(c). The nutrient limits here are water quality-based effluent limitation, commonly referred to as "WQBELs".

### B. Impaired Waters and Total Maximum Daily Load

The CWA establishes a process by which states identify and manage waters where pollution control technologies alone are not stringent enough to achieve applicable water quality standards. CWA § 303(d). These identified waters, where the applicable water quality standards have not yet been attained, are commonly referred to as "impaired" waters or "nonattainment" waters and are prioritized by the states on a list that is commonly referred to as a "303(d) list." *Id.* Once a water is identified on a 303(d) list, the state develops a management plan for bringing these waters into compliance with water quality standards. CWA § 303(d)(1)(C)-(D). This process includes setting priorities for establishing TMDLs for individual pollutants in the impaired waters. *Id.*

A TMDL defines the amount of a pollutant that a waterbody can assimilate without exceeding the state's water quality standard for that waterbody. CWA § 303(d)(1)(C). TMDLs are set at a level that incorporates seasonal variations of the waterbody and a margin of safety that takes into account gaps in knowledge. *Id.* The TMDL then allocates a portion of the receiving water's pollutant loading capacity among facilities discharging to the impaired waterbody. 40 CFR §§ 130.2(h), 130.7. These wasteload allocations ("WLAs") for point sources, which are based on the underlying water quality standards, serve as a basis for water quality-based effluent limitations in permits. In addition to wasteload allocations for point sources, TMDLs include load allocations ("LAs") for background and nonpoint sources, a margin of safety, and possibly a reserve allocation (for example, for future growth). CWA § 303(d)(1)(C); *see also* 40 CFR § 130.7; Office of Water, U.S. EPA, Doc. No. EPA-833-K-10-001, *NPDES Permit Writers' Manual* §§ 6.2.1.2, 6.4.1.1, at 6-14, -31 (Sept. 2010) ("*2010 Permit Writers' Manual*").

Although EPA initially approached the development of TMDLs one water segment at a time, EPA has long supported and encouraged states to develop TMDLs on a watershed-wide basis to more comprehensively assess and allocate pollutant loads across hydrologically-linked water segments at the same time. *See* Office of Wetlands, Oceans & Watersheds, U.S. EPA, *Handbook for Developing Watershed TMDLs* 1, 6-8 (draft Dec. 15, 2008) ("*Watershed TMDL Handbook*"); *see also* CWA § 303(d)(1); 40 CFR §§ 130.7, 131.3(h). Watershed TMDLs follow the same general process as a "single-segment TMDL," but the watershed TMDL involves larger-scale considerations and "often provides greater flexibility in developing source allocations." *Watershed TMDL Handbook* at 69. This approach is reflected in the LIS TMDL.

In addition to TMDLs, the furthering of impairment is prohibited by the antidegradation provisions of State water quality standards. One of the principal objectives of the CWA, articulated in CWA § 101(a) is to "maintain the chemical, physical and biological integrity of the Nation's waters." The antidegradation requirements in federal regulations at 40 CFR § 131.12 provide a framework for maintaining and protecting water quality that has already been achieved and require states to adopt provisions in their water quality standards that prevent further degradation of both degraded and waters which are meeting or exceeding the water quality necessary to protect designated and existing uses. Since the receiving water at issue here is in Connecticut, we look to Connecticut antidegradation requirements which state, in paragraph 2 of the Connecticut Water Quality Standards:

> Existing and designated uses such as propagation of fish, shellfish and wildlife, recreation, public water supply, and agriculture, industrial use and navigation, and the water quality necessary for their protection is to be maintained and protected.

As the New Hampshire point source dischargers are substantially upstream of the impaired receiving water, EPA is applying the antidegradation requirement by capping the aggregate loading of nitrogen to the Long Island Sound from New Hampshire dischargers. This allows EPA to ensure that the nitrogen limits are applied fairly and in a technologically feasible manner while ensuring that antidegradation provisions of Connecticut's water quality standards are being met.

### C. The Relationship Between NPDES Permitting and TMDLs

This permit concerns the interrelationship between two key mechanisms prescribed by the CWA for protecting and improving water quality: (1) the facility-specific effluent limits established by NPDES permits issued pursuant to section 402, and (2) the TMDL WLAs, and the assumptions underlying them, developed by states pursuant to section 303(d) to limit and allocate pollution loads among facilities discharging to impaired water bodies. The statute does not specify how NPDES permits should incorporate or reflect WLAs. EPA's implementing regulations, however, require permitting authorities to ensure that permit effluent limits are "*consistent with the assumptions and requirements* of any available [WLA] for the discharge prepared by the State and approved by EPA." 40 CFR § 122.44(d)(1)(vii)(B) (emphasis added).

As detailed below, EPA is obligated to regulate discharges that have the reasonable potential to cause or contribute to water quality standards violations through the imposition of WQBELs in NPDES permits, even where a TMDL has not yet been issued or updated. In so regulating, EPA may also impose limitations that are at once consistent as well as more stringent than the *assumptions* of a wasteload allocation in a TMDL based on new information. Finally, a permitting authority may derive a limit based on both a TMDL and the relevant water quality standard.

It has long been settled in the EAB and the First Circuit that EPA has the discretion to regulate discharge through the imposition of a WQBEL where a TMDL has not yet been issued or revised. As the Board explained in *In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 604-06 (EAB 2010):

> Regulations implementing the NPDES permitting program specifically contemplate that permit issuers will establish numeric permit limits when there is no TMDL or wasteload allocation. Subsection (vii) requires the permitting authority to "ensure" that effluent limits are consistent with "any *available* wasteload allocation." 40 CFR § 122.44(d)(1)(vii) (emphasis added). By using the phrase "any available," the regulations expressly recognize that a TMDL or wasteload allocation may not be available. This reading of the regulation is compelled by the Agency's interpretation set forth in the preamble to 40 CFR § 122.44(d)(1), which expressly outlines the relationship between subsections (vi) governing the setting of limits based on narrative criteria and (vii), which requires consistency with "any available" waste load allocation or TMDL:

> The final point about paragraph (vi) is that, *in the majority of cases where paragraph (vi) applies, waste load allocations and total maximum daily loads will not be available* for the pollutant of concern. Nonetheless, any effluent limit derived under paragraph (vi) must satisfy the requirements of paragraph (vii). Paragraph (vii) requires that all water quality-based effluent limitations comply with "appropriate water quality standards," and be consistent with "available" waste load allocations. *Thus, for the purposes of complying with paragraph (vii), where a wasteload allocation is unavailable, effluent limits derived under paragraph (vi) must comply with narrative water quality criteria and other applicable water quality standards.*
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> 54 Fed. Reg. 23,868, 23,878 (June 2, 1989) (emphases added). This formal Agency interpretation set forth in the preamble at the time the regulation was promulgated expresses the Agency's expectation that, while wasteload allocations may not uniformly be available, effluent limits must be established without waiting for a TMDL or wasteload allocation.

The Board's decision was upheld in *Upper Blackstone Water Pollution Abatement Dist. v. EPA*, 690 F.3d 9, 26 (1st Cir. 2012), *cert. denied*, 569 U.S. 972 (2013), where the court similarly rejected the notion that permit issuers must wait until a TMDL or wasteload allocation is developed before setting an effluent limit in a permit and reiterated that scientific uncertainty is not a basis for delay in issuing an NPDES permit. *Accord In re City of Ruidoso Downs,* 17 E.A.D. 697, 733 (EAB 2019), *appeal docketed sub nom. Rio Hondo Land & Cattle Co. v. EPA*, No. 19-9531 (10th Cir. May 23, 2019); *In re City of Taunton,* 17 E.A.D. 105, 144 (EAB 2016) *aff'd*, 895 F.3d 120 (1st Cir. 2018), *cert. denied*, 139 S. Ct. 1240 (Feb. 19, 2019).

EPA, in addition, has the discretion to deviate from a wasteload allocation in a TMDL, if such a departure is warranted by the record. Significantly, WLAs are not permit limits *per se*; rather they still require translation into permit limits (*i.e.*, WQBELs). While section 122.44(d)(1)(vii) prescribes minimum requirements for developing WQBELs, it does not prescribe detailed procedures for their development. Permit limits need not be identical to the wasteload allocation established by the TMDL. *See In re City of Homedale Wastewater Treatment Plant*, 16 E.A.D. 421, 432 (EAB 2014) (upholding as "consistent with the assumptions and requirements of the…TMDL" permitting authority's decision to include monthly and weekly average effluent limits for phosphorus, rather than daily maximum contained in applicable TMDL). Rather, permit issuers have flexibility to determine appropriate effluent limits for permits within the parameters of the statutory and regulatory scheme. *See* 54 Fed. Reg. 23,868, 23,879 (June 2, 1989) (clarifying in preamble to 40 CFR § 122.44 that, in not imposing detailed procedures for establishing permit limits, EPA intended to "give[] the permitting authority the flexibility to determine the appropriate procedures for developing water quality-based effluent limits"). Accordingly, the Board has rejected the argument that the EPA permit writer, in calculating permit limits for a wastewater treatment plant, erred by using a facility's current, known design flow in developing effluent limits, rather than higher flow rate referenced in the TMDL. *In re City of Moscow*, 10 E.A.D. 135, 146-48 (EAB 2001). Thus, "TMDLs are by definition maximum limits; permit-specific limits like those at hand, which are more conservative than the TMDL maxima, are not inconsistent with those maxima, or the WLA upon which they are

based." *City of Moscow*, 10 E.A.D. at146-48. *See also City of Taunton v. EPA*, 895 F.3d 120, 139-40 (1st Cir. 2018) (upholding Agency's decision to establish necessary permit limits to comply with water quality standards based on available information at the time of permit reissuance (citing *Upper Blackstone Water Pollution Abatement Dist. v. EPA*, 690 F.3d 9, 26 (1st Cir. 2012), *cert. denied*, 569 U.S. 972 (2013))), *cert. denied*, 139 S. Ct.___ (Feb. 19, 2019)).

