United States Court of Appeals

for the

First Circuit

Case No. 11-1474

UPPER BLACKSTONE WATER
POLLUTION ABATEMENT DISTRICT,

Petitioner,

v.

U.S. ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

(For Continuation of Caption See Next Page)

ON APPEAL FROM AN ORDER ENTERED FROM THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

BRIEF ON BEHALF OF PETITIONER

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Case No. 11-1610

CONSERVATION LAW FOUNDATION, INC.,

Petitioner,

v.

UPPER BLACKSTONE WATER
POLLUTION ABATEMENT DISTRICT,

Intervenor,

U.S. ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

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STATEMENT IN SUPPORT OF ORAL ARGUMENT

Appellant respectfully requests oral argument as to all issues.

STATEMENT OF JURISDICTION

This court has jurisdiction pursuant to 33 U.S.C. § 1369(b)(1)(F) to review the Environmental Protection Agency ("EPA") Administrator's action in issuing a National Pollution Discharge Elimination System ("NPDES") Permit under 33 U.S.C. § 1342 ("Permit").

On May 28, 2010 and May 30, 2011, EPA's Environmental Appeals Board ("EAB") denied the Upper Blackstone Water Pollution Abatement District's ("District") petitions for review of contested permit conditions. By letter dated April 6, 2011, EPA issued notice of final permit decision constituting final agency action under 40 C.F.R. § 124.19(c). The District's petition for judicial review was timely filed on April 29, 2011, within 120 days of the date of EPA's final agency action.

STATEMENT OF ISSUES

Whether EPA can use tank experiments to establish limits in the Permit where the agency acknowledges that there are numerous uncertainties concerning the applicability of those experiments for bringing local rivers into attainment of water quality standards.

Whether the nitrogen limits in the Permit should be set aside as arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law because they are not connected to attainment of water quality standards.

Whether the phosphorous limits in the Permit should be set aside as arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law on the ground that those limits are arbitrarily based on a recommended national value with no connection to attainment of local water quality goals.

Whether the aluminum limits in the Permit should be set aside as arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law on the ground that they were based on a flawed technical analysis that included data EPA should not have considered.

Whether the EAB's denial of the District's petition for review was arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.

STATEMENT OF CASE

The District owns and operates a publicly owned treatment works ("POTW") that treats wastewater from Worcester and several surrounding communities. Pursuant to the Clean Water Act ("CWA"), the District is authorized to discharge from its facility to the Blackstone River under the terms of an NPDES permit issued on September 30, 1999 (Appx. 1423-69.) as modified by a settlement agreement with Region 1 of EPA ("EPA") dated August 8, 2001 (the "2001

Permit"). (Appx. 1501-20.) In accordance with the settlement agreement, EPA and the District entered into an administrative consent order in 2002 that included an eight-year compliance schedule ("Consent Order"). (Appx. 1521-34.) Under that schedule, the District was required by August 2009 to complete treatment plant upgrades to meet certain 2001 Permit limits, including a total phosphorus discharge limit of 0.75 mg/L during the summer months. (Appx. 1528, 1425.)

Based on these limits and the Consent Order, the District committed to upgrade its facility at a significant cost of approximately $180 million. Facility upgrades were designed to meet not only the 2001 Permit limit for total phosphorus of 0.75 mg/L, but also total nitrogen at a level of 8-10 mg/L, even though the 2001 Permit set no limit on total nitrogen. The nitrogen reductions for which the facility was designed reflected the level of nitrogen control being considered by other large dischargers in Rhode Island at that time. (Appx. 1377.)

As construction of facility upgrades was underway, the District submitted an application for renewal of its 2001 Permit to EPA on November 8, 2005. (Appx. 42.) On March 23, 2007, EPA issued a draft NPDES permit. (Appx. 1354.) The draft NPDES permit conflicted with the existing, enforceable compliance schedule established under the Consent Order and the 2001 Permit. Before completion of facility upgrades, and without evaluating the effectiveness of facility upgrades on water quality, EPA proposed new, more stringent limits on

phosphorus of 0.1 mg/L during summer months and 1.0 mg/L during winter months, as well as a new limit for total nitrogen of 5.0 mg/L. (Appx. 1354, 1377 1425, 1528.) The District and others submitted comments objecting to those new limits within the public comment period, which concluded on May 25, 2007. (Appx. 137-397.)

Over a year later, on August 22, 2008, EPA issued a final NPDES permit to the District ("2008 Permit"). (Add. 110-129.) The 2008 Permit contained the same new limits for phosphorus and nitrogen as EPA had proposed in the draft Permit. On September 15, 2008, the District filed a petition for review with the Environmental Appeals Board ("EAB") appealing, among other provisions, the new discharge limits on total phosphorus and total nitrogen contained in the 2008 Permit. (Appx. 34-821.) The Massachusetts Department of Environmental Protection ("MassDEP") also submitted a petition for review with the EAB contesting the new total nitrogen limit set by the 2008 Permit. (Add. 5, 21-35, 66-68.)

While the District's petition for review was pending before the EAB, EPA issued a draft permit modification to impose a limit on aluminum discharges from the District facility. (Appx. 5796-5808.) The District timely submitted comments on the draft permit modification (Appx. 842-1144.) and the modification became final on April 17, 2009. (Appx. 5498.) The District petitioned the EAB for review

of the aluminum modification on May 19, 2009 (Appx. 822-1144.) and the EAB consolidated both District appeals. (App. 5.)

On May 28, 2010, the EAB issued an order denying review in part and remanding to EPA portions of the 2008 Permit relating to co-permittees for further consideration. (Add. 1-109.) On July 7, 2010, EPA issued a determination on remand. The District and other parties filed petitions for review of the remand determination on co-permittee issues with the EAB. On March 30, 2011, the EAB issued an order denying review of these petitions. On April 6, 2011, EPA issued its notice of final permit decision, constituting final agency action under 40 C.F.R. § 124.19(c). (Add. 297-98.)

The District has petitioned for judicial review of EPA's final agency action pursuant to 33 U.S.C. § 1369(b). The District contested the EAB's denial of the District's petitions for review of contested permit conditions concerning nutrients (nitrogen and phosphorus), aluminum, and other issues.

The District requested and the Court granted on April 29, 2011 a stay of the contested 2008 Permit conditions. (Petitioner's Emergency Motion for Stay, 4/29/11; Order of Court, 4/29/11; *Upper Blackstone Water Pollution District v. U.S. Environmental Protection Agency*, No. 11-1474 ("*Upper Blackstone*, No. 11-1474")). The District presented evidence that the 2008 Permit, which but for the stay would have been effective on May 1, 2011, would require the District to

immediately commence upgrading its wastewater treatment facility at an additional cost of approximately $180-$200 million, would increase significantly the District's annual operating costs, and would cause various energy and environmental side effects. (4/29/11 Affidavit of Thomas K. Walsh ("4/29/11 Walsh Affidavit"), at ¶¶ 14-15; *Upper Blackstone*, No. 11-1474.) Specifically, to remove more phosphorus to achieve a level of 0.1 mg/L during summer months and 1.0 mg/L during winter months, and to reliably remove total nitrogen to a level of 5.0 mg/L in the summer would require construction of new technology and considerable modifications to existing facilities, including additional treatment processes as well as increased chemical and energy usage. (4/29/11 Walsh Affidavit, at ¶¶ 14-17; 5/13/11 Affidavit of Thomas K. Walsh, at ¶¶ 13-14; *Upper Blackstone*, No. 11-1474.)

