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November 15, 2021

Via Electronic Filing

Mr. Emilio Cortes
Clerk of the Environmental Appeals Board
U.S. Environmental Protection Agency
Environmental Appeals Board
1201 Constitution Avenue, NW
U.S. EPA East Building, Room 3332
Washington, DC 20004

RE: National Pollutant Discharge Elimination System Permit Number NH-0100790 for the Keene Wastewater Treatment Plant

Dear Clerk Cortes:

On behalf of the City of Keene, New Hampshire, with regard to the above captioned matter, please find enclosed a complete copy of the following:

1. City of Keene's Petition for Review ("Review Petition"),
2. Review Petition Exhibits A-J
3. Statement of Compliance with Word Limitation
4. Certificate of Service

Thank you for your consideration.

Sincerely,

Joanna B. Tourangeau

Cc: Ms. Kristen Scherb, Esq. (by email)
Mr. Samir Bukhari, Esq. (by email)
Ms. Deborah Szaro (by email)

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

In Re:	)	
City of Keene, New Hampshire	)	NPDES Appeal No. 21-03
NHDES Permit No. NH0100790	)	

PETITION FOR REVIEW

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Cases

Statutes

Agency Rules and Regulations

Other Authorities

PETITION FOR REVIEW

I. INTRODUCTION

The City of Keene, New Hampshire ("City" or "Keene"), through its undersigned representatives and pursuant to 40 C.F.R. § 124.19(a), respectfully submits this Petition for Review ("Petition") of three conditions to the final National Pollutant Discharge Elimination System ("NPDES") Permit No. NH0100790 ("Final Permit"), issued to Keene by the United States Environmental Protection Agency ("EPA") on September 13, 2021. A copy of the Final Permit and the cover letter accompanying the same are enclosed as Exhibit A. The Final Permit authorizes Keene to discharge to the Ashuelot River from the Keene Wastewater Treatment Plant in Swanzey, New Hampshire and will become effective December 1, 2021, except for those provisions stayed by this appeal.

Keene requests that the Environmental Appeals Board (the "Board" or "EAB") review three effluent limits established in the Final Permit because they are based on clearly erroneous findings of fact or conclusions of law and/or involve an exercise of discretion or an important policy consideration that the Board should, in its discretion, address. Specifically, first, Keene contests the Final Permit effluent limit for pH because it ignored Keene's presentation of significant data in the administrative record documenting that the naturally occurring pH of the Ashuelot River is lower than the Final Permit effluent limit and the negative water quality consequences of such a disparity. Second, Keene contests EPA's use of obsolete methodology for calculating the Final Permit effluent limit for total recoverable aluminum instead of EPA's own current methodology, use of which is the only approved methodology applicable to discharges to the receiving water. Finally, Keene contests EPA's failure to authorize utilization of a site-specific effluent copper limit as an acceptable alternative to the Final

Permit copper effluent limit. Each of these Final Permit effluent limits presents clear error and is an abuse of discretion.

II. KEENE ESTABLISHED STANDING TO SEEK EAB REVIEW.

Keene satisfies the threshold prerequisites to filing its notice of appeal and petition for review as set forth in 40 C.F.R. Part 124. First, Keene timely submitted comments on July 17, 2020 on the draft permit that EPA transmitted to Keene on May 20, 2020 ("Draft Permit") (Exhibit B). 40 C.F.R. §124.19(a)(2); *see* Exhibit C, City of Keene, New Hampshire Wastewater Treatment Plant: NPDES Permit No. NH0100790 Draft Permit Comments, dated July 17, 2020 ("Keene Draft Comments"). Second, Keene timely filed its Notice of Appeal on September 24, 2021, within 30 days after EPA provided Keene with the Final Permit, and files this supporting brief timely, in accord with the EAB Order dated September 27, 2021, which extended Keene's time for filing its petition for review to November 15, 2021. *See* 40 C.F.R. §124.19(a)(3), (g). Finally, Keene raised each of the issues discussed herein in its comments on the Draft Permit, thereby preserving the issues for EAB review, or such issues were based on new data or EPA claims made during the issuance process. 40 C.F.R. §§124.13, 124.19(a)(4); *see* Keene Draft Comments.

III. FACTUAL BACKGROUND

Keene owns and operates a municipal wastewater treatment facility known as the Keene Wastewater Treatment Plant, which is located at 420 Airport Rd, in Swanzey, New Hampshire ("Facility" or "WWTF"). Keene Draft Comments at IN-1. The Facility operates under a NPDES Permit issued by EPA on August 24, 2007 (the "2007 Permit"), which is attached hereto as Exhibit D. *See generally* 2007 Permit; Final Permit. The 2007 Permit authorizes Keene to discharge treated wastewater effluent from the Facility to the Ashuelot

River, which flows to the Connecticut River and ultimately, Long Island Sound. 2007 Permit at 2; Keene Draft Comments at IN-1. The 2007 Permit expired in 2012, but was administratively extended upon Keene's timely filing of a renewal application.

Keene is committed to operations utilizing sound and reliable infrastructure in order to remain compliant with permit effluent limitations and to contribute to improving water quality in the Ashuelot River. Keene Draft Comments at IN-1. Since the 2007 Permit, Keene implemented significant operational and facility improvements. *See* Keene Draft Comments at IN-1. The City designed and began a three-phase upgrade, totaling approximately $13.4 million in order to improve effluent quality and to improve water quality in the Ashuelot River. Keene Draft Comments at IN-1 and Appendix A. The City continues to invest in equipment and infrastructure to maintain reliable operations and compliance with the requirements of its NPDES permit. See Keene Draft Comments at IN-1 and Appendix A.