Additionally, neither the CWA nor its implementing regulations provide a basis for concluding that a permitting authority cannot derive a limit based on *both* a TMDL *and* the relevant water quality standard if there is a record justification to warrant that approach. *In re City of Ruidoso Downs,* 17 E.A.D. 697, 733 (EAB 2019), *appeal docketed sub nom. Rio Hondo Land & Cattle Co. v. EPA*, No. 19-9531 (10th Cir. May 23, 2019); *see also* NPDES Surface Water Toxics Control Program, 54 Fed. Reg. 23,868, 23,879 (June 2, 1989) (incorporating language into the regulations that requires water quality-based effluent limits to be derived from water quality standards because that "is the only reliable method for developing water quality-based effluent limits that protect aquatic life and human health"). To be sure, Sections 301 and 303 have different purposes; each represents a distinct aspect of the CWA statutory scheme that is implemented under a separate set of regulatory authorities. *Compare* 40 CFR § 122.44 (containing NPDES permitting regulations) *with* 40 CFR § 130.7 (containing CWA section 303(d) and TMDL regulations). *See In re City of Taunton Dep't of Pub. Works*, 17 E.A.D. 105, 142-144 (EAB 2016), aff'd, 895 F.3d 120, 136 (1st Cir. 2018), cert. denied, 139 S. Ct. ___ (Feb. 19, 2019) (explaining distinction between CWA § 303(d) listing process and the NPDES permitting process, and observing that, "The 303(d) listing process represents a statutory *response* to water pollution" while "NPDES permitting under CWA section 301 applies to individual discharges and represents a more *preventative* component of the regulatory scheme in that, under section 301, no discharge is allowed except in accordance with a permit.") (emphasis in original). But TMDLs, wasteload allocations developed from TMDLs, and water quality-based effluent limits in permits share a common foundation in that all are required to take into account and assure that relevant water quality standards will be met. This conclusion is reflected in the applicable NPDES regulation at 40 CFR § 122.44(d)(1)(vii)(A)-(B):

> (vii) When developing water quality-based effluent limits under this paragraph the permitting authority shall ensure that:
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> > (A) The level of water quality to be achieved by limits on point sources established under this paragraph is derived from, and complies with all applicable water quality standards; *and* [emphasis added]
> >
> > (B) Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7.

These two provisions are not to be read in isolation; rather, as indicated by the word "and," these requirements must be read in conjunction with one another. This is in in keeping with other provisions of the NPDES regulations implementing the NPDES program and CWA § 301, including 40 CFR 122.4(a) ("No permit may be issued…[w]hen the conditions of the permit do not provide for compliance with the applicable requirements of the CWA, or promulgations

promulgated under CWA'); 122.44(d)(4) (requiring NPDES permits to include "any requirements in addition to or more stringent than promulgated effluent limitation guidelines or standards under sections 301…of the CWA necessary to…[c]onform to applicable water quality requirements under section 401(a)(2) of CWA when the discharge affects a State other than the certifying State") and 122.44(d)(5) (requiring NPDES to "Incorporate any more stringent limitations, treatment standards, or schedule of compliance requirements established under Federal or State Law or regulations in accordance with section 301(b)(1)(C) of the CWA"). *See also* NPDES Surface Water Toxics Control Program, 54 Fed. Reg. 23,868, 23,879 (June 2, 1989) (incorporating language into the regulations that requires water quality-based effluent limits to be derived from water quality standards because that "is the only reliable method for developing water quality-based effluent limits that protect aquatic life and human health"). *See City of Taunton v. EPA*, 895 F.3d 120, 139-40 (1st Cir. 2018) (upholding EPA's decision to establish necessary permit limits to comply with water quality standards based on available information (citing *Upper Blackstone Water Pollution Abatement Dist. v. EPA*, 690 F.3d 9, 26 (1st Cir. 2012), *cert. denied*, 569 U.S. 972 (2013).

### D. The Nutrient Limits Are Consistent with the Assumptions and Requirements of the LIS TMDL

It is undisputed that excessive nitrogen loadings are causing significant water quality problems in Long Island Sound, including low dissolved oxygen. In December 2000, the Connecticut Department of Environmental Protection ("CT DEP"), now known as the Connecticut Department of Energy and Environmental Protection ("CT DEEP"), and New York State Department of Environmental Conservation ("NYSDEC"), completed a TMDL for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL includes a WLA for point sources and a load allocation ("LA") for non-point sources. The point source WLAs for in-basin sources (Connecticut and New York State) are allocated facility-by facility and were developed to achieve an aggregate 60% reduction in point source loading from those two states. The point source WLA in the TMDL *assumes* an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL for out-of-basin sources (Massachusetts, New Hampshire and Vermont wastewater facilities discharging to the Connecticut, Housatonic and Thames River watersheds), but does not allocate loads by facility. *See* TMDL--A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound (CT DEP 2000, page 33).

Although the facility's discharge has not been assigned a specific WLA, it is still subject to the assumptions incorporated into the LIS TMDL under Section 303 of the Act, and implementing regulations, as well as compliance with applicable water quality standards under Section 301 of the Act. The nitrogen load limit in the permit is necessary to meet federal regulations at 40 CFR § 122.44(d)(1)(vii)(A), which as explained require that effluent limits be consistent the assumptions and requirements of any available approved wasteload allocation, and 40 CFR § 122.44(d)(1)(vii)(B), which require compliance with state water quality standards. In its 2001 LIS TMDL approval letter and attached review memo, EPA acknowledged the TMDL assumption that a 25% reduction of the out-of-basin point source load was a reasonable, necessary condition for approving the LIS TMDL. It committed to using its NPDES authorities to implement this reduction. EPA discussed the out-of-basin nitrogen loads as follows:

> The TMDL identifies wasteload allocations for out-of-basin nitrogen loads (i.e., tributary loads) that would be achieved through the implementation of Phase IV reduction targets. Specifically, the Phase IV targets include a 25 percent reduction in point source nitrogen loads, based on the clear role that these sources have on water quality in Long Island Sound.
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> As discussed above, EPA is not approving the out-of-basin nitrogen reductions as formal allocations but rather as reasonable assumptions on which the in-basin reductions are based. In this case, the states' estimated 25 percent reduction in nitrogen loads from point sources (primarily POTWs) is reasonable because this level of reduction has been demonstrated as feasible through Biological Nutrient Removal (BNR) retrofits of existing facilities. These low-cost retrofits were implemented at numerous Connecticut POTWs during Phase II of the Long Island Sound nitrogen reduction program. The reductions achieved by these retrofits support the predicted 25 percent reduction by out-of-basin sources. EPA believes that these estimates of future reductions make sense. Moreover, as discussed in the Reasonable Assurance section below, EPA is prepared to use its authorities when issuing NPDES permits to dischargers in Massachusetts and New Hampshire, and in overseeing permit issuance in Vermont, to translate the nitrogen reductions into facility specific requirements in order to achieve the overall 25 percent reduction level. EPA has already begun to include nitrogen monitoring requirements in New Hampshire permits.

Review Memo Section 5.B (page 13, emphasis added).[6] Therefore, EPA's approval of the 2000 TMDL included a commitment on EPA's part to use its NPDES permitting and oversight authorities to reasonably assure that the assumption regarding out-of-basin load reductions identified in the TMDL would occur, consistent with the regulatory requirements. In this and other documents, EPA refers to that commitment as the out-of-basin WLA, consistent with the language in the TMDL.

The annual loading effluent limit is consistent with the assumptions used to derive the WLA for both in-basin and out-of-basin dischargers in the LIS TMDL, because the maximum estimated total out-of-basin point source load is assured to be less than the out-of-basin WLA assumed by the 2000 TMDL. As TN increases may be driven by population increases (the estimated wastewater TN loading is 10 pounds per person per year[7]), TN effluent limits are necessary to assure that the aggregate out-of-basin loading is not exceeded due to population. EPA anticipates that forthcoming out-of-basin permits in New Hampshire will include average annual loading nitrogen limits for facilities with design flow greater than 1 MGD, along with TN optimization requirements in all permits for dischargers greater than 100,000 gpd, and monitoring for all dischargers, in order to assure that TN loadings will be not increase over time to levels that exceed the WLA assumption in the TMDL.

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[6] TMDL Approval Letter from the Long Island Sound Office of the U.S. EPA to the states of New York and Connecticut, with enclosure entitled: EPA New England and EPA Region 2 TMDL Review for TMDL in Long Island Sound, Connecticut and New York, Final Status, Impairment/Pollutant is Hypoxia (low dissolved oxygen) due to nitrogen, dated April 3, 2001.

[7] Unit loading from residences has been estimated at an average of 0.027 lb/capita/d or 10 lb/capita/year. See EPA Manual – Nitrogen Control, September 1993, EPA/625/R-93/010, Page 10.

### E. The Nutrient Limits are Imposed Based on a Finding of Reasonable Potential to Cause or Contribute to an Exceedance of Water Quality Standards; Constitute a Translation of the States' Narrative Nutrient Water Quality Standards; and Are Necessary to Ensure Compliance with Water Quality Standards, Including Antidegradation

Narrative standards have the same force and effect as other state water quality standards; unlike numeric criteria, however, narrative water quality standards are necessarily subject to translation prior to their application. *See American Paper Inst. v. United States EPA*, 996 F.2d 346, 351 (D.C. Cir. 1993). As explained by the D.C. Circuit:

> As long as narrative criteria are permissible…and must be enforced through limitations in particular permits, a permit writer will inevitably have some discretion in applying the criteria to a particular case. The general language of narrative criteria can only take the permit writer so far in her task. 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.

*See American Paper Inst.*, 996 F.2d at 351 (citations omitted). This process of translating a narrative criterion is governed under EPA regulations by 40 CFR § 122.44(d)(1)(vi), which implements Sections 301 and 402 of the Act. Subsection (A) of that provision mandates at the outset a calculation of a protective ambient threshold concentration for the pollutant:

> 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 [emphasis added] for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use.