The District also presented evidence that in August 2009, the upgrades performed by the District under the Consent Order came "on-line" and have since allowed the District to produce effluent quality far superior to that prior to the upgrade. Since the startup of the new facility in August 2009, the District has reduced phosphorus levels by 80% and total nitrogen levels by 50%. The load of nitrogen the District is now discharging is far less than the load the 2008 Permit authorizes the District to discharge at its design level. Consequently, the District's discharge now approaches the quality goals of the 2008 Permit, and surpasses them

on an annual basis. (4/19/11 Walsh Affidavit, at ¶ 21; *Upper Blackstone*, No. 11-1474.) Modeling of the Blackstone River performed by the University of Massachusetts and a third-party engineering firm demonstrate that there is little appreciable difference in water quality impacts between the discharge levels being achieved by the newly constructed facility and the levels that would be achieved by imposing the 2008 limits. (4/19/11 Walsh Affidavit, at ¶¶ 22-23; 5/13/11 Affidavit of John J. Gall, Jr., at ¶ 5; *Upper Blackstone*, No. 11-1474.) On April 29, 2011, the Court granted a stay of the contested permit provisions. (Order 4/29/11; *Upper Blackstone*, No. 11-1474.)

STATEMENT OF FACTS

A. Background

The POTW which the District owns and operates is located in Millbury, Massachusetts. It discharges treated wastewater to the Blackstone River. The Blackstone River flows from its origin in Massachusetts south to Rhode Island and into the Seekonk River and then into the Providence River, both of which are tidal extensions of Narragansett Bay. (Appx. 1332-34.) The District's facility is currently operating under NPDES Permit No. MA0102369 issued on September 30, 1999, as modified on August 8, 2001, by a settlement agreement. (Appx. 1501-34.) As provided under the settlement agreement, the District and EPA entered into an Administrative Consent Order in 2002 establishing an eight-year

schedule for a series of upgrades designed to bring the District's facility into compliance with certain discharge limits, including a discharge limit of 0.75 mg/L for phosphorus during the summer season. The Consent Order required the District to complete the upgrades necessary to meet that phosphorus limit by August 2009. The 2001 Permit and Consent Order did not limit total nitrogen discharges from the District. (Appx. 1501-34.)

In accordance with the Consent Order, the District moved forward with upgrade activities at a cost of approximately $180 million. (Appx. 1377.) The upgrades were designed to meet not only the discharge limit for total phosphorus of 0.75 mg/L, but also a reduced total nitrogen discharge level of 8-10 mg/L, even though the 2001 Permit set no limit on total nitrogen. (Appx. 1377.)

As construction of the upgrades was underway, and as required by 40 C.F.R. § 122, the District submitted an application for renewal of its 2001 Permit to EPA on November 8, 2005. (Appx. 42.) On March 23, 2007, EPA issued a draft NPDES permit. (Appx. 1354-72.) The draft NPDES permit conflicted with the existing, enforceable compliance schedule established under the Consent Order and the 2001 Permit. EPA proposed new, more stringent limits on phosphorus of 0.1 mg/L during summer months and 1.0 mg/L during winter months, and a new limit for total nitrogen of 5.0 mg/L between May 1 and October 31. The District and others submitted comments objecting to these new limits during the public

comment period which concluded on May 25, 2007. (Appx. 137-397.) The District's comments noted the ongoing river modeling study and asked EPA to consider that data before issuing a final permit. (Appx. 138, 355, 376-77.)

Over a year later, EPA issued the final 2008 Permit to the District on August 22, 2008. (Add. 110-29.) Despite the objections of the District and other commenters, the 2008 Permit contains the same new limits for total nitrogen and total phosphorus that EPA had proposed in the draft permit. (Add. 113-14.)

B. NPDES Requirements

The CWA authorizes EPA to issue NPDES permits allowing wastewater discharges subject to limited conditions. CWA Section 402, 33 U.S.C. § 1342. Section 401(a)(2) of the CWA and 40 C.F.R. § 122.44(d)(4) require that NPDES permits be conditioned "in such a manner as may be necessary to insure compliance" with applicable water quality standards. Similarly, section 301(b)(1)(C) of the CWA specifies that permits must contain "any more stringent limitation, including those necessary to meet water quality standards...established pursuant to any State law or regulations or any other Federal law or regulation, or required to meet any applicable water quality standards established pursuant to this chapter." (emphasis added). Water quality standards, adopted by states and approved by EPA, are designed to protect public health or welfare, enhance water quality, and advance the purposes of the CWA. 33 U.S.C. § 1313(c)(2)(A).

EPA regulations implementing the statutory requirements of the CWA prohibit EPA from issuing a permit "when the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected States." 40 C.F.R. § 122.4(d). The Permit must include conditions "necessary" to "achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality." 40 C.F.R. § 122.44(d)(1). In addition, "[l]imitations must control all pollutants or pollutant parameters…which the [EPA] determines are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above any State water quality standard, including state narrative criteria for water quality." 40 C.F.R. § 122.44(d)(1)(i).

C. The 2008 Permit

EPA set a total nitrogen summertime effluent limit of 5.0 mg/L, applying 40 C.F.R. § 122.44(d)(1)(vi)(A) and (B) and using a variety of information available to it, and paying particular attention to a 2004 report issued by the Rhode Island Department of Environmental Management ("RIDEM"). (Add. 182-86, 249.) This report explains that, because RIDEM was not able to develop a computer-based numeric model for the Providence and Seekonk Rivers, the report focused instead on the results of a physical model experiment conducted in the early 1980's by the Marine Ecosystems Research Laboratory ("MERL") at the University of

Rhode Island. (Appx. 5279-5311.) The MERL experiment was designed to study the relationship between nitrogen and phosphorus loading and various response variables in a tank system structured to mimic the general conditions of Narragansett Bay as a whole. (Appx. 5279-5311, 147-153.) Based upon RIDEM's analysis of this information, EPA "concluded that a seasonal reduction of nitrogen to no more than 5.0 mg/L is required at the [District's Treatment Plant] in order to achieve water quality standards," (Add. 143.); that "the limits on total nitrogen are necessary to ensure compliance with Rhode Island Water Quality Standards," (Add. 174.); that "no less stringent limit could be imposed that would still ensure compliance with water quality standards in light of the severe existing eutrophic condition in the Providence/Seekonk River System indicating that it is significantly over allocated for nitrogen," (Add. 205.); and acknowledging uncertainties in its analysis, nonetheless concluding that "[t]here is no realistic likelihood, … that water quality standards could be met with a less stringent nitrogen limit than the one proposed." (Add. 143.)

EPA set a total phosphorus limit of 0.1 mg/L for summer months and 1.0 mg/L for winter months. (Add. 139.) EPA states that it established this limit pursuant to the 40 C.F.R. § 122.44(d)(1)(vi)(B) requirement to insure compliance with the Massachusetts narrative water quality criteria. In setting the 2008 Permit limit, EPA reports that it considered two documents providing guidance on

numeric criteria: (1) Office of Water, U.S. EPA, *Quality Criteria for Water*, May 1, 1986 (the "*Goldbook*") and (2) Office of Water, U.S. EPA, *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Nutrient Ecoregion XIV* (Dec. 2000) ("Ecoregion XIV Criteria"). (Add. 137-39.) The total phosphorus limit of 0.75 mg/L in the 2001 Permit was established by EPA based on its use of a mathematical model referred to as QUAL2E. In setting the phosphorus limit for the 2008 Permit, EPA chose not to use this model. (Appx. 195-196.) Instead, EPA referred to the *Goldbook* recommended National criteria of 0.1 mg/L and the Ecoregion XIV Criteria criterion which recommended 0.025 mg/L. EPA then selected the *Goldbook* criterion of 0.1 mg/L as the warm weather 2008 Permit limit. (Add. 138-39, 196.)

D. 2009 Permit Modification to Add Aluminum Limit

The 2008 Permit included a requirement for the District to monitor and report aluminum levels on a monthly basis. It contained no numeric limitation for aluminum. (Add. 114.) As noted above, the District and several other parties filed petitions with the EAB for review of the 2008 Permit. One of those parties, the Northern Rhode Island Chapter 737 of Trout Unlimited ("Trout Unlimited") argued that EPA should set an effluent limit for aluminum based on data suggesting that aluminum concentrations in the District's effluent have levels

believed to be harmful to fish populations in the Blackstone River (Appx. 863-881; Add. 282-83.)

