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

In the Matter of:	)	
Upper Blackstone Water Pollution Abatement District	)	NPDES Appeal Nos. 08-11, 08-12, 08-13, 08-14, 08-15, 08-16, 08-17, 08-18
NPDES Permit No. MA 0102369	)	

RESPONDENT REGION 1'S MEMORANDUM IN OPPOSITION TO PETITIONS FOR REVIEW

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Dated: December 17, 2008

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The central dispute over this National Pollutant Discharge Elimination System ("NPDES") permit is whether the New England Region of the U.S. Environmental Protection Agency ("the Region") imposed appropriate numeric effluent limitations for phosphorus and nitrogen on the Upper Blackstone Water Pollution Abatement District ("the District") to address severe and undisputed nutrient-induced water quality impairments in the Blackstone River and in upper Narragansett Bay. The Blackstone River, with its headwaters in Massachusetts, is a nationally recognized American Heritage River and is a major source of freshwater to Narragansett Bay in Rhode Island. Narragansett Bay is an estuary of national significance under the National Estuary Program and is an important New England fishery and recreational resource.

The District, a regional treatment facility serving several communities in central Massachusetts, argues that the permit's water quality-based phosphorus and nitrogen effluent limits are too stringent and that the Region erred in not waiting for the development of a total maximum daily load ("TMDL") or a mathematical water quality model. The Conservation Law Foundation, an environmental advocacy organization, counters that the limits for both nutrients are too lax in light of the extent of impairments and significance of the District's loadings. The Massachusetts Department of Environmental Protection supports the District only in opposing the nitrogen limit, which the Region established to meet the water quality standards of Massachusetts' downstream neighbor, Rhode Island.

In addition to challenging the nutrient limits, the District also seeks review of effluent limitations for metals, various monitoring protocols and the timing of reporting, the expression

of ammonia limits in both mass and concentration, and the absence of a compliance schedule in the permit. Finally, the District and several "satellite" systems also object to the Region's decision to treat each of them as "co-permittees" directly responsible for reporting sewer overflows and for operation and maintenance of their respective collection systems.[1]

In their challenges to the permit, each petitioner falls far short of the threshold necessary for review, and is unable to demonstrate clear error or abuse of discretion by the Region. Because the Region's determinations, made in an area of unavoidable technical and scientific complexity and uncertainty, were sound, review of the permit should be denied.

I. STATEMENT OF THE CASE.

A. The Applicable Legal Standards.

The central issue on appeal is whether the Region established appropriate numeric water effluent limitations for phosphorus and nitrogen based on its interpretation of narrative water quality standards established by Rhode Island and Massachusetts. The Clean Water Act ("CWA") provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. *See* CWA §§ 301, 303, 304(b), 33 U.S.C. § 1311, 1313, 1314(b); 40 C.F.R. Parts 122, 125, 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant-reducing technology available and economically achievable for the type of facility being permitted. *See* CWA § 301(b). Water quality-based effluent limits are designed to ensure that state water quality standards are met regardless of the technological and economic factors

[1] Trout Unlimited appealed the Region's decision not to impose an effluent limit for total aluminum. After review of the petition, the Region intends to propose a modification to the permit to incorporate an effluent limit for total aluminum and associated monitoring requirements. The Region anticipates issuing the draft modification in January 2009, after the uncontested provisions of the permit go into effect. The Region will notify the Board upon issuance of the proposed modification.

that inform the derivation of technology-based limitations. In particular, section 301(b)(1)(C) of the CWA requires achievement of "any more stringent limitation [than the technology-based requirements set forth in Section 301(b)(1)(A) and (B)], including those necessary to meet water quality standards...established pursuant to any State law or regulation...." Thus, NPDES permits must contain effluent limitations necessary to attain and maintain water quality standards, without consideration of the cost, availability or effectiveness of treatment technologies. *See U.S. Steel Corp. v. Train*, 556 F.2d 822, 838 (7th Cir. 1977); *In re City of Moscow, Idaho* 10 E.A.D. 135, 168 (EAB 2001) (quoting *In re City of Fayetteville, Ark.*, 2 E.A.D. 594, 600-601 (CJO 1988)).

Water quality standards under the Act consist of three elements, two of which are relevant here:[2] (1) designated "uses" of the water, such as for public water supply, aesthetics, recreation, propagation of fish, or agriculture; and (2) "criteria," which specify the amounts of various pollutants that may be present in those waters without impairing the designated uses, expressed either in numeric form for specific pollutants or in narrative form (*e.g.*, waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring). *See* CWA § 303(c)(2)(A), 33 U.S.C. § 1313(c)(2)(A); *see* 40 C.F.R. §§ 130.3, 130.10(d)(4), 131.6, 131.10 and 131.11. EPA's long-standing CWA regulations expressly authorize the establishment by states of narrative water quality criteria. *See* 40 C.F.R. §§ 131.3(b), 131.11(b)(2).

Under the federal regulations implementing the NPDES program, permit issuers are required to determine whether a given point source discharge "causes, has the reasonable

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[2] The third component of the overall water quality standards program is the antidegradation policy, which is not at issue here.

potential to cause, or contributes to" an exceedance of the narrative or numeric criteria set forth in state water quality standards. *See* 40 C.F.R. § 122.44(d)(1)(ii). If a discharge is found to cause, have the reasonable potential to cause, or contribute to an exceedance of a numeric or narrative state water quality criterion, a permit *must* contain effluent limits as necessary to achieve state water quality standards. *See* 40 C.F.R. §§ 122.44(d)(1), 122.44(d)(5) (providing in part that a permit must incorporate any more stringent limits required by CWA § 301(b)(1)(C)).

The regulatory mechanism used by permit writers to interpret narrative water quality criteria and establish numeric water quality-based effluent limits is set forth at 40 C.F.R. § 122.44(d)(1)(vi). Where a state has not established a numeric water quality criterion for a specific chemical pollutant, the permitting authority must establish effluent limits in one of three ways: (i) based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use"; (ii) on a "case-by-case basis" using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or (iii) in certain circumstances, based on an "indicator parameter." 40 C.F.R. § 122.44(d)(1)(vi)(A)-(C).

Section 401(a)(1) of the CWA precludes issuance of a federal permit unless the state where the discharge originates, in this case Massachusetts, certifies that the discharge will comply with state water quality standards, or waives certification. Section 401(a)(2) of the CWA directs EPA to consider the views of a downstream State concerning whether a discharge would result in violations of the State's water quality standards. When a point source discharge affects a downstream state, EPA must condition the NPDES permit to ensure compliance with the water quality standards of the downstream State. *See* CWA § 401(a)(2), 40 C.F.R. § 122.44(d)(4). *See*

also CWA § 301(b)(1)(C); 40 C.F.R. § 122.4(d) (prohibiting issuance of an NPDES permit "[w]hen the imposition of conditions cannot ensure compliance with applicable water quality requirements of all affected States."); 40 C.F.R. § 122.44(d)(5). It is undisputed that both Massachusetts and Rhode Island are "affected" states in this permitting proceeding within the meaning of 40 C.F.R. § 122.4(d).

B. Factual Background.

1. The District, its Effluent and Impairments to the Receiving Waters.

The District owns and operates a wastewater treatment facility in Millbury, Massachusetts, that serves several communities in central Massachusetts. *See Fact Sheet* at 1 (Ex. 1; AR 6).[3] This large facility has a permitted maximum discharge flow of 56 million gallons per day (mgd) and discharges near the headwaters of the Blackstone River. *Id.* at 2. Average annual flow has ranged from 34 to 43 mgd in recent years. *See Response to Comments (RTC)* at n.3 (Ex. 2; AR 5). Because of the large volume of its discharge and location near the headwaters of the River, the District's effluent dominates the river flow during low flow conditions. The 7Q10 flow of the River is only 4.4 mgd. *See Fact Sheet* at 2. Under 7Q10 receiving water conditions and permitted flow conditions, accordingly, the authorized discharge is 13 times the receiving water flow (56 mgd vs. 4.4 mgd).

The District is nearing completion of the first major upgrade to its facility. *Fact Sheet* at 5 (Ex. 1); *RTC* at 24 (Ex. 2). One of the main objectives of the work is to upgrade the facility's aging infrastructure; the facility first went on line in 1976. *RTC* at 24. The work will also enable the District to handle a higher volume of wet weather flows, including providing primary treatment to peak flows from the nearby Worcester combined sewer system. *Fact Sheet* at 5.

[3] "Ex." refers to copies of documents the Region has appended to this response for the Board's convenience. The "AR" citations provide the numeric references of these documents in the Administrative Record.

Advanced treatment will have capacity to handle an hourly peak flow up to 120 mgd, while primary treatment will have an hourly peak flow capacity up to 160 mgd. *Id.* The District's upgrades, which involve enhanced biological processes, will also improve nutrient control but will not achieve the nutrient limits in the new permit without further modifications. *RTC* at 23 (Ex. 2).

The Blackstone River is an interstate water which has its headwaters in Worcester, Massachusetts. *See Fact Sheet* at 5 (Ex. 1). It flows south into Rhode Island where it discharges into the Seekonk River, which is a marine water, and the beginning of upper Narragansett Bay. *Id. See also Map* (Ex. 8; AR 206). The Seekonk River joins the Providence River, also a marine water, which ultimately flows into the lower reaches of the Bay. *Id.*

Excessive nutrients, generally phosphorus in fresh water (such as the Blackstone River) and nitrogen in marine water (such as the Seekonk and Providence Rivers) can contribute to eutrophication. *See RTC at* 79-80, 92 (Ex. 2). The Blackstone River and the Seekonk and Providence Rivers have suffered from severe cultural eutrophication for many years. *Id.* at 21, 29-30. *See also Fact Sheet* at 8-12 (Ex. 1). Cultural eutrophication refers to the human induced increase in nutrients beyond the assimilative capacity of the water body, which can result in the acceleration of plant productivity. *See, e.g., Massachusetts Surface Water Quality Standards ("Massachusetts Standards")* at 314 CMR 4.02 (defining cultural eutrophication) (Ex. 4; AR 112); *Rhode Island Surface Water Quality Regulations ("Rhode Island Standards")* at Rule 7 (same) (*Ex.* 5; AR 115). Under undisturbed natural conditions, nutrient concentrations are very low in most aquatic ecosystems. *See RTC* at 106 (Ex. 2). Typically, elevated levels of nutrients will cause excessive algal and/or plant growth, which may prevent waters from meeting their designated uses. *Id.* Phosphorous and nitrogen promote the growth of nuisance levels of

macrophytes (rooted aquatic plants), phytoplankton (free floating algae), and periphyton (attached, including filamentous, algae). *Id.*

Noxious aquatic plant growth degrades aesthetic and recreational uses in a variety of ways. Unsightly algal growth is unappealing to swimmers and reduces water clarity. Algae on rocks can make streambeds slippery and difficult or dangerous to walk on. Aquatic vegetation can foul fishing lures and equipment, and can tangle boat propellers and oars. Excessive plant growth can also result in a loss of diversity and other changes in the aquatic plant, invertebrate, and fish community structure and habitat. *Id.* at 106.

Through respiration, and the decomposition of dead plant matter, excessive algae and plant growth can reduce in-stream dissolved oxygen concentrations to levels that could negatively impact aquatic life. During the day, primary producers (*e.g.*, algae, plants) provide oxygen to the water as a by-product of photosynthesis. At night, however, when photosynthesis ceases but respiration continues, dissolved oxygen concentrations decline. Furthermore, as primary producers die, they are decomposed by bacteria that consume oxygen, and large populations of decomposers can consume large amounts of dissolved oxygen. Many aquatic insects, fish, and other organisms become stressed and may even die when dissolved oxygen levels drop below a particular threshold level. *Id.* at 106.

Decomposing plant matter also produces unpleasant sights and strong odors, again negatively impacting recreational and aesthetic uses. Nutrient-laden plant detritus can also settle to bottom of a water body. In addition to physically altering the benthic environment and aquatic habitat, nutrients in the sediments can become available for future uptake by aquatic plant growth, further perpetuating and potentially intensifying the eutrophic cycle. *Id.*

The Blackstone River demonstrates severe and substantial phosphorus-driven eutrophication. *Fact Sheet* at 7-10 (Ex. 1). *See also RTC* at 32 (Ex. 2). From the District's treatment plant to the Massachusetts/Rhode Island border, the Blackstone River is listed on the Massachusetts 303(d) impaired waters list as impaired for unknown toxicity, priority organics, metals, ammonia, chorine, nutrients, organic enrichment/low dissolved oxygen, flow alterations and other habitat alterations, pathogens, suspended solids, turbidity, and objectionable deposits. *Massachusetts 2004 and 2006 Integrated List of Waters* (which incorporates the §303(d) list) (Ex. 6; AR 113 and 114); *Fact Sheet* at 6 (Ex. 1).

Members of the public and watershed associations who offered comment noted the extensive aquatic growth and objectionable odors in the Blackstone River downstream of the District's discharge. *See, e.g, Transcript of Public Hearing,* May 9, 2007 at 45 (AR 18) ("[I]t's not EPA that tells me there's too many nutrients, it's my nose.); *id.* at 60 ("If you stand on the Blackstone bikeway bridge where the river collects the treatment discharge you can see a remarkable increase in vegetation just downstream.") Studies of the River also have documented the extensive macrophytic growth and other adverse impacts immediately downstream from the District's discharge. Photographs taken as part of an U.S. Army Corps in July 2003, for example, show the abundant macrophytic growth in the reach of the River immediately downstream of the District's discharge. *Phase I: Water Quality Evaluation and Modeling of the Massachusetts Blackstone River, Draft – 2004 (U.S. Army Corps of Engineers)("U.S. Army Corps Evaluation")* at Figure 38 (Ex. 9.2; AR 126). During evaluations conducted over the spring and summer of 2003, MassDEP also noted at the first station below the District's discharge there was excessive macrophypte growth, which "increased dramatically over the course of the summer." *Blackstone River Watershed 2003 DWM Water Quality Monitoring*

Report, TM-51-10, MassDEP)("MassDEP 2003 Water Quality Monitoring") at 13 (Ex. 10; AR 124). Nearing the end of the summer, instream acquatic vegetation covered "virtually the entire river bottom." *Id.* MassDEP's monitoring at this location indicated in-stream dissolved oxygen below 5.0 mg/l in July, August and September of 2003. *Id.* at 20. Biological assessments conducted by MassDEP at the first station downstream of the District's discharge showed substantial impairments to the macroinvertebrate community. *Blackstone River Watershed 2003 Biological Assessment, TM-51-11 (MassDEP)* ("*MassDEP 2003 Biological Assessment*") at 13 (Ex. 11; AR 125). MassDEP concluded that the benthic community at this location was "moderately/severely impacted" and "was easily the worst benthic community assessment received by a biomonitoring station in the 2003 Blackstone River watershed survey...." *Id.*

The Blackstone River discharges directly into the upper part of the Seekonk River, which is the most severely impaired section of Narragansett Bay. *See RTC* at 17, 27 (Ex. 2). On a per unit areas basis, current total nitrogen loads to the Seekonk River are 24 times higher than the nitrogen load to Narragansett Bay as a whole. *Id.* at 17. In upper Narragansett Bay, cultural eutrophication has resulted in periodic low dissolved oxygen levels and fish kills and contributed to dramatic declines in eelgrass. *See Fact Sheet* at 11; *RTC* at 27. *See also Governor's Narragansett Bay and Watershed Planning Commission (Nutrient and Bacteria Pollution Panel,* 2004) at 4 (Ex. 12; AR 136). Historic estimates of eelgrass in Narragansett Bay ranged from 8,000-16,000 acres. *See Fact Sheet* at 11. Eelgrass provides important spawning, nursery, foraging and refuge habitat for many fish and invertebrate species, including commercially important species. *RTC* at 27. Winter flounder, striped bass and lobsters are just a few of the species that utilize this habitat. *Id.* Current estimates of eelgrass indicate that fewer than 100

acres remain, and no eelgrass remains in the upper two thirds of Narragansett Bay. *See Fact Sheet* at 11; *RTC* at 80.

The Seekonk River is listed on Rhode Island's 2004 and 2006 CWA 303(d) List of Impaired Waters as impaired for nutrients, low DO, and excess algal growth/chlorophyll *a*. The Providence River is listed for these same impairments as well as for pathogens. (Ex. 7; AR 109-111).

The District is the dominant point source of nutrient loadings to the Blackstone River. *RTC* at 27, 32 (Ex. 2). The total permitted municipal wastewater volume to the Blackstone River is 80.4 mgd and the District represents approximately 70% of this volume. *Fact Sheet* at 14; *RTC* at 32. Studies have documented that the District is, by far, the dominant point source of phosphorus to the Blackstone River under a range of flow conditions. *See, e.g., U.S. Army Corps Evaluation* at Figure 31 (Ex. 9.1; AR 126). The District is also the dominant point source of nitrogen loadings to the Blackstone, and from the Blackstone to the Seekonk River. *RTC* at 32. *See also Fact Sheet* at 13 (noting that the loadings data in a 2004 study conducted by RIDEM indicated that the District contributed approximately 64% of the total nitrogen load from the Blackstone River to the Seekonk River).

2. Applicable Massachusetts and Rhode Island Water Quality Standards, Including the Narrative Nutrient Criteria.

Massachusetts Standards list the Blackstone River, from its source to the Rhode Island border, as a Class B Warm Water Fishery. Its uses include habitat for fish, other aquatic life and wildlife and for primary (*e.g.*, swimming) and secondary (*e.g.*, fishing and boating) contact recreation. *See* 314 C.M.R. §§ 4.05(3)(b) and 4.06 (Table 12) (Ex. 4; AR 112). Such waters must have consistently good aesthetic value. *Id.* at § 4.05(3)(b). In addition to criteria specific

to Class B waters, Massachusetts imposes minimum narrative criteria applicable to all surface waters, including aesthetics ("free from pollutants in concentrations or combinations that settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life"); bottom pollutants and alterations ("free from pollutants in concentrations or combinations or from alterations that adversely affect the physical or chemical nature of the bottom, interfere with the propagation of fish or shellfish, or adversely affect populations of non-mobile or sessile benthic organisms"); toxics ("free from pollutants in concentrations that are toxic to humans, aquatic life or wildlife"); and nutrients ("unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses..."). *See* 314 C.M.R. § 4.05(5)(a), (b), (e) and (c). Massachusetts Standards do not establish a numeric criterion for total phosphorus.

Rhode Island Standards list the Blackstone as a Class B1 water from the Massachusetts border to the Newman Avenue Dam in East Providence, and as a Class B water from the Newman Avenue Dam to the Seekonk River. *See Rhode Island Standards* at Appendix A (Ex. 5; AR 115). The Seekonk River and Providence River are marine waters. *Id.* Rhode Island has categorized the Seekonk River as a Class SB1{a} water. *Id.* The Providence River has also been designated as a Class SB1{a} water from its confluence with the Moshassuck and Woonasquatucket Rivers until a point in Warwick, Rhode Island, and from that point as a Class SB{a} water until the Upper Narragansett Bay Subbasin. *Id.*

Rhode Island Class B waters' designated uses include primary and secondary recreational uses and fish and wildlife habitat. *See* Rhode Island Standards, Rule 8.B.(l)(c). Class B1 waters have the same designated uses, except that primary contact recreational uses may be impacted by

pathogens from approved wastewater discharges. *See Id.* at Rule 8.B.(l)(d). Rhode Island Class SB{a} waters' designated uses include primary and secondary contact recreation; fish and wildlife habitat; shellfish harvesting; and must have good aesthetic value. *See Id.* at Rule 8(B)(2)(b). Class SB1{a} waters share the same designated uses as Class SB{a}, with the exception of shellfish harvesting. *See Id.* at Rule 8(B)(2)(c).

Class B waters are subject to generally applicable minimum criteria, as well as a variety of class-specific criteria. At a minimum, all Rhode Island waters shall be free of pollutants in concentrations that: (i) adversely affect the composition of fish and wildlife; (ii) adversely affect the physical, chemical, or biological integrity of the habitat; (iii) interfere with the propagation of fish and wildlife; (iv) adversely alter the life cycle functions, uses, processes and activities of fish and wildlife; or (v) adversely affect human health. *See Id.* at Rule 8.D.(1)(a). In addition, all waters of the State shall be free from pollutants in concentrations or combinations that: (i) settle to form deposits that are unsightly, putrescent, or odorous to such a degree as to create a nuisance, or interfere with the existing or designated uses; (ii) float as debris, oil, grease, scum or other floating material attributable to wastes in amounts to such a degree as to create a nuisance or interfere with the existing or designated uses; (iii) produce odor or taste or change the color or physical, chemical or biological conditions to such a degree as to create a nuisance or interfere with the existing or designated uses. *See Id.* at Rule 8.D.(1)(b). Rule 8.D.(1)(d) (General Criteria; Nutrients) of the Rhode Island Standards provides that "nutrients shall not exceed the limitations specified in rule 8.D.(2) [Class Specific Criteria - Freshwaters] and 8.D.(3) [Class Specific Criteria - Seawaters] and/or more stringent site-specific limits necessary to prevent or minimize accelerated or cultural eutrophication."

Rules 8.D.(2) and (3) set forth various criteria (DO, taste and odor, chemical constituents) for Class B and B1 freshwaters and Class SB{a} and Class SB1{a} seawaters, including nutrient criteria. Nutrient criteria for freshwaters and seawaters include: "None in such concentration that would impair any usages specifically assigned to said Class, or cause undesirable or nuisance aquatic species associated with cultural eutrophication …." Rule 8.D.(2)(10)(b)(freshwaters) and Rule 8.D.(3)(10)(seawaters). Rhode Island Standards do not include numeric criteria for nutrients applicable here.

Both Massachusetts and Rhode Island Standards require water quality criteria to be met even during severe hydrological conditions, *i.e.*, periods of critical low flow when the volume of the receiving water is able to provide relatively little dilution. In Massachusetts, NPDES permit limits for discharges to rivers and streams must be calculated based on the "7Q10," or "the lowest mean flow for seven consecutive days to be expected once in ten years." *See* 314 C.M.R. § 4.03(3) (Ex. 4). Similarly, in Rhode Island, "water quality standards apply under the most adverse conditions," meaning "the acute and chronic aquatic life criteria for freshwaters shall not be exceeded at or above the lowest average 7 consecutive day low flow with an average recurrence frequency of once in 10 years (7Q10)." *See* Rhode Island Standards, Rule 8.E.

3. Reasonable Potential Analysis.

During the permit reissuance process, the Region evaluated the sources of phosphorus and nitrogen loading into the Blackstone River, Seekonk and Providence Rivers, as well as the physical, chemical and biological impacts of the nutrient loading in the receiving water. *See Fact Sheet* at 8-10, 11-14 (Ex. 1). *See also RTC* at 25-30, 32-33 (Ex. 2). The Region determined that the Blackstone River and the Seekonk and Providence Rivers are severely eutrophic due to

excessive phosphorus loading to the freshwater segments and nitrogen loading to the marine segments. *Fact Sheet* at 10, 11.

As to phosphorus, the Region found that even when the District completes its ongoing upgrades and is able to consistently achieve the total phosphorus effluent limit of 0.75 mg/l allowed under its expired permit, this discharge of phosphorus will cause or contribute to or has the reasonable potential to cause or contribute to excursions about the Massachusetts narrative water quality criteria for cultural eutrophication. *Id.* at 9-10; *RTC* at 41, 106. As the Region explained in the proceedings for the previous NPDES permit issued in 1999 and modified in 2001 (and now expired), the 0.75 mg/l limit in the expired permit was based on a dissolved oxygen model and designed solely to meet dissolved oxygen criteria. *Response to Comments in Support of the 1999 Permit* at 5 (Ex. 23; AR 74). *See also RTC* at 105 (Ex. 2). The Region expressly cautioned that even at 0.75 mg/l total phosphorus, the model indicated that chlorophyll *a* values and diurnal dissolved oxygen variations would still be at levels of concern relative to eutrophication impacts. *1999 Response to Comments* at 5 (Ex. 23).

As detailed above, studies of the River conducted by MassDEP and the U.S. Army Corps since the issuance of the expired permit provide further documentation of the severity of the cultural eutrophication in the River. *See MassDEP 2003 Water Quality Monitoring* (Ex. 10); *MassDEP 2003 Biological Assessment* (Ex. 11); *U.S. Army Corps Evaluation* (Ex. 9). The data in these studies show extensive growth of aquatic vegetation, low in-stream dissolved oxygen levels, and adverse impacts to the benthic community. *Supra* at Section I.B.1.

Given the lack of any significant dilution of the District's discharge under 7Q10 conditions, the Region determined that a total phosphorus discharge of 750 ug/l (0.75 mg/l) would result in an in-stream concentration of 682 ug/l (assuming zero upstream phosphorus and

a discharge at design flow). *Fact Sheet* at 9-10 (Ex. 1). The Region's calculation assumed a background concentration of zero, meaning that the District's discharge on its own would cause this in-stream concentration in the absence of any other sources. Although Massachusetts Standards do not contain a numerical nutrient criterion for phosphorus, an in-stream concentration of 682 ug/l is far in excess of recommended values contained in EPA's national technical guidance and the peer-reviewed scientific literature pertaining to nutrients. *Id.* at 9-10. *See also RTC* at 108-109 (Ex. 2). These sources recommend protective in-stream phosphorus values ranging from 10 ug/l (0.01 mg/l) to 100 ug/l (0.1 mg/l). *See Fact Sheet* at 9-10; *RTC* 108-109.