*See also Upper Blackstone Water Pollution Abatement Dist. v. United States EPA*, 690 F.3d at 23. Because both Connecticut and New York employ narrative water quality criteria for the relevant pollutants, EPA relied in the first instance on the TMDL (a sophisticated and resource-intensive modeling and technical effort representing the input of five states and EPA) as a translation of these criteria under 40 CFR § 122.44(d)(1)(vi), and supplemented that reliance

with an analysis of subsequent water quality monitoring data and other information related to LIS nutrient-driven impairments.[8]

As the Board and First Circuit have held, EPA has a significant amount of flexibility within the bounds of the CWA in determining whether a particular discharge has a reasonable potential to cause an excursion above a water quality criterion. *In re City of Taunton Dep't of Pub. Works*, 17 E.A.D. 105, 144 (EAB 2016), aff'd, 895 F.3d 120, 136 (1st Cir. 2018), cert. denied, 139 S. Ct. ___ (Feb. 19, 2019)*; Upper Blackstone Water Pollution Abatement Dist. v. U.S. Envtl. Prot. Agency*, 14 E.A.D. 577, aff'd, 690 F.3d 9 (1st Cir. 2012), cert. denied, 133 S. Ct. 2382 (2013); *In re Town of Newmarket*, 16 E.A.D. 18 (EAB 2013); *In re City of Attleboro Wastewater Treatment Plant*, 14 E.A.D. 398 (EAB 2009). The requirement to impose a permit limit is triggered by a finding that the facility may discharge a pollutant at a level that "contributes" to or has the "reasonable potential" to cause a water quality standard violation. *Upper Blackstone*, 14 E.A.D. at 599 & n.29; *see also* 40 CFR § 122.44(d). To establish a "reasonable potential" the permitting authority must show some level of certainty greater than a mere possibility in the technical judgment of the permitting authority. *Upper Blackstone*, 14 E.A.D. at 599 n.29 (explaining that "'[r]easonable 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"). Additionally, the reasonable potential analysis must be based on "worst-case" effluent conditions. *Id*. at 599. Thus, as explained previously, this analysis requires "a precautionary approach when determining whether the permit must contain a water quality-based effluent limit for a particular pollutant," rather than "certainty of an existing causal link between a specific discharge and a particular violation of water quality standards" *Id*.

Although nitrogen driven impairments in LIS have been reduced, they have not been eliminated, and remain significant. In EPA's technical and scientific judgment, the current quantity of nitrogen in LIS exceeds the narrative and numeric nutrient-related criteria applicable to LIS, and existing uses are not being protected, based on analyses of water quality data and information in the administrative record.[9] The out-of-basin loads, whose magnitude is described above, necessarily contribute, or have the reasonable potential to contribute, to these violations. Designated uses for the marine waters of Long Island Sound (Class SA) include "habitat for marine fish, other aquatic life and wildlife." *See* RCSA § 22a-426-(f) and (g). Connecticut's WQS protect those uses from excessive nutrient pollution by means of the following narrative criteria: "The loading of nutrients, principally phosphorus and nitrogen, to any surface water body shall not exceed that which supports maintenance or attainment of designated uses." Although there have been significant reductions in the size of the hypoxic zone in LIS due largely to in-basin point source TN reductions, LIS continues to be impaired.[10] As noted, it is undisputed that significant amounts of nitrogen from out-of-basin facilities are discharged to the

[8] NY and CT have narrative nutrient criteria, as well as numeric DO criteria, along with antidegradation requirements protecting existing uses. LIS was listed due to low DO. The use impairment includes: decrease in bathing area quality, an increase in unhealthy areas for aquatic marine life, an increase in mortality of sensitive organisms, poor water clarity for scuba divers, a reduction in commercial and sport fisheries values, a reduction in wildlife habitat value, degradation of seagrass beds, impacts on tourism and real estate, and poorer aesthetics. See TMDL at p. 9.

[9] *See* e.g. Long Island Sound Report Card 2018, at https://www.ctenvironment.org/wp content/uploads/2018/09/ReportCard2018-BestView.pdf

[10] Long Island Sound Study, *A Healthier Long Island Sound: Nitrogen Pollution*, 2019, page 2.

LIS watershed (as much as 6 million pounds per year, based on the sum of the maximum annual discharge from each out-of-basin discharger from 2013 to 2017).

Since the LIS TMDL was approved by EPA in 2001, the study of water quality conditions in LIS and the nitrogen loadings that contribute to hypoxia and other impairments there has continued. Annual monitoring of hypoxia and dissolved oxygen conditions in Long Island continues, as most recently documented in the *2019 Long Island Sound Hypoxia Season Review*[11] which notes that while the area of hypoxia has been reduced, water quality standards have not yet been met.[12]

In 2015, the Long Island Sound Study (LISS)[13] updated its Long Island Sound Comprehensive Conservation and Management Plan (CCMP)[14] which sets watershed targets, implementation actions to meet those targets, and monitoring strategies. One of the objectives of the CCMP is to improve water quality by further reducing nitrogen pollution from sources that are more distant from the Sound, [15] such as wastewater treatment plants in New Hampshire.

A study published in 2008 used both measurements and mass-balance modeling to evaluate the potential for nitrogen attenuation in the main stem of the Connecticut River in April and August 2005. One of the reaches studied was a 55 km stretch of the Connecticut River in Massachusetts. The study found no nitrogen loss in that reach either in April or August, most likely due to the depth and higher velocities in the main stem of the river compared to the shallower, slower tributaries where previous models and studies had demonstrated varying degrees of nitrogen attenuation.[16]

In addition, subsequent studies refined the understanding of out-of-basin baseline nitrogen loading which suggest lower out-of-basin baseline point source loading to the Connecticut River than the 21,672 lb/day assumed in the 2000 TMDL. In 2013, the United States Geological Survey (USGS) published an estimation of the total nitrogen load to Long Island Sound from Connecticut and contributing areas to the north for October 1998 to September 2009.[17] Available total nitrogen and continuous flow data from 37 water-quality monitoring stations in the LIS watershed, for some or all of these years, were used to compute total annual nitrogen yields and loads. In order to extract the non-point source loadings from the total nitrogen measured, the authors relied on point source estimates from the SPARROW model of nutrient delivery to waters in the Northeastern and Mid-Atlantic states in 2002, including the Connecticut River, that

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[11] CTDEEP, Interstate Environmental Commission, EPA, *2019 Long Island Sound Hypoxia Season Review*, available at: http://www.iec-nynjct.org/sites/default/files/2020-07/FINAL_LISound-Hypoxia-2019-Combined-Report_april2020.pdf

[12] *2019 Long Island Sound Hypoxia Season Review* (page 13)

[13] The Long Island Sound Study (LISS) is a bi-state partnership, formed by EPA, New York and Connecticut in 1985, consisting of federal and state agencies, user groups, concerned organizations, and individuals dedicated to restoring and protecting the Long Island Sound. For more information see https://longislandsoundstudy.net/

[14] LISS, Long Island Sound Comprehensive Conservation and Management Plan 2015 Returning the Urban Sea to Abundance (CCMP), 2015.

[15] CCMP, page 19.

[16] Smith, Thor E., et al, *Nitrogen Attenuation in the Connecticut River, Northeastern USA; A Comparison of Mass Balance and $N_2$ Production Modeling Approaches, Biogeochemistry*, Mar., 2008, Vol. 87, No. 3 (Mar., 2008), pp. 311-323

[17] Mullaney, J.R., and Schwarz, G.E., 2013, Estimated Nitrogen Loads from Selected Tributaries in Connecticut Draining to Long Island Sound, 1999–2009: U.S. Geological Survey Scientific Investigations Report 2013–5171, 65

was published by Moore and others in 2011[18]. The SPARROW model estimated that 1,776.7 metric tons per year (MT/yr) (or annual average 10,820 lb/day) of total nitrogen was discharged to the Connecticut River from Massachusetts, New Hampshire and Vermont in 2002[19]. These estimates were based on an approach by Maupin and Ivahnenko, published the same year, which used discharge monitoring data available from EPA's Permit Compliance System (PCS) database for 2002.[20,21] Where no data was available, an estimated typical pollutant concentration (TPC) and flow was used to approximate nitrogen loading from point sources according to their industrial category.[22]

The permit conditions at issue here were fashioned to ensure full implementation of CWA §§ 301(b)(1)(C) and 402, as well as consistency with the assumptions of the LIS WLA. A permitting authority has considerable discretion to determine appropriate effluent limits for a permit. "Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve these statutory mandates of establishing effluent limitations, including narrative permit conditions, to attain and maintain water quality standards. *Arkansas v. Oklahoma*, 503 U.S. 91, 105 (1992). Section 402 provides that a permit may be issued upon condition "that such discharge will meet either all applicable requirements under sections 301, 302, 306, 307, 308 and 403 of this Act, or prior to taking of necessary implementing actions relating to all such requirements, such conditions as the Administrator determines are necessary to carry out the provisions of this Act." 33 U.S.C. §1342(a). "This provision gives EPA considerable flexibility in framing the permit to achieve a desired reduction in pollutant discharges." *Id.* The D.C. Circuit has 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).

Finally, antidegradation provisions of State water quality standards require that existing uses be fully maintained and protected, which is an additional basis for the limit. EPA does not believe that increased nitrogen loading into an impaired water body that is suffering the ongoing effects of cultural eutrophication would be consistent with applicable antidegradation requirements.

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[18] Moore, Richard B., Craig M. Johnston, Richard A. Smith, and Bryan Milstead, 2011. Source and Delivery of Nutrients to Receiving Waters in the Northeastern and Mid-Atlantic Regions of the United States. Journal of the American Water Resources Association (JAWRA) 47(5):965-990. DOI: 10.1111/j.1752-1688.2011.00582.x

[19] Extrapolated from Moore, et.al 2011, Table 3 on page 977 which estimated that for 2002 an 33.2 % of the total 4,553 MT/yr Massachusetts nitrogen load was from point sources, 2.5% of the total 3,795 MT/yr Vermont nitrogen load was from point sources and 6.1 percent of the total 2,790 MT/yr New Hampshire nitrogen load was from point sources.