After reviewing Trout Unlimited's Petition, on January 30, 2009, EPA issued a draft permit modification to the 2008 Permit proposing a numeric limitation of 87 ug/L for aluminum ("2009 Modification"). In its statement of basis issued with the draft 2009 Modification EPA stated that effluent limitations are imposed when the "EPA finds that there is reasonable potential for the discharge to cause or contribute to an in stream excursion above a water quality criterion contained within applicable state water quality standards (40 C.F.R. § 122.44(d)(1)(i))." (Add. 284.) EPA explained that the 87 ug/L limit was drawn from criteria for aluminum found in the *National Recommended Water Quality Criteria: 2002* (EPA 822 R-02-047) ("EPA's 2002 National Criteria") and the Massachusetts Surface Water Quality Standards at 310 CMR § 4.05(5)(e)). Because the Massachusetts Surface Water Quality Standards refer to EPA's 2002 National Criteria where Massachusetts has not set a numeric limit, EPA adopted the concentration level of 87 ug/L for aluminum as recommended in EPA's 2002 National Criteria. (Add. 284-87.)

In determining that the District's discharge had a "reasonable potential" to exceed the 87 ug/L standard for aluminum, EPA projected the concentrations of aluminum in river water downstream from the District's discharge by considering

data in sample analyses obtained between June 2005 and July 2008. (Add. 285, 288.) Using data from only seven sampling events during that period, EPA found both the background or ambient concentration of aluminum in the river and the concentration of aluminum in the District's effluent to exceed the 87 ug/L standard, and therefore it found "a reasonable potential for the discharge of any aluminum from the facility to cause or contribute to an excursion of the criteria downstream." (Add. 286.)

On February 27, 2009, the District provided comments to EPA on the proposed 2009 Modification. (Appx. 5937-6249.) In those comments, the District informed EPA that the 87 ug/L limit, and EPA's projected concentrations of aluminum in the District's discharge, were based on incomplete and incorrect data. Specifically, the District noted in its comments that EPA used selective sampling events, leaving out data from other sampling events, and that EPA's selective use of the data from a limited set of seven samples allowed EPA to form the erroneous conclusion that an aluminum limit was needed. (Appx. 5937-38.) The District also informed EPA that background or ambient aluminum levels in the river routinely exceeded the 87 ug/L standard for aluminum. (Appx. 5939-40.) The District asked EPA to review its data and conclusions, withdraw the proposed 2009 Modification, and discuss with the District and interested stakeholders a more comprehensive approach to addressing control of aluminum. (Appx. 5941-42.)

EPA, however, chose to move forward with the 87 ug/L limit on aluminum and issued the final 2009 Modification on April 17, 2009, along with its response to comments. (Appx. 5498-5795.) On May 19, 2009, the District petitioned the EAB for review of the 2009 Modification, (Appx. 822-1144.) and the EAB subsequently consolidated the District's petition with the existing appeal as to the 2008 Permit. (Add. 5.)

E. The EAB's Opinion

On May 28, 2010, the EAB issued its opinion, in which it denied review on all issues the District appealed except one: the Board remanded the Permit's provisions adding, as co-permittees subject to the Permit's conditions, certain municipalities served by the District's POTW. (Add. 20-21.) With respect to the nitrogen permit limit, the EAB concluded that EPA's choice of 5.0 mg/L was not "so far outside a zone of reasonableness that it constitut[ed] clear error or abuse of discretion." (Add. 53.) In response to contentions that data used by EPA did not support the nitrogen limit, the EAB acknowledged that there were numerous uncertainties in the application of the available data to the Providence and Seekonk Rivers but nevertheless concluded that "[t]he selection of representative data for the analysis is a technical judgment that falls within the permit issuer's discretion and technical expertise." (Add. 52.) (citations omitted).

In denying review of challenges to the phosphorus limit, the EAB concluded that EPA's use of the "Goldbook" to select a total phosphorus limit was consistent with 40 C.F.R. § 122.44(d)(1)(vi). The EAB opined that the record did not provide support that a phosphorus limit of .75 mg/L was sufficient to control cultural eutrophication and that EPA acted appropriately in relying on the severe state of cultural eutrophication as a basis for setting permit limits without waiting for further data which might provide greater certainty as to what those limits should be. (Add. 87.)

With respect to the District's position that it was improper for EPA to impose an aluminum permit limitation of 87 ug/L for discharges into the Blackstone River due to fundamental flaws in the data set selected by EPA, the EAB also denied the District's request for review. The Board asserted that the District's primary arguments on this issue were being introduced for the first time on appeal and thus could not be considered. (Add. 98, n. 60.)

STANDARD OF REVIEW

The CWA gives this Court jurisdiction to review EPA's final federal permit decision (33 U.S.C. § 1369(b)(1)(F)) and the Administrative Procedure Act ("APA") (5 U.S.C. §§ 701-706) governs the standard of review. Under the APA, this Court may overturn the EAB's ruling, as an agency action, if it was "arbitrary, capricious, an abuse of discretion or otherwise not in accordance with law."

5 U.S.C. § 706(2)(A); *see also Adams v. EPA*, 38 F.3d 43, 49 (1st Cir. 1994) (applying standard of review to review of EPA's issuance of a NPDES permit); *Pepperell Assocs. v. United States EPA*, 246 F.3d 15, 22 (1st Cir. 2001). "Agencies…are normally entitled to substantial deference so long as their decisions do not collide directly with substantive statutory commands and so long as procedural corners are squarely turned. This deference is especially marked in technical areas. But in the end an agency decision must also be rational – technically speaking, it must not be 'arbitrary or capricious,' – and that requirement exists even in technical areas of regulation." *Puerto Rico Sun Oil Co. v. U.S. EPA*, 8 F.3d 73, 77 (1st Cir. 1993) (internal citations omitted).

SUMMARY OF ARGUMENT

It is important to make clear what the District has not contested at any stage of this matter and is not contesting by this appeal. The District does not challenge EPA's authority to establish limits necessary to protect water quality, inclusive of water quality in Rhode Island waters downstream of the District's discharge. Nor is the District challenging the fact that nutrients can cause impairments in water bodies, or claiming that completing a total maximum daily load ("TMDL")[1] is the

[1] Section 303(d) of the CWA establishes the TMDL program, a water quality-based approach to regulating waters that fail to meet water quality standards. A TMDL is a calculation of the maximum quantity of a given pollutant that may be added to a waterbody from all sources without exceeding the applicable water quality standard for that pollutant. States are required to establish TMDLs for each

only allowable method for EPA to issue more stringent permit limits to the District. Instead, the District is arguing that the Clean Water Act ("CWA") mandates that EPA have a sound scientific basis for proposed permit limits, and in this case, EPA has not met this obligation. In addition, when establishing numeric limits to satisfy narrative water quality standards, EPA's failure to actually demonstrate that these limits are "necessary" to attain and maintain the water quality standard constitutes a clear error of law.[2] *See* 40 C.F.R § 122.44(d)(1).

Under the CWA, science must trump emotion, guesswork, and ad hoc justifications in numeric discharge calculations. When establishing NPDES permit limits, it is not a legally acceptable argument that "the ends justify the means." EPA cannot simply assert that, because impairment exists, it must act by making discharge limits more stringent, and that whatever limit it sets is automatically justified. On the contrary, such action must be justified by a demonstrated

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pollutant that prevents each waterbody from attaining water quality standards. After that TMDL is established by the State and approved by EPA, water quality-based effluent limits for dischargers to the waterbody must be consistent with the assumptions and requirements of any applicable wasteload allocation for those sources that is contained in the TMDL. 40 C.F.R. § 122.44(d)(1)(vii)(B).

[2] Our focus in this brief on the nitrogen, phosphorus and aluminum limits in the District's Permit is not intended to diminish in any way the serious concerns that the District raised before EPA and EAB concerning other parameters in the Permit. Given the page/word limits for this brief, the District chose to focus here on those issues that posed the greatest impact on its operations, and on which EPA and EAB had committed the most serious legal and scientific errors.

connection between the District's discharge and the impairment as well as a showing, supported by sound science, that the proposed limits are appropriate and necessary to address the impairment and will result in attainment of water quality standards. 40 C.F.R. § 122.44(d)(1).