The Region also concluded that excessive nitrogen loading from the District's facility has the reasonable potential to contribute to violations of Rhode Island Standards in the Seekonk and Providence Rivers. *See Fact Sheet* at 13; *RTC* at 80, 99. Municipal wastewater treatment facilities in Massachusetts and Rhode Island are the predominate source of the nitrogen loading in Narragansett Bay. *See RTC* at 24, 27 (Ex. 2); *Evaluation of Nitrogen Targets in WWTF Load Reductions for the Providence and Seekonk Rivers* (RIDEM, December 1, 2004) (*"2004 RIDEM Load Reduction Evaluation")* at 18-21 (Ex. 13; AR 139*)*; *Plan for Managing Nutrient Loadings to Rhode Island Waters (RIDEM 2005) ("2005 RIDEM Nutrient Loading Plan") at 3* (Ex. 14; AR 137). The District is one of several municipal POTWs in Massachusetts that discharges nitrogen into tributaries of the Seekonk River, which is the most severely impaired section of the upper Narragansett Bay. *See RTC* at 17, 24; *Total Nitrogen Permit Modifications Response to Comments (RIDEM, June 27, 2005) ("RIDEM 2005 Response to Comments")* at 8 ("The Woonsocket, UPWPAD [i.e., the District], Attleborough and North Attleborough WWTFs are

significant contributors to the most highly enriched estuarine waters in RI, the Seekonk River.") (Ex. 15; AR 192).

4. Establishment of Seasonal Effluent Limitations for Phosphorus and Nitrogen.

When establishing water quality-based effluent limitations in the absence of numeric criteria for phosphorus and nitrogen, the Region looks to a wide range of materials, including nationally recommended criteria, supplemented by other relevant materials, such as EPA technical guidance and information published under Section 304(a) of the CWA, peer-reviewed scientific literature and site-specific surveys and data. *See* 40 C.F.R. § 122.44(d)(1)(vi)(A),(B). *See RTC* at 28-30, 37, 94, 96, 107-109 (Ex. 2). In accordance with the regulatory framework, the Region does not afford definitive weight to any one value or source, but rather assesses the total mix of technical, science and policy information available to it when determining an appropriate and protective limit. *RTC* at n.7.

When permitting nutrient discharges, the Region analyzes available record materials from a reasonably conservative standpoint. *Id.* at n.12. This protective approach is appropriate because, once begun, the cycle of eutrophication can be difficult to reverse due to the tendency of nutrients to be retained in the sediments. *Id.* Nutrients can "be re-introduced into a waterbody from the sediment, or by microbial transformation, potentially resulting in a long recovery period even after pollutant sources have been reduced." *See Nutrient Technical Guidance Manual: Rivers and Streams (US EPA 2000) ("Rivers and Streams Nutrient Guidance")* at 3 (Ex. 18; AR 99). Eutrophic conditions are often exacerbated around impoundments and in other slow moving reaches of rivers, where detention times increase relative to free flowing segments of rivers and streams. In addition, "[i]n flowing systems, nutrients may be rapidly transported downstream and the effects of nutrient inputs may be uncoupled from the nutrient source, [which]

complicat[es] source control." *Id.* Thus, a second key function of a nutrient limit is to protect downstream receiving waters "regardless of [their proximity] in linear distance." *See Quality Criteria for Water 1986* (*Gold Book*) (US EPA 1986) at 241 (Ex. 17; AR 109). *See also Development and Adoption of Nutrient Criteria into Water Quality Standards*, Geoffrey Grubbs, Director, EPA Office of Science and Technology (November 14, 2001) (AR 100).

a. The Phosphorus Limit.

EPA has produced several guidance documents that set forth total ambient phosphorus concentrations that are sufficiently stringent to control cultural eutrophication and other adverse nutrient-related impacts. *Fact Sheet* at 9; *RTC* at 108. These guidance documents present protective in-stream phosphorus concentrations based on two different analytical approaches. *RTC at 108.* An effects-based approach provides a threshold value above which adverse effects (*i.e.*, water quality impairments) are likely to occur. *Id.* This approach applies empirical observations of a causal variable (*i.e.*, phosphorus) and a response variable (*i.e.*, chlorophyll *a* as a measure of algal biomass) associated with designated use impairments. *Id.*

Alternatively, reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregion class. *Id.* They are a quantitative set of river characteristics (physical, chemical and biological) that represent conditions in waters in that ecoregion that are minimally impacted by human activities (*i.e.*, reference conditions), and thus by definition representative of water without cultural eutrophication. *Id.* The total phosphorus criterion for the ecoregion that includes Massachusetts and Rhode Island waters is 0.024 mg/l (24 ug/l) for the critical growing season. *See Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams I Ecoregion XIV* (US EPA 2000)(EPA 822-B-00-022) ("*Ecoregional Nutrient Criteria*")

at 15 (Ex. 16; AR 110).

The *Gold Book* follows an effects-based approach and sets forth maximum threshold concentrations that are designed to prevent or control adverse nutrient-related impacts from occurring. *RTC* at 108 (Ex. 2). Specifically, the *Gold Book* recommends in-stream phosphorus concentrations of no greater than 0.1 mg/l (100 ug/l) for any stream not discharging directly to lakes or impoundments, 0.05 mg/l (50 ug/l) in any stream entering a lake or reservoir, and 0.025 mg/l (25 ug/l) within a lake or reservoir. *See Gold Book (Ex. 17; AR 109).*

A more recent EPA technical guidance manual, the *Rivers and Streams Nutrient Guidance* (Ex. 18; AR 99) cites to a range of effects-based ambient concentrations drawn from the peer-reviewed scientific literature that are sufficiently stringent to control periphyton and plankton (two types of aquatic plant growth commonly associated with eutrophication). This guidance indicates that in-stream phosphorus concentrations between 0.01 mg/l (10 ug/l) and 0.09 mg/l (90 ug/l) will be sufficient to control periphyton growth and concentrations between 0.035 mg/l (35 ug/l) and 0.070 mg/l (70 ug/l) will be sufficient to control plankton. *See Rivers and Streams Nutrient Guidance* at Table 4 (Ex. 18; AR at 99); *RTC* at 108.

The Region opted for an in-stream phosphorus target reflecting an effects-based approach because it is more often directly associated with an impairment to a designated use (i.e., fishing, swimming). *RTC* at 108. Reference-based values, by contrast, are statistically derived from a comparison within a population of rivers within the same eco-region class. *Id.* Specifically, reference conditions presented are established statistically at the low end of a large data set from many waterbodies (i.e., the 25^{th} percentile or the value that was exceeded 75% of the time.) *Id.*; *Ecoregional Nutrient Criteria* at 10 (Ex. 16). Thus, while reference conditions, which reflect minimally disturbed conditions, may meet the requirements necessary to support designated

uses, they may also reflect water quality that is better than necessary to support such uses. *RTC* at 109.

To effectively address the documented eutrophication in the Blackstone River, the Region concluded that ambient phosphorus concentrations must be brought within the protective range of 0.01 mg/l (10 ug/l) to 0.1 mg/1 (100 ug/l) recommended by national guidance and peer-reviewed literature, and that the District's existing phosphorus effluent limit of 0.75 mg/l in the expired permit made more stringent. *See RTC* at 105-109. Given the lack of effective dilution under 7Q10 flow conditions, the Region established a monthly average total phosphorus effluent limit of 0.1 mg/l (imposed April through October) to ensure that the narrative criterion is met in the Massachusetts reach of the river immediately below the discharge and before any other dischargers. *See Fact Sheet* at 9-10; *RTC* at 109.[4]

While selecting an in-stream phosphorus target at the high end of the effects-based protective range, the Region also recognized that the lower values recommended by the *Nutrient Criteria Guidance* and the *Ecoregional Nutrient Criteria* represent targets based on seasonal averages and corresponding seasonal flows (as opposed to worst case 7Q10 flow conditions). *RTC* at 39. Thus, by establishing the 0.1 mg/l limit at 7Q10 conditions, in-stream phosphorus concentrations would be lower when calculated over the seasonal average period.

b. The Nitrogen Limit.

The fate and transport dynamics of nitrogen in impaired estuaries are highly complex. The response of a coastal ecosystem to nitrogen enrichment depends on many factors, including light availability, temperature, stratification, grazing of algae by zooplankton and shellfish, and

[4] As the applicable nutrient criteria for Massachusetts are similar to those in Rhode Island, the Region also concluded that the total phosphorus effluent limit of 0.1 mg/l would ensure compliance with Rhode Island's Standards. *See Fact Sheet* at 6.

flushing rates. EPA has not promulgated recommended national nutrient criteria for estuarine and coastal waters. *See Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Marine Waters (US EPA 2001) ("Estuarine Nutrient Guidance")*at 1-8 ("It is impossible to recommend a single national criterion applicable to all estuaries.") (Ex. 19; AR 98).

Absent a recommended criterion, the Region relied on the best information reasonably available to it to establish a nitrogen effluent limitation that would be sufficiently stringent to ensure compliance with Rhode Island's narrative water quality criterion for nitrogen. *See* 40 C.F.R. § 122.44(d)(1)(vi)(A). The Region considered more than 15 years of water quality data, studies and reports evaluating nitrogen levels and response variables in Narragansett Bay. *RTC* at 28-29; *Fact Sheet* at 11-14. These materials included EPA's *Estuarine Nutrient Guidance* and a variety of site-specific reports commissioned by Rhode Island to address nitrogen loading and control the effects of cultural eutrophication in upper Narragansett Bay. *See, e.g., 2004 RIDEM Load Reduction Evaluation* (Ex. 13; AR 139)*; 2005 RIDEM Nutrient Loading Plan (Ex. 14; AR 137). See also Massachusetts Estuaries Project – Site-Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators (MassDEP 2003)("Site-Specific Nitrogen Thesholds, MassDEP")(Ex. 20; AR 135).*

In addition, the Region relied on the results of a physical water quality model operated by the Marine Ecosystems Research Laboratory (MERL) at the University of Rhode Island that was designed to predict the relationship between nitrogen loading and several trophic response variables in the Narragansett Bay system. *Fact Sheet* at 12-13; *RTC* at 29. The Region also considered actual measurements of nitrogen loadings from point source discharges, including a 1995-96 study by RIDEM Water Resources. *Fact Sheet* at 12-13*; RTC* at 29.

The MERL enrichment gradient experiment included a study of the impact of different loadings of nutrients on dissolved oxygen and chlorophyll *a*. *See Patterns of Productivity During Eutrophication: A Mesocosm Experiment,* Oviatt, Keller, Sampou, Beatty, *Marine Ecology*, 1986 (Ex 21; AR 153); *RTC* at 47-48; *2004 RIDEM Load Reduction Evaluation* at 1-2 (Ex. 21). The MERL enrichment gradient experiments were conducted from June 1981 through September 1983 and consisted of 9 tanks (mesocosms), each 5 meters deep and 1.83 meters in diameter. *RTC* at 47-48. Three tanks were used as controls, and were designed to have regimes of temperature, mixing, turnover, and light similar to a relatively clean Northeast estuary with no major sewage inputs. *Id.* The remaining six mesocosms had the same regimes, but were fed reagent grade inorganic nutrients (nitrogen, phosphorus and silica) in ratios found in Providence River sewage. *Id.* The six mesocosms were fed nutrients in multiples of the estimated average sewage inorganic effluent nutrient loading to Narragansett Bay. *Id.* For example the 1X mesocosm nitrogen loading was 2.88 mM N/m ^{2}/day (40 mg/ m ^{2}/day) and the 2X was twice that and so on (4X, 8X, 16X) up to the a maximum load of 32X. *Id.* During the study, dissolved oxygen, chlorophyll *a*, pH, and dissolved inorganic nutrients were measured in the water column and benthic respiration was also measured. *Id.* From the collected data the investigators produced times series for oxygen, pH, temperature, nutrients, chlorophyll *a*, and system metabolism. *Id.*

The correlation between nitrogen loadings, chlorophyll *a* levels, and dissolved oxygen impairment is well documented in the *Estuarine Nutrient Guidance. See RTC* at n.10 (Ex. 2). Dissolved oxygen levels (either low or supersaturated) and phytoplankton (as measured by chlorophyll *a* levels) are indicators of cultural eutrophication. *Id.* at 48, 94. Both the MERL tank experiments and the data from the Providence/Seekonk River system confirm a clear

correlation between nitrogen loadings, dissolved oxygen impairment and chlorophyll *a* levels. *Id. at 29, 48*; *2004 RIDEM Load Reduction Evaluation* at 2-17 (Ex. 13). The dissolved oxygen measurements taken from the MERL tank experiments demonstrate that the range and variability of DO increase with greater nutrient loading. *RTC* at 48 (Ex. 2). The DO concentrations in the Seekonk River showed patterns of DO variability similar to that of the high enrichment tanks in the MERL experiments. *Id.* The MERL tank experiments showed a correlation between nitrogen loading rates and chlorophyll *a* levels. *Id.* These results were consistent with RIDEM data from 1995-96, which showed that mean photoplankton chlorophyll *a* levels in the three Seekonk River monitoring stations ranged from 14 ug/l to 28 ug/l,[5] with the highest levels in the upper reaches of the river and the lowest levels in the lower reaches of the river. *Id.* Coastal areas without high nutrient loads are expected to have chlorophyll *a* levels in the 1 to 3 ug/l range. *Id.* Massachusetts has identified chlorophyll *a* levels of less than 3 ug/l as representing excellent water quality and chlorophyll *a* levels similar to the levels in the Providence/Seekonk River system as representing significantly impaired waters. *Id.* at 10-11.

The Region concluded that the basic relationship demonstrated by the MERL tank experiments between the primary causal and response variables relative to eutrophication corresponds to what is actually occurring in the Providence/Seekonk River system. *RTC* at 49; *2004 RIDEM Load Reduction Evaluation* at 12 (Ex. 13). The Region recognized, however, that the MERL tank experiments could not 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 cannot not yield a precise level of nitrogen control required to restore uses in the system. *RTC* at 49. For example, dissolved oxygen in

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[5] Peak chlorophyll *a* levels in the Providence/Seekonk River system have exceeded 200 ug/l. *RTC* at 48.

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. The model's lack of stratification could result in it being significantly less conservative (*i.e.*, underestimating the effects of a given nutrient loading on water quality) than the natural environment. On the other hand, the flushing rate used in the MERL tank experiments was significantly slower than flushing rates in the natural ecosystem. The fact that the model did not mirror the flushing rates in Narragansett Bay could render it overly conservative when compared to natural conditions, but to what degree is unclear. Because the physical model did 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, the Region was required to exercise its technical expertise and scientific judgment based on the available evidence when translating these laboratory results and establishing the Permit limit. *RTC* at 49.

The Region determined that a concentration-based limit of 5 mg/l would be necessary to address the excessive loadings from the District's facility, which both the Region and Rhode Island have determined are contributing to ongoing water quality impairments in the Narragansett Bay system. *Fact Sheet* at 14; *RTC* at 49. An effluent limit of 5 mg/l for the District's facility, coupled with effluent limits of either 5 mg/l or 8 mg/l (depending on size and location of the discharge) for other POTWs in Massachusetts and Rhode Island that are discharging to the Seekonk River, corresponds to a MERL loading scenario in the Seekonk River

of "approximately 6.5X at current facility flows and 10X at 90% design flows."[6] *RTC* at 49. The Region was aware that the MERL tank experiments and RIDEM studies showed that limits corresponding to a nitrogen loading scenario of between 2 - 4X (i.e., 3.0 mg/l) may be necessary to achieve water quality standards. *RTC* at 49. However, the Region opted not to impose a limit based on more stringent loading scenarios at this time in order to account for uncertainties associated with the physical model. *Id.*

Even with the recognition of differences between the laboratory and natural environment, the fact that water quality responses in the MERL tank experiments resulted in a significant level of impairment with a 10X nitrogen mass loading scenario (the loading if the treatment plants were to discharge near design flow) concerned the Region in light of its duty under section 301(b)(1)(C) to ensure compliance with water quality standards. *RTC* at 49. However, the Region was also aware that the particular approach it adopted possesses conservative elements that enhance the protectiveness of the Permit beyond that of the 10X mass loading scenario. *Id.* Specifically, concentration limits will assure that effluent nitrogen concentrations are maintained at consistently low levels and, as a practical matter, will result in actual mass loadings significantly below the 10X loading scenario for the foreseeable future, as treatment plant flows remain well below the facility's design flow of 56 mgd (i.e., 34 – 43 mgd) and have been steady in recent years. *Id.* at 49-50.

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[6] These projected loading estimates assume that roughly 13% of the nitrogen loading from the District's facility will attenuate before the load reaches the Seekonk River due to uptake by aquatic plants in the freshwater Blackstone River system. *Fact Sheet* at 14; *RTC* at 45-46; *RIDEM 2005 Permit Modification Response to Comments* at 11-12 (Ex. 15, AR 192). In addition to the 13% attenuation assumption made with respect to the Blackstone River, the loading estimates also assume nitrogen attenuation rates of 18% and 40%, respectively, for POTWs discharging to the Pawtuxet and Ten Mile Rivers, two other tributaries to upper Narragansett Bay. *See 2004 RIDEM Load Reduction Evaluation* at 18 (Ex. 13; AR 139).

The Region also considered that Rhode Island, when assigning permit limits to facilities within its own borders based on size and location in accordance with its own water quality standards, did not conclude more stringent nitrogen limits would be necessary or appropriate at this time. *RTC* at 50. Under Rhode Island's permitting approach, limits of 5 mg/l and 8 mg/l have been imposed on various Rhode Island POTWs whose discharges impact Narragansett Bay, and Rhode Island has recommended that similar limits be placed on certain Massachusetts facilities that are impacting the Bay, including the District. *Id. See also 2004 RIDEM Load Reduction Evaluation* at 28-31 (Ex. 13); *2005 RIDEM Nutrient Loading Plan* at 4, 8-9 (Ex. 14). RIDEM has established nitrogen limits of 5.0 mg/l for facilities contributing the largest amount of nitrogen to the upper reaches of the Seekonk River system, where the greatest level of impairment has been documented. These include three facilities in Rhode Island, NBC-Fields Point (with a permitted design flow of 65 mgd); NBC-Bucklin Point (31 mgd design flow) and Woonsocket (16 mgd design flow).[7] *RTC* at 100-101. All of the Rhode Island facilities receiving a limit of 8.0 mg/l (East Providence, Cranston, Warwick and West Warwick) discharge either into the Providence River or into Narragansett Bay below the Providence River, where the flushing rate is higher and the impacts less severe. *Id.* at 101. In addition, these four facilities have relatively smaller permitted design flows – ranging from 8 mgd to 20 mgd – and smaller corresponding nitrogen loads. *Id.*[8] In arriving at its decision to impose a nitrogen effluent limit

[7] In settlement of a recent appeal, the Woonsocket facility agreed to construct facilities that will achieve a total nitrogen limit of 3 mg/l (rather than the limit of 5 mg/l initially imposed by RIDEM) upon RIDEM's consent to a schedule allowing the facility until March 31, 2014 to meet the limit. *See RTC* at 101 (Ex. 2). *See also Consent Agreement, In re: AAD No. 05-004/WRA* dated June 27, 2008 (AR 187).

[8] In Massachusetts, the Region has issued final permits with total nitrogen limits of 8.0 mg/l to Attleboro and North Attleborough. While these two facilities discharge to a freshwater river that flows to areas of the upper Bay where the greatest impairments have been measured, they also have a much smaller permitted flow and nitrogen loadings than the District. Attleboro has a design flow of 9 mgd and North Attleborough has a design flow of 5 mgd. *RTC* at 101.

of 5 mg/l on the District's facility, the Region regarded Rhode Island's position and recommendations as additional evidence that the limit was reasonable and sufficiently stringent to comply with Rhode Island's water quality standards and with Section 301(b)(1)(C) and Section 401(a)(2) of the CWA. *Id.* at 50.

The Region determined that a limit no less stringent that 5.0 mg/l could be imposed that would still ensure compliance with Rhode Island water quality standards in light of the severe existing eutrophic conditions in the Providence/Seekonk River system, indicating that it is significantly overloaded for nitrogen. *Id.* In so concluding, the Region also weighed the fact that RIDEM has indicated that more stringent limits may be necessary to achieve water quality standards, with the caveat that it too has acknowledged uncertainty in the MERL model. *Id. See also 2004 RIDEM Load Reduction Evaluation* at 27 (Ex. 13).

C. Procedural Background.

In Massachusetts, the Region administers the NPDES permitting program as the Commonwealth has not obtained authorization to administer the program. *See Fact Sheet* at 2 (Ex. 1); *RTC* at 1. The Region issued a draft permit on March 23, 2007. *See Draft Permit* (Ex. 1; AR 7). Anticipating substantial public interest in the permit proceeding, the Region designated a 55 day public comment period and scheduled a public hearing. *See* Fact Sheet at 23 (Ex. 1). *See also Legal Notices,* March 23, 2007 and April 30, 2007 (AR 13).

The Region held the hearing on May 9, 2007, at in Worcester, Massachusetts. *See Public Hearing Transcript* (AR 18). Immediately before the hearing, the Region also held an informal informational session, making available technical staff involved in the permitting proceeding to explain the basis for the proposed limits and to answer any questions from the permittee and co-permittees, local officials or members of the public. *See Legal Notice,* April 30, 2007 (AR 13).

Over 50 people attended, including representatives from the District, its engineering consultant Camp Dresser and McKee (CDM), and its counsel (Bowditch & Dewey), as well as members of the public, local elected officials and members of the media attended. *Sign In Cards* (AR 12). At the hearing, the Region granted a request to extend the public comment period an additional nine days. *Public Hearing Transcript* at 100. (AR 18).

The Region subsequently received 34 sets of written comments, including lengthy and detailed comments and attachments from the District, its engineering consultants and legal counsel. (AR 23-54). The Region reissued the final permit to the District on August 22, 2008. (Ex. 3; AR 1). The Region deemed state certification waived under 40 C.F.R. §124.5 because over 16 months had passed since the Region's initial request for certification and because of the Region's conclusion that permit issuance should proceed expeditiously in light of the ongoing and significant impairments. *See Email from Stephen Perkins (Region 1) to Glenn Haas (MassDEP)* dated August 22, 2008 (AR 55). In addition, the Region considered that MassDEP's principal concern had been the stringency of the nitrogen limit, *id.,* which does not require Massachusetts' certification as the limitation is based solely on Rhode Island's Standards.

Eight parties timely filed petitions for review.

D. Standard of Review.

A party seeking review of a NPDES permit carries the burden of demonstrating that a permit condition is based on a clearly erroneous finding of fact or conclusion of law, or involves an exercise of discretion or an important policy consideration warranting review by the Board. *See* 40 C.F.R. § 124.19(a)(1)-(2); *In re Carlota Copper Co.*, 11 E.A.D. 692, 708 (EAB 2004); *Rohm & Haas,* 9 E.A.D. 499, 504 (EAB 2000). Tellingly absent from the petitions here, however, is much discussion of the Region's 122-page response to comments that analyzed and

addressed their concerns. As is detailed more fully below, petitioners often repeat comments without confronting the Region's responses (such as calls for delay pending completion of TMDLs or other studies). Mere repetition of objections made during the comment period or the "mere allegation of error" without specific supporting information, however, are insufficient to warrant review. *In re Phelps Dodge Corp.*, 10 E.A.D. 460, 496, 520 (EAB 2002); *In re Knauf Fiber Glass, GmbH*, 9 E.A.D. 1, 5 (EAB 2000). Elsewhere, petitioners raise brand new arguments that were never included in the comments below (such as the District's suggestion of improper *ex parte* communications between the Region and RIDEM), which is not allowed under the agency's rules governing appeals. Arguments must be made with specificity below in order to be preserved for the Board's review. *See In re Maui Elec. Co.*, 8 E.A.D. 1, 9 (EAB 1998). Finally, petitioners also offer opposing technical interpretations and conclusions without demonstrating why the Region's technical judgment and explanations warrant review by this Board (such as proposals of alternative methodologies to calculate attenuation). *In re Town of Ashland Wastewater Treatment Facility,* 9 E.A.D. 661, 667 (EAB 2001). As is detailed more fully below, none of the petitioners has carried its burden and, therefore, review should be denied.

II. ARGUMENT

A. The Region's Technical Approach in Establishing the Nitrogen Limit was Consistent With the CWA and Regulations and Warranted to Address Severe and Undisputed Impairments in Upper Narragansett Bay.