[20] Moore (2011), page 968.

[21] Maupin, Molly A. and Tamara Ivahnenko, 2011. Nutrient Loadings to Streams of the Continental United States From Municipal and Industrial Effluent. *Journal of the American Water Resources Association* (JAWRA) 47(5):950-964.

[22] Maupin (2011), page 954.

One of the principal objectives of the CWA, articulated in CWA § 101(a) is to "maintain the chemical, physical and biological integrity of the Nation's waters." The antidegradation requirements in federal regulations at 40 CFR § 131.12 provide a framework for maintaining and protecting water quality that has already been achieved and require states to adopt provisions in their water quality standards that prevent further degradation of both degraded and waters which are meeting or exceeding the water quality necessary to protect designated and existing uses. Since the receiving water at issue here is in Connecticut, EPA looked to Connecticut antidegradation requirements which state, in paragraph 2 of the Connecticut Water Quality Standards:

> Existing and designated uses such as propagation of fish, shellfish and wildlife, recreation, public water supply, and agriculture, industrial use and navigation, and the water quality necessary for their protection is to be maintained and protected.[23]

As the New Hampshire point source dischargers are substantially upstream of the impaired receiving water EPA is applying an effluent limitation consistent with antidegradation requirements by capping the aggregate loading of nitrogen to the Long Island Sound from New Hampshire dischargers, to prevent further degradation of the receiving waters that would result from increased loading from the facility, given that nitrogen-driven cultural eutrophication, and the deleterious effects on existing and designated uses that attend this process, is still underway in LIS. This allows EPA to ensure that the nitrogen limits are applied fairly and in a technologically feasible manner while ensuring that antidegradation provisions of Connecticut's water quality standards are being met.

In order to assure compliance with water quality standards, and fully implement and translate the states' narrative nutrient and related criteria, in EPA's judgment, out-of-basin loads should not be increased, because water quality data indicates that the assimilative capacity for nitrogen has been reached in portions of LIS and cultural eutrophication, the impacts of which include hypoxia, is ongoing. It is reasonable, in EPA's view, to issue permits to out-of-basin dischargers that hold loads constant and in so doing curtail the potential for these out-of-basin loadings to contribute to further impairment and degradation of a water that is already beyond its assimilative capacity for nitrogen. The TN effluent limits and optimization requirements are necessary to assure that the out-of-basin load does not cause or contribute to further violation of water quality criteria in the downstream LIS. Holding these loads level, in conjunction with significant nitrogen pollution reduction efforts being pursued by in-basin dischargers will, under EPA's analysis, be sufficient to make a finding that the out-of-basin permits taken as a whole contain nutrient controls sufficient to ensure that the discharges comply with water quality standards under Section 301 of the Act, based on information in the record currently before EPA. This conclusion will be tested for the term of the permit through monitoring programs in LIS and will be adjusted as necessary in future permit cycles. This review and potential tightening of the conditions in NPDES permits is a basic feature of the CWA.

[23] Connecticut DEEP, 2011, Connecticut Water Quality Standards, page 2. Available at: https://portal.ct.gov/-/media/DEEP/water/water_quality_standards/wqsfinaladopted22511pdf.pdf.

## III. Principal Objections to EPA's Chosen Out-of-Basin Permitting Approach

Overall, commenters objecting to the approach adopted by EPA misapprehend the legal framework governing EPA's derivation of NPDES effluent limitations under CWA § 402, which under federal regulations must not only be consistent with the assumptions and requirements of any available WLA, but also must ensure compliance with applicable water quality standards pursuant to CWA § 301, based on information reasonably available to EPA at the time of permit reissuance.

### A. Effluent limits may be more stringent than a TMDL WLA

Several commenters argue that compliance with the nitrogen reductions assumed by the LIS TMDL preclude the imposition of further nitrogen controls on the facility, or rely on the closely-related proposition that EPA must await the development and approval of new, facility-specific WLAs for the out-of-basin POTWs prior to imposing effluent limitations, even if there is evidence of ongoing water quality impairments in the receiving waters (a fact not disputed on the permit record). These positions, however, are unfounded, as the Environmental Appeals Board and United States Court of Appeals for the First Circuit have repeatedly and unambiguously held that EPA need *not* await development of an EPA-approved, facility-specific WLA, or collection of new water quality data or creation of new models, in order to independently develop and impose a water quality-based effluent limitation stringent enough to satisfy CWA § 301 at the time of permit reissuance. *See City of Taunton v. U.S. Envtl. Prot. Agency,* 895 F.3d 120 (1st Cir. 2018), cert. denied, 139 S. CT. 120 (2019); *Upper Blackstone Water Pollution Abatement Dist. v. U.S. Envtl. Prot. Agency*, 690 F.3d 9 (1st Cir. 2012), cert. denied, 133 S. Ct. 2382 (2013).

Additionally, some commenters appear to misconstrue the basis for the permit limits for the out-of-basin dischargers, improperly characterizing that foundation as the WLA established for POTWs discharging directly into Long Island Sound. By this, they imply that the permit need only comply with the WLA, as opposed to the Act as a whole. This view is incorrect in at least two ways. First, as a factual matter, the out-of-basin dischargers were not assigned a WLA; reductions from these sources were an *assumption* of the LIS WLA. Second, EPA's permit limits were not only developed to be consistent with the LIS WLA, but also derived from water quality standards under CWA § 303, which may lead to the imposition to more stringent effluent limitations necessary to achieve those standards, as EPA is obligated to do under CWA § 301. Thus, in accordance with the Act and EPA's implementing regulations, they have been: (1) written to be "consistent" with the assumptions and requirements of the LIS WLA, which was established based on an assumption that out-of-basin sources of nitrogen would be reduced by 25%, and (2) made more stringent than that assumption in order to comply with CWA § 301, based on information available to EPA at the time of permit reissuance, specifically, evidence of ongoing nitrogen-driven impairments in LIS.

### B. EPA need not await a TMDL update before it can incorporate new information relevant to nitrogen loading and receiving water quality in an NPDES permit, and consideration of new information does not amount to a de facto TMDL update

Some commenters argued that EPA must await development of a new TMDL prior to considering updated information when developing NPDES permits. This view improperly subordinates the NPDES program to the TMDL program. In fact, they are coordinate programs.

TMDLs establish pollutant maxima under Section 303 of the Act, and do not preclude the imposition of a more stringent limit pursuant to an NPDES permit under Section 402. While NPDES permits must be consistent with the assumptions and requirements of any available WLA pursuant to EPA regulations, EPA has an independent obligation to write NPDES permits that ensure compliance with Section 301, using the best information available at the time of permit reissuance, which in this case includes an evaluation of TMDL implementation and current receiving water quality in LIS. While the TMDL represented, as a commenter notes, "the best scientific and legal approach for meeting water quality standards in the LIS" at the time, EPA may supplement its scientific and technical record for the purposes of NPDES permitting, including through refining its knowledge of TMDL inputs and assumptions, such as baseline loads, which are inherently dynamic and vary from permit cycle to cycle, as well as an evaluation of instream monitoring and data that reflect the extent to which the TMDL endpoints are being achieved. Contrary to some commenters' assertions, EPA is not attempting to modify the TMDL through issuance of a permit; EPA, rather, is implementing the TMDL by issuing a permit consistent with the assumptions and requirements of that TMDL as required by the federal regulations, and pursuant to its independent obligations under Section 402 and 301 of the Act. *See* 40 CFR 122.44(d)(1)(vii)(A)-(B).

TMDLs are in a sense fixed in a moment in time, but that attribute of TMDLs does not suspend consideration of new information or preclude new analysis consistent with the TMDL under other regulatory programs, such as the NPDES permit program, if the permit record calls for such an evaluation. This stands to reason, given that a person is authorized to discharge, if at all, through an NPDES permit, not a TMDL, and the issuance of an NPDES permit that does not assure attainment of water quality standards is prohibited under the Act and regulations implementing the NPDES program. EPA is obligated under the Act to revisit NPDES permit requirements and generate updated record bases for decision at periodic intervals not to exceed five years. TMDLS, on the other hand, are planning documents and not independently enforceable. Rather, they are implemented though the regular issuance of NPDES permits, and at each NPDES permit reissuance, the permit issuer *must* demonstrate that the discharge will not cause or contribute to a water quality standards violation. Reassessing the baseline load, which was based on estimated point source loads from over 30 years ago, is one component of this process. This evaluation is a function of the NPDES permitting process and does not amount to an "update" of the TMDL. EPA is obligated to ensure not only that the NPDES WQBELs are consistent with the assumptions and requirements of any available WLA, but to ensure that the permit complies with the requirements of Section 301. Given the lapse of time between TMDL approval, and derivation of the baseline assumptions underlying the TMDL, this type of inquiry is reasonable, and indeed has been squarely requested of EPA through comments on the record, including but not limited to those from a downstream affected state. (Even commenters objecting to this reassessment recognize that the NPDES permits necessarily incorporate more recent data and information, given the structure of Section 301 and 402; in objecting to a proposed benchmark, the commenter states, "It does not represent the most recent data available to the Agency at the time of permit renewal.")

### C. The optimization requirement is not vague and is within EPA's authority

Some commenters argued that that a special condition, such as the optimization requirement, is not anticipated by rule, guidance or definition. EPA is authorized to impose narrative conditions in permits to abate the discharge of pollutants when, for example, "The practices are reasonably

necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA." 40 CFR § 122.44(k)(4). Special conditions are defined in EPA's NPDES Permit Writer's Manual as those which,

> "supplement numeric effluent limitations and require the permittee to undertake activities designed to reduce the overall quantity of pollutants being discharged to waters of the United States, to reduce the potential for discharges of pollutants, or to collect information that could be used in determining future permit requirements." (*NPDES Permit Writers' Manual, Chapter 9,* USEPA September 2010 [EPA833-K-10-001]).