Although absolute scientific precision is not required for EPA to make valid decisions concerning NPDES permit limits, using experimental results and other data that are not rationally related to the affected waters is insufficient and inadequate to justify the nitrogen and phosphorus limits proposed here. Flawed science begets flawed results: the nitrogen and phosphorus limitations contained in the 2008 Permit have no proven connection to the water quality impairment EPA cites in justifying those limitations. The consequence of this flawed process is especially troubling in this matter, where EPA itself had ordered the District to complete a $180 million dollar upgrade project that would address those very constituents, yet failed to evaluate or even consider the results of those improvements before imposing even more onerous and costly permit requirements.

All EPA can do to justify its conclusions is articulate a potpourri of assumptions and unproven conclusions and argue that, despite a significant level of scientific uncertainty, the ends justify the means. This slipshod methodology strikes at the heart of the evidence-based, scientific process that is intended to form the foundation of NPDES permitting decisions. The EAB failed to hold EPA to

the CWA requirements governing permitting decisions and thus erred in denying the District's Petition for Review.

ARGUMENT

I. The actions by EPA in issuing the District's Permit violate basic legal principles established by this Court and therefore should be vacated and remanded.

The circumstances of this case are similar to those faced by this Court in *Puerto Rico Sun Oil Co. v. U.S. EPA*, 8 F.3d 73 (1st Cir. 1993). In that case, Sun Oil had held an NPDES permit that incorporated a "mixing zone analysis" in setting the pollution limitations for the company's discharged effluent. When Sun Oil sought to renew the permit, EPA forwarded the permit application to Puerto Rico's Environmental Quality Board ("EQB"), the local agency responsible for providing state certification to EPA. Because EQB was reformulating its mixing zone criteria at the time, EQB's draft certification neither continued in force the old mixing zone criteria nor made the certificate subject to the new criteria still under development. EQB subsequently promulgated new mixing zone regulations, but "just as Sun Oil moved to correct the EQB certification to incorporate the new mixing zone analysis, EPA moved even more swiftly to adopt a final permit based on the EQB certificate that omitted a mixing zone analysis." *Id.* at 76. Notwithstanding (i) Sun Oil explaining that it could not operate its refinery without the mixing zone analysis, (ii) EQB's expressed intent to apply the new mixing

zone regulations to Sun Oil's permit, and (iii) EQB's formal request to EPA to leave the company's previous permit in place, EPA affirmed the final NPDES permit without the mixing zone analysis. The Environmental Appeals Board issued an opinion denying review of the permit.

This Court reversed the decision of the EAB and vacated the order adopting the permit that lacked the mixing zone analysis. This Court made clear that EPA actions which may comport with technical legal requirements can be so irrational and nonsensical as to be arbitrary and capricious:

> The EPA's action in adopting the permit in this case is not flawed by procedural mistake. On the contrary, EPA did a commendable job of dotting i's and crossing t's. Nor is there any violation of substantive provisions of the Clean Water Act; for example, nothing in that statute explicitly requires EPA to use mixing zone analyses in its permits. The problem with EPA's decision is simply that the outcome appears on its face to make no sense.

Id. at 77. Put another away, this Court said that just because EPA legally can do something does not mean that they should do it if there no rational reason for the action other than "a mechanical desire to reach a rapid conclusion without regard to whether the result is sound." *Id.* at 79. EPA appeared rigidly intent on issuing the permit in the absence of the updated mixing zone regulations despite EQB's "increasingly evident desire to reconsider a mixing zone analysis for this permit." *Id*. at 78. This Court did not understand EPA's great rush to issue the permit without the latest applicable analysis for Sun Oil's discharges. "What is beyond

explanation, or at least wholly unexplained, is why EPA should be intent on adopting half of what the Commonwealth wanted while systematically frustrating its attempt to secure the other half. The obligation, we repeat, is not one of deference to local authorities but of making sense." *Id.*

EPA's actions in issuing the District its permit similarly results in an outcome that makes no sense. In this case, EPA was clearly intent on issuing a discharge permit prior to obtaining the latest and best data reflecting the upgrades the District made to its facility as a result of the settlement agreement with EPA. Further, rather than waiting for new scientific models of the Blackstone River watershed that were in development (and are now complete), EPA hurried to rely on data from tank experiments which the agency readily admits are rife with uncertainty and lack applicability in many respects to the waters at issue. The irrational result, as discussed in more detail below, is a set of permit limitations which are not connected to the District's discharges and are unproven to attain the applicable water quality standards. EPA's rush to issue the permit, rather than wait for the latest data and scientific models, makes no sense and appears to be "a mechanical desire to reach a rapid conclusion without regard to whether the result is sound." *Id.* at 79. This Court should follow its reasoning in *Sun Oil* and find that EPA's actions were arbitrary and capricious.

II. The nitrogen limit set by EPA was improperly based on the MERL experiments and is not adequately supported.

The District challenges the 5.0 mg/L nitrogen limit because EPA has not provided reliable scientific data to support that limit. As this Court has noted, "[i]t may come as a surprise that agency decisions must make sense to reviewing courts." *Puerto Rico Sun Oil Co. v. U.S. EPA*, 8 F.3d 73, 77 (1st. Cir. 1993). Although agency decisions are normally entitled to substantial deference, especially in technical areas, "…in the end an agency decision must also be rational… and that requirement exists even in technical areas of regulation." *Id*. In this case, EPA's efforts to explain its reasoning for a 5.0 mg/L nitrogen limit in the 2008 Permit lack both scientific reliability and rationality.

A. EPA and RIDEM were unable to develop an applicable water quality model and therefore used the MERL tank experiments to set the nitrogen limits.

In response to each of the District's challenges to the 5.0 mg/L nitrogen limit, EPA and the EAB provide explanations that strain rationality and bear no relationship to the limit EPA selected. EPA first started down this path because neither it nor RIDEM were successful in developing a real water quality model for the Bay watershed. As explained by RIDEM, "[w]hen functioning properly, a water quality model predicts an accurate water quality condition that results from a set of inputs (pollutant loadings) to the system." (Appx. 5280.) However, RIDEM

readily admits that it could never get its model for the Bay "functioning properly." (Appx. 5280.)

Because the specific modeling effort for the Bay watershed was unusable, EPA looked elsewhere for a model to justify its regulatory actions. Therefore, in choosing the 5.0 mg/L nitrogen limit, EPA relied upon conclusions drawn by the Rhode Island Department of Environmental Management ("RIDEM") in a December 2004 report entitled *"Evaluation of Nitrogen Targets and WWTF Load Reductions for the Providence and Seekonk Rivers"* ("2004 RIDEM Report") (Appx. 1339.) To reach its conclusions in that report, RIDEM applied and analyzed a laboratory experiment conducted in the 1980s by the Marine Ecosystems Research Laboratory ("MERL") at the University of Rhode Island. The MERL experiments were designed to mimic the general conditions of Narragansett Bay. EPA, however, extrapolated the MERL experiments results to predict the impact of nitrogen loadings on the Providence and Seekonk Rivers. (Appx. 1339-41.)

The District objected to EPA's application of the MERL experiments to develop its permit limits because the actual conditions in the local water bodies are materially different from the conditions under which the experiments were conducted. (Appx. 147-153.) In particular, the District explained that the flushing times in the Seekonk River are on the order of 3.5 days, not at all comparable to

the 27 days used in the MERL experiments, and because of the complexity of the Narragansett Bay system and the difference between the Bay and the local rivers, EPA had not made adjustments to account for attenuation and dilution that match real world conditions. (Appx. 147-153.) The District provided EPA with calculations demonstrating the inconsistency between the MERL experiments and real world conditions. In fact, the District provided specific reasons, both in its comments and in its Supplemental Petition for Review to EAB, as to why the MERL studies do not support the 5.0 limit. (Appx. 147-153, 50-71.)