1. The Region had Sufficient Scientific Basis and Adequate Data Upon Which to Establish the Nitrogen Limit.

The District and MassDEP contend the Region erred in giving any consideration to the MERL model (and RIDEM's subsequent analysis of the experiments) as the model fails to fully

mirror the natural ecosystem of upper Narragansett Bay. *See Dist. Pet.* at 19-23; *MassDEP Pet.* at 12-16. They also contend that the Region failed to appropriately or adequately account for these uncertainties in its development of the effluent limitation for total nitrogen. *Dist. Pet.* at 24; *MassDEP Pet.* at 16. MassDEP is able to offer the Board no proposed alternative course of action for the Region to establish nitrogen limits. The District contends the path is clear: water quality-based nitrogen limits for the facility must await development of a TMDL or mathematic model. *See Dist. Pet.* at 11.

The suggestion that the Region should have rejected the MERL model and RIDEM's analyses wholesale is contrary to EPA's regulations and belied by the record. Under applicable regulatory standards, EPA is plainly authorized, even in technically and scientifically complex cases, to base its permitting decision on a wide range of relevant material, including EPA technical guidance, State laws and policies applicable to the narrative water quality criterion, and site-specific studies.

The specific means by which narrative water quality criteria must be interpreted to derive water quality-based effluent limits is provided by 40 C.F.R. §122.44(d)(1)(vi), which was promulgated in 1989 as part of a set of regulations related to the establishment of water quality-based effluent limits in compliance with section 301(b)(1)(C). These provisions amended 40 C.F.R. §122.44(d)(1)(1988), which had simply required permits to contain requirements "necessary to....[a]chieve water quality standards established under section 303 of the CWA." As EPA explained in its preamble, "EPA's legal obligation to ensure that NPDES permits meet all applicable water quality standards, including narrative criteria, cannot be set aside while a state develops [numeric] water quality standards." *See* 54 Fed. Reg. 23868, 23877 (June 2,

1989). As provided by the regulation, where a State has not established a numeric water quality criterion, the permitting authority must establish effluent limits in one of three ways:

> (A) Establish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Such a criterion may be derived using a proposed State criterion, or an explicit State policy or regulation interpreting its narrative water quality criterion, supplemented with other relevant information which may include: EPA's Water Quality Standards Handbook, October 1983, risk assessment data, exposure data, information about the pollutant from the Food and Drug Administration, and current EPA criteria documents; or
> (B) Establish effluent limits on a case-by-case basis, using EPA's water quality criteria, published under section 304(a) of the CWA, supplemented where necessary by other relevant information; or
> (C) in certain circumstances, based on an "indicator parameter."

40 C.F.R. § 122.44(d)(1)(vi)(A)-(C). This regulatory provision has been upheld as a reasonable, authorized attempt at necessary gap-filling in the CWA statutory scheme as it provides permit writers with guidance on how to translate state narrative water quality standards into numeric effluent limits. *See American Paper Inst. v. U.S. EPA*, 996 F.2d 346, 348, 351 (D.C. Cir. 1993); *American Iron and Steel Inst. v. U.S. EPA,* 115 F.3d 979, 990-991 (D.C. Cir. 1997) (*per curiam*).

With respect to the scope of materials EPA is authorized to consider, the operative term of the regulation above is "relevant," which means, "Having a bearing on or connection with the matter at hand." *See The American Heritage Dictionary of the English Language, Fourth Edition (2004).* Nothing in the CWA or NPDES permitting regulations delimits or qualifies what can constitute "relevant information" under subsections (A) or (B) of 40 C.F.R. § 122.44(d)(1)(vi). Even the use of the documents specifically cited by EPA in the regulation is not mandatory. *See* 54 Fed. Reg. at 23876.

In the absence of a calibrated and corroborated dynamic model or TMDL, EPA relied on the best information reasonably available to it, which included 15 years of ambient water quality

data; numerous site-specific studies, reports and scientific papers evaluating nitrogen levels and response variables in Narragansett Bay; and EPA nutrient technical guidance documents. *See supra* at Section I.B.4.b. As explained in the Region's Response to Comments, in keeping with the regulation, no one source of information should necessarily be given definitive weight, nor should the absence of any particular information source necessarily preclude EPA from establishing an effluent limit. *See RTC* at n.7. The Region's response is consistent with the preamble to the 40 C.F.R. §122.44(d)(1)(vi), which explains, "It is EPA's intent that the three options in subparagraph (vi) will allow the permitting authority to set effluent limits to control discharges (in the absence of state numerical water quality criteria for all pollutants of concern) that interfere with attaining and maintaining designated uses, while at the same time, giving the permitting authority sufficient flexibility to account for site-specific impacts on aquatic life or human health." *See* 54 Fed. Reg. at 23878.

The approach of utilizing available guidance and materials generated by EPA and States, as supplemented by other information reasonably available at the time of permit reissuance, is also reasonable in light of federal regulations requiring EPA to include requirements that will achieve state water quality standards when reissuing a permit and prohibiting issuance of a permit when the imposition of conditions cannot ensure compliance with the applicable state water quality requirements of all affected States. *See* 40 C.F.R. §§ 122.4(d), 122.44(d)(1); *see also* CWA §§ 301(b)(1)(C) and 401(a)(2). The alternative proposed by the District (and implicit in MassDEP's petition) is that the Region forego imposition of permit limits that would address ongoing water quality impacts while awaiting complex TMDL studies and dynamic mathematical models that would like years to complete. This interpretation of the CWA would forestall water quality improvements, would be inconsistent with EPA's express statutory and

regulatory obligations, as well as the overarching goal of the statute, which is to have eliminated the discharge of pollutants into the Nation's waters more than two decades ago. *See* CWA § 101(a).

Although the District and MassDEP decry the application of the MERL and RIDEM studies as overly simplistic and criticize the Region for imposing limits despite its lack of a mathematical model or study to precisely assess impacts from all sources on the Providence and Seekonk Rivers, the relevance of the MERL model and RIDEM studies to nitrogen impairment in the receiving waters and the District's nitrogen loadings is self-evident. In this case, the Region expressly articulated the link between the MERL model and the natural environment, determining that, "[b]oth the MERL tank experiments and the data from the Providence/Seekonk River system indicate a clear correlation between nitrogen loadings, dissolved oxygen impairment and chlorophyll *a* levels." *RTC* at 48. The MERL model was peer-reviewed and published in a scientific journal, thereby withstanding the scrutiny of representatives of the scientific community. *See RTC* at 97. As the Region pointed out in the Response to Comments (*RTC* at 98), EPA also cited the MERL experiment with approval in national nutrient technical guidance, a document which in turn was relied on by the Region and is intended to provide "scientifically defensible technical guidance to assist States, authorized Tribes, and other governmental entities in developing numeric nutrient criteria for estuaries and coastal waters under the authority of the Clean Water Act (CWA), Section 304[a]." *See Estuarine Nutrient Guidance* at 1-1, 2-11 and 2-16 (Ex. 19).[9] Generally, "it is only when a model bears no rational

[9] The guidance states: "Three case studies provide some of the strongest evidence available that water quality managers should focus on N for criteria development and environmental control (see NRC 2000 for details). One study involves work in large mesocosms by the University of Rhode Island (Marine Ecosystem Research Laboratory–MERL) on the shore of Narragansett Bay. Experiments showed that P addition was not stimulatory, but

relationship to the characteristics of the data to which it is applied that [a court] will hold that the use of the model was arbitrary and capricious." *Appalachian Power Co. v. EPA*, 135 F.3d 791, 802 (D.C. Cir. 1998) (*per curiam*). *See also County v. United States EPA*, 2008 U.S. App. LEXIS 12119, 39-41 (11th Cir. 2008); *Chemical Mfrs. Ass'n v. EPA*, 28 F.3d 1259, 1265 (D.C. Cir. 1994). This standard of relevance is met in the instant case.

MassDEP similarly cannot avail itself of the argument that the MERL experiments should not be afforded any weight because, as a physical model, the experiments are "less sophisticated" than a mathematical model. *MassDEP Pet.* at 13. The mere fact that the MERL tank experiments were physical rather than mathematical models and could not completely simulate the physical environment does not bear on their overall validity and continuing relevance to the nitrogen limits here.[10] "[A] model is meant to simplify reality in order to make it tractable," and it is no criticism of a model "that [it] does not fit every application perfectly." *Chemical Mfrs. Ass'n*, 28 F.3d at 1264.

The District also overreaches in its claim that the Region should have given no consideration to the MERL experiments since they involved "a different ecosystem." *See Dist. Pet.* at 19. According to the District, the MERL study cannot be applied in an evaluation of

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N or N+P caused large increases in the rate of net primary production and phytoplankton standing crops (Oviatt et al. 1995)."

[10] As the Region noted in its Response to Comments (*RTC* at 96-97), this view of physical models is consistent with *EPA's Estuarine Nutrient Guidance*, which states, at 9-2:

Frequently, the impression is given that the only credible water quality modeling approach is that of mathematical process-based dynamic computer modeling. This is not the case. For example, a Tampa Bay water quality modeling workshop in 1992 (Martin et al. 1996) produced the consensus recommendation that a multipronged (mechanistic and empirical) modeling approach be implemented to provide technical support for the water quality management process....There are many other examples of empirical models used to relate environmental forcing functions to ecological responses, especially nutrient load/concentration and response relationships. Much of the professional aquatic ecological literature reports on use of empirical models (e.g., Chapters 2 and 3). Empirical models have their limitations, but when judiciously applied, they offer a highly useful tool to water quality managers. (Ex. 19).

appropriate loadings to the upper portions of the Bay (i.e., the Seekonk and Providence Rivers) because the MERL mesocosyms better mimicked certain physical characteristics of the lower Bay. *Id.* Review of this specific argument, which was not raised below, should be denied on procedural grounds, *see In re Gov't of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D. 323, 339 (EAB 2002), as well as on the merits. The Region frankly acknowledged that the model was a useful, though imperfect, mirror of the natural ecosystem, and explicitly factored the differences (including flushing rates and stratification) into its final determination. *See Fact Sheet* at 13-14 (Ex. 1); *RTC* 47-51 (Ex. 2).

The District and MassDEP also cite differences between the response from loadings of the MERL experiments and measured data collected in 1995-96 as evidence that the experiments cannot be reliably used to derive effluent limits in this matter. *See Dist. Pet.* at 22; *MassDEP Pet.* at 14. Again, the Region acknowledged that these differences were not unexpected given that the MERL tank experiments cannot exactly replicate the complex dynamics of the Providence and Seekonk Rivers. *RTC* at 49. Just as it would not be reasonable to ignore relevant differences between laboratory and real world conditions, it would likewise be unreasonable to ignore relevant similarities, which clearly pointed to a correlation of adverse impacts to nitrogen loadings.

In its challenge, the District focuses on flushing rates, one difference between the MERL experiments and natural setting that, taken alone, suggests that reliance on the MERL model may yield an overly protective limit. *See Dist. Pet.* at 20-21. Without citation to any of the comments it offered to EPA, the District alleges that the Region did not meaningfully respond to its argument that differences in flushing times between the Seekonk River and MERL experiments would result in the MERL experiments over-estimating the effects of a given loading. In fact,

the Region explained that it clearly considered the difference in flushing rates between the MERL tank experiments and the natural setting of upper Narragansett Bay and specifically considered the impact of this difference on the Permit limit. *See RTC* at 49, 55. Indeed, this was a major reason the Region chose not to impose a more stringent nitrogen limit at this time. *Id.* at 49.

In its Petition, the District refines its comments to make the differences between the model and natural system appear more stark: noting that the flushing rate used in the MERL studies was about 27 days and the estimated flushing rate for the natural systems in RIDEM's study was about 3.5 days, the District suggests the model will over-predict the impact of any given loading by a factor of eight (i.e., 27⁄3.5). *See Dist. Pet.* at n.3 and 24. RIDEM's 2004 study, however, explains that the estimated flushing rate for the natural system of 3.5 days represents the theoretical flushing rate of conservative substance such as water and not the flushing rate of a non-conservative substance such as nitrogen. *See 2004 RIDEM Load Reduction Evaluation* at 12 (Ex. 13; AR 139). The RIDEM study also references scientific literature that suggests that in shallow systems (such as the natural setting here) the residence time of nitrogen may be much longer than water because of such factors as uptake of nitrogen by macroalgae. *Id.* Further, the record supports that during periods of higher temperatures and lower tributary flow rates (i.e., conditions closer to critical 7Q10 flows), flushing in the natural system would take longer than 3.5 days and, therefore, the difference between the natural setting and model would be less. *See Asselin and Spaulding, Flushing times for the Providence River Based on Tracer Experiments, Figures 8 and 9* (AR 154).

Moreover, although ignored by the District, the Region also considered differences in stratification (which support that the MERL experiments would underestimate the severity of

dissolved oxygen impairments in the upper Bay). The Region explained that DO concentrations in the Bay are influenced by stratification, which was not simulated in the MERL tank experiments, in which waters were routinely mixed. *RTC* at 49. The Region continued: "In a stratified systems, there is little vertical mixing of water, so sediment oxygen deficits are exascerbated, due to the lack of mixing with higher DO water above." *Id.* Thus, the model's lack of stratification could result in it being significantly less conservative than the natural environment. On the other hand, the failure of the model to mirror the flushing rates in Narrangansett Bay could render it overly conservative when compared to natural conditions, but to what degree is unclear. *Id.* The Region continued:

> Because the Region does not general 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 the permit limit.

Id.

Although the District decries the Region's ultimate conclusion to impose a limit of 5.0 mg/l as "unduly conservative" (*Dist. Pet.* at 24), the Region expressly stated that it was adopting a reasonably conservative approach for the purposes of determining the Permit limit, in part due to the significant impairments in the receiving waters and in part due to the tendency of nutrients to accumulate and recycle in the water column. *See RTC* at 50 & n.12. Given that the Region adequately explained its approach and, moreover, took the flushing differences into account in its decision not to establish a more stringent limit, the Board should deny review.

In its challenge to the Region's evaluation of the uncertainties raised by the MERL experiments, MassDEP argues that the Region in fact disregarded the uncertainties and simply adopted the 5.0 mg/l limit proposed by RIDEM in its 2004 study. *See MassDEP Pet.* at 17.

MassDEP's conclusory allegation is clearly incorrect; MassDEP fails to show any infirmity in the Region's approach, nor has MassDEP demonstrated that the actual effluent limitation selected by the Region was erroneous. To the contrary, the Region's decision-making, made against a backdrop of unavoidable scientific and technical uncertainty, was reasonable, technically sound and consistent with applicable regulations. The Region was forthright that the physical model did 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. *RTC* at 49. In its approach, the Region identified the specific factors in the MERL model that rendered it under- and over-protective. *Id.* The Region further explained that, although the MERL experiments showed that limits corresponding to a nitrogen loading scenario of between 2X and 4X (i.e., 3.0 mg/l) may be necessary to achieve water quality standards, requiring this level of treatment of the District at this time was not warranted in light of the uncertainties in the model. *Id.* In choosing an appropriate loading scenario, the Region appropriately considered RIDEM's recommendations – not only for the District's facility, but also for facilities located within Rhode Island. *Id.* at 50, 100-101. Of course the Region considered RIDEM's recommendation of 5.0 mg/l limit for the District's facility; it was obliged to do so under sections 301(b)(1)(C) and 401(a)(2) of the CWA to ensure compliance with Rhode Island's narrative nutrient criterion. *Id.* at 50. But there is no support for MassDEP's allegation that the Region merely adopted the limit proposed by RIDEM without engaging in an independent, scientific and technical evaluation to establish the appropriate limits.

The law is clear that "[a]n agency confronted with a complex task may rationally turn to simplicity in ground rules, and administrative convenience, at least where no fundamental injustice is wrought." *American Public Gas Association v. FPC*, 567 F.2d 1016, 1056 (1977)

(quoting *Gulf Oil Corp. v. Hickel*, 435 F.2d 440, 446 (1970)), *Hercules, Inc. v. EPA*, 598 F.2d 91, 116-117 (D.C. Cir. 1978). Here, the Region was forced to weigh competing interests and sometimes contradictory facts in determining how to rationally map the findings of a physical laboratory model onto the complicated geography of a real world – and severely degraded – estuary. In such circumstances, the relevant question is not whether the numerical standard is "precisely right" but "whether the agency's numbers are within a '"zone of reasonableness."' *See Hercules,* 598 F.2d at 106-07 ("We do not demand certainty where there is none. There may be no strong reason for choosing [one number] rather than a somewhat higher or lower number. If so, we will uphold the agency's choice of a numerical standard if it is within a 'zone of reasonableness.'"); *see also National Association of Broadcasters v. Copyright Royalty Tribunal*, 675 F.2d 367, 374 (D.C. Cir. 1982); *Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 525 (D.C. Cir. 1983).

MassDEP makes no attempt to show how an alternative approach to the one actually employed by the Region here might be made to work to satisfy the requirements of the CWA and to reduce the significant nitrogen loadings from the District's facility that are contributing to severe and undisputed impairments downstream in Rhode Island. Its apparent goal of simply stalling the nitrogen reductions here is unreasonable and contrary to policy objectives of the CWA to make reasonable further progress toward eliminating pollution to the Nation's waters. *See Natural Resources Defense Council, Inc. v. Costle*, 568 F.2d 1369, 1380 (D.C. Cir. 1977) ("...EPA may issue permits with conditions designed to reduce the level of effluent discharges to acceptable levels. This may well mean opting for a gross reduction in pollutant discharge rather than the fine-tuning suggested by numerical limitations. But this ambitious statute is not

hospitable to the concept that the appropriate response to a difficult pollution problem is not to try at all.").

Accordingly, the Region's reliance on the MERL models, together with other data, studies and guidance, was entirely appropriate and directly supported by applicable regulations. Further, the District and MassDEP have not demonstrated any clear error or abuse of discretion in the Region's approach in accounting for the uncertainties between the MERL models and the natural ecosystem that warrants review.

2. MassDEP's New Challenges to the MERL Studies Should be Rejected as Untimely and do not Raise Any Issues Warranting Review.

MassDEP also raises additional concerns about the model not raised by any commenter to EPA during the comment period. First, MassDEP suggests the Region's conclusions drawn from the MERL studies are suspect because the tanks were enriched not only with inorganic nitrogen, but also with phosphorus and silica, and that the study failed to specifically account for how each individual nutrient contributed to resulting concentrations of chlorophyll *a* and dissolved oxygen. *See MassDEP Pet.* at 15. Second, MassDEP criticizes the 2004 RIDEM study for extrapolating total nitrogen (TN) concentration limitations based on data that measured only dissolved inorganic nitrogen (DIN). *Id.* at 15-16. According to MassDEP, the conversion from DIN to TN was based on no more than a "guesstimate." *Id.* at 16. Neither argument was raised in comments by any party to the Region and, therefore, review of these issues should be denied for lack of preservation. It is well settled that permit issuers are "under no obligation to speculate about possible concerns that were not articulated in the comments." *In re New England Plating Co.,* 9 E.A.D. 726, 735 (EAB 2001); *accord, e.g., In re Teck Cominco Alaska Inc., Red Dog Mine,* 11 E.A.D. 457, 481; *In re Steel Dynamics, Inc.,* 9 E.A.D. 165, 229-31 (EAB

2000); *In re Sutter Power Plant,* 8 E.A.D. 680, 694 (EAB 1999). Instead, a petitioner must have raised during the public comment period the specific argument that the petitioner seeks to raise on appeal. *Gov't of D.C. Mun. Separate Storm Sewer Sys.,* 10 E.A.D. at 339.

On the merits, MassDEP fails to present any sufficiently specific or compelling argument that casts doubt on thoroughness or rationality of the Region's technical evaluations and conclusions regarding uncertainties in the model. With regard to the failure of the model to "isolate" the effects of nitrogen from those of silica and phosphorus, other than simply raising the issue, MassDEP does not offer what impact such an exercise would have had on the resulting loadings or the Region's determination of effluent limitations. *See In re Three Mountain Power, LLC,* 10 E.A.D. 39, 58 (EAB 2001) ("The Board will not overturn a permit provision based on speculative arguments."). Further, the *Estuarine Nutrient Guidance* supports that nitrogen is the primary nutrient controlling growth when the nitrogen to phosphorus ratio is less than 16:1. See *Estuarine Nutrient Guidance* at 2-3 (Ex. 19). In the MERL tank experiments, the nitrogen to phosphorus ratio was 13:1 and in the Seekonk and Providence Rivers the nitrogen to phosphorus ratios are all less than 5:1. *See 2004 RIDEM Load Reduction Evaluation* at 12 (Ex. 13).

With reference to MassDEP's argument about DIN, the recommended DIN loadings were extrapolated to TN concentrations using both literature values as well as measurements from wastewater treatment facilities in the watershed. *2004 RIDEM Loading Reduction Study* at 20 (Ex. 13; AR 125). This analysis resulted in recommended DIN limits being adjusted to TN by increasing the recommended limits by 2 mg/l. *Id.* Again, MassDEP does not does not offer any specifics as to how this analysis rendered the approach contrary to the CWA and regulations. Review should be denied.

3. The Region's Attenuation Calculations Were Appropriate and Reasonable.

The District and MassDEP also raise concerns with the Region's analysis of how much of the facility's nitrogen loading would attenuate as it travels down the Blackstone River to the upper Bay. Attenuation refers to the uptake of nitrogen by algae and other plants. *RTC* at 46 (Ex. 2). Phosphorus loadings play a role in nitrogen attenuation rates: because the primary mechanism for nitrogen attenuation in the Blackstone River is phosphorus-driven algae growth, attenuation rates are expected to decrease (i.e., more of the nitrogen loading will be delivered to the Bay) as the District implements measures to reduce its phosphorus loadings. *Id.*

In calculating the nitrogen limit, the Region concluded that 13% of the District's nitrogen loading would attenuate, resulting in 87% of the loading being delivered to the Seekonk River. *Fact Sheet* at 13-14 (Ex. 1); *RTC* at 45-46 (Ex. 2). According to the District, the Region's attenuation calculations are inequitable as they fail to take account of contributions from other sources in the receiving waters and attribute all nitrogen discharged into the Bay via the Blackstone River to the District and Woonsocket. *See Dist. Pet.* at 28. The District posits that a more complete analysis that includes these sources would result in a higher attenuation rate and a correspondingly higher effluent limitation. *Id.* at 31. The District also challenges the Region's approach in allocating the District's share of the total allowable nitrogen load; according to the District, a more equitable allocation would have resulted in the District receiving a higher effluent limitation than the downstream facility located in Woonsocket, Rhode Island. *Id.* at 32. MassDEP raises a more narrow point – that the attenuation calculations included comparison of actual loads from the District's facility from the years 2000 and 2002 with nitrogen loads in the Providence and Seekonk Rivers from five years earlier. *See MassDEP Pet.* at 15.

The Region adequately explained its approach to attenuation, including explaining how it had taken into consideration other sources of nitrogen and the rationale for its assumptions. For example, the Region detailed that it considered three analyses of attenuation as part of its deliberations: 1) the analysis presented in RIDEM's 2004 Study which evaluated 1995/1996 data and estimated a total nitrogen delivery factor of 87%; 2) a subsequent analysis by RIDEM using data from 2001 and 2002 that estimated a nitrogen delivery factor of 73%; and 3) an analysis by Nixon *et al.* indicating minimal attenuation in the segment of the Blackstone River from Millville, MA to Pawtucket, RI. *See RTC* at 45-46. Taking into account all of this information, the Region concluded that an attenuation rate of 13% (and corresponding delivery factor of 87%) was reasonable. *Id.*

With regard to the District's concern that the calculation did not consider contributions from other sources, the Region expressly noted that the second RIDEM analysis (which resulted in an attenuation estimate of 73%) "employed a model ***that did account for other point sources, as well as non-point sources.***" (emphasis added) *Id.* The Region further responded that the District's request for another round of adjustments to account for the same sources amounted to double-dipping: "The commenter suggests further adjustments based on its estimates of non-point and point source loadings, resulting in a proposed delivery factor of 51%. However, the second analysis conducted by RIDEM quantified these loadings and accounted for them in the revised estimate of attenuation. The commenter does not identify any specific concerns with the loadings in the revised analysis that warrants use of the commenter's estimated loadings." *RTC* at 45 n.9. In its Petition, the District does not directly confront the Region's response, but simply repeats its request for a second round of adjustments to account for other sources.

The Region also explained that RIDEM's second analysis (which resulted in the lowest overall delivery factor of 73%) did ***not*** take into account that the District would need to further reduce its phosphorus loading in order to comply with the new permit limit of 0.1 mg/l. (The second RIDEM analysis only assumed the District would meet the 0.75 mg/l limit in its expired permit.) These further reductions in phosphorus loadings are anticipated to further reduce algal growth, ultimately lowering the nitrogen attenuation rate and increasing the nitrogen load that is delivered the Seekonk.

In its analysis, the Region further noted that a more recent study of attenuation by Nixon, which found no evidence of nitrogen attenuation, called into question whether "the delivery factors estimated by DEM for the Blackstone River from the state line to the Seekonk River may be too low." *RTC* at 46. The District criticizes the Region for being "selective" in its decision to consider this study since (unlike the second RIDEM study detailed above) Nixon did not quantify non-point sources of nitrogen. *See Dist. Pet.* at 29-30. The District misapprehends the Region's reliance on the study. Although the Nixon study did not quantify non-point sources, the study targeted a low flow period when point sources (rather than non-point sources) should be having the greatest impact on nutrient transport and when nitrogen removal processes associated with algal growth and biological denitrification should be maximized. *See RTC* at 46. Thus, the Region was fully justified in its observation that the study called into question whether RIDEM's attenuation estimates might be too low. Further, the Region's consideration of all the available attenuation studies is fully appropriate, particularly in an area of ongoing scientific investigation. As the Region explained in its responses: "While scientific study of attenuation is ongoing, EPA must use its judgment to establish nutrient reductions for this discharge

necessary to ensure attainment of water quality standards based on the information available now." *RTC* at 46.