A. Natural pH in the Ashuelot River is Lower than the pH Limit in the Final Permit and Imposition of the Effluent Limit for pH Negatively Impacts Water Quality and Aquatic Life.

In 1997, the City added a new chemical feed system to increase the pH of its effluent. *See* Keene Draft Comments at 3-1. Since 1997, the City has spent approximately $140,000 annually (in FY20 dollars) in additional operational costs to achieve this increased pH.[1] Keene Draft Comments at 3-1. Meanwhile, the naturally occurring pH in the Ashuelot River, as documented by sampling data beginning in 2007 and collected through the present, including in-depth

[1] Since 2018, Keene incurred twelve NPDES Permit violations. All but one of those violations relate to pH. Three of the eleven pH violations were for low pH (i.e. slightly below 6.5 S.U. but not below 6.0 S.U.). Eight of those violations were for high pH because the chemical feed system Keene utilizes to adjust pH overcompensated resulting of a pH over the maximum of 8.0 S.U. (usually at 8.1 S.U.). Keene tests for pH utilizing a daily grab sample which methodology Keene intends to continue to comply with the Final Permit requirement that "pH shall be within the specified range at all times" Final Permit at p. 7, Item 6.

sampling by the City in 2018, is consistently at a pH well below that of Keene's effluent. Keene Draft Comments at 3-1 to 3-4. Because pH is measured on a logarithmic scale, each standard unit of pH represents a ten-fold change in the acidity or basic nature of the substance. This means that a pH of 6.0 S.U is ten (10) times more acidic than a neutral pH of 7.0. Consequently, a delta of just 0.5 standard units of pH is a half an order of magnitude more acidic or more basic. Keene Draft Comments at 3-1 to 3-4.

In 2018, Keene collected ambient pH data in the Ashuelot River upstream of its discharge point at the Martell Court Bridge. *See* Keene Draft Comments, Appendix B. The City obtained a robust data set via a large number of samples over the course of the entire year. *See* Keene Draft Comments, Appendix B. The following table shows the pH range of the samples collected each month along with the median of the summer and winter months. Keene Draft Comments at 1-5. This data set indicates that the pH range for the Ashuelot during this sampling was 4.6 S.U. to 7 S.U. with a summer median of 6.0 S.U. and a winter median of 5.8. Keene Draft Comments, Appendix B.

Table 1 Upstream pH Data from 2018 Sampling

Months	Number of Samples	pH Range (S.U.)
January 2018	5	4.7 - 5
February 2018	6	4.6 - 5
March 2018	17	5.1 - 6.7
April 2018	10	5.7 - 6.5
May 2018	19	5.8 – 6.5
June 2018	15	6.0 – 6.4
July 2018	9	6.1 – 6.2

August 2018	20	5.4 – 6.2
September 2018	14	5.7 – 7.0
October 2018	15	5.4 – 6.6
November 2018	19	5.1 – 7.0
December 2018	6	5.2 – 5.9
Median Summer (June 1- Oct. 31)	73	6.0
Median Winter (Nov. 1- May 31)	63	5.8

The New Hampshire Department of Environmental Services ("NHDES") Volunteer River Assessment Program ("VRAP") sampled pH in the Ashuelot beginning in 2007. Keene Draft Comments at 3-1 to 3-2. The VRAP is a staffed NHDES program that recruits trained volunteers to assist "NHDES in evaluating water quality throughout the state" by conducting water quality monitoring, according to the New Hampshire VRAP 2007 Ashuelot River Watershed Water Quality Report ("2007 VRAP Report") at 2.1-2.2, attached herein as Exhibit E. NHDES staff interpret and publish this data, providing the VRAP reports and supporting data for public viewing. 2007 VRAP Report at 2.2 and 4.2; Keene Draft Comments at 3-1. Annual NHDES reports from 2007 to 2010 summarize VRAP-collected data (see Table 2, below), which are interpreted as they relate to the surface water quality standard ("WQS") for pH, and were included in Appendix D to Keene Draft Comments and separately attached hereto as Exhibits E, F, G, and H. Keene Draft Comments at 3-1 and Appendix D. VRAP also collected data for NHDES, for the years 2011 through 2019. Keene Draft Comments at 3-1. VRAP collects samples for the warmer half of the year (May through September), which closely aligns to the period the City described as the summer median. *See, e.g.*, 2007 VRAP Report at 2.4. VRAP data published in the NHDES reports are consistent with those Keene obtained in

2018 documenting the low pH of the Ashuelot River. *See* 2007 VRAP Report at 4.2; 2008 VRAP Report at 4.2; 2009 VRAP Report at 4.2; 2010 VRAP Report at 4.2; Keene Draft Comments at 1-6.

In 2007, for example, VRAP collected data from 13 sampling stations in the Ashuelot River Watershed. 2007 VRAP Report at 4.2. These stations are located both upstream and downstream of the Keene WWTF discharge point. Keene Draft Comments at 3-1. Based on the description of VRAP sampling locations, VRAP's sampling station 17-ASH is located in a location similar to the location of Keene's 2018 data collection. Keene Draft Comments at 1-6. However, because VRAP data from 17-ASH is unavailable, Keene analyzed the data collected at sampling station 18-ASH, located at Route 101 upstream of the Keene WWTF. Keene Draft Comments at 1-6; New Hampshire VRAP 2008 Ashuelot River Watershed Water Quality Report ("2008 VRAP Report") at 3.0 (Exhibit F). Table 2 below includes a summary of the VRAP data collected between 2007 and 2010 and documented in the annual reports. 2007 VRAP Report at 4.2; 2008 VRAP Report at 4.2; 2009 VRAP Report at 4.2; 2010 VRAP Report at 4.2.