B. EPA used the MERL tanks experiments despite their uncertainty.

Because the modeling effort of the Bay watershed was unsuccessful, EPA used the MERL data as a proxy. Yet, just because some data are available does not mean they are applicable to the real world situation in the local rivers. This is true even if the MERL experiments demonstrate basic scientific principles concerning the interaction between nitrogen and oxygen. In fact, RIDEM itself acknowledges a number of reasons there is uncertainty about the applicability of the MERL data:

> While we believe that the MERL tank results provide an adequate representation of the relationship between nitrogen and oxygen levels in the Providence and Seekonk Rivers, some uncertainty remains regarding predicted water quality improvement and loading reductions necessary to meet water quality standards. As noted above, significantly lower mean DIN concentrations were observed in the Providence and Seekonk Rivers as compared to the MERL experiment for an equivalent loading rate, which may be the result of large differences between the field and experimental flushing times, uptake by macroalgae and denitrification in the bottom waters. Also

> the MERL experiment DO sampling protocol does not provide sufficient data to fully assess the compliance with the recently established EPA guidelines regarding cumulative periods of low dissolved oxygen.

(Appx. 5306.) RIDEM goes on to state that "phased implementation is indicated" because under EPA TMDL guidance, "[f]or certain non-traditional problems if there are *not adequate data and predictive tools* to characterize and analyze the pollution problem, a phased approach may be necessary." *Id.* (emphasis added). (Appx. 5306.) RIDEM's statements leave no doubt that the agency has serious misgivings about the adequacy and applicability of the MERL data to predict real-world conditions in the local rivers.

EPA itself, in responding to comments concerning its use of the RIDEM Report and the associated MERL data, acknowledges applicability problems and the limitations of the MERL data:

> EPA recognized, however, that the MERL tank experiments cannot completely simulate the response of chlorophyll *a* and dissolved oxygen to nitrogen loadings in a complex, natural setting such as the Providence/Seekonk River system, and thus <u>does not yield a precise level of nitrogen control required to restore uses in the system</u>. For example, dissolved oxygen in Narragansett Bay is influenced by stratification, which was not simulated in the MERL tank experiment, in which waters were routinely mixed. In a stratified system, there is little vertical mixing of water, so sediment oxygen deficits are exacerbated, due to the lack of mixing with higher DO waters above. In addition, the flushing rate used in the MERL tanks is not the same as seen in the Bay. Because the physical model does not generate a definitive level of control that can be applied to a real world discharge, but instead a range of loading scenarios which are subject

> to some scientific uncertainty, EPA was required to exercise its technical expertise and scientific judgment based on the available evidence when translating these laboratory results in establishing the permit limit.

(Appx. 1254.) (emphasis added). The extent of shortcomings with the MERL data admitted to by EPA and RIDEM is quite remarkable, given that EPA nevertheless pressed forward in trying to apply this data to the local rivers.

To avoid arbitrary decision-making when using a model, an agency must be able to draw a rational connection between the factual inputs, modeling assumptions, modeling results and conclusions drawn from these results. *Sierra Club v. Costle*, 657 F.2d 298, 332-33 (D.C.Cir.1981). A reviewing court also will reverse an agency action that relies on a model, "if the model is so oversimplified that the agency's conclusions from it are unreasonable." *Appalachian Power Co. v. EPA*, 249 F.3d 1032, 1052 (D.C. Cir. 2001) (citations omitted). When a model is challenged, EPA must provide a full analytic defense. *Eagle-Picher Indus., Inc. v. U.S. EPA*, 759 F.2d 905, 921 (D.C.Cir.1985). EPA must be able to explain the assumptions and methodology used in preparing the model. *Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 535 (D.C. Cir. 1983). Further, proceeding without a fully developed model of the Bay is contrary to EPA's own recommended water quality criteria for nutrients which state: "wherever possible,

develop nutrient criteria that fully reflect localized conditions and protect specific designated uses." 66 FR 1671, 1673 (Jan. 9, 2001). (Add. 317.)

It is clear that EPA failed to meet these standards. Instead, in this matter, EPA plays a loose game of "connect the dots" and claims it will simply fix its mistakes later if the challenges to its methodology prove to be right: "If EPA has erred in navigating the scientific complexities and uncertainties associated with the MERL tank experiments, EPA will be able to further refine the limit in future permitting cycles." (Appx. 1255.) This approach is backwards. If EPA cannot conduct a valid technical analysis or "a full analytic defense," of a challenged model, it cannot justify its regulatory action under the CWA[3]. *Eagle-Picher Indus. Inc.*, 759 F.3d at 921.

C. EPA never actually reached a conclusion concerning what nitrogen permit limitation is "necessary" to attain water quality standards as required by the CWA.

EPA has no evidence that imposition of the 5.0 mg/L numeric limitation for total nitrogen in the District's permit will actually lead to attainment of narrative Rhode Island water quality standards. Section 301(b)(1)(C) of the CWA requires NPDES permits to contain:

[3] Moreover, this approach of "fix it later" ignores the anti-backsliding concerns identified by this Court in *Puerto Rico Sun Oil Co. v. USEPA*, 8 F.3d 73, 78-79 (1st Cir. 1993).

> any more stringent limitation, including those necessary to meet water quality standards, treatment standards, or schedules of compliance, established pursuant to any State law or regulations (under authority preserved by section 1370 of this title) or any other Federal law or regulation, or required to implement any applicable water quality standard established pursuant to this chapter.

33 U.S.C. § 1311(b)(1)(C) (emphasis added). Similarly, section 101(a)(2) of the CWA establishes a national goal that "wherever attainable," water quality standards shall be set to protect aquatic life and recreational uses. 33 U.S.C. § 1251(a)(2).

The need for standards to be attainable is confirmed in EPA regulations, which specify that water quality standards "should, wherever attainable, provide water quality for the protection of fish, shellfish and wildlife...." 40 CFR 131.2 (emphasis added). In addition, States are obligated to "specify appropriate water uses to be achieved and protected." 40 CFR 131.10(a) (emphasis added).

Each of these provisions plays an important role in the process of establishing effluent limitations and the water quality standards upon which they are based. To be legitimate, standards must be "attainable." Further, effluent limitations must be "necessary" to achieve attainable standards. General tenets of statutory interpretation dictate that these words were used intentionally and should be ascribed their ordinary meaning. *U.S. v. Ditomasso*, 621 F.3d 17, 22 (1st Cir. 2010). In this situation, EPA has failed to establish that the 5.0 mg/L permit limitation for total nitrogen is "necessary" to achieve appropriate and "attainable"

water quality standards for nutrients in the Blackstone River and the waterways downstream to Narragansett Bay.

Nowhere in the record does EPA make a specific finding that the 5.0 mg/L permit limitation is necessary to attain water quality standards. EPA proffers, and the EAB accepts, a creative dance around this obvious problem. EPA claims that "a seasonal reduction of nitrogen to no more than 5.0 mg/l is required at the [District's Treatment Plan] in order to achieve water quality standards." (Appx. 1341.) (emphasis added). EPA recognized the uncertainties in its analysis, but concluded that "[t]here is no realistic likelihood…that water quality standards could be met with a less stringent nitrogen limit than the one proposed." (Appx. 1341; *see also* Appx. 1234-37, 1255, 1299; Add. 37.) Put another way, EPA is saying that: its science is uncertain; it has not determined what nitrogen limit is "necessary" as required under 33 U.S.C. § 1311(b)(1)(C); and that EPA can simply apply its best estimate of a "ceiling" as a permit limit when it does not know what the actual "necessary" numeric limit should be.

To justify this approach, all EPA can do is make conclusory statements that the MERL experiments—which EPA admits have numerous applicability problems —actually do provide "real world" information after all:

> The basic relationship demonstrated by the MERL tank experiments between nitrogen loadings, dissolved oxygen impairment and chlorophyll *a* levels corresponds to what is actually occurring in the Providence/Seekonk River system. Both the MERL tank experiments

> and the data from the Providence/Seekonk River system indicate a clear correlation between nitrogen loading, dissolved oxygen impairment and chlorophyll *a* levels.