As the optimization requirement supplements the TN annual average load limit and is designed to reduce the overall quantity of nitrogen being discharged, it clearly fits within this definition. The requirement is not overly prescriptive, because it is intended to afford the permittee with the latitude to develop the optimization strategy that best meets the configuration and operation of the facility. EPA in imposing the optimization requirement is not dictating specific operational measures at the facility.

EPA disagrees that the optimization is vague. Optimization has been defined, for example, as the process of identifying the most efficient or highest quality outcome, given current constraints, by maximizing positive factors and minimizing negative factors. A permittee applying this or other definition in common usage would not be at risk of arbitrary enforcement. Rather, this condition gives a person of ordinary intelligence a reasonable opportunity to know what is prohibited and comply with the requirement by considering objective factors, so that they may act accordingly. The operators of the facility, as evidenced by their comments, have a deep and nuanced expertise in nutrient removal capabilities and constraints of the plant, and of the factors that impact plant performance.

It is intended that during the first year of the permit, alternative methods of operating the facility to optimize nitrogen removal will be evaluated. At the end of the year the permittee will submit a report to the EPA and NHDES of its findings. The optimal operational method will be self-implementing by the permittee at the beginning of the second year and does not require EPA or NHDES approval. It is the intent of EPA and NHDES that treatment facilities optimize nitrogen removal and, at a minimum, the facilities must not increase their nitrogen discharge loadings.

### D. Voluntary reductions in Total Nitrogen discharge will not assure attainment of water quality standards

Certain commenters suggest that *voluntary* reductions by the out-of-basin dischargers are sufficient to ensure compliance with applicable water quality standards under Section 301 of the Act. The Region disagrees. One long-standing principle is that permits must "ensure" compliance with water quality requirements. *See* 40 CFR § 122.4(d); *In re City of Marlborough*, 12 E.A.D. 235, 250 (EAB) (2005) (finding that "possible" compliance is not the same as "ensuring" compliance); *In re Gov't of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D. 323,342 (EAB 2002) (finding that "reasonably capable" does not comport with the "ensure" standard). EPA has similarly interpreted the CWA to prohibit it from issuing an NPDES permit "[w]hen the imposition of conditions cannot ensure compliance with the applicable water quality requirements of *all affected States*." 40 CFR § 122.4(d) (emphasis added); *accord Arkansas v. Oklahoma*, 503 U.S. 91, 105 (1992) (noting that the regulation dates back from 1973). EPA has

promulgated two other regulations with similar requirements. The first requires each NPDES permit to include conditions necessary to "[a]chieve [WQSs] established under section 303 of the CWA, including State narrative criteria for water quality." 40 CFR § 122.44(d)(1). The second requires each NPDES permit to "[i]ncorporate any more stringent limitations…established under Federal or State law or regulations in accordance with section 301(b)(1)(C)." 40 CFR § 122.44(d)(5). Pollutant controls that may be set aside, for any reason, at the sole election of the discharger—even if those increased loadings will contribute to further violations of water quality standards—cannot be said to "ensure" compliance with these standards. EPA is thus obligated under Section 301 of the Act and implementing regulations to include enforceable limits in the permit.

### E. There is a reasonable level of scientific certainty given the facts in the record to establish an effluent limit

Some commenters argued that more data and modeling is necessary before determining whether further nitrogen controls from out-basin-dischargers would be necessary and, if so, the precise extent of those reductions. While there will always be an irreducible amount of uncertainty given the varied sources of nitrogen loading into LIS and the size and complexity of that water body, EPA is nevertheless obligated to exercise its scientific expertise and apply its technical judgment based on the information it has at the time of permit reissuance, which under the Act is called for at regular intervals not to exceed five years. *See Upper Blackstone*, 690 F.3d at 22 ("[N]either the CWA nor EPA regulations permit the EPA to delay issuance of a new permit indefinitely until better science can be developed, even where there is some uncertainty in the existing data."); *Ethyl Corp. v. EPA,* 541 F.2d 1, 28 (D.C.Cir.1976) (en banc) ("[R]ecognizing ... the developing nature of [the field].... [t]he [EPA] Administrator may apply his expertise to draw conclusions from suspected, but not completely substantiated, relationships between facts, from trends among facts, from theoretical projections from imperfect data, from probative preliminary data not yet certifiable as 'fact,' and the like."). But here, once again, what remains certain and undisputed on the record before EPA is the fact that large amounts of nitrogen from out-of-basin dischargers contribute to ongoing nitrogen water quality impairments in LIS. *Miami–Dade County v. EPA,* 529 F.3d 1049, 1065 (11th Cir.2008) (holding that the "EPA is compelled to exercise its judgment in the face of scientific uncertainty unless that uncertainty is so profound that it precludes any reasoned judgment"). In light of this fact and applicable case law construing the Act, EPA is more than entitled under the Act to proceed with the imposition of reasonable permit effluent limits, designed to achieve gross reductions, on the out-of-basin dischargers.

ATTACHMENT B

SPRINGFIELD, MASSACHUSETTS NPDES PERMIT COMMENT LETTERS

Connecticut Department of
ENERGY &
ENVIRONMENT AL
PROTECTION

79 Elm Street• Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

February 7, 2018

Meridith Timony
U.S. Environmental Protection Agency-Region 1
Office of Ecosystem Protection
Municipal Permits Unit (OEP06-l)
5 Post Office Square , Suite 100
Boston, MA 02109-3912

Clair Golden
MA Department of Environmental Protection
205B Lowell Street
Wilmington, MA 01887

RE: Draft Springfield Regional Wastewater Treatment Plant and CSO discharge permit number (MA0101613)

Dear Ms. Timony and Ms. Golden,

The Connecticut Department of Energy and Environmental Protection (CTDEEP) is providing comment on the draft NPDES permit for the Springfield Regional wastewater treatment plant (WWTP) and combined sewer outfall (CSO) discharges. The draft permit authorizes discharges of treated, untreated, and partially treated wastewater to the Connecticut River which subsequently flows through Connecticut to Long Island Sound (LIS).

As a downstream state, Connecticut has a keen interest in both the WWTP and CSO discharges and potential impacts to both the Connecticut River and LIS. LIS is affected by hypoxic conditions, which occur annually in the summer. Hypoxia in LIS has been well documented to result from excessive amounts of nitrogen. Discharges from wastewater treatment plants and combined sewer overflows contribute to the nitrogen loading to LIS.

CTDEEP's comments on the draft Springfield discharge permit are provided below under four main topic areas: Nitrogen, Combined Sewer Overflows, Co-permittees , and Public Hearing.

Nitrogen

In response to hypoxic conditions in LIS, Connecticut and New Yorkjointly developed a Total Maximum Daily Load (TMDL) for nitrogen which was approved by the Federal Environmental Protection Agency (EPA) in April, 2001. Please update the permit fact sheet to more accurately reflect this information relative to the LIS TMDL.

In addition to a number of nitrogen reduction efforts required of Connecticut and New York, the TMDL specifies a 25% reduction in the estimated baseline nitrogen load from states upstream of Connecticut (MA, NH, and VT). Because the baseline load was determined using an average discharge concentration (15 mg/L) and design flows (monitoring data was not available at that time), the baseline load was grossly overestimated. As a result, Massachusetts met the 25% reduction in 2005, however, little if any actual nitrogen removal efforts were implemented. EPA does not allow such "credits" regarding nitrogen load reductions to LIS where Connecticut and New York are concerned.

Upon review of the draft permit, CTDEEP concludes that the proposed three options for total nitrogen optimization benchmarks are inadequate to address nitrogen loading to LIS. All three proposed options only establish a benchmark and fail to require an actual permit limit. In addition, the proposed benchmark for option 1 exceeds the baseline cap of 1,648 pounds/day by 631 pounds/day. Although, EPA makes note of this in the fact sheet, EPA fails to explain how allowing an exceedance from the baseline cap, established using 2004-2005 data is acceptable. How can EPA justify allowing a greater discharge of nitrogen than the Springfield WWTP is capable of obtaining?

We would also like to bring to your attention, the Enhanced Implementation Plan (EIP), which allowing the Springfield WWTP to exceed the baseline cap directly violates. In 2011, the five watershed states (CT, NY, MA, NH, VT) and EPA agreed upon an EIP. The plan requires EPA and the tributary states to implement a tributary state wastewater treatment plant (WWTP) permitting strategy with a goal of essentially capping existing WWTP total nitrogen loads at or near existing levels until agreement is reached on final allocations and how they will be achieved.

Finally, the draft permit requires the WWTP to optimize in order to achieve the greatest performance of nitrogen removal. However, the permittee has demonstrated greater nitrogen removal capabilities and as such, the WWTP is already poised to comply with this condition. In essence, the WWTP will be permitted to discharge more nitrogen than it is capable of removing upon issuance of this draft permit.

A study of nitrogen loading trends to LIS from New England states found that approximately 50% of the nitrogen load to LIS comes from areas north of Connecticut (Mullaney and Schwarz, 2013). This study was based on 10 years (1999-2009) of data and compared computed nitrogen loads from four gaging stations located along the Connecticut-Massachusetts border to the total nitrogen load computed from gages (and estimates) within Connecticut. As Connecticut continues to achieve greater nitrogen reductions at its WWTPs, the load from Massachusetts and other upstream states (New Hampshire and Vermont) consequently becomes a greater portion of the load and warrants full attention. In addition, very little to no attenuation occurs in the Connecticut River (Smith et al. 2008) so this entire total nitrogen load from upper basin states is essentially transported directly to LIS.

We would also like to take this opportunity to call attention to EPA's effort to advance a nitrogen reduction strategy for LIS (see December 23, 2015 letter from the EPA Regional Administrator). You may already be aware of this effort as EPA recently accepted technical comments from stakeholders for Subtasks F & G (Application of Technical Approach for Establishing Nitrogen Thresholds and Allowable Loads for Three LIS Watershed Groupings: Embayments, Large Riverine Systems, and Western LIS). As noted in CTDEEP's comment letter " We continue to support moving all three watershed groupings forward simultaneously and anticipate that any further work with these initial thresholds will include all three watershed groupings".