The District also contends the Region erred in estimating anticipated future reduction in attenuation that will be achieved from compliance with the new phosphorus limit of 0.1 mg/l (rather than using the model employed by RIDEM in its second attenuation analysis.) *See Dist. Pet.* at 29. The Region determined to estimate this increase against the backdrop of evidence (discussed above) that RIDEM's 73% estimate might be too low. *RTC* at 46. Further, the RIDEM analysis did not take into account planned phosphorus reductions that are anticipated for some of the smaller point source discharges to the Blackstone River, which will also contribute to reduction of the overall nitrogen attenuation rate. *Id.* The Region's ultimate conclusion of a 87% nitrogen delivery factor (and 13% attenuation rate) is within the range of values that can be calculated and therefore is reasonable and appropriate. *See In re Dominion Energy Brayton Point, L.L.C.*, 12 E.A.D. 490, 510-11, 576-83 (EAB 2006) (rejecting Petitioner's claim of technical error where available information does not provide a definitive cutoff for a temperature threshold, and "Petitioner's challenge to the 24 [degrees] C temperature threshold value is really a dispute between experts over the proper interpretation of several scientific studies as well as an underlying dissatisfaction with the Region's use of a more conservative approach than Petitioner would prefer.")

MassDEP raises a single criticism: that the Region's analysis of attenuation included comparison of nitrogen loads in the Seekonk Rivers from 1995 to 1996 with nitrogen loading from the District's facility from 2000 and 2002. *MassDEP Pet.* at 15. Not only did no one raise this concern in comments to the Region, MassDEP does not explain how the differing dates may have impacted the Region's conclusions or resulted in any reviewable error. Had MassDEP

appropriately preserved this argument by raising it in comments, the Region would have explained that its attenuation analysis included the best information reasonably available. While the analysis did include consideration of flow data from the District's facility collected in 1995 and 1996, the District was not required to monitor for nitrogen in its effluent until its prior permit went into effect in 2001. *See 2001 Permit Modification* (Ex. 26; AR 69). Therefore, the Region considered nitrogen data from this later time period. MassDEP does not point to any upgrades or other factors that would have significantly altered the nitrogen loadings from the District's facility. The Board, accordingly, should decline review on this ground.

Assuming for the sake of argument that the Region's estimate of an 87% delivery factor was appropriate, the District next argues that the Region made "computational" errors by not ultimately assigning it a limit of 5.75 mg/l rather than 5.0 mg/l. *Id.* at 32. While framing the problem as an error in math, the challenge actually goes to the Region's methodology for limiting the District's share of the total allowable nitrogen load. The Region established the District's effluent limitation of 5.0 mg/l at the point of discharge. In doing so, the Region fully understood that the concentration of nitrogen reaching the Bay would be less than 5 mg/l (i.e., 87% of 5.0 mg/l, or 4.4 mg/l). The District prefers, however, that the Region calculate the limit such that the concentration at the point of delivery to the Bay is 5.0 mg/l; in this way, the District should receive a limit at the end of pipe of 5.75 mg/l (rather than 5.0 mg/l). In its Response to Comments, the Region explained that the District's limit of 5.0 mg/l at the point of discharge (resulting in 4.4 mg/l actually reaching the Bay) was necessary to ensure compliance with standards, taking into account the location of the District's discharge to the upper Seekonk and the significance of the District's loadings. The Region explained that the District's discharges

> ...enter Upper Narragansett Bay through the headwaters of the Seekonk River, which is the most impaired section of Upper Narragansett Bay. The RIDEM 2004 study indicates that this segment of the Bay currently receives nitrogen loads at a rate 24 times higher than the average Bay-wide loading. The limit EPA believes is necessary to attain water quality standards (i.e., 5.0 mg/l) will result in a loading in the Seekonk River of 6.5 times the Bay-wide loading. UBWPAD [the District] is the dominant source of nitrogen to the Blackstone, even after accounting for attenuation, from the Blackstone to the Seekonk.

RTC at 54. In its petition, the District frames its objection to the Region's approach in terms of fairness: it points out that the two major point source dischargers to the Blackstone River (the District and Woonsocket) were both assigned effluent limitations of 5.0 mg/l notwithstanding that the District is "almost twice as far from Narragansett Bay...." *Dist. Pet.* at 28.[11] The District's argument on appeal, however, does not confront the Region's explanation that a limit of 5.0 mg/l is necessary in light of the fact that the District will be delivering a significantly greater nitrogen load to Narragansett Bay (after accounting for attenuation) than the much smaller Woonsocket facility. Notwithstanding that the District and Woonsocket are the two major point source loads of nitrogen to the Blackstone River, the District has a permitted design flow of 56 mgd compared to Woonsocket's permitted design flow of 16 mgd. *See 2004 RIDEM Nitrogen Load Reduction Study* at 20 (Ex. 13). Actual flows show a similar disparity. For instance, monthly average flows for the District and Woonsocket during the summers 1995-96 were 32.7 mgd and 7.37 mgd, respectively. *Id. See also Seekonk Reach Loads* (Ex. 27; AR 203). Not surprisingly, the respective nitrogen loads attributable to the two facilities also track this general pattern. In its analysis, for instance, RIDEM concluded that, after taking into account attenuation, the District and Woonsocket together represent approximately 83% of the

[11] A table on page 14 of the District's Petition mistakenly assigns Woonsocket an effluent limitation of 8.0 mg/l. RIDEM initially issued Woonsocket a permit with an effluent limitation of 5.0 mg/l. In resolution of an appeal of that permit, Woonsocket has now agreed to construct facilities to meet an effluent limitation of 3.0 mg/l. *Supra* n.7.

nitrogen load from wastewater treatment facilities delivered to the mouth of the River. *See RIPDES Permit Modifications Response Comments* at 12 (Ex 15; AR 192). Of this amount, the District represents about 64% of the load compared to Woonsocket's 19%. *Id.*[12] Also cutting against the District's claims of inequity is that, as the Region noted in its response, Woonsocket has recently agreed to meet an effluent limitation of 3.0 mg/l. *RTC* at 54. In light of these circumstances, the Region's decision to impose a limit of 5.0 mg/l on the District in order to ensure compliance with standards is reasonable and appropriate.

Because neither the District nor MassDEP has provided any compelling reason to that cast the Region's technical judgment into question on the issue of attenuation, the Board should decline to review it. *Hercules,* 598 F.2d at 106-07 (upholding an Agency's choice of a numerical standard where it was within a "zone of reasonableness."). Moreover, to the extent the Region's interpretation is grounded in technical water quality considerations, deference should be afforded to the Region. *NE Hub,* 7 E.A.D. at 567-68; *see also In re Envotech, L.P.,* 6 E.A.D. 260, 284 (EAB 1996) ("absent compelling circumstances, the Board will defer to a Region's determination of issues that depend heavily upon the Region's technical expertise and experience").

4. The Region Appropriately Moved Forward Now to Reduce the District's Nitrogen Loadings.

While acknowledging that the Region need not await a TMDL to issue water quality-based effluent limitations (*Dist. Pet.* at 14), the District repeatedly asserts that the Region must

[12] Because of this great disparity in discharge flow and loadings, the District's nitrogen loadings to the Seekonk River are still several times more than those of Woonsocket even if Woonsocket were to be given no benefit of attenuation and the District were still afforded an attenuation rate of 13%. For instance, in its deliberations, the Region evaluated the relative nitrogen loadings of major point source discharges to the Seekonk under different flow scenarios. *See Seekonk Reach Loads* (Ex. 27). The discharge flow scenarios included average monthly flow and 90% of permitted design flow both with and without attenuation. *Id.* Comparison of the relative loads of the District (with the benefit of attenuation) and Woonsocket (with no attenuation) shows that the District's loads are still several times more than those of Woonsocket. *Compare* District load at 95-96 flow with attenuation of 712 lbs/day *with* Woonsocket load at 95-96 flow with no attenuation of 184 lbs/day. *Id.*

do just that. *Id.* at 15 (Region cannot use a "lesser process" than a TMDL to develop numeric effluent limits); *id.* ("the process for establishing appropriate effluent limitations is the same as that needed to develop TMDLs"); *id.* at 25 ("RIDEM should complete the federally-required TMDL before Region 1 imposes the proposed total nitrogen permit modification"). The District's preference is that the Region delay reissuance of the permit pending completion of a mathematical model, TMDL or equivalently comprehensive study (such as the eco-risk/integrated watershed management assessment suggested by EPA's Science Advisory Board). But the Region clearly explained its reasoning for moving forward at this time based on the current record, citing:

- the "severe existing nitrogen-driven cultural eutrophication in the receiving waters," including dramatic decline in dissolved oxygen levels, significant fish kills and loss of historic eelgrass habitat; *RTC* at 29, 96;
- "the tendency for nitrogen to not only exacerbate existing water quality impairments but to persist in the environment in a way that contributes to future water quality problems," which counseled in favor of limiting the pollutant expeditiously; *id.* at 30;
- the extreme difficulty and uncertainty associated with developing a dynamic model; *id.* at 29, 95;
- the scientific consensus that wastewater discharges (as opposed to non-point sources) are by far the dominant source of nitrogen; *id.* at 24, 73;
- the fact that the District's facility is one of the largest sources of nitrogen to Narragansett Bay and represents well over half of the nitrogen load discharged to the Blackstone River from municipal treatment facilities; *id.* at 27, 32; and
- the fact that the facility was operating under an expired permit that had been administratively extended for several years. *Id.* at 30.

The Region also explained that its approach was entirely consistent with applicable regulations. Neither the CWA nor EPA regulations require that a TMDL, or its equivalent, be completed before a water quality-based limit may be included in an NPDES permit. *See RTC* at

70-72. Rather, water quality-based effluent limitations in NPDES permits must be "consistent with the assumptions and requirements of any *available* [emphasis added] wasteload allocation." 40 C.F.R. § 122.44(d)(1)(vii)(B). *Id.* Thus, an approved TMDL is not a precondition to the issuance of an NPDES permit for discharges to an impaired waterway. *Id.* This interpretation is consistent with the preamble to 40 C.F.R. § 122.44(d)(1), which expressly outlines the relationship between subsections 122.44(d)(1)(vi) (*i.e.*, procedures for implementing narrative criteria), and (d)(1)(vii):

> The final point about paragraph (vi) is that in the majority of cases where paragraph (vi) applies waste load allocations and total maximum daily loads will not be available for the pollutant of concern. Nonetheless, any effluent limit derived under paragraph (vi) must satisfy the requirements of paragraph (vii). Paragraph (vii) requires that all water quality-based effluent limitations comply with "appropriate water quality standards," and be consistent with "available" waste load allocations. Thus for the purposes of complying with paragraph (vii), where a wasteload allocation is unavailable, effluent limits derived under paragraph (vi) must comply with narrative water quality criteria and other applicable water quality standards.

See 54 Fed. Reg. 23,868, 23,876 (June 2, 1989). If a TMDL is completed and approved by EPA, the effluent limitation in any subsequently issued NPDES permit must be consistent with the wasteload allocation assigned to the District's facility. In the meantime, relevant regulations *require* that EPA include effluent limits for any pollutants that EPA determines "are or may be discharged at a level which will cause, have the *reasonable potential* [emphasis added] 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).

In deciding to rely on the MERL experiments as a basis for the Permit limit rather than await the completion of a mathematical model or TMDL at some future date, the Region considered the fact that for the past decade or more RIDEM had expended significant resources

in an attempt to simulate upper Narragansett Bay through the use of mathematical models but was forced to conclude that "the system is too complicated to simulate with available mathematical models." *See RTC* at 96 (Ex. 2). In its Response to Comments, the Region specifically referred to the discussion in the *2005 RIDEM Nutrient Loading Plan* at 3, in which Rhode Island concluded that:

> Water quality sampling and modeling studies, for the most part commissioned by the Narragansett Bay Project between 1985-1990, indicated that additional data collection and a more detailed computer model was necessary to predict the reduction in nutrients necessary to meet water quality standards. Since 1995, DEM has conducted additional fieldwork, hired a consultant and worked with a technical advisory committee (TAC), consisting primarily of scientists and engineers representing, academic, municipal, state and federal organizations, to calibrate a model and develop a water quality restoration plan, or TMDL, for the Providence and Seekonk Rivers. It was recently determined that the hydrodynamic model formulation could not adequately simulate conditions due to the relatively severe changes in the bathymetry in the Providence River.

Moreover, as described in the RIDEM 2004 Evaluation at 1 (Ex. 13):

> It has recently been determined that due to problems encountered when modeling the interaction between deep channel and shallow flanks of these water bodies, the mass transport component of the system cannot be successfully calibrated and validated. This problem has been encountered in other estuaries and has not been resolved with state of the art numerical solution techniques. Because water doesn't mix in the model as it does in the rivers, we are unable to simulate the chemical and biological behavior of the system in the water quality phase of the modeling effort.

Completely ignoring the Region's articulation of its technical approach and explanations of the applicable regulatory framework, the District repeats verbatim assertions from its comments that additional research is needed on a variety of issues before the Region proceeds with nitrogen effluent limitations. According to the District, the following research needs underscore the need for a TMDL: the need to evaluate nitrogen loadings from non-point sources (*see Dist. Pet.* at 24-25); the need to collect 3-5 years of in-stream data to better evaluate causal

and effect variables (*id.* at 26); the need to determine the ramifications of a study indicating that nitrogen levels in the Bay have held relatively constant over time (*id.* at 25); and a general need to improve understanding of the site-specific factors that determine the sensitivity of estuaries to nutrients. *Id.* at 25-26. Yet with each of these calls for more refined research, the District does nothing more than cut and paste from its comments, utterly failing to explain how the Region's evaluation and response to these arguments was lacking. For instance, in its Petition, the District contends the Region should have collected 3-5 years of site-specific data (as recommended in a "guidance" by Benjamin R. Parkhurst) in order to better link the relationship between causal (nutrient) and effect (chlorophyll *a* and DO) variables. *See Dist. Pet.* at 26. Other than re-ordering a few sentences, the same language appeared in the District's comments offered during the public comment period on the draft permit. *See Comment #F47(a)(1), RTC* at 93. In its Petition, the District doesn't even acknowledge the Region's response, which explained the applicable statutory and regulatory provisions related to establishment of water-quality based effluent limitations based on narrative nutrient criteria, provided an overview of the data, studies and other information that the Region considered in establishment of the effluent limitation for nitrogen, and detailed the Region's reasons for not relying on the study offered by the District. *See Response #47(a)(1), RTC* at 93-95. Because the District has merely repeated its comments below, and has not demonstrated any error in the Region's explanation for its technical approach, the Board should deny review. *See Phelps Dodge*, 10 E.A.D. at 507-09, 518-19 (denying review where petitioner merely repeated comments without attempting to rebut permit issuer's responses to those comments).

Language in the District's Petition and its earlier comments is also virtually identical with regard to its claim that the Region should have conducted more evaluation of non-point

source nitrogen loadings. *Compare Dist. Pet.* at 24-26 *with Comment #F40, RTC* at 72. And, in its Petition, the District utterly ignores the Region's explanation that multiple studies have demonstrated that point sources are the dominant source of nitrogen and must be limited in order to ensure attainment of standards. *RTC* at 73.

This pattern repeats with the District's claim that a TMDL is necessary in light of a study by *Nixon et al.* indicating that total nitrogen loading has held relatively steady for the past ten years. *Compare Dist. Pet.* at 25 *with Comment#F47(a)(3)(v), RTC* at 97-98. The District again fails to acknowledge the Region's response, which highlighted limitations of the study and also noted that "[r]egardless of whether loadings have been consistent over time, the nitrogen loadings are excessive and must be reduced." *Id.* The District again repeats its comments verbatim in its call for site-specific studies evaluating such impacts as light and residence time. *Compare Dist. Pet.* at 25-26 *with Comment #F47(a)(3)(vi), RTC* at 98. Similarly, the District pays no mind to the Region's responses, which detailed the work that had been done as part of RIDEM's modeling efforts to reflect the dynamic physical conditions of the systems and the Region's explanations for proceeding with a seasonal reduction of nitrogen without further site-specific studies. *RTC* at 98.

The Region appreciates that the District holds a different view as to whether a nitrogen limit can be imposed in this matter absent a TMDL. The District, however, cannot sustain its burden of demonstrating clear error on the Region's part by simply ignoring the Region's rationale and responses. Clear error or a reviewable exercise of discretion is not established simply because petitioners present an alternate view. *Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. at 667. Instead, when a petitioner challenges the Region's technical judgment, "petitioners must provide compelling arguments as to why the Region's technical judgments or

its previous explanations of those judgments are clearly erroneous or worthy of discretionary review." *Id.* at 668 (*citing In re Ash Grove Cement Co.,* 7 E.A.D. 387, 404 (EAB 1997)). The District completely failed to do so in this case and, therefore, review should be denied.

The District also ignores the Region's responses in its repeated claim that the decision to proceed contravenes recommendations of EPA's Science Advisory Board ("SAB"). *See Dist. Pet.* at 31-32. As the Region explained in its Response to Comments, it requested the SAB to review a prior study called the Blackstone River Initiative ("BRI"). The Region established the BRI, in cooperation with MassDEP, RIDEM and the University of Rhode Island, to promote interstate assessment and cleanup of the Blackstone River. The project included an intensive environmental sampling and assessment program under both dry and wet weather conditions, as well as development of a wasteload allocation based on a dissolved oxygen model. *RTC* at 78. With regard to the SAB review, the Region explained:

> Nowhere in its review did the SAB indicate that the Region should suspend issuance of NPDES permits pending completion of comprehensive studies of the watershed including non-point source controls, removal of contaminated sediments and dam removal. The SAB's recommendations for further study reflect an attempt to foster Regional adoption of integrated watershed management assessment approaches. More specifically, the SAB recommended that the Region undertake a second phase effort that would include: incorporation of the ecological risk assessment framework, limited additional monitoring, inclusion of biological information and the use of additional existing models for watershed-level analysis. We disagree that this permit issuance should await such TMDL-like efforts.

RTC at 79. The more refined studies and modeling recommended by the SAB may prove useful in consideration of future actions that may be necessary to fully restore water quality and designated uses. It is simply not credible, however, that the SAB would recommend that the

Region hold in abeyance necessary point source reductions of nutrient loadings in the face of fish kills and devastating loss of aquatic habitat.

The Region's decision to move forward now with a nitrogen effluent limitation was a reasoned response to the information available in the record. Indeed, the District does not directly contest the validity of any of the Region's rationales for moving forward with a nitrogen limitation at this time. The District's proposed course – to await a completion of a dynamic model or a comprehensive study of all pollutant sources while pollutant loadings from its facility continue unabated – is unreasonable and contrary to policy objectives of the CWA to make reasonable further progress toward eliminating pollution to the Nation's waters. *See Natural Resources Defense Council,* 568 F.2d at 1380. *See also City of Waukesha v. EPA*, 320 F.3d 228, 252 (D.C. Cir. 2003) (citing *Chlorine Chemistry Council v. EPA*, 206 F.3d 1286, 1290-1291 (D.C. Cir. 2000) (arbitrary and capricious for EPA to delay decision for which adequate basis exists just because new science may emerge that contradicts the present result, as that could always provide an excuse for delay and inaction). As the District fails to present any sufficiently specific or compelling evidence or argument that would cast doubt on the reasonableness of the Region's technical evaluations and conclusions on this point, review should be denied. *See Ash Grove,* 7 E.A.D. at 403-13.

5. The *Kester Model* is a Red Herring: No One Has Presented a Dynamic Model that the Region Could Have Used to Set the Nitrogen Limit.

The District contends that the Region's citation to the results of a mathematical model showing BOD impacts from direct dischargers into upper Narragansett Bay – referred to by the District as the "Kester Model" – contradicts its position that a mathematical model showing nitrogen impacts was unavailable. *See Dist. Pet.* at 27. The District suggests that the Region's

reference to the Kester Model is a "post-hoc rationalization" of the nitrogen limits and that the District has not been afforded the opportunity to review how EPA used the Kester Model to set the nitrogen limit. *Id.* at 27. The District's concerns are illusory, and the Board should deny review of this issue.

The Region cited *Modeling, Measurements, and Satellite Remote Sensing of Biologically Active Constituents in Coastal Waters*, D.R. Kester et al., *Marine Chemistry* 53 (1996) 131-145 (AR 150) in response to a comment from the District and for the discrete and narrow proposition that "Biochemical Oxygen Demand (BOD) from direct discharges to Upper Narragansett Bay has been shown to have minimal impact on dissolved oxygen levels." *RTC* at 52. During the public comment period, the District's consultant claimed that the Region had failed to sufficiently consider oxygen demanding sources such as waste water treatment discharges and combined sewer overflows. *See Comment #F18B, RTC* at 51. While this modeling effort sheds some light on the role of BOD, the District cites no evidence indicating the model could have been used by the Region to develop the nitrogen limit. To the contrary, the record clearly reflects that mathematical modeling is in all likelihood incapable of generating scientifically defensible nitrogen limits for the District's facility at this time. *Id.* at 96 (detailing RIDEM's difficulties and conclusions regarding use of successfully simulating the system with available mathematical models.) There is no indication that the *Kester Model*, which pre-dates RIDEM's conclusions by more than a decade, adequately addresses, much less resolves, the obstacles raised in Rhode Island's much later modeling efforts. Under these circumstances, the inferences drawn by the Region from the MERL tank experiments were reasonable and rational in light of the record and should be upheld. *Ethyl Corp v. EPA*, 541 F.2d 1, 28 (D.C. Cir. 1976) (*en banc*) ("Where a statute is precautionary in nature, the evidence difficult to come by, uncertain, or

conflicting because it is on the frontiers of scientific knowledge, the regulations designed to protect the public health, and the decision that of an expert administrator, we will not demand rigorous step-by-step proof of cause and effect.").

6. MassDEP's and the District's Requests that the Nitrogen Limit be Expressed Solely in Terms of Mass (and not Concentration) are an Effort to Relax the Limit.

MassDEP and the District contend that the Region inappropriately expressed the effluent limitation for total nitrogen in terms of concentration. *See MassDEP Pet.* at 7. According to MassDEP, the Region's approach contravenes applicable permitting regulations at 40 C.F.R. § 122.45(f)(1), as well as undermines policy goals such as promoting water conservation and encouraging municipal systems to address excessive inflow/infiltration. *Id.* at 10-11. The District makes the more narrow argument that the Region should express the limit in mass because one of the underlying RIDEM studies examines mass loadings. *Dist. Pet.* at 23. MassDEP's claim is wrapped in the guise of environmental protectiveness, but in reality would undermine an attribute of the limit that the Region expressly determined would be critical to ensuring compliance with Rhode Island's water quality standards. Further, expression of the permit limits comports with applicable regulations and policy concerns. Accordingly, review should be denied.

In the permit, the Region included an effluent limitation for total nitrogen expressed as a concentration (i.e., 5 mg/l), as well as an enforceable flow limit of 56 million gallons per day. *See Permit* at Part I.A.1 (Ex. 3; AR 1). The Region determined, however, that a concentration limit would be more stringent than the mass limit and was necessary to sufficiently reduce loadings in order to ensure compliance with Rhode Island's water quality standards. *See RTC* at 17. The Region explained that because the District's annual average flows have been historically

less than its permitted design flow, a concentration limit was needed in order to achieve the targeted reduction of nitrogen loads to the Seekonk River, the area of greatest impairment in the upper Bay. *Id.* The Region explained that "current total nitrogen loads to the Seekonk River are 24 times higher than the total nitrogen load to all of Narragansett Bay." *Id.* Expression of the limitations solely as mass using facility design flows would authorize loadings of "approximately 10 times higher than the Bay-wide loads per unit area," while including a concentration limit in the permit would result in loadings being reduced in this area to approximately 6.5 times the Bay-wide loadings. *Id.* Accordingly, in light of the difference between the District's actual and design flows, the Region determined that a concentration limit would be more stringent and was necessary to meet water quality standards.

In its Petition, MassDEP makes the point that, in general, a concentration limit can be more or less stringent than a mass limit depending on a facility's flow: "While a mass limitation restricts a wastewater treatment plant to a finite amount of nitrogen discharged over a period of time, a concentration limit could result in either a lower or *higher* amount of nitrogen being discharged over the same period of time, depending on the volume of the flows discharged." *See MassDEP Pet.* at 9 (emphasis in original). The apparent suggestion is that a concentration limit in this case is not sufficiently protective, but this rationale fails to hold. First, the permit effectively contains a limitation on mass as the Region has limits on both concentration and design flow, a fact that MassDEP ignores. Second, if it were MassDEP's purpose to strengthen the permit, the imposition of mass *and* concentration based limits should logically follow. Instead, MassDEP requests removal of the concentration limit and imposition of only a mass limit. The results of such a decision are not hypothetical, as MassDEP intimates, but are entirely predictable and *will* result in a higher amount of nitrogen being discharged to the receiving

waters based on the volume of flow currently being discharged. Even the District stops short of MassDEP's position and concedes that, under the facts of this case, "the Region is correct in saying that there will be a lower loading at current conditions using a concentration limit than there would be at a design flow of 56 million gallons per day ...." *Dist. Pet.* at n.5.