(Add. 204.) The EAB simply accepts this conclusion even though the District provided information showing that this conclusion was not correct. (Add. 55; Appx. 147-153.) The EAB then goes on to assert that EPA also notes the observed "consistency" between the MERL experiment and the conditions in the Providence and Seekonk Rivers with respect to dissolved oxygen ("DO") and chlorophyll *a*, all while citing similarly conclusory justifications posited by EPA. (*See*, Add. 46-47.) Yet, even accepting the truth and accuracy of these amorphous and conclusory statements, they say nothing to explain how a specific limit of 5.0 mg/L in the District's permit is "necessary" to achieve water quality standards.

The EAB was surprisingly unfazed by EPA's failure to ever reach an actual conclusion about the "necessary" permit limitation:

> The question before the Board in this appeal is not whether the EPA, in taking differences between the model and the natural environment into account, including dilution and attenuation, could have selected a somewhat higher or lower number than 5.0 mg, but rather the question is whether the EPA's decision falls so far outside the zone of reasonableness that it constitutes clear error or abuse of discretion. (citations omitted). Here, the EPA explained that "[i]n establishing the nitrogen limit in the permit, EPA took into account uncertainties in extrapolating the physical model to a complex, natural setting such as Upper Narragansett Bay." RTC at 30. The EPA explained further, "[b]ecause the physical model does not generate a definitive level of nitrogen control that can be applied to a real world discharge, but instead a range of loading scenarios which are subject to some

> scientific uncertainty, EPA was required to exercise its technical expertise and scientific judgment based on the available evidence when translating these laboratory results and establishing a permit limit."

(Add. 52-53.) In short, while admitting that there is a lack of reliable and definitive data to support a clear justification for the 5.0 mg/l permit limit, the EAB has condoned a process by which EPA can practically pick almost any number for an effluent limitation, and that value will be upheld, because "[t]he selection of representative data for the analysis under [section 122.44(d)(1)] is a technical judgment that falls within the permit issuer's discretion and technical expertise." (Add. 52.) That has an appealing ring to it and it is repeated a number of times in the EAB's opinion. However, it is exceptionally problematic reasoning. First, it encourages EPA to settle for uncertain and unclear science that it can just loosely connect to the "real world" when establishing permit limitations, since "the selection of representative data" will receive little to no scrutiny by the EAB. Second, this reasoning is difficult to square with the law. Permits must include conditions "necessary" to "achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality." 40 CFR § 122.44(d)(1). If EPA is not being required to meet this threshold showing, what meaning do the regulations have?

In rejecting the District's argument concerning the lack of a water quality standards-related basis for the nitrogen limit, the EAB relegated the argument to a

footnote – and made two fundamental errors in that footnote. First, the EAB states that EPA made a "determination, based on the administrative record of this matter, that the Permit's total nitrogen limit is sufficient to ensure compliance with Rhode Island's water quality standards." (Add. 64, n. 48.) But the Board never states where such a determination might be found, and in fact, EPA never made such a determination: nowhere has EPA ever found that the limit is "sufficient to ensure compliance with Rhode Island's water quality standards," and nowhere has EPA presented evidence that would support such a claim.

But that is not the only error committed by the EAB in its footnote. The EAB also stated that it could not find in the District's favor because "rather than leading to a delay in imposing more stringent requirements…a finding that the Permit cannot ensure compliance with water quality standards would require denial of the District's permit application." (Add. 64, n. 48.) The EAB cites no authority for that proposition, and in fact, there is no such authority. In addition, the EAB has simply misread the District's argument. We are not saying that EPA had made, or should have made, a finding that the Permit "cannot ensure compliance with water quality standards." Rather, we are saying that if EPA is going to issue a permit, and include numeric limits for a particular pollutant, the Agency must show that the limits will ensure compliance with water quality standards. 40 C.F.R. § 122.4(d). If the Agency finds that it cannot make that determination, then

it should either gather enough information to make that finding, or work with the State to review the water quality standard, to determine if it actually can be attained. 40 C.F.R. § 122.44(d)(1)(vi). If the standard cannot be attained, then the standard should be revised to reflect what can be attained; at that point, a numeric limit can be derived that would ensure attainment of that standard. 40 C.F.R. § 122.44(d)(1).

It would be the essence of "arbitrary and capricious" action for EPA to forsake that entire process and instead simply deny the permit – that would amount to complete abdication of the Agency's responsibilities under the CWA. In fact, it would be the mirror image of the situation in *Sun Oil*. In that case, EPA rushed to issue a permit before it had the necessary information for the permit to make sense, and this Court determined that such conduct was arbitrary and capricious. Here, EPA would be denying the permit before it had the necessary information it needed to issue a permit that makes sense. In both situations, EPA's impatience and its "mechanical desire to reach a rapid conclusion without regard to whether the result is sound," *Sun Oil*, 8 F.3d at 79, result in decisions which may be expedient, but do not actually further the goals of the CWA. Such conduct is neither called for or authorized here; instead, the Agency should just do its job.

EPA cannot say that the 5.0 mg/L limit will achieve water quality standards. It selected a specific number which it acknowledges is uncertain. Rather than

spend the time and effort to acquire more certainty, it is bent on imposing this limitation irrespective of the enormous cost it will impose on the District and its rate-payers and to the disruption to the ongoing facility upgrades, which EPA required in the first place. For these reasons, the Court should vacate the nitrogen limits and remand the Permit to EPA to reassess and then determine a proper nitrogen limit.

III. The phosphorus limit set by EPA was based on an arbitrary choice of a national value, with no cause and effect relationship with local water quality in the Blackstone River.

The EAB entirely ignores the irrational nature of the permitting action taken by EPA as to phosphorus. Through the 2001 permit and 2002 Consent Order, EPA agreed that the District would upgrade its facilities to meet a summertime limit of 0.75 mg/L for phosphorus by August 2009. But before that construction was completed, and before any data could be generated showing what effect the upgrades had on water quality, EPA set a new, more stringent summertime limit of 0.1 mg/L for phosphorus.

The threshold question that EPA has never been able to squarely answer with regard to the new phosphorus limit it imposed on the District is: what evidence is there that 0.1 mg/L is the correct limit for the Blackstone River? EPA devoted extreme efforts to explain why it does not believe the previous limit of 0.75 mg/L is still appropriate. Although the District does not agree with EPA's

reasons,[4] it is also important to recognize that the 0.75 mg/L is not at issue in this case. Also, the District is not arguing that there should be no limit at all. It is possible that the appropriate limit is somewhere between 0.1 mg/L and 0.75 mg/L, but there is no evidence in the record that EPA ever looked at possible limits in this range to determine if they would sufficiently protect water quality.

The EAB opines that EPA was technically justified in selecting the 0.1 mg/L limit by choosing a number from numeric criteria developed in 1968, 1973, and 1986 found in the "*Goldbook*." (Add. 82-85.) But in picking the 0.1 mg/L limit from the range of the limits recommended in the *Goldbook*, EPA simply picked a "national" number and undertook no action to demonstrate the relationship between any impairment to the designated uses of the receiving waters and the imposed phosphorus limit. Consequently, the best EPA can say about the numeric limits set to address the narrative criteria is that the limits are "Likely" to be protective of designated uses. "Likely" to protect designated uses falls well short

[4] The new data that EPA relies upon to justify the need for the new limit are from 2003, before the District's upgrade came online. EPA relies upon observations of river conditions in August 2003, and phosphorus discharge levels at the facility that were at or near the 0.75 mg/L limit. (Add. 85.) The District, however, pointed out that (1) the observations of river conditions (mid-September) were not during the same time period as the discharges, (Appx. 75.) and (2) in September, when the river observations took place, was unusually high (the average concentration was 2.75 mg/L for the two weeks prior to the observations, almost four times the 0.75 mg/L level that the District was upgrading to meet. (Appx. 75.) The EAB glossed over these objections to conclude that EPA correctly rejected its earlier permit limit. (Add. 72-87.)

of the demonstration required by 40 C.F.R. § 122.44(d)(1)(vi) requiring that the limit will attain and maintain the narrative criteria[5]. EPA needs to respect the scientific process in establishing limits for NPDES permits and ground its decision-making in sound data and analysis. With respect to the phosphorus limitation, EPA's decision-making process was devoid of any such process and to date, there has been no connection made between the 0.1 mg/L limit and the protection of designated uses. The EAB did not hold EPA to the CWA requirements for establishing permit limits.