Table 2 VRAP Receiving Water pH Data at 18-ASH, 2007-2010

Year	Number of Samples	pH Range (S.U)
2007	5	5.58 – 5.87
2008	5	5.79 – 6.55
2009	5	5.92 – 6.74
2010	5	5.54 – 6.60

NHDES's compilation of VRAP pH data for the Ashuelot River from 2011 through 2019 likewise demonstrates that the majority of samples for pH in the Ashuelot River are below a pH of 6.5 S.U. Keene Draft Comments at 3-2 to 3-4.

VRAP data from the past 5 years from sampling station 18-ASH is similar as summarized in Table 3 below. Keene Draft Comments at 1-6. A more comprehensive review of the data collected through VRAP between 2015 and 2019 is located in Table 3.1 of the Keene Draft Comments at 3-2 to 3-4.

Table 3 VRAP Receiving Water pH Data at 18-ASH, 2015-2019

Year	Number of Samples	pH Range (S.U)	Acceptable Samples Not Meeting WQS
2019	5	5.94-6.15	5 (100%)
2018	5	5.97-6.35	5 (100%)
2017	5	5.08-5.99	5 (100%)
2016	5	6.30-6.57	3 (60%)
2015	4	6.36-6.68	1 (25%)

The VRAP dataset in Table 3 includes 24 samples. Keene Draft Comments at 1-6. Of those 24 samples, the pH was below 6.5 in 19 out of the 24 samples. Keene Draft Comments at 1-6. The VRAP data confirm the low pH of the Ashuelot River consistent with Keene's 2018 data. Keene Draft Comments at 1-6. As stated in the 2007, 2008, 2009, and 2010 annual reports prepared by NHDES, "lower pH measurements are likely the result of natural conditions such as the soils, geology, or the presence of wetlands in the area." Keene Draft Comments at 3-2; 2007 VRAP Report at 4.2; 2008 VRAP Report at 4.2; 2009 VRAP Report at 4.2; 2010 VRAP Report at 4.2. The reports also 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." Keene Draft Comments at 3-2; 2007 VRAP Report at 4.2; 2008 VRAP Report at 4.2; 2009 VRAP Report at 4.2; 2010 VRAP Report at 4.2.

Since 1997, Keene has treated its effluent, at significant cost, in order to achieve a pH between 6.5 and 8.0 S.U. Keene Draft Comments at 3-1. As a result, Keene's effluent possesses a pH that is at least 0.5 S.U. higher than the summer median pH for the Ashuelot River and which is very frequently even more disparate from background conditions in the Ashuelot River. *See* Keene Draft Comments at 1-5 to 1-6; 2007 VRAP Report at 4.2; 2008 VRAP Report at 4.2; 2009 VRAP Report at 4.2; 2010 VRAP Report at 4.2. As Keene pointed out, this significant disparity (half an order of magnitude) between upstream pH of the receiving water and the adjusted pH of Keene's effluent may cause an adverse effect to water quality by producing a pH "curtain wall" in the vicinity of Outfall Serial Number 001. Keene Draft Comments at 3-1. Scientific studies document that aquatic life is vulnerable to adverse impacts from abrupt changes or fluctuations in pH. *Id.*

All aquatic life possess a range of tolerable pH levels and can only withstand certain pH variation. As Keene discussed in its Draft Permit Comments, aquatic life in the Ashuelot River is adapted to the naturally low pH conditions and may be negatively impacted by the curtain wall effect resulting from the significant delta between the pH of the receiving water and that of Keene's effluent. Keene Draft Comments at 3-1. The dramatic change in receiving water pH caused by the required pH adjustment in the Final Permit may also adversely impact the migration routes of native fish, due to the susceptibility and sensitivity of aquatic life to changes in pH. Keene Draft Comments at 3-1.

B. Use of EPA's Current Recommendations for Calculating the Effluent Limit for Total Recoverable Aluminum would Not Violate WQS.

The City's 2007 Permit contained no effluent limit for Total Recoverable Aluminum. 2007 Permit at 3. In 2018, EPA updated its aquatic life ambient water quality criteria ("AWQC") recommendation for aluminum "to reflect the latest scientific knowledge."[2] This 2018 criteria supersedes the 1988 recommended criteria that, despite EPA's updated aluminum criteria, is what EPA used to determine Keene's new chronic effluent limitation for aluminum.[3] Using this superseded guidance, the Final Permit now includes a chronic effluent limitation of 109 µg/L for Total Recoverable Aluminum, reporting requirements for the maximum daily (acute) condition, and includes a schedule of compliance for this limitation reflecting the time needed for New Hampshire's adoption of the revised aluminum criteria as well as EPA's approval of this adoption. Final Permit at 3, 17.

EPA implemented new guidance, in part, due to longstanding and significant scientific objection regarding the validity of the 87 µg/L aluminum chronic criterion and to more accurately characterize the bioavailability of aluminum by accounting for directly relevant site-specific data. *See* Keene Draft Comments at 4-1 to 4-2. "The 1988 criteria did not consider the variable effects of water chemistry on aluminum toxicity, but simply specified that the recommended criteria only applied to a pH range of 6.5 to 9.0. The 2018 final aluminum guidance recommended that AWQC take into account the effects of pH, total hardness and [Dissolved Organic Carbon] on aluminum toxicity."[4] Further, the 1988 chronic criterion was

[2] U.S. Dep't Envtl. Prot., Final Aquatic Life Ambient Water Quality Criteria for Aluminum – 2018, Executive Summary at xi, CAS Registry Number 7429-90-05, EPA-822-R-18-001, https://www.epa.gov/sites/production/files/2018-12/documents/aluminum-final-national-recommended-awqc.pdf.
[3] *Id* at xi.
[4] *Id*. at xii.