We feel this permit is an important step to advance the implementation of strategic nitrogen reductions throughout the LIS watershed and to demonstrate EPA' s commitment to lead through example. The inclusion of a "benchmark" in a National Pollutant Discharge Elimination System (NPDES) permit following the collection of 16 years of data is inadequate. CTDEEP notes that EPA took 12 years to issue a draft discharge permit for the Springfield WWTF. The permittee has demonstrated the ability to meet a certain nitrogen discharge. Therefore, it is appropriate for EPA to require a hard nitrogen load **limit** ofno more than 1,648 pounds/day in Section I.A.I of Springfield's NPDES permit. We formally request that the final permit include an enforceable nitrogen permit limit in Section I.A.I.

Combined Sewer Overflows

We note that in regard to Combined Sewer Overflows (CSOs), EPA merged the formerly separate NPDES permits for the WWTP and CSOs. We understand that an Administrative Order (EPA AO 14-007) to reduce CSOs was executed in September 2014. We also note that the Integrated Wastewater Plan (IWP) submitted in April 2014, which updates the May 2012 Final CSO Long Term Control Plan, has not been approved by EPA.

One of the conditions for the CSOs is that the Nine Minimum Controls be implemented, which includes maximizing combined flows to the WWTP. However, the April 2014 IWP does not adequately address how combined flows will be maximized to the WWTP in order to reduce CSO discharge volume. How much additional combined flow will the upgrade of the York Street Pump Station and Connecticut River Crossing pipes convey to the WWTP? How much will the annual CSO discharge volume will be reduced as a result of these efforts?

Co-Permittees

Additionally, EPA is adding six co-permittees to the draft permit. The towns of Agawam, Longmeadow, East Longmeadow , Ludlow, West Springfield and Wilbraham, Massachusetts own and operate sanitary wastewater collection systems that discharge flows to the Springfield Regional WWTP for treatment. Chicopee was not added to the permit because less than 1,000 residents in the Town of Chicopee are served by sewers discharging to the system. These municipalities are co-permittees for certain activities pertaining to proper operation and maintenance of their respective collection systems. How will the EPA and Springfield ensure that these towns will properly maintain their

systems? Are these towns conducting any projects to reduce infiltration and/or inflow? How will EPA through the permit achieve reductions in wet weather flows and CSO discharges?

Public Hearing

CTDEEP supports the Connecticut Fund for the Environment's request (see CFE comment letter dated February 7, 2018) for a public hearing.

In closing, we trust that US EPA will fully and carefully consider our comments and revise the permit accordingly.

As always we are available to meet with the parties to discuss our comments and achieve our common goal of providing the best possible protection for the environment.

Sincerely,

Denise Ruzicka, P.E.
Director, Water Planning and Management Division
Bureau of Land Protection and Water Reuse

cc. L. Hamjian, EPA Region I
D. Ferris, MADEP
J. Schimmel, Springfield Water & Sewer Commission
S. Sullivan, NEIWPCC
M. Tedesco, EPA LISS Office
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Connecticut River Conservancy

*Clean water. Healthy habitat. Thriving communities.*

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February 12, 2018

Meridith Timony
U.S. EPA – Region 1
5 Post Office Square, Suite 100
Boston MA 02109-3912

**Subject: Springfield Regional Wastewater Treatment Facility draft NPDES Permit**
Permit Number: MA0101613, Public notice MA-004-18
*Replaces permit MA010331*

Dear Ms. Timony,

I am submitting comments on the draft National Pollutant Discharge Elimination System (NPDES) permit for the Springfield Water and Sewer Commission's (SWSC's) Regional Wastewater Treatment Plant (WWTP) on behalf of the Connecticut River Watershed Council, now doing business as the Connecticut River Conservancy. The Connecticut River, an American Heritage River and America's only National Blueway, is a regional resource that merits the highest level of protection. Designed to fully treat an average flow of 67 million gallons per day (MGD), the SWSC facility is the largest wastewater treatment facility in the Massachusetts portion of the Connecticut River watershed. The Connecticut River downstream of the Holyoke Dam to the Connecticut state border is listed as an impaired water body due to priority organics, pathogens, and total suspended solids. CRC is particularly interested in improving water quality in the Connecticut River so that it can support existing primary and secondary contact uses, even during wet weather. CRC believes that the Connecticut River can meet Class B water quality during wet weather and be made safe for swimming, if state and federal regulators work aggressively with other stakeholders to ensure compliance with Clean Water Act goals. CRC has also been following the work of the Long Island Sound TMDL workgroup to reduce nutrient discharges into Long Island Sound.

This draft permit combines two permits into one, replacing the existing permit for the WWTP (MA0101613) last issued in 2000 and the CSO permit (MA 010331) last issued in 2009. On May 24, 2016, the Connecticut Fund for the Environment requested that EPA modify, revoke and re-issue, or terminate these NPDES permits. CRC, as CRWC, signed on in support. In this draft permit, EPA has finally moved to update a permit that is 17 years old, and has been administratively continued for 12 years.

Our comments are below.

1. The protection of existing uses is required under 40 CFR 131.12(a)(1). Below is our understanding of existing uses in the area affected by the SWSC system.
   - Medina Street Boat ramp – located just upstream of the confluence with the Chicopee River. A popular launching point for motor boats, especially in May and June.

- Chicopee River confluence – a popular 24-hr/day fishing location during migratory fish season.
- Pioneer Valley Riverfront Club – youth and adult rowing programs, dragon boating, running and biking. See http://www.pvriverfront.org/
- West Springfield boat ramp – new cartop boat ramp installed in the last 10 years.
- Bondi's Island Boat Ramp – boat ramp located just upstream of the WWTP.
- Pynchon Point – cartop access located just downstream of the confluence with the Westfield River.
- Springfield Yacht Club – located in Agawam, providing boat slips for motor boats and sailboats. See https://www.sycc.website/ .
- Pioneer Valley Yacht Club – located in Longmeadow, providing boat slips for motor boats, sailboats, and rowing access. See http://www.ourpvyc.net/ .
- Riverfront Park and Fannie Stebbins Wildlife Refuge – Longmeadow public boat access, trails, and nature area that is now part of the Silvio Conte National Wildlife Refuge
- Bike paths along the CT River in Springfield and Agawam – ideally, people use the riverfront area in Springfield and Agawam for recreation, although it gets some amount of homeless housing activity. People fish from the banks right next to CSO outfalls and where the Mill River discharges into the CT River.
- Thompsonville Boat Ramp in Connecticut – improved boat ramp for all types of craft, located a couple miles downstream of the MA/CT state line.

2. This section of the river, though urbanized, also contains important fish and wildlife habitat. Many migratory fish pass by the section of Connecticut River affected by the WWTP and CSOs on their way upstream from Long Island Sound, either on their way to the Westfield River, the lower Chicopee River, or the Connecticut River to the fish lift at the Holyoke Dam. These fish include the endangered shortnose sturgeon. In 2017, migratory fish numbers that passed above Holyoke are as follows: 11 Atlantic salmon; 536,670 American shad; 875 blueback herring; 451 striped bass; 85 federally endangered shortnose sturgeon; 740 gizzard shad; 21,526 sea lamprey; and 17,037 American eels. In 2017, 6,000 shad; 5 Atlantic salmon; 5 river herring; and 249 sea lamprey were counted at the fish ladder on the lowermost dam on the Westfield River.

3. CRC supports the inclusion of co-permittees in this permit, the towns of Agawam, East Longmeadow, Longmeadow, Ludlow, West Springfield, and Wilbraham.

4. CRC is glad that the permit has finally been updated to include a pathogen limit based on *E. coli* levels, rather than fecal coliform.

5. CRC supports the increased frequency of sampling of nitrogen compounds from monthly to weekly.

6. CRC recommends that total phosphorus sampling be required as part of this permit. Eurasian water milfoil is present in the Connecticut portion of the Connecticut River. Understanding both the phosphorus and nitrogen inputs in the Connecticut River is important to understanding the spread of weeds like milfoil, as well as cyanobacteria outbreaks, if and when they occur.

7. Section I.B.3.b of the draft permit now requires that CSO structures and regulators be inspected once per month, down from twice weekly. Holyoke and Chicopee are required to do monthly

inspection of their CSO structures also. CRC recommends the frequency be appropriate for finding and fixing problems that arise. We note that twice weekly may be burdensome, but once a month may not be often enough.

8. Section I.B.3.d prohibits dry weather overflows. The previous CSO permit defined "dry weather" as less than 0.1 inch of precipitation or snowmelt in a calendar day. CRC recommends that a definition of dry weather be re-instated in the final permit.

9. Section I.B.3.g requires a public notification plan. CRC notes that none of the CSO communities along the Connecticut River in Massachusetts appear to be doing any kind of public notification, despite permit requirements. We have been supportive of a sewage spill public notification bill going through the Massachusetts legislature. The proposed notification in the draft permit seems potentially unrealistic, given the challenge of having accurate data on when CSOs are discharging. We also think bypass flows and blended flows also be part of public notification. We'd be amenable to an automated notification built into the SWSC website, or a CT River centralized website, that would predict, based on rainfall data, where in the system there is likely to be a CSO activation (Chicopee River, Mill River, north/south CT River mainstem, and on the Bondis Island side). Making a table available to the public like that in Attachment D to the Fact Sheet (along with information on CSO outfall locations), would also be very helpful.

10. Section I.B.3.e requires National Weather Service precipitation data be recorded for each CSO discharge event. This information should also be included in the annual CSO report required in draft permit Section I.B.4 and the DMR data required in draft permit Section I.B.5.a.

11. Section I.D.4 and I.D.5 requires a collection system map and a collection system operation and maintenance plan, respectively, and CRC thinks the requirement is appropriate.