MassDEP also ignores that the applicable regulations allow the permit writer to include, at his or her discretion, concentration limits in a permit. *See* 40 C.F.R. § 122.45(f)(2). The *NPDES Permit Writers Manual* indicates that one such reason is where a concentration limit will more effectively ensure loadings are reduced during periods of lower effluent flow. *See NPDES Permit Writers' Manual* at 67 (Ex. 28; AR 93). This is such a case. The Region appropriately exercised its discretion to include concentration limits in the District's permit to ensure loadings are reduced under actual flow conditions, which is lower than design flow.[13]

In support of its argument that the permit should not include any concentration limit, MassDEP claims the limit will foster dilution to meet the limit. *MassDEP Pet.* at 11. MassDEP also suggests the concentration limit will provide a disincentive for the District to address excessive inflow/infiltration in the system or to promote water conservation. *Id.* at 11. With regard to MassDEP's concerns about dilution, the Region does not find credible that a regional treatment facility of District's large size would undertake to somehow dilute its effluent. It would take millions of gallons of water to dilute the very large volume of effluent the District handles every day. Further, the increased energy and chemical costs associated with treating excess water should provide incentive for the District and its member communities to promote conservation practices. With regard to inflow/infiltration, the Region has included provisions in

[13] Annual average flows at the facility have been as follows: 34 mgd in 2002; 41 mgd in 2003; 36 mgd in 2004; 43 mgd in 2005; 35 mgd in 2006 and 30 mgd in 2007. *RTC* at n.3. As the Region noted in its responses, while there is some variation, due in part to wet weather flows, there is no upward trend. *Id.*

the permit specifically intended to make additional progress on reducing excessive levels of inflow/infiltration. More specifically, the District has long contended that it does not have regulatory authority to require the communities it serves to undertake the operation and maintenance of their respective collection systems necessary to reduce the unacceptably high levels of inflow/infiltration. *See, e.g., Dist. Pet.* at 61-62. The Region, accordingly, has included provisions in the permit that makes these communities directly responsible for reducing inflow/infiltration in their respective systems. *See Permit* at 1 and Section E (Ex. 3). For all of these reasons, the Region's inclusion of a concentration limit in the permit will not encourage dilution or impede water conservation or reduction of inflow/infiltration.

That MassDEP's underlying concern relates to the stringency of the nitrogen limit rather than issues of water conservation and inflow/infiltration is manifest in that MassDEP does not raise the same concerns with regard to the phosphorus limit. That limit similarly is based on state narrative criteria (albeit Massachusetts' criteria rather than Rhode Island's). And, the permit also includes a limitation for phosphorus expressed in terms of concentration.

Finally, the District raises a new argument on appeal: the Region is obliged to express the limit in terms mass because the *2004 RIDEM Load Evaluation and Reduction Study* expresses its analysis in terms of reductions of mass loadings. *See Dist. Pet.* at 23. This argument was not raised in any of the comments to EPA and, therefore, is not preserved for review by the Board. Further, the District offers no rationale as to why mass loadings cannot be expressed in terms of concentration. Indeed, RIDEM itself has included concentration-based limits in permits to other facilities also based on the same study.

Neither MassDEP nor the District has raised issues calling into question the propriety of the Region's decision to express the nitrogen limitation in terms of concentration. The Board should decline review on this issue.

7. The Region's Decision Not to Establish the Nitrogen Limit as Low as Current Levels of Technology at this Time was Consistent with the CWA and Regulations.

In its appeal to the Board, the Conservation Law Foundation (CLF) takes an opposite tack from the District or MassDEP. In CLF's view, not only was the Region compelled to act now, but it should have established the nitrogen limit at 3.0 mg/l, which represents current limits of treatment technology. CLF bases its argument on the fact that the MERL studies indicated that limits corresponding to reductions of nitrogen loadings to the 2-4X scenario would be necessary to meet standards. *CLF Pet.* at 9. While acknowledging that the Region chose a different limit in light of uncertainties in extrapolating the results of the MERL model to the natural ecosystem, CLF argues the Region erred in affording any weight to these uncertainties. *CLF Pet.* at 11-12. The argument ignores, however, that the MERL model did 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. The record reflects that the Region carefully weighed these uncertainties based on site-specific data and other studies, and exercised its technical expertise and scientific judgment to translate the laboratory results of the MERL experiments into an effluent limitation to control loadings to the natural setting. Furthermore, the Region also took into account that, in the event it has erred in navigating these very complex and technical issues, a continuous monitoring program is in place to evaluate whether the limits do in fact ensure compliance with standards.

In support of its claim, CLF relies principally on the Board's decision in *City of Marlborough, Massachusetts, Easterly, Wastewater Treatment Facility,* 12 E.A.D. 235 (2005). In that case, the Board remanded to the Region its decision to impose a 0.1 mg/l phosphorus limit without imposing additional control measures to account for phosphorus in the sediment of the affected receiving waters. *Id.* at 248-252. The record underlying the Board's decision in *Marlborough*, however, is completely distinguishable from that here. In *Marlborough*, the Region specifically found that "a significant amount of the phosphorus discharged by the [Facility] has accumulated in the sediment" and that this "accumulated phosphorus can be released from the sediment during the summer growing season..." *Id.* at 249. The Region concluded that, absent efforts to reduce phosphorus in the sediment, it "***may be possible*** to meet the numeric and narrative criteria and attain [designated] uses if the discharge is limited in the summer months to 0.1 mg/l," *id.* at 249, but that "***the potential to meet water quality standards*** with a seasonal limits of 0.1 mg/l ... will be enhanced by taking steps to reduce sediment phosphorus recycling." *Id.* at 248. The Board held that this conditional language, together with the absence in the Permit of any provisions requiring study or other action to address the potential for releases of phosphorus from the sediment over the term of the Permit, made it "unclear from the record before us whether this Permit will ensure compliance with water quality standards." *Id.* at 251.

CLF's attempt to equate the records in these two proceedings is misplaced. *Marlborough* reflects the Region's analysis of and conclusions drawn from a study of phosphorus sediment recycling conducted in the natural setting. Based on the study, the Region concluded that, absent action to reduce the phosphorus recycling, it ***may be possible*** that water quality standards would be met. Here, the Region has acknowledged that, viewed in isolation, the MERL tank

experiments yield the conclusion that reductions of nitrogen loading to the 2 - 4 X scenario (i.e., to 3.0 mg/l) are needed to restore the health of the upper Bay. Yet, the record also shows that the Region was acutely aware that the tank experiments cannot precisely mirror the natural ecosystem. When assessing the MERL experiments and RIDEM studies for the purposes of establishing a nitrogen effluent limit, the Region did not adopt the most conservative option available to it (which CLF urges), but sought to rationally account for differences and similarities between the laboratory and the real world. *RTC* at 47-48 (Ex. 2). The Region also sought to anchor its conclusions to other indicia of reasonableness, such as the fact that Rhode Island, when assigning permit limits to facilities within its own borders in accordance with its own water quality standards, did not conclude more stringent limits would be necessary or appropriate. *Id.* at 50.[14] In addition, the Region was aware that Rhode Island has established an extensive and ongoing monitoring network capable of continuous measurements of water quality in order to provide the data necessary to evaluate compliance with water quality standards upon implementation of the recommended nitrogen reductions. *Id. See also* Ex. 22 (AR 180) (description of Narragansett Bay fixed-site monitoring network). This information will be available to verify the Region's conclusions regarding the adequacy of the limit. *Id.*

Other than generally asserting the Region arrived at the wrong conclusion in evaluating the uncertainties, CLF does not squarely confront the Region's explanation for its decision. The Region appreciates that CLF holds a different opinion as to the relative weight of the uncertainties in the MERL studies, but clear error or a reviewable exercise of discretion is not established simply because petitioners present an alternative theory regarding a technical matter.

[14] As is detailed above, *supra* n.7, Woonsocket recently settled an appeal of the 5.0 mg/l limit that included an agreement to meet at 3.0 mg/l limit together with a construction schedule through March 31, 2014.

Town of Ashland Wastewater Treatment Facility, 9 E.A.D. at 667. Instead, when petitioners challenge the Region's technical judgment, "petitioners must provide compelling arguments as to why the Region's technical judgments or its previous explanations of those judgments are clearly erroneous or worthy of discretionary review." *Id.* at 668 (*citing Ash Grove*, 7 E.A.D. at 404). CLF did not do so in this case and review should therefore be denied. *See also Steel Dynamics, Inc.*, 9 E.A.D. at 744.

CLF also argues that the Region attempted to minimize RIDEM's 2004 analysis as "only 'suggesting' that a nitrogen limit based on the limit of technology may be necessary." *CLF Pet.* at 11. The Region was aware and frankly acknowledged in the record that the MERL tank experiments showed that limits corresponding to a nitrogen loading scenario of between 2X and 4X may be necessary to achieve water quality standards. *RTC* at 49. The Region, however, also explained that the uncertainties in applying the model to the natural setting was the major factor in its not choosing to impose a limit based on this loading. *Id.* In its 2004 study, RIDEM also acknowledged uncertainty in the MERL model and came to a similar conclusion as to nitrogen loading reductions to be imposed in RIPDES permits. *2004 RIDEM Load Reduction Evaluation* at 27 (Ex. 13). Accordingly, the Region believes it was accurate to describe RIDEM's interpretation of the MERL studies in its 2004 study as "suggesting" that a nitrogen limit based on the limit of technology may ultimately be necessary.

CLF also argues that a statement by the Region in the Response to Comments that "water quality standards could not be met with a limit less than 5 mg/l" is not the assurance required by the CWA that the limit will meet such standards. *CLF Pet.* at 12. CLF's apparent suggestion is that this language is akin to the Region's statements in the *Marlborough* record that it "may be possible" to achieve standards. CLF reads too much into the Region's choice of words. The

Region used this type of phrasing in the context of responding to comments that the limits were too stringent. For instance, in response to MassDEP's comment that the limits should be expressed only in mass, EPA explained that a concentration limit was necessary to ensure the limits would be met even under lower flow conditions: "....EPA believes that the limit cannot be any less stringent than 5.0 mg/l under all flow conditions and ensure that water quality standards will be met." *RTC* at 17. The Region used similar language in response to comments from the District arguing that no nitrogen limits should be imposed in light of uncertainties in the model. The Region frankly acknowledged that "[u]ncertainties in extrapolating the model to the natural environment were the major factor in our decision not to impose more stringent nitrogen load reductions at this time," *RTC* at 51, and cautioned that, in the event the Region erred in navigating these scientific complexities, limits might be made more stringent: "The uncertainties in the physical model may ultimately mean that additional nitrogen reductions are needed, but there is no realistic likelihood that water quality standards could be met with a less stringent nitrogen limit than 5.0 mg/l." *RTC* at 30.

Furthermore, CLF does not highlight other locations in the record where the Region's choice of words was much more emphatic. In responding to CLF's comment that the limits should be more stringent, for instance, the Region stated: "Consequently, we believe that the significant reductions required by the permit, as well as other permits in the watershed, are consistent with achieving water quality standards. Further limitations (including offsets) are not warranted at this time." In response to a comment from the District regarding attenuation calculations, the Region stated: "Accordingly, EPA determined that a limit of 5.0 mg/l total nitrogen for UBWPAD's [the District's] discharge is necessary in order to achieve water quality standards."). *Id.* at 54. *See also RTC* at 19 ("With regard to nitrogen, the limits on total nitrogen

are necessary to ensure compliance with Rhode Island Water Quality Standards...."); *id.* at 46 ("While scientific study of attenuation is ongoing, EPA must use its judgment to establish nutrient reductions for this discharge necessary to ensure attainment of water quality standards based on the information available now."); *id.* at 79 ("As is detailed in the Fact Sheet and this Response to Comments, the total nitrogen limit in this permit is necessary to ensure compliance with Rhode Island's water quality standards."); *id.* at 81 ("...EPA relied on Rhode Island's Water Quality Standards, consistent with 40 CFR 122.44(d), to impose [a] nitrogen limit[] necessary to ensure attainment of Rhode Island's water quality standards.")

Accordingly, CLF has failed to demonstrate clear error or abuse of discretion in the Region's approach to development of the nitrogen effluent limitation. Review should be denied.

8. The Region Made No Procedural or Constitutional Errors in Establishment of the Nitrogen Limit Warranting Review.

Peppered throughout the District's petition are claims that imposition of a nitrogen limit based on the water quality standards of a downstream state is procedurally and constitutionally flawed. Underlying many of these arguments is a common thread – the District's belief that the Rhode Island facilities have gotten a better deal. As is detailed below, the District is not being treated inequitably and the Region is committed to working with both MassDEP and RIDEM to ensure this continues to be the case. Furthermore, the Region's technical analysis and conclusions are grounded in requirements of the CWA and regulations, and as the Region has faithfully adhered to all procedural and substantive requirements governing this permitting proceeding, review on these issues should be denied.

The District's claims of constitutional and procedural error include the following:

- "the imposition of Rhode Island requirements on Massachusetts point source discharges, without the CWA-required demonstration that the point source's discharge is

causing or contributing to a violation of those out-of-state standards/requirements" violates Section 510 of the CWA, the Tenth Amendment and invades Massachusetts' sovereignty; *Dist. Pet.* at n.14;

- EPA has required Massachusetts facilities to meet more stringent limits than Rhode Island facilities, thereby violating the Commerce Clause; *id.* at 66;

- RIDEM has compounded this inequity through consent agreements with Rhode Island facilities that defer achievement of limits far into the future, if ever; *id.* at 13-14;

- the District and its ratepayers were denied due process in that they did not participate in the Rhode Island rulemaking that resulted in the narrative water quality standards at issue; *id.* at 9;

- the District was denied meaningful participation in development of the permit limit since the Region did not engage in the type of notice and comment rulemaking required when EPA adopts water quality standards; *id.* at 16, 17;

- the Region violated due process by not requiring Rhode Island to identify the methodology for applying its narrative nutrient criteria, as is required in EPA's regulations related to toxics control; *id.* at 17-19; and

- the Region engaged in prohibited *ex parte* communications with Rhode Island in contravention of requirements of the Administrative Procedure Act. *Id.* at 7-9.

As a general matter, to the extent that the District raises challenges to the merits or constitutionality of the CWA and/or its implementing regulations, such challenges are not appropriately raised in these administrative proceedings. *See, e.g., In re: City of Port St. Joe and Florida Coast Paper Co.*, 7 EAD 275, 317 at n. 58 (July 30, 1997). *See also RTC* at 99-100, 101. On this basis alone, the Board should deny review. As is detailed below, the District also fails to substantiate any of its claims of constitutional or procedural error on the merits.

a. The Nitrogen Limit Does Not Violate Section 510 of the CWA, The 10th Amendment or Otherwise Unlawfully Intrude on Massachusetts' Sovereignty.

The District's contention that imposition of the nitrogen limit violates Section 510 of the CWA, the 10th Amendment of the U.S. Constitution and is an invasion of Massachusetts

sovereignty is addressed in a single footnote of the petition. *See Dist. Pet.* at n. 14. Its theory is that the Region triggered these statutory and constitutional errors by failing to demonstrate that the District's discharge "is causing or contributing to a violation of [Rhode Island's] out-of-state standards/requirements" before using those standards to develop a limit in the District's permit. *Id.* The legal basis of these claims is obscure.

Furthermore, with regard to its general objection that the Region erred in its "reasonable potential" analysis, the District fails to faithfully track the relevant regulatory provisions. Permit writers are required to determine whether a given point source discharge "causes, ***has the reasonable potential to cause***, or contributes to" an exceedance of the narrative or numeric criteria set forth in state water quality standards. *See* 40 C.F.R. §122.44(d)(1)(ii) (emphasis added). The Region has amply made such a demonstration. *See infra Reasonable Potential Analysis* at Section I.B.3. The District nowhere contests the facts and data underlying the Region's analysis, including, for instance, that its facility is a significant contributor of nitrogen to the most highly enriched estuarine waters in Rhode Island and that nitrogen-related impairments have included low dissolved oxygen (so severe that it causes occasional fish kills) and dramatic loss of eel grass (which provides important habitat to may aquatic species.) *RTC* at 27 (Ex. 2).

The District makes no effort to explain exactly how the Region's "reasonable potential analysis" falls short of the framework in the NPDES regulations, much less invades Massachusetts' sovereignty, violates Section 510 of the CWA or contravenes the Tenth Amendment. The claims lack requisite specificity necessary for a meaningful response. *See In re Puerto Rico Electric Power Authority,* 6 E.A.D. 253, 255 (EAB 1995); *In re Genesee Power Station L.P.,* 4 E.A.D. 832, 867-868 (EAB 1993). Moreover, even MassDEP does not argue

infringement of its sovereignty in its challenge to the nitrogen limit. The Board should decline review.

b. The District is not Being Treated Inequitably in Violation of the Commerce Clause or Otherwise.

The District's next constitutional challenge is that, by imposing a nitrogen limit of 5 mg/l, the Region has shifted a disproportionate share of the cost of addressing impairments in Narragansett Bay from Rhode Island facilities to Massachusetts facilities in violation of the Commerce Clause. *See Dist. Pet.* at 66. As is demonstrated in the record, however, no such disparate treatment exists. Limits have not been assigned to facilities based on whether they are located in Rhode Island or Massachusetts. Rather, the salient factors have involved consideration of facilities' relative loadings (including the attenuation of the loadings) and the location of the discharge where it enters the Bay. *RTC* at 99. Facilities in both Rhode Island and Massachusetts with relatively larger design flows and loadings and that also discharges into areas of the river system experiencing the most significant impairment have received nitrogen limits of 5.0 mg/l. Facilities with relatively smaller flows and loadings have received limits of 8.0 mg/l. *Id.*

The District does not substantively respond to the Region's view on this point, but instead essentially repeats verbatim its comments on the Draft Permit regarding the inequitable burdens being placed upon it. *Compare Dist. Pet.* at 66 *with Comment #F47(b)(iii), RTC* at 100. The District further repeats claims that the Region has not fairly accounted for attenuation. *Compare Dist. Pet.* at 65 with *Comment #F47(b)(iii), RTC* at 100. As detailed above, any such disparate treatment is illusory in light of the District's size and significance of its loadings. The next largest source of nitrogen loadings to the Blackstone River is the facility in Woonsocket,

Rhode Island. In its analysis, RIDEM concluded that, after taking into account attenuation, the District and Woonsocket together represent approximately 83% of the nitrogen load from wastewater treatment facilities delivered to the mouth of the River. *See RIPDES Permit Modification Response Comments* at 12 (Ex. 15; AR 192). Of this amount, the District represents about 64% of the load compared to Woonsocket's 19%. *Supra* Section II.A.3.

The District's request that EPA assign it a more relaxed limit (in the range of 8.0 to 10.0 mg/l) or no limit at all while downstream Rhode Island facilities are subject to more stringent limits turns the Commerce Clause on its head: it is the District who seeks preferential treatment over its downstream neighbors. With effluent limitations for the District and Woonsocket both set at 5.0 mg/l, the District is already authorized to discharge loadings of nitrogen several times higher than those of the much smaller Woonsocket facility. *Supra* n.17. And, as noted above, Woonsocket has voluntarily agreed to meet a limit of 3.0 mg/l upon RIDEM's agreement to a schedule allowing upgrades to meet that level of treatment. Establishing the District's limit at 8.0 mg/l or 10.0 mg/l would only exascerbate the disparity of loading contributions from these two facilities. Moreover, such an approach would certainly not be in keeping with the goal, as stated by the Supreme Court in *Arkansas v. Oklahoma*, 503 U.S. 91, 110 (1992) of creating a "uniform system of interstate pollution regulation." The clearest path to that goal is the reasonable application of applicable water quality standards of affected States. This is in keeping with the CWA. According to CWA §101(a), the Act's broad purpose is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." *See* CWA §101(a), 33 U.S.C. § 1251(a). "The application of state water quality standards in the interstate context is wholly consistent with [this purpose]." *Arkansas,* 503 U.S. at 105.

The District similarly does not substantiate that the Region has imposed a limit on the District that Rhode Island has postponed for its own in-state dischargers through consent agreements. *Dist. Pet.* at 13-14. According to the District, while "it might appear that most discharges in Rhode Island have accepted permit limits comparable to those in the District's permit, careful inspection suggests that it will be many years before the limits will be achieved, if ever." *Id.* at 13. Although the District appends to its petition three consent agreements related to Rhode Island permits (Woonsocket, NBC Bucklin Point and NBC Fields Point), the District references no specific provisions of the agreements in support of its claim.[15] The reason the District has failed to cite any provisions of the agreements is manifest: the consent agreements in fact require the Rhode Island facilities to achieve the nitrogen limits in their permits. Each agreement contains the following provision: "The Respondent shall attain compliance with the final effluent limits for Total Nitrogen (May-October) as specified in the Permit Modification [5 mg/l for the NBC facilities and 3.0 mg/l for Woonsocket]," and sets forth a compliance schedule for achieving such a limit, on penalty of $1,000 dollars "for each day and every day it remains in violation of the schedule." *See NBC Fields Point Consent Agreement* at ¶¶7, 11 (AR 191); *NBC Bucklin Point Consent Agreement* at ¶¶ 7, 11 (AR 189); *Woonsocket Consent Agreement* at ¶¶ 7, 11 (AR 187).

Further, as the Region explained in its Response to Comments on this point, it is reasonable to assume that technically achievable reductions associated with the legally enforceable permits issued to Rhode Island dischargers will actually occur. *RTC* at n.13. The Region's original response adequately responded to the District's concerns on this issue. *RTC* at

[15] The District attached the expired 2001 permit for NBC Fields Point and NBC Bucklin Point to its Petition in Ex. I, but these were not included in comments provided by any party or relied on by the Region in this proceeding. Accordingly, the Region has not included these two permits in the Administrative Record for this proceeding.

57-58. Indeed, the District does not confront the Region's response, but simply restates its concerns with even less detail. *Compare Dist. Pet.* at 13-14 *with Comment #F21, RTC* at 21-22. Therefore, review should be denied. *Phelps Dodge*, 10 E.A.D. at 507-09, 518-19.

Furthermore, it is illogical to compare the Permit as written in the case of the District with consent agreements enforcing the permits in the case of all other facilities. The more rational comparison, and the one the Region performed, is between the nitrogen limits in the NPDES permit issued to the District and the permits issued to various Rhode Island facilities. *See RTC* at 50. This is particularly true where the Region has indicated that the District too will soon be subject to an enforcement order containing a reasonable compliance schedule to meet the nitrogen effluent limit in light of the facts and circumstances related to the facility. And, as stated in the Response to Comments, "it is EPA's intent to work closely with MassDEP and RIDEM to ensure that the facilities in each state are on the same approximate schedules. *See RTC* at 58. *See also Letter dated January 8, 2007 from Ken Moraff, Deputy Director, Office of Ecosystem Protection, EPA to Glenn Haas, Director, Bureau of Resource Protection, MassDEP and Alicia Good, Assistant Director, Water Resources, RIDEM* (Ex. 29; AR 63).

Issues associated with enforcement-related compliance schedules are separate from whether the nitrogen permit limit is justified; the Region has an independent duty under the CWA to impose effluent limits that will ensure compliance with applicable water quality standards. *See* CWA §301(b)(1)(C). The relevant question is whether the Region properly established a limit that is sufficiently stringent to comply with applicable water quality standards. Even if the District were correct, and an assumption is made that downstream reductions in nitrogen will not occur in light of the consent agreements, this fact would not counsel in favor of relaxing or eliminating the District's limit. Section 301(b)(1)(C) requires each point source to

achieve effluent limitations necessary to meet water quality standards and does not make allowances for the failure of other sources to comply. *See In the Matter of: National Pollutant Discharge Elimination System Permit for Blue Plains Sewage Treatment Plant No. DC 0021199*, 1 E.A.D. 531 (EAB 1979).[16]

c. The District has been Afforded Due Process.

The District also fails to set forth any violation of due process. The District does not argue the Region has failed to adhere to the notice and comment requirements of an NPDES permitting proceeding. Rather, the District contends it was entitled to even more process than EPA's regulations require in that: 1) it did not have the opportunity to participate in the state rulemaking surrounding development of Rhode Island's narrative standard (*Dist. Pet.* at 9); the Region failed to articulate its interpretation of the state's narrative standard through formal rulemaking procedures (*id.* at 9, 17-18); and 3) the Region failed to require Rhode Island to identify a methodology for applying its narrative nutrient criteria, as is required for narrative toxic standards. (*Id.* at 18).