based on a dataset of only two species of invertebrates and one fish species.[5] The updated chronic criterion is based on data from nine new species.[6]

Keene calculated potential aluminum criteria discharge scenarios utilizing the EPA aluminum criteria calculator available for public use. Keene Draft Comments at 4-1. While this criteria calculation is hypothetical, and would vary based on the inputs selected, Keene utilized inputs based on an analogous sample municipal calculation which EPA conducted for Hillsborough, NH. Specifically, Keene sampled Dissolved Organic Carbon ("DOC"), pH, and hardness levels simultaneously and included this sampling data as Appendix E to Keene Draft Comments, which is included separately here as Exhibit I. Keene Draft Comments at 4-1; Total Recoverable Aluminum Sampling Parameters ("Aluminum Sampling") attached hereto as Exhibit I. This data includes samples collected both upstream in the Ashuelot River and of its secondary effluent. Keene Draft Comments at 4-1; Aluminum Sampling. The data used and criteria calculated is presented in Table 4 below:

Table 4: 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

[5] *Id.* at 84.
[6] *Id.*

Based on these calculations, which mirror those EPA conducted for Hillsborough, the chronic criterion for Total Recoverable Aluminum would be 320 µg/L. Keene Draft Comments at 4-2. Given Keene's reported effluent data for Total Recoverable Aluminum and utilizing this chronic criterion calculation, Keene would not have the reasonable potential to cause or contribute to an exceedance of this WQS for aluminum. Keene Draft Comments at 4-1.

C. A Site-Specific Effluent Copper Limit is Consistent with EPA's Response to Comments and NHDES WQS.

EPA carried forward Keene's previous effluent limits of 6.2 µg /L (average monthly) and 8.2 µg /L (maximum daily) for Total Recoverable Copper. Final Permit at 3. NHDES allows for site-specific effluent copper limitations based on approved methods to characterize copper conditions, including the Water Effect Ratio ("WER") and the Biotic Ligand Model ("BLM") N.H. Admin. R., Env-Wq 1703.22(d). NHDES approval of a study plan and its results allows for immediate enforceability of a site specific criterion. *See* Response to Comments at 30.

IV. ISSUES PRESENTED

1. EPA's imposition of a Final Permit pH effluent limit of 6.5-8.0 S.U. must be reviewed because it ignored administrative record documentation that the low pH of the Ashuelot River is a naturally occurring condition that is lower than the Final Permit effluent limit and the associated negative water quality consequences of such a disparity.
2. EPA's implementation of a Final Permit effluent limit of 109 µg/L for Total Recoverable Aluminum must be reviewed because it is based on obsolete science instead of EPA's own current standard, and use of the current standard would not violate WQS.

3. EPA's acknowledgment of the propriety of a site-specific effluent copper limit in its Responses to Comments is at odds with its refusal to include that approach as an acceptable alternative to the Final Permit effluent limit for copper and is thus clear error.

V. ARGUMENT

A. The Board must Review and Remand Final Permit Conditions Which Are Not Cogently Explained by EPA nor Supported in the Administrative Record.

The Board permits review of a permit decision pursuant to 40 C.F.R. §124.19(a) if the appellant demonstrates that the permit condition in question is based on either "(A) [a] finding of fact or conclusion of law that is clearly erroneous; or (B) [a]n exercise of discretion or an important policy consideration that the Environmental Appeals Board should, in its discretion, review." 40 C.F.R. §124.19(a)(4); *In re: Town of Concord Dep't of Pub. Works*, 16 E.A.D. 514, 516 (EAB 2014). The City bears the burden of demonstrating that Board review is warranted and "must specifically state its objections to the permit and explain why the permit issuer's previous response to those comments was clearly erroneous or otherwise warrants review." *In re: Town of Newmarket, New Hampshire*, 16 E.A.D. 182, 187 (EAB 2013).

In assessing clear error, "the Board examines the administrative record that serves as the basis for the permit to determine whether the permit issuer exercised considered judgment." *In re: Town of Concord Dep't of Pub. Works*, 16 E.A.D. 514, 517 (EAB 2014). "Specifically, the Region must articulate with reasonable clarity the reasons for its conclusions and the significance of the crucial facts in reaching those conclusions." *In re: Ash Grove Cement Co.*, 7 E.A.D. 387, 417-18 (EAB 1997) (internal citations and quotations omitted). The record must show that the Region "duly considered the issues raised in the

comments" and adopted a rational approach given the record as a whole. *In re: Town of Concord Dep't of Pub. Works*, 16 E.A.D. 514, 517 (EAB 2014) (internal citations and quotations omitted). When the "administrative record is unclear" as to the factual basis supporting the permit condition, the Board must remand the permit condition to the Region. *In re: Broward County, Florida*, 4 E.A.D. 705, 721 (EAB 1993).

In assessing an agency's exercise of discretion, "the Board applies an abuse of discretion standard." *In re: Town of Concord Dep't of Pub. Works*, 16 E.A.D. 514, 517 (EAB 2014). The Board examines whether the Region's acts of discretion are "adequately explained and justified." *In re Ash Grove Cement Co.*, 7 E.A.D. 387, 397 (EAB 1997). The Region's decision must be "cogently explained and supported in the record." *In re: Town of Concord Dep't of Pub. Works*, 16 E.A.D. 514, 517 (EAB 2014); *In re: Town of Newmarket, New Hampshire*, 16 E.A.D. 182, 187 (EAB 2013); *see also Motor Vehicles Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 48 (1983) ("We have frequently reiterated that an agency must cogently explain why it has exercised its discretion in a given manner. . .").