12. Section I.G includes some new industrial pretreatment program requirements, of which we are supportive.

13. Section I.H. includes special conditions for nitrogen, which is new to this permit. The draft permit proposes an annual average mass discharge of total nitrogen capped at the existing average mass loading of 2,279 lbs/day. The Fact Sheet also provides two other alternatives for Total Nitrogen Optimization Benchmarks, based on a total nitrogen (TN) concentration benchmark of 8 mg/L, one including a loading benchmark based on existing flows, and one with no loading benchmark. CRC has discussed these three options with the SWSC and our understanding is that they prefer Alternative 2, and feel that they can meet a concentration benchmark of 8 mg/L. Based on Attachment H to the Fact Sheet, the TMDL based on 2004-2005 used data from two years when the plant was discharging TN at concentrations between 0.988 mg/L (this seems wrong) and 7.29 mg/L. We aren't sure why, if Springfield has been doing N optimization, the concentrations have been consistently higher during the last several years.

    The draft permit proposal of a loading benchmark of 2,279 lbs/day based on existing loading values is consistent with the way EPA has set Total Nitrogen limits for other NPDES permits in the Massachusetts part of the Connecticut River watershed. We looked at the nitrogen general permit in Connecticut, and see that the Hartford MDC facility, which has a design capacity of 80 MGD (20% larger than Springfield), has a limit of 2,377 lbs/day (only 4 % higher than the

proposed limit for Springfield). This amounts to a TN concentration of 3.56 mg/L if you use the design flow of 80 MGD.

CRC notes that using existing flow to set limits is inconsistent with the approach EPA uses to establish loading values in all permits, such as BOD and TSS and also the "reasonable potential analysis for metals (Table 2 in the Fact Sheet). In this permit, they are all based on the design flow of 67 MGD.

CRC also notes that one phase in Springfield's Integrated Wastewater Plan is to provide 62 MGD pumping capacity at the York Street pump station and a new 48-inch diameter river crossing from the collection system to the WWTP, new storage, and conveyance for relief of the Connecticut River interceptor. If the end result of this is a higher capacity to treat larger volumes of wastewater, and EPA and MassDEP approved of this plan, then SWSC should not necessarily be penalized for treating extra volumes and not meeting TN targets based on the previous average flow of the plant.

If a loading value is calculated using the design flow of 67 MGD and a concentration of 8 mg/L, the total nitrogen would be 4,470 lbs/day. Should Springfield's flow increase, the permit would allow an unreasonably high TN loading amount, and for this reason, CRC does not support Alternative 2. Attachment H shows that between 2001 and 2016, the average total nitrogen concentration was 5.46 mg/L, and varied quite a bit from 0 (not a realistic number) to 15.23 mg/L. SWSC would seemingly not be able to meet an enforceable limit based on a 8 mg/L concentration limit consistently. Increasing the sampling from monthly to weekly will allow for better understanding of the performance, which emphasizes again that this permit should have been updated long ago.

CRC recommendation: CRC requests that EPA set an enforceable permit limit that is consistent with anti-backsliding provisions and is based on the design flow of the plant. We recommend that the average TN treatment performance of the facility over the past 15 years be used (5.5 or rounded up to 6 mg/L) to calculate a loading value of 3,073 lbs/day or 3,353 lbs/day, respectively. Then, subtract out a 25% reduction to be somewhat consistent with the approach of the current TMDL. This would mean a loading of 2,305 lbs/day (based on 5.5 mg/L) or 2,514 (based on 6 mg/L). Under current flow rates, the facility would seemingly have no problem meeting this limit. Under increased flows, the facility would also typically be able to meet this limit, when flows and concentrations are averaged over the course of the year. We believe this approach is consistent with the 2015 Long Island Sound Nitrogen Reduction Strategy -- capping WWTPs at or near current total nitrogen loads, yet also sensitive to the SWSC's plans to be sending and treating additional sewage volumes to the WWTP. Future iterations of the permit will have the benefit of more data and a better understanding of nutrient loadings under the Nutrient Reduction Strategy.

14. We have several comments on the CSO overflow events and volumes shown in Attachment D. To start, we are assuming that the volumes for 2016 are an order of magnitude wrong, and were not properly converted to the 1,000's of gallons that the rest of the table was based on. We also recognize that estimation of CSO discharges is an imperfect science.

    Construction to reduce discharges from the Mill River CSOs was completed in 2003. In 2000, the draft LTCP showed in Table 5-3 that the Mill River CSOs were discharging 134 times in a typical

year with a volume of 61.21 million gallons (MG). Springfield's 2014 Integrated Wastewater Plan in Vol 1 appendix B indicates that the post-construction baseline activation frequency (based on 1976 as a typical year) is 15 times with a volume of 1.1 MG. Attachment D of the Fact Sheet indicates the Mill River system has been, in reality, discharging between 47-113 times per year, at a volume of 3.6-29.1 MG between 2012 and 2016. The latter year was one of the most severe drought years since the 1960's, and even then, annual discharge volumes were 300% more than designed. Improvement has been made, but not nearly as much as what was anticipated.

Construction to reduce discharges from the Chicopee River CSOs was completed in 2009. In 2000, the draft LTCP showed in Table 5-3 that the Chicopee River CSOs were discharging 92 times in a typical year with a volume of 22.55 MG. Springfield's 2014 Integrated Wastewater Plan in Volume 1 Appendix B indicates that the post-construction baseline activation frequency (based on 1976 as a typical year) is 3 times with a volume of 0.31 MG. Attachment D of the Fact Sheet indicates the Chicopee River system has, in reality, been discharging 32-82 times per year, at a volume of 1.9-11 MG between 2012 and 2016. The latter year was one of the most severe drought years since the 1960's, and even then, annual discharge volumes were 500% more than designed. Improvement has been made, but not nearly as much as what was anticipated.

Unless the Mill River and Chicopee River CSO abatement projects were not actually constructed as designed, it is evident that using 1976 as the typical precipitation year is a mistake. CRC implores that EPA and DEP abandon the use of 1976 as the "typical year" in projects from this point forward, and use modern day climate data and climate predictions to design CSO projects.

CRC appreciates the opportunity to provide comments on the draft permit. I can be reached at adonlon@ctriver.org or (413) 772-2020 x.205.

Sincerely,

Andrea F. Donlon
River Steward

Cc: Brian Harrington, MassDEP
Denise Ruzicka, CT DEEP
Bill Fuqua, SWSC
Jack Looney, Connecticut Fund for the Environment, Inc.

Connecticut Department of
ENERGY &
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April 27, 2018

Meridith Timony
U.S. Environmental Protection Agency-Region 1
Office of Ecosystem Protection
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Clair Golden
MA Department of Environmental Protection
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Wilmington, MA 01887

RE: Draft Springfield Regional Wastewater Treatment Plant and CSO discharge permit number (MA0101613)

Dear Ms. Timony and Ms. Golden:

The Connecticut Department of Energy and Environmental Protection (CTDEEP) is providing additional comment on the draft NPDES permit for the Springfield Regional wastewater treatment plant (WWTP) and combined sewer outfall (CSO) discharges. This letter supplements the February 7, 2018 comment letter and written testimony that we submitted into the record at the April 24, 2018 public hearing:

1. Mr. Joshua Schimmel, Executive Director of the Springfield Water & Sewer Commission (SWSC), commented at the public meeting before the hearing on Tuesday night that Springfield cannot implement as much CSO reduction work as communities in Connecticut, because Massachusetts does not have the same funding opportunities for wastewater improvement projects that are available to Connecticut. He specifically citing our 50% grant for CSO projects.

   We wish to note that communities like Hartford are similar in size and economic condition to Springfield. If we compare the portion of project costs that are not subsidized by grants, the Metropolitan District (MDC) has spent over $320 million in the last five years and is expected to bid $190 million in new CSO contracts in the next twelve calendar months. Complete implementation of the TMDL by 2026 is expected to result in MDC paying for $1.5 billion of the overall $2.1 billion cost; compared to the $100 million dollars that Springfield has spent to date and the additional $183 million that is proposed for CSO control in the Connecticut River in the 2014 Integrated Wastewater Plan.

   Also, the LTCP for MDC provides for the elimination of all CSO discharges in a typical year by the year 2029. This represents a reduction of one billion gallons of CSO discharges in a

typical year. Meanwhile, it appears that 59 million gallons per year will continue to be discharged from Springfield's CSOs in a typical year after the last CSO project is completed in 2031. This demonstrates that Springfield is in no way doing an appropriate or commensurate amount of CSO reduction activities. The Environmental Protection Agency (EPA) must require Springfield to do more.

2. We request that the NPDES permit require that Springfield's CSOs are tested for nitrogen on a recurring basis. The amount of currently unaccounted-for nitrogen loading to the Connecticut River and Long Island Sound (LIS) attributable to CSOs and other bypasses must be measured, recorded and annually reported through a permit condition.

3. Due to the direct impact on the health of the public recreating and using the Connecticut River, EPA must protect our citizens by inserting into the NPDES permit required notification to Connecticut residents within two hours whenever any of the Springfield CSOs or other bypasses are activated. Notification based on predictive rainfall modeling would be sufficient. In addition, SWSC must be required to notify the CTDEEP when any bypasses occur including CSOs which reach the CT River due to the adverse impact on Connecticut Water Quality during such events. Timely notification is critical in order to protect public health through proper notification to the public.

4. We are concerned about the resistance the SWSC has raised regarding the reclassification of OF-42 as a CSO. If OF-42 is not a true CSO as Mr. Schimmel suggests in his February 9, 2018 comment letter, then this is an unauthorized plant bypass which cannot be permitted and must be treated as a violation when activated. Additionally, we request that CTDEEP be notified whenever this overflow is activated.

5. Finally, we wish to strongly reiterate our demand that this NPDES permit contain an enforceable nitrogen load limit of 1,648 lbs/day in the table on Page 4, Section I.A.1. According to the LIS TMDL, "The enforceable mechanism to ensure reductions are attained will be state and federal permitting programs." Note the imperative words of "enforceable mechanism".