Underlying these claims is dissatisfaction with the regulatory process EPA established to guide the permit writer in interpretation of narrative water quality standards in order to develop water quality-based effluent limitations. *See* 40 C.F.R. §122.44(d)(1)(vi). *See also supra* at Section II.A.1. The District's arguments amount to a collateral attack on these regulations, which (in addition to its claims of constitutional error) are not appropriately raised in this

[16] Even if the Rhode Island permits themselves were inequitable or insufficiently stringent, which they are not, this similarly would not be a basis for further weakening the permit at issue here. Although EPA looked to the Rhode Island permits as a reference point and as an additional factor in confirming the overall reasonableness of the nitrogen limit, the Region has an independent duty under section 301(b)(1)(C) of the CWA to ensure compliance with water quality standards, and determined that a limit of 5 mg/l would be necessary to meet this standard.

permitting proceeding. *See In re City of Irving, Texas, Municipal Separate Storm Sewer System*, 10 E.A.D. 111, 123 (July 16, 2001). On this basis alone the Board should deny review.

In any event, the procedures governing this permit reissuance have provided the District with full opportunity to comment on EPA's interpretation and application of the relevant Rhode Island narrative water quality standards. *See RTC* at 102 (Ex. 2). The District has ably taken advantage of that process – including its participation at the public hearing on the permit, its review of the administrative record on two separate occasions, its submission of robust written comments prepared with assistance from counsel and engineering consultants, and its appeal to this Board.

With regard to the District's claim that it was not afforded opportunity to participate in the state rulemaking underlying the narrative nutrient criteria, the District has not offered any detail as to the commentary it would have possibly offered at that time. As required by the CWA, Rhode Island has adopted water quality criteria sufficient to protect designated and existing uses of each water body. *See* 33 U.S.C. §§1313(a)-(c). *See also* 40 CFR §131.11(a). These criteria may be numeric or narrative. 40 C.F.R. §§131.3(b), 131.11(b)(1)-(2). The CWA and EPA's regulations also provide that the state's standards (and revisions to the standards) are subject to EPA review to determine whether the standards meet the minimum requirements of the CWA. 33 U.S.C. §§ 1313(a), (c). *See also* 40 C.F.R. § 131.20. Rhode Island has adopted (and EPA has approved) the following narrative criteria applicable to the nitrogen limit:

> At a minimum, all waters shall be free of pollutants in concentrations or combinations or from anthropogenic activities subject to these regulations that:
>
> i. Adversely affect the composition of fish and wildlife;
> ii. Adversely affect the physical, chemical, or biological integrity of the habitat;
> iii. Interfere with the propagation of fish and wildlife;

> iv. Adversely alter the life cycle functions, uses, processes and activities of fish and wildlife...." Rule 8.D.(1).
>
> There shall be no nutrients "in such concentration that would impair any usages specifically assigned to said Class, or cause undesirable or nuisance aquatic species associated with cultural eutrophication." Table 2, Rule 8.D.(3)10; see also Rule 8.D.(1)(d).

Additional relevant regulations include Rule 9.A. and B., which prohibit discharges of pollutants which alone or in combination will likely result in violation of any water quality criterion or interfere with one or more existing or designated uses, and prohibit discharges that will further degrade waters which are already below the applicable water quality standards. *See also RTC* at 102. As the Region summarized in its Response to Comments:

> In short, Rhode Island's criteria prohibit discharges of nutrients that would impair or interfere with uses. The District has not explained how these criteria do not appropriately protect uses or otherwise contravene the requirements of Section 303(a)-(c) of the CWA. Nor does [the District] offer what possible commentary or concerns it would have raised during the development of such narrative criteria by Rhode Island. The more specific objections [the District] has raised elsewhere in its comments relate to EPA's application of these criteria in establishment of the nitrogen effluent limit. And, as is detailed above, [the District] and other interested persons have had full opportunity through this permitting proceeding to comment on the Region's interpretation of and application of Rhode Island's narrative criteria.

RTC at 103.

The District never confronts this response, offering instead a new argument that the Region's interpretation of Rhode Island's narrative criteria should have been undertaken through formal notice and comment rulemaking pursuant to 33 U.S.C. §1313(c)(4)(B). *See Dist. Pet.* at 16. The Board should reject the argument outright in light of the District's failure to preserve it. Moreover, the provision of the CWA on which the District relies has no applicability to this permitting proceeding. Rather, 33 U.S.C. §1313(c)(4) authorizes EPA to promulgate water

quality standards only where a state has failed to do so. Here, Rhode Island has in place a water quality standard that EPA has approved. Further, Rhode Island has exercised its prerogative to express its nutrient criterion as a narrative.

The District also cannot avail itself of arguments that the Region violated due process by not requiring Rhode Island to identify the methodology for applying its narrative nutrient criteria, as is required in EPA's regulations related to toxics control. *See Dist. Pet.* at 17-19. *See also* 40 C.F.R. §131.11(a)(2). This provision of EPA's regulations applies to development of state standards regulating toxics, not nutrients. Moreover, this argument also was not raised in comments and, therefore, was not preserved for review. *Maui Elec. Co.,* 8 E.A.D. at 9.

The District's reliance on three state cases in support of its due process claims is, at best, wishful thinking. *See Dist. Pet.* 18-19 (citing *City of Cookeville v. Tennessee Water Quality Control Board,* No.02-3694-III (Davidson Cty., Tenn. Chancery Ct. July 31, 2003); *Monogahela Power Co. v. Chief, Office of Water Resources,* No. 99-AA-66 (Cir. Ct. Kanawha Cty, W.VA. May 1, 2001); *City of Burbank v. State Water Resources Control Bd.,* 4 Cal. Rptr. 3d 27 (Cal. App. 2d Dist. 2003). *City of Cookeville* involved a challenge to a numeric nitrogen limit in a NPDES permit that was imposed before the state had promulgated its nutrient criterion. *City of Cookeville v. Tennessee Water Quality Control Board,* 2004 WL 2607539 (2004) at *2 ("At the time that the City was issued the 1998 Draft Permit, the Board has not promulgated any Water Quality Standards regarding organic enrichment."). The *Burbank* case involves limits based on narrative toxic criteria, not nutrient criteria. *Burbank*, 4 Cal. Rptr. 3d at 30-32. Moreover, the court reversed a lower court decision holding that derivation of the numeric limits had not been adequately explained. *Id.* at 28. *Monogahela Power* involved a challenge to the state's §303(d) list. *Monogahela Power Co. v. Chief, Office of Water Resources*, 567 S.E.2d 629 (W. Va. 2002).

Not only is this inapposite, but the court again reversed the lower court ruling on which the District relies. Accordingly, all three decisions are of no utility to the Board's decision here.

Other than expressing a preference that Rhode Island's standard be numeric rather than narrative, the District does not explain how the State's narrative standard fails to meet the requirements of the CWA or EPA's regulations. Furthermore, other than making repeated assertions that it has not been afforded sufficient procedural rights, the District fails to explain exactly what arguments it has been prevented from offering. Finally, to the extent the District seeks to challenge the regulation that guides interpretation of narrative standards, such a claim is not appropriately brought in these proceedings.

d. The District's New Claim of Inappropriate *Ex Parte* Communications Should be Rejected.

The District raises yet another new argument on appeal: that the Region engaged in Prohibited *ex parte* communications with Rhode Island. According to the District, communications between EPA and Rhode Island prior to the issuance of the draft permit ran afoul of 5 U.S.C. § 557(d)(1)(E). *See Dist. Pet.* at 8-9. As a preliminary matter, the District failed to raise this issue in comments and, therefore, the issue is not properly preserved for review. Moreover, the provision of the Administrative Procedure Act referenced by the District pertains only to formal agency adjudicative or rulemaking proceedings. 5 U.S.C. §557(a). These procedures are inapplicable to this permitting proceeding. Section 402 of the CWA only requires informal adjudication of permit applications. *See Dominion Energy Brayton Point, LLC v. Johnson*, 443 F.3d 12, 16 (1st Cir. 2006). Moreover, it is hard to imagine how the Region could develop a water quality-based effluent limitation without conversations with affected states.

The communication at the heart of the District's claim is an Appendix to a Performance Partnership Agreement (PPA) between EPA and RIDEM, which was signed in February 2006. (*Ex.* 30). PPAs are a vehicle used by the Region to outline the goals, activities and actions that the state environmental agency will be completing over a performance cycle. The District objects that the Appendix reflects EPA's commitment to initiate permitting proceedings based on the nitrogen loading reductions proposed by RIDEM to those Massachusetts facilities contributing to impairments in Narragansett Bay. According to the District, this "crossed the line" into forbidden communications and gives "the impression" that the Region had decided upon a limit of 5.0 mg/l some time ago. *Dist. Pet.* at 9.

While the Appendix to the PPA reflects the Region was nearing readiness to initiate the process to establish such limitations, it nowhere indicates any intent to circumvent the NPDES permitting process. To the contrary, the record of this proceeding reflects that the Region took seriously its obligation to receive and consider opposing views, including scheduling a public hearing on its own initiative and taking several months to prepare a 122-page response to the comments it received. That the communication between the Region and RIDEM reflected in the Appendix in no way undermined this process is manifest in that the District points to no specific harm it has suffered as a result.

Because the Appendix to the PPA reflects little more than the Region's intent in 2006 to initiate a permitting process including nitrogen reductions, the Region did not designate the PPA in its record for this process. The District was initially in apparent agreement with the Region regarding the insignificance of the document; although the document was produced to counsel for the District prior to the close of the comment period (*see Letter dated May 22, 2007 from Stephen Perkins (Region 1) to Kathleen Freeman, Esq. (Bowditch & Dewey)* (Ex. 31), the

District only raises its concerns now.[17] Furthermore, the document, like other recent PPAs between the Region and New England states has long been publicly available through the Region's website. *See* http://www.epa.gov/region1/eco/ri/.

Although not touched on by the District, the Appendix speaks more to the Region's role vis-à-vis RIDEM and MassDEP than to establishment of a particular effluent limitation. The document notes the need for the Region to work with both RIDEM and MassDEP "to ensure equitable regulation of WWTF discharges impacting the Seekonk River, Providence River, and Upper Narragansett Bay." *See 2006 PPA* at Appendix B (Ex. 30). This is an appropriate and important role for the Region, particularly in light of the backdrop of MassDEP's initial opposition to the establishment of ***any*** numeric nitrogen effluent limitations on Massachusetts facilities and the fact that RIDEM had already moved forward with RIPDES permits including nitrogen limitations for Rhode Island facilities. *Id.* EPA, RIDEM and MassDEP have continued good faith efforts to resolve differences on these issues. We have reached some agreement, as reflected in EPA's recent issuance of permits to two other Massachusetts facilities (Attleboro and North Attleborough) which include effluent limitations for total nitrogen of 8 mg/l. *See* Attleboro 2008 NPDES Permit (AR 181); North Attleborough 2008 NPDES Permit (AR 183). While MassDEP did not endorse these effluent limitations, it did not appeal them. The Region has committed to continuing to work with its state partners to ensure that the compliance schedules for implementing the permit requirements are equitable. *RTC* at 58 (Ex. 2).

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[17] The May 22, 2007 correspondence to the District's counsel was in response to a FOIA request and the Region has not designated the correspondence in the administrative record for this proceeding. The Region does not seek to supplement the record with this correspondence, but rather, to demonstrate that the District's argument regarding Appendix B was reasonably available prior to the close of the comment period. Indeed, the District did make reference in its comments to another document provided to counsel via the same correspondence. *See Comment #F26, RTC* at 64 (commenting on email correspondence regarding a facility located in Wareham, MA).

The District contends that, because the Region spoke with RIDEM before the draft permit was issued, it also should have acceded to the District's request for a meeting at the close of the public comment period. *See Dist. Pet.* at 10 & n.2. The Region, however, determined that, in light of the substantial number of parties who participated at the public hearing and submitted written comments, it would not be appropriate or productive to enter into discussions regarding the permit limits with the District without providing the same opportunity to all interested parties. *Id.* Moreover, the Region did provide an informal opportunity for the District to ask questions and to discuss the permit at a public informational session held immediately before the public hearing on May 9, 2007. At that session, Regional technical staff and management provided an overview of the proposed limits and then offered the opportunity for questions.

Review on the claim of inappropriate *ex parte* communications should be denied.

9. The Requirement that the District Continue to Operate Treatment During the Winter Season to Denitrify its Effluent is Reasonable and Consistent with the CWA and Applicable Regulations.

In addition to the seasonal total nitrogen effluent limitation of 5.0 mg/l, the Permit requires the District to operate its treatment facilities (other than the carbon source needed to meet the seasonal limit) during the period November to April in order to denitrify its effluent. *Permit* at n. 9. CLF contends the Region should have included a numeric effluent limitation, similar to the Region's decision to include a phosphorus effluent limitation during the winter period. *CLF Pet.* at 15. The District, while acknowledging the underlying purpose of the requirement, contends that the provision is too subjective. *Dist. Pet.* at 53. The District suggests the provision be amended to provide that the District operate the facility in a manner which "in the best judgment of the District" will meet permit conditions. *Id.*

With regard to CLF's contention that the Region erred in not including a numeric effluent limitation for nitrogen for the winter period, the Region explained its rationale as follows:

> In typical wastewater treatment plant effluent, both phosphorus and nitrogen are present in the dissolved phase. Typical effluent also includes particulate phosphorus, but very little particulate nitrogen. The predominate form of nitrogen in municipal wastewater discharges is dissolved inorganic nitrogen (primarily ammonia, nitrite and nitrate). Also, dissolved inorganic N forms, especially nitrite and nitrate, are highly soluble and do not precipitate easily or sediment out when freshwater enters the brackish zone of estuaries as inorganic P is likely to do. *See* Nutrient Criteria Technical Guidance Manual, Estuarine and Coastal Marine Waters (EPA-822-B-01-003, October 2001).
>
> The RIDEM nitrogen reduction analysis and supporting scientific documentation indicates that the winter contribution is not significant. *See, e.g.*, RIDEM Response to Comments on Total Nitrogen Permit Modifications, June 27, 2005, page 26. However, in light of the uncertainties with the fate and transport of winter contributions of nitrogen through the system and the potential that these contributions will add to the pool of nitrogen available during critical periods, the permit requires that UBWPAD [the District] optimize the treatment facilities in the winter period in order to minimize the potential for higher winter loadings to prevent attainment of water quality standards.

RTC at 7-8 (Ex. 2). In its response, the Region specifically cited page 26 of RIDEM's response to comments related to some RIPDES permit issuances. In that document, in turn, RIDEM explained that:

> While nitrogen loading throughout the year has the potential to contribute to the pool of nitrogen available during critical periods, the general consensus of participants in the technical advisory committee that DEM established to assist with efforts to develop a water quality model and TMDL for the Providence and Seekonk Rivers was that the winter contribution is not significant. This is also supported by work completed by *Doering et. al.* (1990) which stated that their analysis and previous mesocosm experiment data showed that dissolved nitrogen concentration in the Providence and Seekonk Rivers result form [sic] external

> sources, while lower portions of the bay are largely driven by internal recycling.

RIDEM Response to Comments at 26 (Ex. 15; AR 192).

CLF argues that, since the Region "expressly recognized that winter contributions will add to the pool of nitrogen causing violations of water quality standards," the Region was obliged under 40 CFR 122.44(d)(1)(i) to add an effluent limitation. *CLF Pet.* at 15. CLF misapprehends the Region's conclusions. Based on its knowledge that the predominant form of nitrogen in wastewater effluent is dissolved, the conclusion of RIDEM's technical advisory committee that the winter contribution of nitrogen is not significant and the supporting work by *Doering*, the Region lacked sufficient information to conclude that discharges of nitrogen from the District during the non-growing season had the reasonable potential to accumulate and to contribute to impairments in the Narragansett Bay during the summer growing period.[18] Absent a finding of reasonable potential, the Region appropriately determined not to impose a numeric water-quality based effluent limitation. Accordingly, the Board should deny review on this ground.

Short of an effluent limitation, the Region nonetheless imposed a requirement that the District operate its treatment processes to minimize the potential for sediment nitrogen impacts:

> The permittee shall operate the treatment facility to reduce the discharge of total nitrogen during the months of November – April to the maximum extent possible, using all available treatment equipment in place at the facility. The addition of a carbon source that may be necessary in order to meet the total

[18] By contrast, based on its knowledge of phosphorus discharges from wastewater treatment plants and phosphorus loadings in the Blackstone River, the Region did conclude that there was a reasonable potential for phosphorus discharges during the non-growing season to accumulate and to cause or to contribute to violations of water quality standards during the growing season. *RTC* at 5 (Ex. 2). Accordingly, the Region included an effluent limitation for phosphorus for the winter period. *Permit* at I.A.1 (Ex. 3). None of the petitioners challenges that limitation here.

> nitrogen limit during the months of May – October is not required during the months of November – April.

Permit at n. 9. (Ex. 3). This condition is appropriate under Section 402(a) of the Act, 33 U.S.C. §1342(a) which provides EPA considerable flexibility in framing permit conditions to achieve a desired reduction in pollutant discharges. *See City of Moscow,* 10 E.A.D. at 171; *Natural Resources Defense Council,* 568 F.2d at 1380.

The District does not challenge the Region's authority to impose such a condition, but argues that the requirement is impermissibly vague. In particular, the District raises concerns about the standard against which its performance will be evaluated, arguing that it will be in "the uncomfortable position of never knowing whether or not it will be deemed in compliance based on someone else's interpretation" of whether it has reduced the discharge of total nitrogen to the maximum extent possible. *Dist. Pet.* at 53. The District suggests replacing the standard of performance with the following language: "The permittee shall operate the treatment facility during the months of November – April which, ***in the best judgment of the District***, manages total nitrogen output in such a manner as to ensure compliance with effluent limits." *Dist. Pet.* at 53 (emphasis added).

It is the District's proposed language, not the requirement in the permit, that is subjective. The permit condition, by contrast, does not evaluate compliance based on the views of a specific entity or individual. Rather, the permit simply requires the District to operate "all available treatment" to denitrify to "the maximum extent possible." This requirement is very similar to the standard permit condition in EPA's regulations requiring all NPDES permittees to "at all times properly operate and maintain" all treatment systems. *See* 40 CFR §122.41(e)(requiring that permittees "at all times properly operate and maintain all facilities and systems of treatment and

control (and related appurtenances) which are installed or used by the permittee" to comply with permit limits.). As required by regulations, this standard condition (requiring the District "properly operate and maintain" all treatment facilities in order to meet its limits) has been in prior permits issued to the District and is included in the permit at issue here. *See, e.g., Permit* at *Part II* (AR 1). The requirement that the District denitrify during the winter season to the maximum extent possible using all available treatment (other than a carbon source) is comparable and sufficiently clear to apprise the District of required conduct. Accordingly, review should be denied.

B. The Region's Phosphorus Limit Was Based Upon a Reasonable Interpretation of Massachusetts Water Quality Standards and EPA Guidance.

The District and the Conservation Law Foundation both challenge the Region's seasonal phosphorus limit of 0.1 mg/l. The District asserts three sets of arguments. First, it contends that the total phosphorus effluent limitation of 0.75 mg/l in the 2001 expired permit may in fact meet Massachusetts narrative nutrient criteria. *See Dist. Pet.* at 33, 36, 39. Under this theory, the Region must await completion of the District's current upgrades before moving forward with a more stringent limit. Second, similar to the arguments it made with regard to the nitrogen limit, the District argues that any effort to develop a numeric phosphorus effluent limitation based on a Massachusetts narrative criterion must be based on a TMDL or mathematical model – either its own model or some other modeling effort. *Id.* at 34-35, 37-38. Finally, the District contends that the Region failed to afford the District the benefit of dilution in the decision to apply the limit to discharges that occur during wet weather events. *Id.* at 36-37. CLF, on the other hand, argues that the seasonal limit of 0.1 mg/l is insufficiently stringent and should be set as low as current levels of technology. *CLF Pet.* at 16-18. Review should be denied on each of these

points, because the explanations provided by the Region were adequate and its determinations reasonable and independently justified under Massachusetts Standards.

1. The Limit in the Expired Permit (0.75 mg/l) Will Not Meet Massachusetts Narrative Nutrient Criterion.

The District contends the Region abused its discretion by proceeding to issue a new and more stringent limit for phosphorus before assessing the effectiveness of upgrades undertaken to meet the limit of 0.75 in the expired 2001 permit. *Dist. Pet.* at 59-60. Suggesting that impairments in the Blackstone River are the result of periodic excursions above the old limit during the time that the District has been completing treatment upgrades, the District argues that the old limit may in fact satisfy Massachusetts narrative criteria. *Id.* at 35-36. The District attempts to bolster its argument by citing outputs of the dissolved oxygen model (the QUAL2E) that the Region used during the last permit issuance. *Id.* at 39. In its Response to Comments, however, the Region clearly explained that the limit of 0.75 mg/l in the expired permit was established to address dissolved oxygen criteria only, and did not take into account impacts of cultural eutrophication. In assessing these impacts in this permit reissuance, the Region found that the loading allowed under the 2001 permit would have a reasonable potential to cause or contribute to a violation of Massachusetts narrative nutrient criteria. The Region grounded this determination in its assessment of site-specific data, as well as the fact that the loadings allowed under the prior permit would result in in-stream phosphorus concentrations that far exceed the range of phosphorus concentrations recommended in national ambient criteria, national guidance and peer-reviewed literature.

As the Region explained in its Response to Comments, it established the 0.75 mg/l limit using a dissolved oxygen model called QUAL2E that was developed as part of the Blackstone

River Initiative. *See Blackstone River Watershed Dissolved Oxygen Waste Load Allocation for Massachusetts and Rhode Island, November 1997 (AR 130). RTC* at 106. As the Region made clear at the time, the 0.75 mg/l limit did not address eutrophication-related impairments. *See 1999 Response to Comments* at 9 (Ex. 23; AR 74). The Region expressly cautioned that even at 0.75 mg/l total phosphorus, the model indicated that chlorophyll *a* values and diurnal dissolved oxygen variations would still be at levels of concern due to cultural eutrophication: "While the model assesses cultural eutrophication, as represented by the response variable chlorophyll a, the waste load allocation did not establish limits necessary to control eutrophication consistent with the narrative criteria in the standards. Phosphorus reductions were evaluated only to the point where the model indicated that minimum dissolved oxygen criteria would be met." *Id.*

Ignoring the record on this point, the District argues that QUAL2E clearly demonstrates that Massachusetts narrative criteria will be met with a limit of 0.75 mg/l since the model predicted chlorophyll *a* levels should be reduced to 22 ug/l at low flow conditions. *Dist. Pet.* at 39. The single value of 22 ug/l referenced by the District was predicted at a location in the Rhode Island portion of the Blackstone River. *See Dissolved Oxygen Wasteload Allocation* at 18 (AR 130). The District can point to nothing indicating that a limit of 0.75 mg/l is sufficient to control the effects of cultural eutrophication (including severe macorphytic growth, odors and adverse impacts to the benthic community) in the reach of the River immediately downstream from its discharge. The Region made clear that a more stringent limit than 0.75 mg/l was necessary to address these impacts. *See RTC* at 75.[19]

[19] Notwithstanding the District's sudden enthusiasm with the QUAL2E model (which it vigorously opposed in the prior permit issuance), the Region notes that the incomplete HSPF modeling efforts the District urges upon the Board, discussed *infra* at Section II.B.3, show both peaks and seasonal average chlorophyll *a* values in the Rhode Island stretch of the Blackstone much higher than 22 ug/l.

The record also shows evidence of severe impairments immediately downstream of the District's discharge even during those times when the District's phosphorus loadings were approaching the 0.75 mg/l limit in its expired permit. For instance, the U.S. Army Corps and MassDEP studies included field work over the spring and summer of 2003. The District's average phosphorus discharge between April and August was 0.9 mg/l. Average monthly discharge concentrations were as follows: April 0.8 mg/l; May 1.2 mg/l; June 0.9 mg/l; July 1.0 mg/l; August 0.8 mg/l. *See Daily Monitoring Reports* (AR 91). The Army Corps' study includes four photographs taken in July 2003 depicting "dramatic evidence" of macrophytes in the reach immediately downstream of the District's discharge (between water quality monitoring stations BAC03 through BAC07). *See U.S. Army Corps Water Quality Evaluation and Monitoring* at 113 and Figure 38 (Ex. 9 and Ex. 9.2). The Corps described the macrophytes in this reach as "dense, thick, and long masses covering most parts of the riverbed." *Id.* at 122. (Ex. 9). The Corps continued: "In addition to the macrophytes, the river-section between BAC06 and BAC07 mats of Sirogyra spp., a filamentous green algae, were also observed growing at the side of the channel on macrophytes or fallen branches of trees." *Id.* at 124. MassDEP's field observations over the course of April through September corroborate that, as the summer progressed, "the macrophyte cover increased dramatically." *Blackstone River Watershed 2003 DWM Water Quality Monitoring Data, TM-51-10 at 13.* (Ex. 10). On September 15, 2003, MassDEP noted ***virtually 100% cover of the entire river bottom by aquatic vegetation and rooted filamentous algae.*** *See Blackstone River Watershed 2003 Biological Assessment, TM-51-11* at 13. (Ex. 11).