B. EPA's Imposition of a Final Permit pH Effluent Limit of 6.5-8.0 S.U. must be Reviewed because it Ignored Administrative Record Documentation that the Low pH of the Ashuelot River is a Naturally Occurring Condition that is Lower than the Final Permit Effluent Limit and the Associated Negative Water Quality Consequences of Such a Disparity.

EPA's failure to consider site-specific data documenting the naturally occurring low pH of the Ashuelot River and associated potential negative water quality impacts flowing from imposition of a high pH Range of 6.5 to 8.0 S.U for Keene's discharge is clear error. *See* Final Permit at 3. First, EPA is required to describe and respond to all significant comments on the Draft Permit that were raised during the public comment period. 40 C.F.R. 124.17. Specifically, in setting the Final Permit pH effluent limit of 6.5 to 8.0 S.U., EPA failed to "duly consider" the

issues Keene raised in its comments, including the voluminous data Keene presented documenting the low natural pH of the Ashuelot River. *See In re: Town of Concord Dep't of Pub. Works*, 16 E.A.D. 514, 517 (EAB 2014). EPA likewise failed to cogently explain its basis for concluding that the receiving water is impaired for pH in the face of this conflicting data and conflicting statements made by NHDES. *See, e.g.*, *In re: Town of Concord Dep't of Pub. Works*, 16 E.A.D. 514, 517 (EAB 2014); *In re: Town of Newmarket, New Hampshire*, 16 E.A.D. 182, 187 (EAB 2013). Finally, EPA failed to address the associated negative water quality and aquatic life impacts associated with disparate receiving water and effluent pH that Keene raised in its comments. *See In re: Town of Concord Dep't of Pub. Works*, 16 E.A.D. 514, 517 (EAB 2014).

1. <u>EPA Failed to Consider Keene's Voluminous Data Documenting the Ashuelot River's Naturally Occurring pH and Failed to Clearly Articulate the Basis for Concluding that the Low pH of the Ashuelot River is not a Naturally Occurring Condition.</u>

In both the Draft Permit and the Final Permit, EPA stated that a change to the pH range may be implemented if Keene can demonstrate to NHDES that the pH range should be modified: (1) due to naturally occurring conditions in the receiving water; or (2) because the naturally occurring receiving water pH would not be significantly changed by the Permittee's discharge. Draft Permit at 22; Final Permit at 17, 22. Keene requested in its Draft Permit Comments that EPA include language in the Final Permit indicating that a site-specific study is an accepted approach to determining whether either of these conditions apply. Keene Draft Comments at 3-1. As explained in the Draft Permit Comments, the City would need to conduct a pH demonstration study to determine whether Keene's discharge affects the naturally occurring pH in the receiving water. Keene Draft Comments at 3-1. This would entail developing proposed study parameters and NHDES approval prior to the initiation of the project. Keene Draft Comments at 3-1; Final

Permit at 22. Keene further requested that if the study determined that either of these conditions exist, the Final Permit would confirm EPA acceptance of the results of the study and that Keene could alter its pH adjustment protocols accordingly.[7] Keene Draft Comments at 3-1.

In support of its request, as discussed above in the Factual Background section of this brief, Keene provided reams of data from 2007 through 2019 documenting pH levels in the receiving water upstream from Keene's discharge point and reports prepared by NHDES concluding that these pH levels result from natural conditions. 2007 VRAP Report at 4.2; 2008 VRAP Report at 4.2; 2009 VRAP Report at 4.2; 2010 VRAP Report at 4.2; Keene Draft Comments, Appendix B; Keene Draft Comments at 3-2 to 3-4. EPA is required to describe and respond to *all* significant comments on the Draft Permit that were raised during the public comment period. 40 C.F.R. 124.17. However, EPA ignored all of this data, including years of VRAP collected data presented in NHDES reports, and simply stated, with no data to support its conclusion, that "the upstream pH values referenced by the commenter do not represent a 'natural condition' because the receiving water is impaired for pH." EPA Response to Comments for NPDES Permit No. NH0100790 ("Response to Comments") at 22, attached hereto as Exhibit J.

However, EPA also notes that "NHDES is unable to precisely differentiate contributions of the natural and anthropogenic contributions to low pH," which is at odds both with NHDES's statements in its VRAP Reports that these "lower pH measurements are likely the result of natural conditions such as the soils, geology, or the presence of wetlands in the area" and with EPA's Response to Comments statement that pH *is* impaired and not the result of natural

[7] This approach, using site-specific data to develop the appropriate effluent limit when so much site-specific data is available, is an appropriate way to set permit effluent limits to meet WQS. *See In Re: Town of Newmarket, New Hampshire*, 16 E.A.D. 182, 231-32 (EAB 2013) (confirming the permitting authority's right to make a site-specific determination when selecting an effluent limit).

conditions. Response to Comments at 22; Keene Draft Comments at 3-2; 2007 VRAP Report at 4.2; 2008 VRAP Report at 4.2; 2009 VRAP Report at 4.2; 2010 VRAP Report at 4.2. EPA simply ignored the lack of clarity regarding whether the pH is natural or anthropogenic and the voluminous data Keene presented in support of a condition allowing for a site-specific study to establish a pH effluent limit. Response to Comments at 22.