   Furthermore, the LIS TMDL states that concentration limits are not acceptable for tracking nitrogen. Note the following language taken directly from the LIS TMDL:

   "CWA Section 303(d) requires the establishment ofTMDLs for pollutants that will result in the attainment of water quality standards. As the term implies, TMDLs are often expressed as maximum daily loads. However, as specified in 40 CFR 130.2(1), TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measures. As presented in Section V.C., nitrogen loadings throughout the year contribute to the pool of nitrogen available for uptake by phytoplankton. Hypoxia resulting from the ultimate decay of that phytoplankton is not sensitive to daily or short term nitrogen loadings. Daily load allocations are not necessary to ensure that standards are met. Instead, DO levels are a function of annual loading rates. While hypoxia generally occurs from June through September, nitrogen loadings throughout the year contribute to the pool of nitrogen available for uptake for phytoplankton. The LIS 3.0 model did not show a strong relationship between

hypoxia and the seasonality of nitrogen loads to Long Island Sound that would warrant special attention to seasonal management of nitrogen. This is because algal growth occurs over seasonal and annual cycles where the total pool of nitrogen available is the critical factor. This supports the use of a maximum annual load used in this TMDL, rather than seasonal or daily load limits. Therefore, the TMDL/WLA[Waste Load Allocation]/LA [Load Allocation] is presented as an annual load in tons per year."

Therefore, based upon the LIS TDML, only a load limit for nitrogen is acceptable. A concentration limit would not be consistent with the intent of the LIS TMDL. Failure of the Springfield NPDES permit to contain a load amount for nitrogen is therefore, inconsistent with the established LIS TMDL.

As you know we are always willing to meet and discuss these issues further. Thank you for the opportunity to comment on this draft NPDES permit.

Sincerely,

Denise Ruzicka, P.E.
Director, Water Planning and Management Division
Bureau of Land Protection and Water Reuse

cc. L. Hamjian, EPA Region I
D. Ferris, MADEP
J. Schimmel, Springfield Water & Sewer Commission
S. Sullivan, NEIWPCC
M. Tedesco, EPA LISS Office
M. Garren, EPA Region I

Connecticut Fund for the Environment

Save the Sound®

February 7, 2018

Via E-mail (Timony.meridith@Epa.gov) and First Class Mail

Alexandra Dapolito Dunn, Regional Administrator
U.S. EPA
Region 1
5 Post Office Square
Suite 100
Boston, MA 02109-3912

**RE: Draft NPDES PERMIT for the Springfield Water and Sewer Commission**
**Permit Number; MA0101613; Public Notice Number: MA-007-18**

Dear Regional Administrator Dunn,

The Connecticut Fund for the Environment and its bi-state programs Save the Sound and The Long Island Sound Soundkeeper, submit the following comments on the draft National Pollutant Discharge Elimination System (NPDES) Permit for the Springfield Regional Waste Water Treatment Facility (SWWTF) and 24 Combined Sewer Overflow (CSO) discharges at 24 CSO outfall locations.

The draft permit integrates the Springfield Water and Sewer Commission's (SWSC) two existing permits for the publically owned treatment facility at Bondi Island and for 25 CSO outfalls in Springfield and Agawam that discharge into the Connecticut, Chicopee and Mill Rivers into a single permit. The draft permit replaces the existing permit for the SWWTF issued on December 8, 2000, which has been administratively continued without modification for the past twelve years, and the existing CSO outfalls permit issued in November, 2009 and administratively continued on September 15, 2014. The draft permit also includes as co-permittees the six towns that operate sanitary waste water collection systems that discharge flows to the SWWTF.

The segments of the receiving waters in which the discharges occur have been designated by the Commonwealth of Massachusetts as a Class B water, warm water fishery, and, pursuant to Massachusetts Surface Water Quality Standards have the following uses: habitat for fish, other aquatic life, and wildlife; primary and secondary contact recreation; a source of public watersupply (where designated and with appropriate treatment); suitable for irrigation and other agricultural uses and compatible for cooling and process use; and, have consistently good aesthetic value. These segments of the receiving waters are identified in the Massachusetts Surface Water Quality Standards with a CSO designator. The CSO designator for these waters

indicates that these waters are impacted by the discharge of combined sewer overflows. Furthermore, the 2014 final Massachusetts Integrated List of Waters lists the specific segments of the Connecticut River where the WWTF discharges and the Connecticut, Mill and Chicopee Rivers where CSO outfalls are located as requiring a TMDL for impairments caused by E. coli and fecal coliform.

**Specific Comments:**

- In light of the descriptions and designations of the receiving waters for these permitted discharges and the listing of segments of the receiving waters into which CSO outfalls discharge as requiring a TMDL for bacterial pollutants associated with CSOs, it is beyond belief that during the past two decades, EPA has not required elimination or at least a reduction in the number of CSO outfalls impacting these waters. The continued permitting of this number of CSO outfalls for another permit term is unconscionable. The number of permitted CSO outfalls should be extremely limited in light of the designated uses of these surface waters.

- The inclusion of communities that contribute sanitary waste water flows to the treatment facility as co-permittees is a welcome modification to this permit and we believe it will enhance compliance and enforcement of the permit.

- Discharges from Springfield add to the nitrogen load in Long Island Sound and contribute to water quality violations in the Sound. On December 23, 2015, the administrators of EPA Regions 1 and 2 issued the *Long Island Sound Nitrogen Reduction Strategy* (the Nitrogen Strategy) in the form of a letter with attachments addressed to the Environmental Protection Commissioners of the states of New Hampshire, Vermont, Connecticut and New York and the Commonwealth of Massachusetts. The Nitrogen Strategy acknowledges the impact of nitrogen discharged from upstream states has on the Dissolved Oxygen crisis in Long Island Sound and its impact on water quality standards for the Sound. Incredibly, the Long Island Sound nitrogen TMDL was not considered in the waterbody assessment for the receiving waters. The Clean Water Act grants EPA the authority to require conditions in NPDES permits which ensure compliance with the water quality standards of any other state.[1] Furthermore, in light of the First Circuit Court of Appeals decision in *Upper Blackstone Water Pollution District v. EPA,* 690 F. 3d 9 (1st Cir. 2012) *cert. denied,* 133 S. Ct. 2382 (2013), EPA has the authority to require permit conditions that comply with water quality standards of downstream states. The impact to Long Island Sound from the nitrogen load from the discharges in this proposed permit must be taken into consideration by EPA.

[1] Clean Water Act § 401, 33 U.S.C. § 1341(a).

- The Permit Fact Sheet indicates that in 2004 – 2005 the SWWTF was meeting the Connecticut Department of Energy and Environmental Protection's TMDL Waste Load Allocation (WLA) 25% aggregate reduction from baseline loadings to the Connecticut River above the Connecticut-Massachusetts border for nitrogen loading from out-of-basin sources. The data shows that SWWTF is no longer meeting that reduction goal. Is this the result of increased development in the area served by the SWWTF?

- The proposed new nitrogen loading discussed in the Factsheet shifts from a daily load limit for nitrogen to an annual average load limit. Did EPA consider the impact of this change to the Long Island Sound especially in the months of April through September when hypoxia occurs in the Sound?

- Since the issuance of the 2000 NPDES permit for Bondi Island and the 2009 reissuance of the CSO permit, several studies and reports including, but not limited to, the December 23, 2015 *Long Island Sound Nitrogen Reduction Strategy* issued by the administrators of EPA Region 1 and Region 2, and the New England Interstate Water Pollution Control Commission's (NEIWPCC) report entitled, *Watershed Synthesis Section: A Preliminary and Qualitative Evaluation of the Adequacy of Current Stormwater and Nonpoint Source Nitrogen Control Efforts in Achieving the 2000 Long Island Sound Total Maximum Daily Load for Dissolved Oxygen, August 2014,* which clearly demonstrate that the nitrogen discharges from the wastewater treatment plant, as well as nitrogen from the CSOs, are causing or contributing to water quality violations in Long Island Sound and will continue to do so, even if and when all of the remaining actions to implement the 2000 TMDL are taken. Bacteria from CSOs are also causing and contributing to water quality violations in the Connecticut River, both in Massachusetts and in Connecticut. Were the results of these studies and reports considered in the preparing these draft permits?

- The draft permit does not contain an enforceable limit for nitrogen. Rather, it proposes continued optimization to meet a benchmark based on the current annual average Total Nitrogen load of 2,279 lbs./day. An enforceable limit must be included in the permit.

- Rather than require a nitrogen limit in the permit, EPA invites public comment on three options for addressing nitrogen discharges from the SWWTF. The three options are 1) the TN Optimization Requirement which requires optimization of operations at the facility to meet a benchmark based on the current average TN load of 2,279 lbs./day; 2) the Nitrogen Optimization Benchmark Alternative 1 which includes an annual average concentration based optimization benchmark of 8 mg/l combined with a higher annual mass based optimization benchmark of 2,534 lbs/day to provide Springfield with flexibility for future growth; and 3) Nitrogen Optimization Benchmark Alternative 2 with

an annual average concentration benchmark of 8 mg/l without a specific base load benchmark. The benchmarks in the draft permit and the other two alternatives are not acceptable. A benchmark is not an enforceable limit and, without a numerical limit, enforcement is impossible and there are no consequences for noncompliance. Although we agree that the further review of out-of-basin total nitrogen loads by EPA may require the incorporation of nitrogen limits in future permit modifications, nothing prevents EPA from proposing a nitrogen limit now– even the 8 mg/l that EPA believes that Springfield can currently attain- for purposes of enforcement and the fair and equal treatment of the regulated communities that currently operate under such permit limits.

The existing permit for the SWWTF at Bondi Island was issued on December 8, 2000, and was administratively continued by EPA in 2005 without an opportunity for public comment. In light of the passage of more than seventeen years since the issuance of the existing permit, it is imperative that members of the public in Massachusetts and Connecticut impacted by the discharge from the SWWTF have an adequate and reasonable opportunity to voice their concerns about this proposed permit. Therefore, Connecticut Fund for the Environment and its bi-state programs Save the Sound and The Long Island Sound Soundkeeper request that EPA hold a public hearing on this proposed permit.

Respectfully submitted,

Connecticut Fund for the Environment, Inc.
Save the Sound
William Lucey, Long Island Soundkeeper

BY:_____/s/_____
John M. Looney
Staff Attorney