In its Response to Comments, EPA indicates that the limit it has established is designed to prevent cultural eutrophication. (Add. 196.) It argued that earlier efforts that established permit limits for phosphorus in the District's discharge were based on consideration of DO, and not on cultural eutrophication. (Add. 196.) However, the Massachusetts water quality standards do not authorize the wholesale application of limits to protect against cultural eutrophication. Rather, the standards require that nutrients be controlled such that the waters of the

[5] In applying that regulation, EPA must "tailor the federal standard to any relevant site-specific circumstances in order to effectuate the intent of a particular state narrative criterion." *American Paper Institute, Inc. v. U.S. EPA*, 996 F.2d 346, 352 (D.C. Cir. 1993) (internal citations omitted). EPA has made no attempt to consider site-specific circumstances here; instead, EPA has simply adopted its own recommended Federal value. In no way can that decision be said to "effectuate the intent" of the particular state narrative criterion at issue. Therefore, EPA has not satisfied its own regulatory test.

Commonwealth are "free from nutrients in concentrations that would cause or contribute to impairment of designated uses." 314 C.M.R. § 4.05(5)(c). Even where cultural eutrophication is invoked as a rationale for nutrient control, it is to "ensure protection of existing and designated uses." 314 C.M.R. § 4.05(5)(c).

Thus it is improper to simply cite cultural eutrophication as the basis for imposition of a numeric permit limit. Rather, the limit must be justified by connecting the reduced level of phosphorus with a specific impairment in designated uses. To do otherwise decouples the essential requirement that the limit be set to protect uses and invites arbitrary application of guidelines that are not relevant to the District's setting. This is exactly what EPA has done in this instance.

In this matter, EPA cannot provide any reasoned evaluation or point to any process undertaken to reach the permit limit. The fact that phosphorus-driven water quality impairments exist can in no way logically lead to the conclusion that the specific limit of 0.1 mg/L is required. There is no demonstration that the reduction of phosphorus to meet the 0.1 mg/L summertime limit would have a substantial impact on the cultural eutrophication of the Blackstone River or on any designated uses. Instead, in this case, all EPA can say is that it opened the *Goldbook* and picked a number. Given the requirements of 40 C.F.R. § 122.44(d)(1)(vi)(b), EPA is required to provide a real scientific justification for the

specific phosphorus permit limitation it selected. It has not done so. EPA's actions were therefore arbitrary and capricious, and this Court should reverse the decision of the EAB in denying review on this issue.

IV. The aluminum limit in the permit is based on EPA's flawed technical analysis, which included data that should never have been considered, and the District did not waive any arguments on this issue.

When EPA issued its Final Permit in August 2008, EPA was satisfied, after several years of review, that the District's effluent had not shown a reasonable potential to exceed criteria for aluminum. Upon the filing of a petition for review of the 2008 Permit by Trout Unlimited, EPA reversed itself and decided that an aluminum limit was appropriate to include in the Final Permit. (Add. 283.)

The EAB erred in failing to consider that EPA selected data to support an erroneous finding that the District's discharges may exceed the criterion of 87 ug/L for aluminum, and therefore, have the potential to cause a violation of Massachusetts water quality standards. Specifically, the EAB chose to ignore that EPA used an inappropriate data set that included an outlier data point of 344 ug/L total aluminum. Only by including this outlier data point could EPA assemble data and arrive at the conclusion that an aluminum limitation was necessary. (Add. 98, n. 60.) The EAB ignores this error on the purported ground that the issue was not previously raised. (Add. 98, n. 60.) A review of the record demonstrates the issue was adequately preserved. (Appx. 5937-42, 5809-14, 822-840.)

Under the permitting regulations, EPA reviews a set of effluent data for a particular pollutant, performs certain statistical calculations, and then determines whether the pollutant levels in the effluent are above the level of the water quality standard. 40 C.F.R. §122.44(d)(i). If so, then EPA issues the limit for that pollutant. 40 C.F.R. §122.44(d)(i)(v). In this case, EPA stated that the effluent levels of aluminum exceeded the aluminum criterion of 87 ug/L and that a permit limit for aluminum of 87 ug/L was therefore required. In its comments on the proposed 2009 Modification, the District informed EPA that its decision to impose the aluminum effluent limitation of 87 ug/L was based on incomplete and incorrect data. (Appx. 5937-42.) Instead of further examining the issues raised by the District—to look critically at the data used to support the draft permit and statement of basis—EPA proceeded to issue the 2009 Modification as originally proposed in its draft permit and justify its use of data values and conclusions in its response to comments. (Add. 278-79; Appx. 5809-14.)

In its Response to Comments, EPA states: "In the statement of basis accompanying the draft permit modification, the EPA fully described its rationale for including or excluding data." (Add. 291.) In response to the District's comments on EPA's error in use of selected data, EPA explained as follows:

> When analyzing the reasonable potential to exceed an ambient criterion that value under [low] flow conditions, we targeted the data collected during the typical low flow period of June through October. We then checked the actual flow for the dates on which the WET tests

> were conducted during this period and used only the data collected during actual low flow of conditions. This approach excluded the use of October 2008 data, as they were not collected during low flow conditions.

(Add. 292.)

EPA summarily rejected any notion that its inclusion and exclusion of data might be flawed. EPA chose not to reexamine all of the data values it used. (Add. 291-93.) Instead, it ignored the District's comments and sought to justify the selective use of data, not on any scientific or rational ground, but on the ground that any errors were harmless; that regardless of the data values chosen, the resulting analysis showed discharge levels above 87 ug/L and therefore justified the 2009 Modification. (Appx. 5809-11.)

In its Petition for Review of the 2009 Modification, the District noted that EPA had again selected data values to obtain an outcome that results in an error, and that, if the error is corrected, the data show that the District's effluent will dilute ambient river aluminum levels, rather than cause or contribute to a violation of water quality standards. (Appx. 825-830.)

In its Opposition to the District's Petition for Review, EPA, for the first time, acknowledged these errors. EPA acknowledged that it did not cross-check Whole Effluent Toxicity ("WET") data from the typical flow period with actual flows in the receiving waters on the dates the tests were conducted. (Add. 303.) In admitting its error, however, EPA did not revisit, as the District implored EPA to

do in its comments and throughout its Petition, all of the data values to assure that it used valid, relevant information. Rather, EPA again, as it did in its response to comments, sought to justify its analysis by claiming harmless error.

For the first time, and after EPA and the EAB would later say the record had closed, EPA provided with its Opposition to the EAB five different data value scenarios to suggest that its analysis was thorough and contained only harmless error. (Add. 309.) Not surprisingly, each of the five new scenarios selected by EPA provides an average effluent value above 87 ug/L based on an outlier data value from a July 9, 2007 sampling event showing a single high value of 344 ug/L total aluminum. This outlier data point is an anomaly and should have been excluded by EPA.

In response to this new information, the District submitted to the EAB its own simple table with the five different scenarios presented by EPA, and the results that would have been obtained had EPA appropriately excluded the single high value of 344 ug/L for total aluminum. (Add. 316.) As Table 1 demonstrates, when the 344 ug/L total aluminum data point is eliminated, none of the 5 scenarios exceed the criterion of 87 ug/L.