EPA must "articulate with reasonable clarity the reasons for its conclusions and the significance of the crucial facts in reaching those conclusions." *In re Ash Grove Cement Co.*, 7 E.A.D. 387, 417-18 (EAB 1997) (internal citations and quotations omitted). EPA failed on both counts. The information EPA provided does not clearly support its conclusion that the receiving water is impaired for pH. Further, this conclusion is unsupported by the site-specific data detailed herein above and in the administrative record before EPA. This omission constitutes clear error. EPA's failure to examine the relevant data and articulate a satisfactory explanation for its action are similarly fatal flaws. For these reasons, and because the "administrative record is unclear" as to EPA's conclusion, which is essential to setting Keene's effluent limitation for pH, the Board must remand this permit condition to the EPA for further action. *See In re: Broward County, Florida*, 4 E.A.D. 705, 721 (EAB 1993).

2. <u>EPA Failed to Respond to Keene's Comments on the Negative Water Quality Consequences and Negative Impacts to Aquatic Life Associated with EPA's Imposition of an Effluent Limitation for pH which Differs Substantially from the Naturally Occurring pH of the Ashuelot River.</u>

EPA flatly ignored Keene's comments regarding the negative impacts associated with EPA imposition of an effluent limitation for pH that is higher than that of the receiving water. Keene Draft Comments at 3-1. Keene explained that a significant delta between background pH in the Ashuelot and in its discharge could create a curtain wall effect. Keene Draft Comments at 3.1. A curtain wall effect impacts aquatic life because studies indicate

that small pH changes (e.g., 1 unit) could have adverse impacts. Fluctuation of pH in the water column affects the water quality of the Ashuelot and, in turn, becomes detrimental to aquatic life if pH levels reach values that aquatic life cannot sustain. Keene Draft Comments at 3-1. A fluctuation of just one standard unit on the pH scale represents conditions that are ten times more acidic or basic. The delta between the pH of Keene's effluent and the receiving water is therefore significant. EPA provided no response to these issues or the voluminous data demonstrating the difference in pH levels between Keene's effluent limitation for pH and the Ashuelot River's background levels. *See* 2007 VRAP Report at 4.2; 2008 VRAP Report at 4.2; 2009 VRAP Report at 4.2; 2010 VRAP Report at 4.2; Keene Draft Comments, Appendix B; Keene Draft Comments at 3-2 to 3-4.

NHDES's WQS for pH contemplates that Class B waters may have a pH range outside of the range of 6.5 to 8.0 "when due to natural causes." N.H. Admin. R., Env-Wq 1703.18. Further, NHDES's WQS require that "[a]ll surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife . . ." N.H. Admin. R., Env-Wq 1703.01. Keene specifically included comments and data supporting its conclusion that implementing an effluent pH level which differs substantially from that of the receiving waters could negatively impact water quality with resulting negative impacts on fish and their migration routes, which could also result in negative impacts on wildlife that depend upon these fish for sustenance. See Keene Draft Comments at 3-1. EPA failed to respond to these concerns, as it is required to do, and failed to cogently explain the basis for exercising its discretion to implement a higher pH effluent limit despite documentation that it would not violate NH WQS because it is the result of natural conditions and would violate NH WQS requiring that the pH effluent limit protect aquatic life. 40 C.F.R. § 124.17; *see, e.g., In re:*

Town of Concord Dep't of Pub. Works, 16 E.A.D. 514, 517 (EAB 2014); *In re: Town of Newmarket, New Hampshire*, 16 E.A.D. 182, 187 (EAB 2013). Further, by continuing to require Keene to meet a 6.5-8.0 S.U. pH, which is not protective of aquatic life that may be sensitive to the pH variations, while not acknowledging and responding to these concerns, EPA is in contravention of NHDES's and EPA's twin directives that they must provide for the "protection and propagation of fish, shellfish and wildlife." 33 U.S.C. § 1251(a)(2); N.H. Admin. R., Env-Wq 1703.01.

EPA's failure to respond to Keene's comments and to cogently explain the basis for the pH effluent limit constitutes clear error and an abuse of discretion requiring the Board to remand this permit condition to EPA to address these issues. *See In re: Broward County, Florida*, 4 E.A.D. 705, 721 (EAB 1993).

C. EPA's Implementation of a Final Permit Effluent Limit of 109 µg/L for Total Recoverable Aluminum must be Reviewed because it is Based on Obsolete Science Instead of EPA's Own Current Standard, and Use of the Current Standard would not violate WQS.

EPA's imposition of an average monthly (chronic) numerical effluent limitation of 109 µg/L for Total Recoverable Aluminum based on superseded guidance is clear error, particularly given that use of the current standard would not violate WQS.[8] In 2018, EPA developed guidance for calculating Total Recoverable Aluminum, which supersedes the controversial 1988 criteria.[9] The Final Permit uses the 1988 aluminum chronic criterion, instead of EPA's updated criterion to develop the Final Permit Limit of 109 µg/L for Total Recoverable Aluminum. Final Permit at 3; Response to Comments at 25. EPA's Response to Comments bases this decision on

[8] U.S. Dep't Envtl. Prot., Final Aquatic Life Ambient Water Quality Criteria for Aluminum – 2018, Executive Summary at xi, CAS Registry Number 7429-90-05, EPA-822-R-18-001, https://www.epa.gov/sites/production/files/2018-12/documents/aluminum-final-national-recommended-awqc.pdf.
[9] *Id.*

the requirement that it comply with state WQS. However, state WQS must be based on "sound scientific rationale," which New Hampshire's aluminum chronic criterion is not. 40 C.F.R. § 131.11. Therefore, EPA's use of this outdated guidance cannot properly be founded upon NHDES' failure to timely update its WQS for Total Recoverable Aluminum. EPA's circumventing its own guidance in favor of outdated, non-compliant state rules is clear error. Additionally, despite the fact that EPA states that certain site-specific data is the only way to account for the true toxicity of acid soluble aluminum, it does not consider site-specific data nor condition the Final Permit to allow for its collection and use in the future. *See,* Response to Comments at 26. EPA's failure both to use its updated guidance and to specify in the Final Permit that Keene could request a preliminary study evaluating the fraction of acid soluble aluminum to total recoverable aluminum and allow Final Permit modifications to reflect this site-specific data is clear error.