The District makes much of the fact that, in its Response to Comments, the Region inadvertently referenced MassDEP's findings detailed above (i.e., of 100% cover of the river

bottom with aquatic growth) as having taken place as part of the assessments conducted in August rather than those conducted in September. *See Dist. Pet.* at 36.[20] According to the District, the Region compounded this error by comparing MassDEP's findings in September (of severe and extensive acquatic plant growth) with the District's phosphorus loadings in August (which were lower than loadings in September). *Id.* The suggestion is that the blanket of macrophytes observed on September 15 were due to unusually high loadings during the first two weeks of September and that impairments, if any, were insignificant at times over the summer when the District's loadings were lower. The District misses the Region's larger point: significant impairments were documented by both MassDEP and the Army Corps over the course of their studies. For instance, the Corps photographs depicting macrophytes that were "dense, thick and long masses, covering most of the riverbed" were taken in July 2003. *See U.S. Army Corps Water Quality Evaluation and Monitoring at* 113, 122 (Ex. 9) and Figure 38 (Ex. 9.2). The substantial aquatic growth that preceded the almost 100% cover observed in September is evidence of severe impairment.

Furthermore, the loadings allowed under the prior permit far exceed any of the recommendations in national guidance and peer-reviewed literature. As is detailed above, *supra* at Section I.B.4., these sources set forth recommended in-stream phosphorus values ranging from 10 ug/l (0.01mg/l) to 100 ug/l (0.1 mg/l) in order to control cultural eutrophication. Given the lack of any significant dilution of the District's discharge under 7Q10 conditions, a total phosphorus discharge of 750 ug/l would result in an in-stream concentration of 682 ug/l

[20] MassDEP's efforts are reflected in two reports. Water chemistry measurements and habitat quality assessments were conducted from April through early October and are documented in *Blackstone River Watershed 2003 DWM Water Quality Monitoring Data, TM-51-10, MassDEP, May 2005* at 3 (Ex. 10; AR 154). Macroinvertibrate and fish communities were assessed in September 2003 and are documented in *Blackstone River Watershed 2003 Biological Assessment, TM-51-11, MassDEP, April 2006* at 4 (Ex. 11; AR 125).

(assuming zero upstream phosphorus and a discharge at design flow). *Fact Sheet* at 9-10 (Ex. 1). The assumption of zero background means the District's discharge on its own would cause this in-stream concentration in the absence of any other sources. An in-stream concentration of 682 ug/l is far in excess of the protective range of 10 ug/l to 100 ug/l. *Id. See also RTC* 105-09 (Ex. 2).

The Region's decision to move forward with a more stringent limit at this time is also consistent with the CWA and EPA's regulations, which provide for reissuance of permits on a regular basis so that permit terms are revisited and reviewed rather than left unexamined and unchanged for long periods of time. *See RTC* at 31 (citing 33 USC §§ 1342(a)(3) and (b)(1)(B), and 40 C.F.R. § 122.46(a)). This regular and periodic review supports the CWA's goal of restoring and maintaining the chemical, physical and biological integrity of the Nation's waters. *Id.* In this case, such review is particularly appropriate since the underlying bases for the 0.75 mg/l phosphorus limit had not been reviewed in some time: EPA first proposed the 0.75 mg/l limit in the District's 1999 permit, which was appealed and not finally resolved until 2001. *RTC* at 31. (Ex. 2). In the intervening years, the Agency has developed a growing awareness of nutrient-related issues and a commitment to resolve those issues. The Region explained in its Response to Comments in this permitting proceeding:

> Nutrients (nitrogen and phosphorus) are one of the leading causes of water quality impairment in our Nation's rivers, lakes and estuaries. Virtually every State and Territory is impacted by nutrient-related degradation of our waterways. Massachusetts has listed Clean Water Act Section 303(d) nutrient-related impairments for numerous water bodies. Over the last nine years, EPA has taken a number of steps to provide leadership and to work in partnership with states, territories and unauthorized tribes to address nutrient impairments. EPA issued a National Strategy for Development of Nutrient Criteria in June 1998, and followed with a November 2001 national action plan for the development and establishment of numeric nutrient criteria. EPA published technical

> guidance for developing criteria for lakes and reservoirs in May 2000, rivers and streams in June 2000, and estuaries and coastal waters in October 2001. EPA also published recommended nutrient criteria for most streams and lakes in 2001.

RTC at 25.

Finally, the Region explained that the District's "concerns regarding the timing of permit issuance as it relates to the ongoing upgrades are more appropriately addressed through compliance scheduling, rather than through delay of permit issuance. For example, it may be appropriate to allow some period of time to operate the new plant before making a final decision on all aspects of additional treatment facilities to enable [the District] and its consultants to determine the most cost-effective technologies for achieving the new limits. " *RTC* at 32.

The District does not confront any of these responses, but simply asks this Board to direct the Region to postpone imposition of a more stringent phosphorus limit. Review, accordingly, should be denied.

2. The Region's Decision to Move Forward Absent a TMDL or other Mathematical Model was Reasonable and Warranted to Address the Significant Impairments in the River.

In its next set of arguments, the District contends that the only way to derive a numeric effluent limitation from MassDEP's narrative nutrient criteria is via a TMDL or other mathematical model. The District asserts that the Region "simply cite[d] cultural eutrophication" as the basis for the phosphorus limit without making a sufficient connection between specific levels of phosphorus reduction and the protection of existing and designated uses. *Dist. Pet.* at 34-35. According to the District, the Region's reliance on *Gold Book* recommendations was "outdated" and "irrelevant" (*Dist. Pet.* at 32), and the only acceptable methodology would be through a TMDL (such as that performed for the Assabet or Charles

Rivers in Massachusetts) or by use of a mathematical model (like the QUAL2E model used as the basis for the old limit of 0.75 mg/l or the District's more recent efforts to use the HSPF model). *Id.* at 34-35, 37-38. In its claims, however, the District completely overlooks the Region's explanation of its technical approach, including its interpretation and application of Massachusetts' narrative criteria, and the Region's reasoned rationale for proceeding without an approved TMDL.

As a preliminary matter, the record clearly demonstrates that the Region did not simply "cite cultural eutrophication" as the basis for the total phosphorus limit. The Region's starting point was the narrative criterion in Massachusetts Standards which requires that "unless naturally occurring, all surface waters shall be free from nutrients in concentrations what would cause or contribute to impairments of existing or designation uses...." 314 CMR 4.05(5)(c). The existing and designated uses of the Blackstone River include habitat for fish, other aquatic life and wildlife and primary (e.g., swimming) and secondary (e.g., fishing and boating) contact recreation. 314 CMR 4.06 (Table 12) and 4.05(3)(b). In its application of MassDEP's narrative criterion, the Region considered the relationship of phosphorus loadings and cultural eutrophication, as measured by response variables such as chlorophyll *a*, periphyton and macrophytes, to establish limitations designed to ensure attainment of Massachusetts water quality standards. Consistent with the approach set forth in 40 CFR §§ 122:44(d)(1)(vi)(A), (B), the Region consulted nationally recommended guidance and other relevant technical documents. Because neither EPA guidance nor the scientific literature established any definitive quantitative thresholds for any of the causal or responsive variables of cultural eutrophication, the Region applied its best professional scientific judgment and technical expertise to establish permit limits. To do so, the Region (i) consulted a wide range of guidance, technical information and site-

specific data, *see RTC* at 105-110; (ii) considered a variety of possible methodological approaches, *see id.* at 108-109; and (iii) established a sufficiently protective limit on a site-specific basis, *see id.* at 109.

In its consideration of methodological approaches to establishment of the limit, the Region specifically noted that "[w]hile the various recommended values for phosphorus contained in the materials cited above – e.g., 24 ug/l (*Ecoregional Nutrient Criteria*) to 100 ug/l (*Gold Book*) – were not specifically developed by or for Massachusetts, these values do reflect a range of ambient phosphorus concentrations that are sufficiently low to prevent cultural eutrophication." *RTC* at 109. The Region explained that it ultimately opted for an in-stream phosphorus target approximating the *Gold Book* value rather than the *Ecoregional* criterion because the *Gold Book* employs an "effects-based" approach, which is often more directly associated with an impairment to a designated use. *RTC* at 109. Here, as detailed *supra* at Section I.B.1, impairments have included the extremely abundant aquatic vegetation in the reach of the River immediately downstream of the District's discharge, low DO, unpleasant odors noted by local watershed groups, and an unhealthy benthic community. Based on consideration of all of these materials, EPA determined that an ambient phosphorus concentration of 0.1 mg/l would be necessary to control the effects of cultural eutrophication and to ensure compliance with the applicable nutrient criterion in Massachusetts. Finally, the Region specifically noted the anticipated and immediate benefits of the effluent limitation on existing and designated uses of the Blackstone River, including significant reductions in plant growth and associated odors that have "severely impaired the aquatic community and recreational uses of the Blackstone River." *Id.* at 114.

The District pays little mind to the Region's actual explanations and instead characterizes the Region's approach as "the arbitrary application of guidelines that are not relevant to the District's setting." (*Dist. Pet.* at 34). According to the District, the Region should have undertaken the type of more refined analyses of specific loading reductions and response indicators as was conducted for the Assabet River and Charles River. *Id.* at 34-35. In its comments to the Region on this point, the District was more candid that these "approaches" involved approved TMDLs. *See Comments #F12 and #F13, RTC* at 39-41. In its responses, the Region clearly outlined its rationale for proceeding without an approved TMDL, including:

- the extent of existing nutrient impairments documented in the Blackstone River, even when the District's phosphorus loadings were nearing the limit of 0.75 mg/l in its expired permit, *RTC* at 40 and 41;
- the fact that MassDEP has only recently announced plans to initiate a phosphorus TMDL (which, according to MassDEP's proposed schedule, would not be completed until July 2013), *id.*;
- the difficulty that MassDEP and others have experienced in developing nutrient TMDLs, *id.* at 40;
- that efforts to calibrate the QUAL2E model for use in this permit reissuance were unsuccessful because the model cannot simulate the dense and rooted aquatic plants immediately downstream from the District's discharge, *id.* at 41; and
- the fact that the District is by far the dominant source of bioavailable phosphorus loadings to the Blackstone River under critical low flow conditions. *Id.*[21]

The Region also noted that neither the CWA nor EPA regulations require that a TMDL be completed before a water quality-based effluent limit may be included in a permit. *Id.* Rather, water quality-based effluent limitations in NPDES permits must be "consistent with the

[21] Although performed on different receiving waters, the ultimate conclusions of the Assabet and Charles River TMDLs do not support the District's claim that the limit of 0.75 mg/l in its expired permit is sufficient to ensure standards are met. The TMDLs assigned all affected POTWs phosphorus effluent limitations ranging from 0.1 to 0.2 mg/l. *See RTC* at 39-40 (Ex. 2).

assumptions and requirements of any *available* [emphasis added] wasteload allocation." 40 CFR 122.44(d)(1)(vii)(B).

Offered only as an aside, the District also contends that the new phosphorus limit should await additional assessment of non-point source loadings. *Dist. Pet.* at 32-33 ("[T]he Region is clearly in error in its belief that it can address cultural eutrophication exclusively by ratcheting down the District's effluent limits, without taking any steps to address non-point sources of phosphorus." This argument fails to address the Region's response that the available science indicates that the significant majority of total phosphorus loads to the Blackstone River are from point sources and that even a high level of non-point source control would not obviate the need for significant point source reductions. *RTC* at 9 (Ex. 2). In making this argument, the District also ignores the Region's conclusions that, in light of the size and location of its discharge near the River's headwaters, the District utterly dominates loadings at the point of discharge where very severe impacts have been documented. *Id.* at 41.

Finally, the District cannot avail itself of the argument that the Region should have used the QUAL2E dissolved oxygen model (that was the basis for the 0.75 mg/l phosphorus limit in the prior permit) to evaluate any needed changes to the limit to satisfy the Massachusetts narrative nutrient criterion. *See Dist. Pet.* at 35. The District completely ignores the Region's response on this point: that the efforts to update the model based on the data collected by the U.S. Army Corps of Engineers were unsuccessful. *RTC* at 32, 41. One of the main objectives of the Corps study was "to develop field and laboratory data that expands the steady-state water quality model used in the [Blackstone River Initiative] and provide further model calibration and validation." *Corps Water Quality Evaluation and Modeling* at 1 (Ex. 9). However, as the Region explained:

> Data collected as part of the Corps of Engineers study [ ] reflected significant changes in the system relative to productivity since the Blackstone River Initiative study that was the basis for the dissolved oxygen waste load allocation. The Corps of Engineers study indicated high levels of productivity and resulting losses of phosphorus in the upstream reaches immediately below the UBWPAD discharge. Macrophytes were documented as dominating these upstream reaches but were not evident in downstream reaches. The plants that dominated these reaches all have in common that they grow in dense, thick, and long masses and are all indicators of eutrophic freshwater. Since the model is not able to simulate rooted aquatic plants, efforts to update the model based on the new Corps of Engineers data were unsuccessful relative to simulating instream phosphorus levels.

RTC at 41 (Ex. 2).

The District does not even acknowledge the Region's response, much less demonstrate that the Region's conclusion is incorrect or otherwise warrants review. In its calls that the Region use QUAL2E, the District proposes to send the Region on a futile mission, while ignoring the fact that the pollutant loading into the Blackstone will continue at unacceptably high levels. "Less speculation and more empirical evidence is needed by petitioner to justify review of the permit." *In re Texas Indus., Inc.*, 2 E.A.D. 277, 279 (Adm'r 1986). The District's argument does not amount to a demonstration of error, much less the type of compelling demonstration of error required to disturb the Region's considered technical determination. *See Three Mountain Power,* 10 E.A.D. at 58 ("The Board will not overturn a permit provision based on speculative arguments.").

3. The Region's Decision not to Wait an Unspecified Period of Time for Completion of the District's Model was Reasonable and Warranted.

Similarly, the Region does not believe it appropriate to await an unspecified amount of time for the District to complete its ongoing modeling efforts before establishing a phosphorus effluent limitation of 0.1 mg/l. While we acknowledge the District has no regulatory obligation to undertake these efforts, the District's model remains uncalibrated and far from ready for use as

a tool in establishment of effluent limitations that meet the requirements of the CWA and EPA's regulations.

During the public comment period on the permit, the District represented that it would be able to complete its modeling efforts by December 31, 2007, and requested that the Region hold open the public comment period until that time. *See RTC* at 75 (Ex. 2). The Region explained that, based on the information the District had provided about the model and the Region's experience with the difficult of simulating the fate and transport of nutrients in a dynamic system such as the Blackstone River, that such a delay was not warranted. *Id.* at 76. The Region also noted that it was far from certain that the model could be calibrated and verified for low-flow, 7Q10 conditions, and that this would be necessary in order for the Region to use the model to establish water-quality based effluent limitations. *Id.* In light of the extensive impairments in the River and the Region's conclusion that the limit in the prior permit was not sufficiently stringent to ensure attainment of Massachusetts water quality standards, the Region explained that it was not appropriate to further delay permit issuance. *Id.* The Region did commit, however, to reviewing the final results of the District's efforts and making any appropriate changes to the permit limits at that time. *Id.*

Other than its request that the Region hold open the comment period until December 31, 2007, the District submitted no other information about the model during the public comment period, which closed on May 25, 2007. The District has, however, appended to its petition a document dated October 2008 which contains some selected simulations of the uncalibrated and uncorroborated model. *See Dist. Pet.* at Ex. G (*Blackstone River HSPF Model Scenario Report*).

As a preliminary matter, the Board should decline to review the *Model Scenario Report* and should deny any attempt on the part of the District to inappropriately supplement the record

with this information. It cannot be argued that the Region inappropriately failed to consider the simulations: the document ***was not even created until 17 months after the close of the public comment period and two months after the final permit was issued***. The Board has held that documents submitted following permit issuance cannot be considered part of the administrative record. *See, e.g., Dominion Energy Brayton Point,* 12 E.A.D. at 518-19. *See also In re BPWest Coast Products, LLC, Cherry Point Cogeneration Facility,* 12 E.A.D. 209, 220 n.27 (EAB 2005) (allowing new substantive issues to be raised after permit issuance "would run contrary to the principle that the administrative record for a permitting decision is complete at the time of permit issuance"). *E.g., Steel Dynamics, Inc.,* 9 E.A.D. at 194 n.32 ("Permitting authorities are under no obligation to consider comments received after the close of the public comment period."); *accord In re St. Lawrence County Solid Waste Disposal Auth.,* PSD Appeal No. 90-9, at 3 n.3 (Adm'r July 27, 1990) ("The close of the public comment period is an appropriate benchmark for closing the administrative record to receipt of new information.").

That the model is not ready for use is manifest in that the District cannot explain exactly how EPA should use the simulations in this proceeding. While claiming that the Report represents "[s]ignificant outputs" and "highly useful information concerning annual variability in nutrient loadings, the cumulative effects of various nutrient control strategies and the importance of non-point sources," (*Dist. Pet.* at 38), the District fails to explain in its petition exactly what these are or how their use would result in alternative permit limits. Rather, the District leaves to the Board the task of searching through the simulations to answer these questions.

By submitting selected runs of its incomplete model, the District's apparent goal is to convince the Board that the significance of non-point source loadings justifies delay pending further studies and completion of a TMDL-like effort: "The studies point out the clear need to

assess control of all sources of nutrients before embarking on strategies which are singularly focused on point source control strategies." *Dist. Pet.* at 38. *See also Dist. Pet.* at 32-33 ("the Region is in error in its belief that it can address cultural eutrophication exclusively by ratcheting down the District's effluent limits, without taking any steps to address non-point sources of phosphorus.").[22] In its call for delay and further study, however, the District completely ignores the Region's explanations for moving forward now. These include the documentation that the old permit limit of 0.75 mg/l cannot ensure attainment of standards; *RTC* at 40 and 41; the fact that allowable loadings under the old limit of 0.75 mg/l will result in in-stream phosphorus concentrations far exceeding recommendations in available national guidance, technical studies and peer-reviewed literature; *RTC* at 35; the fact that, under 7Q10 conditions, point sources will continue to be the dominant source of phosphorus loadings even after the current upgrade is completed; *RTC* at 41; and that the District will continue to be, by far, the largest single source of phosphorus loadings to the River. *Id.* The District also ignores that, in its decision to move forward, the Region took into account its knowledge of the difficulty of conducting nutrient TMDLs, and that MassDEP only recently announced plans to begin a TMDL for the River, which will not be completed until the summer of 2013. *Id.* Finally, the District fails to confront the substantial and immediate benefits that are anticipated from compliance with the new phosphorus limit, including "significant reduction in algal growth and associated odors that have

[22] That the District's modeling efforts are focused on highlighting the significance of non-point source loadings and not in development of scenarios that can be used to establish water quality-based effluent limitations is manifest in such choices as: 1) the simulations and analyses are focused on historical discharge flow volumes and not permitted design flows as required by permitting regulations (*Model Scenario Report* at ix); 2) no model simulations are provided under 7Q10 flow conditions consistent with requirements of the Massachusetts Water Quality Standards; 3) the dissolved oxygen simulations provided only evaluate summer average dissolved oxygen levels which provide no indication as to whether or not the Massachusetts minimum dissolved oxygen standard of 5.0 mg/l will be met; and 4) modeling scenarios only evaluate total annual nitrogen loadings to Narragansett Bay rather than providing any focus on the critical period of May through October when point sources will be more dominant.

severely impaired the aquatic community and recreational uses of the Blackstone River." *RTC* at 114.

In the event the Board nonetheless determines the need to review the *Model Scenario Report* to evaluate the reasonableness of the Region's decision not to await completion of the District's modeling efforts, the Region highlights the lack of any evidence that the model is calibrated and verified. (Calibration refers to the process of adjusting model parameters so that the resulting predictions give the best possible fit to observed data. Verification or corroboration refers to the evaluation of how well the model actually works following calibration.) While the District makes reference to the technical advisory committee that provided guidance and technical comments on its calibration approach (*Dist. Pet.* at 38), its Petition is notably silent with regard to any of their opinions. Also telling is that the District chose not to submit any information from the calibration report for its modeling effort. *See Model Scenario Report* at ix (noting only that "a description of model development and calibration" is presented in a separate report). While the *Model Scenario Report* notes that "further refinement" of model calibration is planned for dissolved oxygen and chlorophyll *a*, the Report offers no information as to efforts to calibrate phosphorus and nitrogen. *Id.* at ix. The model cannot be considered calibrated and verified until it can accurately simulate *both* causal (i.e., phosphorus and nitrogen) and response variables (i.e., chlorophyll *a* and dissolved oxygen) for the length of the River under a variety of flow conditions.[23]

[23] The District has provided the Region with a copy of the calibration report in August 2008, also well outside the public comment period for the permit. Accordingly, the document is not part of the administrative record for this proceeding. The Region has, however, committed to reviewing the final results of the model and, if warranted, to initiating proceedings to modify the permit. *See RTC* at 76. Nothing the District has presented to date has altered the Region's conclusions reflected above that the model is far from ready as a useful tool to establish a water quality-based phosphorus effluent limitation for the District's discharge.

Further, the Region cannot agree with the District's contention that it has developed a model "explicitly to address the issues raised in EPA's SAB review of the prior [Blackstone River Initiative] Studies." *Dist. Pet.* at 38. First, the District's implication that the Region's decision to proceed with a phosphorus limitation contravenes recommendations of the SAB is simply incorrect. *Infra* at II.A.4. Second, unquestionably, the District's consultants have selected a model – HSPF – that has the ***potential*** to address some of the SAB's recommendations, such as augmenting wet weather and non-point source loading estimates and obtaining a better understanding of the role of dams and impoundments. The District provides no evidence, however, of significant new data collection that such an undertaking would entail, including detailed monitoring of impoundments, comprehensive monitoring to capture the variability during storm events, or calibration of non-point source loading estimates. Similarly, the District has not explained how its efforts address the SAB's recommendations to incorporate a broader "ecological risk framework" into any modeling efforts. At best, if successfully calibrated, the model will provide yet another tool for estimating nutrient levels in the river including non-point source/point source ratios. The model also may prove of use to MassDEP as part of its efforts to undertake a phosphorus TMDL for the Blackstone River.

It is somewhat puzzling that the District even bothered to submit the simulations. Setting aside the inherent unreliability of simulations based on an uncalibrated and uncorroborated model, the selected simulations presented by the District predict that average in-stream concentrations of phosphorus may be too high to protect existing and designated uses following upgrades to meet 0.1 mg/l. Even assuming successful calibration of the model, such predictions do not support any less stringent limit than 0.1 mg/l for the District. Rather, they would support

the need for even further point source controls and strategies to reduce non-point source loadings.

The fact that, even today, the District cannot demonstrate that the model is a reliable or useful tool for the Region to establish the phosphorus limit, only confirms the appropriateness of the Region's decision not to extend the comment period to await the model results. The Board should reject the District's efforts to inappropriately supplement the record with the *Model Scenario Report* and otherwise deny review on this issue.

4. The Region's Decision Not to Afford the District the Benefit of Dilution During "Wet Weather" Discharges is Appropriate and Necessary to Ensure Attainment of Water Quality Standards.

Claiming the Region has only "selectively cited" data indicating background levels are greater than the phosphorus level of 0.1 mg/l, the District contends it should not need to meet the limit when discharge flows are higher as a result of "wet weather" events. *Dist. Pet.* at 36-37. According to the District, it should be afforded the benefits of dilution during these high flow events since background levels in the River during these events are much lower than the in-stream target of 0.1 mg/l. *Id.* The District's argument misapprehends the Region's use of the data showing phosphorus loadings in background.

Although belittled by the District as "selective," the Region's evaluation of monitoring data showing background phosphorus levels in the River was reasonable and explained in the record. In the course of evaluating the District's comment that discharges during wet weather events should be afforded the benefit of dilution, the Region considered available monitoring data collected at the water quality monitoring station immediately upstream from the District's point of discharge. *RTC* at 60 (Ex. 2). These data were collected as part of MassDEP's Smart Monitoring program between 2000 and 2005. *See Smart Monitoring Data* (Ex. 32; AR 131). As

is explained in its Response to Comments, the Region excluded data collected during dry weather events. *RTC* at 60. This stands to reason as the District's comment centers on whether it should be afforded dilution during wet weather events. (By contrast, in the calculation presented in its petition (*Dist. Pet.* at 37), the District uses data collected during both dry and wet weather events.) MassDEP indicated that 10 of the 25 data points were collected during wet weather events. *See Smart Monitoring Data* (Ex. 32). As explained in its Response to Comments, the Region also sought to exclude possible interference from the upstream CSO facility and, therefore, excluded five of the 10 samples that were collected when the Worcester CSO facility was actively discharging. *RTC* at 60. Based on the remaining data points (i.e., wet weather events during which the CSO facility was not discharging), the Region concluded that the data indicated in-stream total phosphorus concentrations ranging from .045 mg/l (45 ug/l) to 0.33 mg/l (330 ug/l), with an average of 0.132 mg/l (132 ug/l). *RTC* at 60. Even including the data points when the CSO facility was active, the results are similar: the average concentration of all ten samples collected during wet weather events is .090 mg/l (90 ug/l). Even excluding the high value of .33 mg/l (33 ug/l), which the District contends is "an outlier," (*Dist. Pet.* at 37), the average of the remaining nine samples collected during wet weather conditions is still 0.063 mg/l (63 ug/l).