EPA provided the EAB with no information, argument, or additional scenario in which the 344 ug/L total aluminum is excluded from its analysis. (Add. 302-08.) Instead, EPA defended its use of this data value on three grounds.

First, EPA said the EAB should not consider rejecting the 344 ug/L value because the District did not raise this argument during the comment period on the original NPDES permit. (Add. 300.) The District, however, had commented that EPA's use of incomplete and incorrect data resulted in erroneous conclusions, which should have caused EPA to look critically at all its data points. (Appx. 5938-39.) While the District provided some examples of EPA's errors in its comments, it could not anticipate that EPA would ignore its comment altogether and issue the 2009 Modification without critical review of all data values used. But that is what EPA did. The District had no opportunity to see EPA's specific misuse of the 344 ug/L high data value until EPA issued the 2009 Modification and its Response to Comments. The EAB has recognized that issues closely related to comments made by a petitioner may be raised on appeal, even if not specifically raised in the comments.[6] (Add. 310-315.) However, the EAB erroneously chose not to consider the District's argument. (Add. 97, n. 60.)

[6] In Re: *EcoElectrica, L.P.*, 7 E.A.D. 56, 64 n.9 (EAB 1997). Such issues may be considered as long as the permit issuer has had an opportunity to address the concerns in its response to comments. *Id.* Here, the District stated in its comments that the Region's dataset was incomplete and erroneous, and asked EPA to reexamine all of the data. In response, EPA provided explanations addressing other values that factored into the average effluent calculation, but said nothing about the 344 ug/L data point until after briefing had already begun before the EAB. Thus, it was wrong for the Region to claim, and error of law for the EAB to find, that the District's comments did not raise issues related to the data used for average effluent calculations. The data accuracy and completeness issues raised by

Pursuant to 40 C.F.R. § 124.13, the District's duty was to "raise all reasonably ascertainable issues and submit all reasonably ascertainable arguments" supporting the District's position by the close of the public comment period. The District did this. When submitting its comments on the draft 2009 Modification, it was not possible for the District to "reasonably ascertain" how EPA would further skew the data, and how EPA would use the 344 ug/L data value to support EPA's calculation of an average exceeding the 87 ug/L criterion. EPA had not yet provided the District with its calculation. Consequently, it was error for the EAB to not consider this information.

Second, EPA said that the District did not demonstrate how the single high value of 344 ug/L for total aluminum, which EPA calls an "upset," qualifies as an "exceptional incident" under the definition of an "upset" in 40 C.F.R. §122.41(n). (Add. 306-08.) However, the rule cited by EPA is irrelevant. 40 C.F.R. §122.41(n) applies only to technology-based limits. None of the District's limits are technology-based; they are all water quality-based. Moreover, EPA's description of this high value as an "upset" mischaracterizes the District's use of the term in its Petition. The District was not arguing that this data point qualified as an "upset" under the Rule. Rather, the District was bringing to the EAB's

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the District were closely enough related to the issues concerning that one data point that the EAB should have considered the District's claims as to that one data point.

attention that conditions associated with plant operations on the day of the sample resulted in abnormal effluent quality, and therefore EPA's inclusion of the value in its analysis of average concentrations was inappropriate. (Add. 313-15.)

Third, EPA claimed that the District failed to provide an explanation for why there was an increased aluminum level in the District's discharge on July 9, 2007. (Add. 308.) As the District pointed out in its submittals to the EAB, a careful review of plant operating data by EPA would have shown that operations on that day were abnormal. (Add. 314.) An explanation for the single high aluminum concentration was available to EPA in its own records[7] showing the anomalous nature of the 344 ug/L data point, which EPA chose to ignore. (Add. 314.)

In short, EPA was informed by the District's comments and knew, or should have known by information available in its own records, that the 344 ug/L aluminum high value was an anomaly that was not representative of the District's

[7] The Region's own Integrated Compliance Information System ("ICIS") database showed that the District's effluent total suspended solids ("TSS") on that day (52 mg/l) was the second highest daily value reported during the entire period of 2004 through 2008. Also, the July 9, 2007 TSS level constitutes one of only two violations of the maximum daily TSS limit in that entire five-year period. The Region well knows that mixed liquor contains elevated TSS and contains concentrated metals. Any ICIS examination by the Region would have noted that the bulking mixed liquor solids in final settling tanks on July 9, 2007 resulted in elevated effluent TSS, which therefore resulted in elevated metals, including aluminum. Indeed, copper and zinc concentrations in the plant effluent on July 9, 2007 (31 ug/L and 63 ug/L, respectively) exceeded the maximum monthly values shown in ICIS (19 ug/L and 59 ug/L, respectively) in the same manner as TSS and aluminum. (*See* Add. 314.)

normal conditions. The data point should have been excluded from EPA's data averages for aluminum effluent. Upon excluding this data point, and making proper adjustments for non-detects, none of the District's average aluminum values exceeded 87 ug/L. *See* Table 1 (Add. 316.)

EPA's inappropriate selection of data values was not harmless error. EPA disregarded information demonstrating that a data point was not representative. This led to significantly skewed averages, which mandated a permit limitation that would not have been required otherwise. As a result, the EAB erred in denying review on this issue.

CONCLUSION

EPA has put the District in an untenable position. While the District was in the midst of implementing an extensive upgrade of its facility pursuant to a settlement agreement with EPA, the agency issued a new permit that required yet another, expensive upgrade, without waiting to see what the initial upgrade would accomplish. During this process, EPA has made all of the following errors: (1) relied on laboratory experiments that do not apply to the specific waters at issue; (2) used the data from those experiments, even though the Agency could not draw firm scientific conclusions from those data; (3) issued limits even though it could not find that those limits were "necessary" to meet water quality standards; (4) adopted other limits without showing any connection between the specific levels of

those limits and the needed improvements in water quality; and (5) issued limits based on data that the Agency should have known were not reliable. The Agency attempts to justify the terms of the permit by referring to the extent of the water quality problem at issue, and by stating that while it may not have figured out exactly what was the right thing to do, it came "close enough." This is not the proper standard under the CWA.

NPDES permits are serious, meaningful operational documents and the final terms have a real effect on the permit holder, and in cases like this, the public. Congress recognized this and included certain safeguards in the statutes and regulations to ensure that a sound scientific process is followed when making permitting decisions and that those decisions actually further the purposes of the CWA. At base, the problem in this case is that EPA did not respect this process. Instead EPA put together a patchwork of assumptions and conclusory statements using incomplete or inapplicable data as support, in an apparent rush to impose new permit limitations on the District. The EAB, for its part, found that EPA basically has carte blanche authority to select the data it uses for its permitting decisions and ruled that such technical decisions are, in essence, beyond review. The end result is an NPDES permit with limitations that are oppressive to the District, while simultaneously being wholly unproven to accomplish the required improvement to water quality under the CWA. Worse still is the precedent this

case sets: it encourages EPA to settle for uncertain and unclear science that it can only loosely connect to the "real world" when establishing permit limitations, since "the selection of representative data" will receive little to no scrutiny by the EAB. The consequence is that EPA will invariably "win" any permit dispute before the EAB.

For all of the reasons above, this Court should reverse the EAB's decision upholding the permit limits, and remand the permit to EPA, so EPA can reconsider the relevant information and determine what the proper limits should be for the District's permit, based on proper science that is applicable to the watershed and the District's discharges.

Respectfully submitted,
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CERTIFICATE PURSUANT TO FED. R . App.P. 32 (a)(7)

I, hereby certify that I have complied with the type volume limitations imposed by Fed.R.App.P. 32(a)(7). I hereby certify that I have confirmed through a word count of a word processing system that the total number of words in this brief (excluding the Table of Contents and Table of Authorities) is 11,814

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CERTIFICATE OF FILING AND SERVICE

I, Robyn Cocho, hereby certify pursuant to Fed. R. App. P. 25(d) that, on September 8, 2011, the foregoing **Brief on Behalf of Petitioner** was filed through the CM/ECF system and served electronically on the individual(s) listed below:

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