1. <u>EPA Failed to Use its Own Current Standard for Total Recoverable Aluminum Despite the Superseded Standard Not Being Based on Sound Science and Being Inapplicable to these Receiving Waters.</u>

There is longstanding and significant regulatory controversy undermining the validity of the aluminum chronic criterion of 87 µg/L upon which EPA founded Keene's Final Permit effluent limit for Total Recoverable Aluminum. Keene Draft Comments at 4-1. The chronic criterion for aluminum under the 1988 guidance would have been 748 µg/L, but was lowered to 87 µg/L to protect brook trout and striped bass.[10] Updated science and further study demonstrated that this one-size-fits-all approach is sometimes not sufficiently protective of

[10] U.S. Dep't Envtl. Prot., Ambient Water Quality Criteria for Aluminum – 1988 at 22, EPA-440/5-86-008, https://www.epa.gov/sites/default/files/2019-02/documents/ambient-wqc-aluminum-1988.pdf.

aquatic life and at other times needlessly stringent, leading EPA to establish a new chronic criterion range of 0.63-3,200 µg/L depending upon the water chemistry of the water body.[11]

EPA's new calculated criterion for a particular waterbody takes "into account the effects of pH, total hardness and DOC on aluminum toxicity."[12] "The 1988 criteria did not consider the variable effects of water chemistry on aluminum toxicity, but simply specified that the recommended criteria only applied to a pH range of 6.5 to 9.0."[13] Notably, this is not and has not been the pH range of the receiving water, which further illustrates the error inherent to EPA's reliance on this outdated guidance. *See* 2007 VRAP Report at 4.2; 2008 VRAP Report at 4.2; 2009 VRAP Report at 4.2; 2010 VRAP Report at 4.2; Keene Draft Comments, Appendix B; Keene Draft Comments at 3-2 to 3-4. EPA's current guidance is based on models with a slightly lower pH range, 6.0 to 8.7, and its criteria calculator allows for extrapolation beyond those pH values and "can be used to address all waters within a pH range of 5.0 to 10.5."[14] Regardless of the outdated guidance's flaws, it does not apply to receiving waters with the pH below 6.5, like the Ashuelot, whereas EPA's current guidance does.

Science is an evolving process. Because a WQS was based on what was thought to have been sound science decades ago does not mean that it still is, particularly when EPA itself concludes that it must update guidance to protect water quality and aquatic life because outdated guidance does not properly account for what matters – the bioavailability, and hence toxicity, of aluminum.[15] Imposition of a new limit based on superseded science is clear error and arbitrarily

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[11] U.S. Dep't Envtl. Prot., Final Aquatic Life Ambient Water Quality Criteria for Aluminum – 2018, Executive Summary at xv, CAS Registry Number 7429-90-05, EPA-822-R-18-001, https://www.epa.gov/sites/production/files/2018-12/documents/aluminum-final-national-recommended-awqc.pdf.
[12] *Id.* at xii-xiii.
[13] *Id.* at xii.
[14] *Id.* at xiv.
[15] *See id.* at xi-xii.

and capriciously prevents Keene from taking advantage of the newly developed and more appropriate criteria. *See generally Sanitary Bd. Of City of Charleston, W.V. v. Wheeler*, 918 F.3d 324, 332 (4th Cir. 2019) (when determining whether a state's proposed WQS are based on sound scientific rationale and meet purported goals for a body of water, EPA must "bring its own understanding of the most recent science to bear"). The new EPA criterion accurately characterizes the bioavailability of aluminum by accounting for site-specific data regarding parameters that directly impact the amount of bioavailable aluminum.[16] pH, Dissolved Organic Carbon, and hardness each affect the toxicity level of aluminum in the receiving water.[17] The criterion EPA used in the Final Permit does not consider these parameters, and does not accurately depict how much aluminum is bioavailable and thus is not technically defensible to use in determining compliance with WQS because a more accurate criterion is available and the superseded standard is no longer based on a sound scientific rationale. 40 C.F.R. § 131.11; *see generally Natural Resources Defense Council v. U.S. E.P.A.*, 16 F.3d 1395, 1402 (4th Cir. 1993) (the Court and EPA agree that when reviewing a proposed state WQS EPA is obligated to "ensure that the underlying criteria, which are used as the basis of a particular state's water quality standard, are scientifically defensible and are protective of designated uses"). EPA, in fact, appears to believe that NHDES will be updating its relevant WQS by cautioning Keene about expending resources to conduct a study that would be irrelevant "once the new criteria are in place in the NH WQS." Response to Comments at 26.

EPA is not required to, and should not, elevate implementation of state WQS that are not *currently* based on sound scientific rationale over its own assessment of the relevant standard. 40 C.F.R. § 131.11. Nor should it use a state WQS developed using criteria that does not apply

[16] *Id.* at xii.
[17] *Id*. at xii.

to a receiving water with Ashuelot's pH levels, especially when an updated, scientifically sound, and directly applicable methodology is available. Instead, the EPA should use its own current methodology to calculate Keene's Total Recoverable Aluminum effluent limit and failure to do so is clear error.

2. EPA Failed to Account for Site-Specific Data on Acid Soluble and Total Recoverable Aluminum.

Regardless of the use of obsolete methodology to determine the aluminum limit in the Final Permit, that methodology is also indefensible clear error because it does not account for site-specific data on acid soluble and total recoverable aluminum. Keene requested, in its Comments on the Draft Permit, that the Final Permit include a special condition allowing Keene to request a preliminary study evaluating the fraction of acid soluble aluminum to total recoverable aluminum, and allow modification of the Final Permit aluminum limit to reflect the site-specific data. Keene Draft Comments at 4-2. EPA did not include the requested language, and instead addressed this in its Response to Comments, noting that NHDES would consider a study of this type and, if approved by NHDES, EPA may consider a permit modification. Response to Comments at 26. However, EPA cautions Keene that only the "DOC, pH, and hardness calculations account for the true toxicity of the acid soluble fraction on test species." Response to Comments at 26. Keene agrees, which is why use of an obsolete standard that does not take these calculations into consideration is clear error and an abuse of discretion. "[W]e should not silently rubber stamp agency action that is arbitrary and capricious in its reliance on old data without meaningful comment on the significance of more current compiled data." *Sierra Club v. U.S. E.P.A.*, 671 F.3d 955, 963 (9th Cir. 2012) (finding EPA actions were arbitrary and capricious when it used old, outdated data without considering the new data or providing explanation in its choice to use old data); *see In Re: Town of Concord Dep't of Public Works*, 16

E.A.D. 514, 524 (EAB 2014) (the EPA argued that "it's self-evident that newer data would be more representative of the conditions in the river as they are today rather than in 2000" and using the "most currently available data is logical and rational").

D. **EPA's Acknowledgment of the Propriety of a Site-Specific Effluent Copper Limit in its Responses to Comments Contradicts its Refusal to Include that Approach as an Acceptable Alternative to the Final Permit Effluent Limit for Copper and is thus Clear Error.**

Keene's Draft Comments requested that EPA include language in the Final Permit specifying that the results of a site-specific approach to establish a copper effluent limit (WER or BLM) be incorporated into the Final Permit. EPA's Response to Comments noted the propriety of this approach but declined to include the requested language. This failure to address Keene's comments requires review.

Keene's whole effluent toxicity results indicate its effluent is not toxic. Even when Keene operated under a less stringent effluent copper concentration limit of 20 µg/L, Keene's effluent complied with toxicity requirements. In fact, due to Keene's history of compliant testing performance, EPA approved a reduction of WET testing frequency from four times annually to once annually.

NHDES water quality standards regulations allow for the use of approved methods including WER and BLM to characterize copper concentrations based on site-specific conditions. N.H. Admin. R., Env-Wq 1703.22 (d); Keene Draft Comments at 5-2. In 2004, Keene applied the BLM and obtained results confirming that the corresponding criteria reflected in the state water quality standards are excessively conservative. Keene Draft Comments at 5-2. Keene commented on the 2007 Draft Permit's proposed copper limits with a similar discussion 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 Draft Comments at 5-2.

EPA's Response to Comments stated that:

> 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.

EPA Response to Comments at 30. After acknowledging that determination of the criterion via WER or BLM is executory and automatically becomes effective without formal adoption, EPA declined to include language in the Final Permit accepting such a criterion. Instead, EPA states:

> 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.

EPA Response to Comments at 31.

EPA's Responses to Comments do not provide a cogent response to Keene because it first acknowledged the propriety of setting the criterion using WER or BLM and then reassessing that criterion every five years within the life of a NPDES Permit. This is precisely the permit condition Keene sought in its Draft Comments- that the Final Permit include language specifying that if it set the criterion using WER or BLM that reset would be incorporated into the Final Permit. However, despite its express agreement that this approach is appropriate and consistent

with NHDES WQS and process, EPA then declined to include this language in the Final Permit, stating instead that it could not prejudge a future permit modification.

Because EPA's Response to Comments is internally inconsistent it does not provide a cogent basis for excluding the language Keene sought in the Final Permit and is clear error that must be reviewed.

VI. CONCLUSION

For the foregoing reasons, Keene respectfully requests that this Board:

1. Grant this Petition for Review and establish a briefing schedule;

2. Provide an opportunity for Keene to present argument and take questions in this proceeding to assist the Board in resolving disputed issues;

3. Remand to Region I for further proceedings requiring:

    a. Review of administrative record documentation of the naturally occurring low pH of the Ashuelot River and the associated negative water quality consequences and imposition of 6.0 to 8.0 S.U. pH Range instead of 6.5 to 8.0 S.U;

    b. Use of EPA's current guidance to determine whether a Total Recoverable Aluminum effluent limitation is necessary or whether it is appropriate for the City to report only regarding aluminum discharge until NHDES adopts the new guidance and EPA approves; and

    c. Allowing implementation of site-specific effluent copper limits established compliant with the processes discussed in EPA's Response to Comments as an alternative effluent copper limit.

4. Grant such other and further relief as may be proper.

Respectfully submitted,

CITY OF KEENE, NEW HAMPSHIRE

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November 15, 2021

TABLE OF ATTACHMENTS

STATEMENT OF COMPLIANCE WITH WORD LIMITATION

In accordance with 40 C.F.R. § 124.19(d)(1)(iv) and (d)(3), undersigned counsel certifies that the foregoing Petition for Review contains 7,583 words, as counted by a word processing system, including headings, footnotes, quotations, and citations in the count, but not including the caption, table of contents, table of authorities, table of attachments, signature block, statement of compliance with word limitation, or attachments, and, thus, this Petition meets the 14,000 word limitation contained in 40 C.F.R. § 124.19

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CERTIFICATE OF SERVICE

I, Joanna B. Tourangeau, hereby certify that on this 15th day of November, 2021, I served the foregoing Petition for Review to the following persons in the manner indicated:

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