All of these calculations lead to the same conclusion: background concentrations of phosphorus in wet weather flows are simply too high to allow the District any benefit of dilution. Where background levels are already at the target criterion, there is nothing available to "dilute" the effluent.

In addition, the District's request that it be allowed to vary the phosphorus loadings in its discharge so long as an in-stream target of 0.1 mg/l is consistently maintained misconstrues the

Region's approach. By establishing the 0.1 mg/l limit at 7Q10 conditions, the Region was aware that water quality would be even better during higher flow conditions. As is detailed above, *supra* at Section I.B.4., in developing the phosphorus limit, the Region consulted national guidance and peer-reviewed literature that recommended in-stream phosphorus values ranging from 0.01 mg/l to 0.1 mg/l. The Region ultimately opted for a target at the high end of the protective range – the 0.1 mg/l target recommended by the *Gold Book.* (The Region adopted the *Gold Book* recommended value because it reflects an "effects based" approach which is more directly associated with an impairment to an existing or designated use than a "referenced-based" approach which may result in water quality better than necessary to ensure standards are met.) While adopting an in-stream target at the high end of the range, however, the Region recognized that recommended values at the lower end of the protective range (i.e., those recommended in the *Nutrient Criteria Guidance* and *Ecoregional Nutrient Criteria*) represent values based on seasonal averages (as opposed to critical, 7Q10 conditions). Therefore, by establishing the 0.1 mg/l limit at 7Q10 conditions, in-stream phosphorus concentrations would be lower and water quality better when calculated over the seasonal average period. *See RTC* at 39 (explaining that the Region was applying the *Gold Book* value of 0.1 mg/l conservatively and as a value "not to be exceeded at any time," not as a seasonal average).

Furthermore, in light of the size of the District's flow and its location near the headwaters of the Blackstone River, available dilution is very small, even during wet weather events. Specifically, the Region noted in its Response to Comments that the District's facility "discharges into the headwaters of the Blackstone River and is very large (peak hour flow of 160 MGD during wet weather) relative to the flow in the river. The discharge dominates the flow in the river under low flow conditions and during most storm events." *RTC* at 60.

While the District may regard the Region's approach as overly stringent, the administrative record for this Permit demonstrates that under undisturbed conditions phosphorus concentrations are extremely low, *see id.* at 106, and the effects of cultural eutrophication are triggered at only marginally higher concentrations, *id.* at 108, so they must be kept at consistently low levels. Because the upstream water during wet weather already contains elevated background levels of phosphorus and there is little available dilution, the Region concluded the District must meet an effluent limitation of 0.1 mg/l even when effluent flows include wet weather flows. The Region's decision not to afford the District the benefit of dilution during wet weather discharges was reasonable in light of all the information in the record and review of this issue should be denied.

5. The Phosphorus Limit of 0.1 mg/l is Sufficiently Stringent and the Region's Rationale for the Limit is Adequately Explained.

The Conservation Law Foundation contends the Region erred in establishing a seasonal total phosphorus limit of 0.1 mg/l. CLF argues that, in light of the geographical location of the Blackstone River in Ecoregion XIV, the Region should have applied the *Ecoregional* value of 0.024 mg/l in lieu of the *Gold Book* recommendation of 0.1 mg/l as the *Ecoregional* value is "the more directly applicable criterion." *CLF Pet.* at 18. CLF also contends that, even if the *Gold Book* were applicable, the Region misapplied the guidance in light of the impoundments in the River and should have relied on the recommended value of 0.050 mg/l. *Id.* at 7, 17. In light of the severity of impairments and the significance of the District's phosphorus loadings, CLF argues the Region should have imposed seasonal phosphorus limits as low as current levels of technology. *Id.* at 18.

As a preliminary matter, no one who offered comments on the draft permit indicated the Region should have imposed a phosphorus limit based on the *Ecoregional* value of 0.24 mg/l. Similarly, no one commented that the *Gold Book* recommended value of 0.050 mg/l is more appropriate than the recommended value of 0.1 mg/l. Accordingly, these issues are not properly preserved for review by the Board.

On the merits, the Region fully explained its approach in interpreting the Massachusetts narrative nutrient criteria. As detailed above, *supra* at Section I.B.4.a., consistent with the approach set forth in 40 CFR 122.44(d)(1)(vi)(A), (B), the Region consulted a wide range of national guidance, site-specific data and technical information. The Region specifically explained that in selecting an in-stream phosphorus target from within the protective range of recommended values in the various guidance documents and peer-reviewed literature (i.e., 0.01 mg/l to 0.1 mg/l), the Region opted for a target approximating the *Gold Book* value rather than the *Ecoregional* criterion because the *Gold Book* employs an "effects-based" rather than a "referenced-based" approach. *RTC* at 108. The Region amplified:

> EPA opted for the effects-based approach in this permitting proceeding because it is often more directly associated with an impairment to a designated use (i.e., fishing, swimming). The effects-based approach provides a threshold value above which adverse effects (i.e., water quality impairments) are likely to occur. Reference-based values are statistically derived from a comparison within a population of rivers in the same eco-region class....[W]hile reference conditions, which reflect minimally disturbed conditions, may meet the requirements necessary to support designated uses, they may also exceed the water quality necessary to support such uses.

RTC at 109. And, as detailed above, *supra* at II.B.4, the Region recognized that the lower values recommended by the *Nutrient Criteria Guidance* and the *Ecoregional Nutrient Criteria* represent targets based on seasonal averages (as opposed to worst case 7Q10 flow conditions). *Id.* at 39.

Therefore, by establishing the 0.1 mg/l limit at 7Q10 conditions, in-stream phosphorus concentrations would be lower when calculated over the seasonal average period. Based on consideration of all of these materials and information, EPA developed a site-specific limit sufficiently stringent to control the effects of cultural eutrophication and to ensure compliance with applicable nutrient criteria in Massachusetts.

With regard to the argument that the *Gold Book* value of 0.05 mg/l would have been more appropriate than the value of 0.1 mg/l, the plain language of the *Gold Book* does not support this reading. The *Gold Book* recommends in-stream phosphorus concentration of "no greater than 50 ug/l in any stream entering a lake or reservoir" and of no greater than "100 ug/l for any stream not discharging directly to lakes or impoundments...." *See Gold Book* (Ex. 17). Following the District's discharge, the Blackstone flows for five miles until the first impoundment. *See Fact Sheet* at 9 (Ex.1). Accordingly, the Region did not apply the value in the *Gold Book* applicable to river discharging ***directly*** to impoundments.

Finally, with regard to CLF's argument that the Region should have established the phosphorus limit at the limit of technology, CLF did not offer this comment during the public comment period. With regard to proposed warm weather total phosphorus limit of 0.1 mg/l, CLF offered only the following comments:

> CLF also respectfully submits that, for the reasons set forth in Attachment A, the final permit's warm weather total phosphorus limit should be no higher than 0.1 mg/l.

CLF Comment at 2. Attachment A, in turn, was prepared by a technical consultant, T.J. Stevenson, Ph.D., who stated:

> In my opinion, EPA's draft NPDES Permit limit of 0.1 mg/l for Total Phosphorus (TP) is necessary for the attainment of water quality standards for the receiving waters. Phosphorus is known to be the

> limiting nutrient in most freshwaters. Due to the historic discharges of phosphorus, this nutrient has accumulated in sediments which act as a reservoir for Phosphorus. Until flushed from the River system, the sediments can re-supply Phosphorus to the overlying waters. Consequently, it would be preferred that no additional Phosphorus be added from point or from non-point sources. However, the draft permit limit of 0.1 mg/l TP represents what is technically feasible at this time. No limit higher than 0.1 mg/l would support the Massachusetts Water Classification B Warm Water Fishery due to the eutrophic effects of Phosphorus, including oxygen stress, during the warm weather months of the year.

CLF Comments, Att. A at 3. In response, the Region concurred the limit could not be any higher than 0.1 mg/l and ensure attainment of water quality standards. *RTC* at 6. The Region further explained that, although the phosphorus limit was not a technology-based limit, more recently developed treatment technology "is capable of achieving phosphorus limits lower than 0.1 mg/l." *Id.* at 7. Accordingly, the Region does not believe the argument that the seasonal phosphorus should be less than 0.1 mg/l was clearly preserved.

Setting aside this procedural issue, the applicable NPDES regulations governing establishment of water quality-based effluent limitations in the absence of numeric criteria do not direct the permit writer to immediately establish an effluent limitation at current levels of technology. Rather, they direct the permit writer to establish a limit to met water quality standards irrespective of technology. 40 C.F.R. §§ 122.44(d)(1)((vi)(A), (B). *See U.S. Steel Corp.*, 556 F.2d at 838. An appropriate limit may be either more or less stringent than what technology can achieve. *In the Matter of: J&L Specialty Products Corp.*, 5 E.A.D. 31, 71-73 (1994). The Region established the phosphorus limit consistent with the regulations, as detailed above, and CLF has not raised concerns with the Region's general approach warranting review.

C. The District Does not Raise any Policy Issues Surrounding Costs, Environmental Justice or Sustainability that Warrant Review.

The District forwards several arguments seeking to derail the nutrient limits as simply too expensive. These include: 1) that the costs of treatment outweigh environmental benefits to the receiving waters, 2) that the Region has failed to consider that Environmental Justice communities in the District's sewer area will foot the bill of treatment, and 3) that increased energy and chemical use associated with treatment outweigh any benefits to the Blackstone River or Narragansett Bay. In its arguments on these points, the District completely ignores the Region's explanations and responses. The District simply repeats its unsubstantiated claims. Review should thus be denied.

1. Costs Play No Role in Establishment of Water Quality-Based Effluent Limitations.

The District contends that the limits for nitrogen and phosphorus are "arbitrary and capricious" as the costs of meeting the new limits are "wholly disproportionate" to any benefits. *See Dist. Pet.* at 6. According to the District, these costs "approach $200 million." *Id.*[24] As the District has failed to substantiate either a factual or legal basis for its claim, review should be denied.

As detailed in the Region's responses, there is no ability under the CWA and implementing regulations for EPA to weight costs against benefits when establishing a water

[24] In its Response to Comments, the Region explained that it could not evaluate or agree to the District's unsubstantiated cost figures as the District failed to provide the bases for any of its estimates. *RTC* at 114 (Ex. 2). The Region noted that the District's costs estimates varied wildly in comments – ranging from $100 million to $200 million. *Id.* at 23, 66. That the District does not yet know precise costs of treatment is not a surprise: the Region explained that the District needs to undertake facilities planning, including an evaluation of alternative treatments, before it will be clear which treatment option is the most cost effective. *Id.* at 66. Such an alternatives analysis is a typical step in compliance scheduling and will be included in the compliance schedule for this permit. *Id.* Other factors that will impact costs included "how and over what time period cost of treatment will be funded." *Id.* In its petition, the District does not respond to any of these points, but simply asserts that costs of treatment are "approaching $200 million." *Dist. Pet.* at 6. On this record, the Board has no basis for accepting the District's unsupported cost estimates.

quality-based effluent limit. Indeed, consideration of costs plays no role in the ***establishment*** of water quality-based effluent limitations. *See RTC* at 22 (citing *U.S. Steel Corp.*, 556 F.2d at 838) (Ex. 2). The Region continued, however, to describe that such considerations could be taken into account in establishment of a compliance schedule. *RTC* at 22. Additionally, under certain circumstances, permittees can conduct an analysis of affordability issues for the purposes of obtaining a water quality standards revision or variance and a less stringent limit consistent with such revision or variance. S*ee Id.* Massachusetts and Rhode Island have regulations that allow variances or revisions of water quality standards under specific conditions, such as when the costs of controls necessary to attain the existing water quality standards would result in widespread social and economic impacts. *Id.* at 6; *Massachusetts Standards* at 314 CMR 4.03(4) (Ex. 4); *Rhode Island Standards* at Rules 19 and 20 (Ex. 5); 40 C.F.R. §131.10(g). In evaluating "widespread social and economic impacts," EPA uses its *Interim Economic Guidance for Water Quality Standards*, EPA-823-B-95-002 (March 1995). *See RTC* at 22 (Ex. 2). Again, the District completely ignores the Region's explanation of the mechanisms that already exist in state regulations and EPA guidance and regulations to address concerns about cost.

The District also completely ignores the Region's explanation of the immediate and substantial benefits anticipated from the nutrient limits. The Region explained:

> The nitrogen reductions required through this permit will have substantial environmental benefit, including significant reductions in algal growth and associated dissolved oxygen impairments that have severely impaired the marine fish community and recreational uses of Narragansett Bay. The phosphorus reductions will also have substantial environmental benefits, including significant reductions in algal growth and associated odors that have severely impaired the aquatic community and recreational uses of the Blackstone River.

Id. at 113-14. Rather, the District protests instead that the Region has provided "no guarantee or scientific evidence that it will work." *Dist. Pet.* at 6.[25] While the Region has not provided a guarantee, it has provided its best technical and professional judgment to establish effluent limitations to ensure compliance with water quality standards in Massachusetts and Rhode Island.

2. The Region Properly Assessed Environmental Justice Policy Considerations in Development of the Permit.

The District argues that the Region did not comply with Executive Order 12898 or the Region's Environmental Justice Action Plan because it did not adequately seek input from or assess the potential impacts of the permit limits on minority and low income populations. *See Dist. Pet.* at 66-68. The District focuses particularly on the increased costs that these communities may incur as a result of facility upgrades. *See Id.* at 66.

As a threshold matter, the District's conception of Environmental Justice is misleadingly narrow. As the Region explained in its Response to Comments, the central tenet of EPA's Environmental Justice policies, including the Executive Order and Regional Action Plan cited by the District, is ensuring that all people can enjoy the same degree of protection from environmental and health hazards. *See RTC* at 113; *EPA Environmental Justice Webpage at* http://www.epa.gov/oecaerth/environmentaljustice; *Regional Policy on Environmental Justice* (October 1, 2001) *at 1 (AR 213); EPA New England Environmental Justice Action Plan for Fiscal Years 2006-2007* ("*Action Plan*") (September 30, 2007) (Ex. 34; AR 212). As defined by

[25] The District also adds the vague aside that the Region has failed to demonstrate that the nutrient limits satisfy "the requirements of the MassDEP regulations which require that the treatment be the most practical." *See Dist. Pet.* at 6. The District nowhere amplifies this argument and, accordingly, it is not possible to provide a meaningful response. In any event, the Region explained in its responses that the nutrient limits here were based on applicable narrative nutrient criteria, not on any provisions related to treatment that is "the most practical." *See, e.g., RTC* at 109 (Ex. 2).

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994), achieving Environmental Justice requires that federal agencies identify and address "disproportionately high and adverse human *health* or *environmental* effects of its programs, policies, and activities on minority populations and low-income populations . . . ." *Executive Order 12898,* Sec. 1-101 (emphasis added) (Ex. 33; AR 211). Furthermore, the Regional Environmental Justice Policy states that no group of people should bear a disproportionate share of the negative *environmental* consequences resulting from industrial, municipal, or commercial operations. *See Regional Policy on Environmental Justice* at 1 (AR 213) (emphasis added).

While the Region is certainly mindful of the cost impacts on the Environmental Justice communities in the District's sewer area, the Region explained that it must also consider that the EJ populations in these communities and in communities downstream from the District's discharge have all suffered from the impacts of severe and ongoing water quality degradation in both the Blackstone River and Narragansett Bay. *See RTC* at 23, 113-114.[26] These communities have been affected by nutrient-induced water quality degradation to the point that designated uses such as fishing and swimming have been impaired. *Id.* at 23, 113. The Region further explained that, given these impairments, the Permit contained significant nutrient loading reductions that reflect appropriate and reasonable determinations of water quality-based limits

[26] In its response to the District's comments regarding environmental justice issues, the Region developed a GIS map that depicts the low income and minority populations in the District's sewer area, as well as among the communities downstream of the District's discharge along the Blackstone River and the Upper Narragansett Bay. The map is appended as Ex. 35 (AR 209). *See also RTC* at n.6. The Region also noted that downstream communities' wastewater treatment facilities had already been required via permits issued by EPA or RIDEM to reduce nutrient loadings. *Id.* at 24. The Region's GIS map illustrates that some of these downstream communities (e.g., East Providence, Woonsocket) also have EJ populations. (Ex. 35).

necessary to achieve applicable water quality standards. *See Id.* at 113-114. No group of people bears a disproportionate share of negative environmental consequences as a result of these limits.

Further, the record reflects that throughout this permit reissuance, the Region fully complied with Executive Order 12898 and the Region's Environmental Justice Action Plan, as well as the Region's Environmental Justice policies in involving EJ communities in this permitting action. Executive Order 12898 calls for federal agencies to develop Environmental Justice strategies that promote enforcement of all health and environmental statutes in areas with minority and low income populations and ensure greater public participation. *Executive Order 12898 at* Sec. 1-103 (Ex. 33). In order to encourage public participation, the Executive Order states that federal agencies must work to ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public. *See Id.* at Sec. 5-5. Furthermore, in an effort to ensure clean and safe water for Environmental Justice populations, the Region's Action Plan states that the Region should issue environmentally significant NPDES permits in Environmental Justice areas of concern and, as appropriate, ensure community input from these areas on problems such as water quality issues affecting poor, rural, or minority communities. *See Action Plan* at 6 (Ex. 34). The Region complied with these mandates through the very issuance of this permit and through its efforts seeking community input.

In light of the substantial public interest in the Permit, the Region held a public hearing on May 9, 2007 at a community college in Worcester, Massachusetts. *See RTC* at 114. Additionally, the Region made staff available to conduct an informational session, which included a question and answer period prior to the public hearing. *See Power Point Presentation*

(AR 16). The Region published notice of the public hearing and informational session in a local paper which serves Worcester, Massachusetts. *See Legal Notices* (AR 13).

The Region garnered a large turnout at the public hearing and informational session. Fifty-eight parties signed in at the events, including reporters from the local newspaper and a local television station, as well as representatives from Congressman James McGovern's office and Worcester City Council members. *See Sign In Cards* (AR 12). Additionally, 23 parties commented on the Permit at the public hearing, and the Region received 34 sets of written comments on the Permit thereafter. *See Public Hearing Transcript* (AR 18); *Written Comments* (AR 23-54). The Region evaluated and responded to all of the comments it received in finalizing the conditions in the Permit. Thus, the Region complied with the requirements of Executive Order 12898, as well as the Region's Action Plan and its Environmental Justice policies, by holding, after appropriate public notice, a widely attended public hearing and informational session on the Permit in a convenient and accessible location to the Environmental Justice communities facing potential impacts.

Finally, while not relevant to setting water quality-based limits, the Region specifically noted in its Response to Comments that "we fully appreciate that the cost of treatment is a critical concern for ratepayers, public officials and others in the UBWPAD [the District's] service area." *RTC* at 65 (Ex. 2). In light of this interest, in the informational session preceeding the public hearing, the Region provided "estimates of costs of nutrient treatment based on estimates of other facilities' planning efforts" and made staff available to answer questions the public might have about projected costs and the role of costs in NPDES proceedings. *Id.*

The District has failed to establish clear error by the Region in its consideration of the impacts of the Permit on Environmental Justice populations and in its outreach to Environmental Justice communities regarding the Permit. Thus, the Board should deny review of these issues.

3. The Region Appropriately and Thoroughly Responded to the District's Concerns About "Sustainability."

The District contends that, in establishing its water quality-based effluent limitations for nutrients, the Region should have balanced the environmental benefits to the receiving waters against the increase in energy costs, chemical usage and sludge production that will be required for the District to meet the limits. *Dist. Pet.* 70. Although the District does not explain exactly how the Region should have conducted this analysis or how it should have factored its findings into the derivation of specific numeric effluent limitations, the District's preferred outcome is clear: "from a sustainability perspective, Permit limits are not justified." *Dist. Pet.* at 68.

As the Region noted in its Response to Comments, the Region is a strong proponent of utilities' efforts to plan and design the most environmentally sustainable treatment processes necessary to meet effluent limitations, as well as to enhance sustainable practices across management and operations. *See RTC* 33-34, 116-18 (Ex. 2). Through its Sustainable Infrastructure Initiative, for example, the Region has provided tools and hands-on training to assist utilities in dramatically reducing their energy and water consumption. *Id.* at 117-18. The purpose of these efforts is not to offset levels of treatment required to meet environmental requirements, but to reduce a utility's environmental footprint and save resources regardless of the level of treatment employed. *Id.* at 117.

Nor does the District find any support for its arguments in Agency-wide efforts to promote sustainability. Citing an EPA Headquarters web page providing background

information about sustainability, the District contends that the Agency's "holistic approach" to sustainability mandates that the Region undertake this balancing test before setting effluent limitations. *See Dist. Pet.* at 70. While the web page does note that "[d]ozens of EPA programs, policy tools, and incentives" seek to enhance sustainability, the web page nowhere speaks to use of sustainability principles in NPDES permitting. Nor does it anywhere indicate that sustainability can be used to alter requirements of the CWA or other environmental programs. To the contrary, the document supports that principles of sustainability and environmental compliance are inherently compatible:

> Sustainable development marries two important themes: that environmental protection does not preclude economic development and that economic development must be ecologically viable now and in the long run.

www.epa.gov/sustainability/basicinfo.htm. The webpage continues: "principles of sustainability can stimulate technologic innovation, advance competitiveness, and improve our quality of life." *Id.* The District's proposed approach would undermine these goals: by relaxing effluent limitations, not only would waters continue to suffer impairment, but there would be no incentive to foster innovation of new sustainable approaches and technologies.

Further, as the Region explained in its Response to Comments, the District's view of sustainability is myopic: a wholehearted commitment to sustainability cannot stop at examination of the treatment technologies needed to meet new permit limits, but must also include a more comprehensive look at operations contributing to inefficiencies and waste. *RTC* at 33 (Ex. 2). In the District's case, for example, approximately 15 million gallons per day (out of a daily average of 37 million gallons per day) is inflow and infiltration, the vast majority of which is from separate sewer areas of the satellite systems. *Id.* at 34. Treating and handling all

of this excess flow consumes a substantial amount of energy and chemicals. *Id.* The District's sludge handling and incineration practices also present opportunities for energy savings and reduction of its carbon footprint. *Id.* at 33. Whether and how the District and satellite communities address these practices will impact not only overall energy and chemical costs, but also those costs associated with meeting the new permit limits.

The Region's position that sustainability issues do not factor into the permit writer's establishment of water quality-based effluent limitations also tracks the legal requirements of the CWA and NPDES regulations. The District points to nothing in the statute or regulations directing the permitting authority to weigh the environmental consequences of possible treatment options against the anticipated benefits of compliance with water quality standards. As explained in the Region's response to comments, the CWA directs states to determine the level of protection needed for their waters through the establishment of water quality standards. *See RTC* at 116. Where EPA (or another NPDES permitting authority) concludes there is a reasonable potential for a discharge to cause or to contribute to violations of those standards, EPA then must set an effluent limit necessary to ensure the standards are met. CWA § 4410(a)(1), 33 U.S.C. § 1341(a)(1); 40 C.F.R. §§ 124.53(a), 124.55(a)(2), 40 CFR 122.4(d) and 122.44(d). *See also RTC* at 116. In related contexts, this Board has time and again held that costs and technical considerations are not a part of the process of **setting** water quality based effluent limitations. *See, e.g., In Re City of Moscow,* 10 E.A.D. at 168. Here, too, the analysis urged by the District should not be part of the process for establishing water quality-based effluent limitations.

D. The Region's Decision to Address the Compliance Schedule for Phosphorus and Nitrogen Through an Administrative Order Rather Than in the Permit was Reasonable and Consistent with Applicable State and Federal Regulations.

The District incorrectly argues that the Region's determination not to include a compliance schedule for the phosphorous and nitrogen limits in the Final Permit constitutes an abuse of discretion. *Dist. Pet. at 44.* The District ignores the Region's explanation of why including a compliance schedule in the Permit would not be appropriate in this instance. The Region's analysis of this matter was sound and review should be denied.

Schedules of compliance are governed by 40 C.F.R. § 122.47, which requires, among other things, that "[a] permit may, when appropriate, specify a schedule of compliance leading to compliance with [the] CWA and [its] regulations." The schedule "shall require compliance as soon as possible, but not later than the applicable statutory deadline under the CWA." *Id.* § 122.47(a)(1). There is no right to a compliance schedule; one "may" be provided, "when appropriate." *See J & L Specialty Products Corp.,* 5 E.A.D. at 345 (grant of a compliance schedule under Ohio water quality standards containing the word "may" is purely discretionary).

As the Region noted in its Response to Comments, compliance schedules to meet water quality-based effluent limits may be included in permits only where the State clearly authorizes such schedules and where the limits are established to meet a water quality standard that is either newly adopted, revised or interpreted after July 1, 1977. *See RTC at 19.* The Board's primary case regarding compliance schedules, *In re Star-Kist Caribe, Inc.*, 3 E.A.D. 172 (Adm'r 1990) ("*Star-Kist I*"), *modification denied*, 4 E.A.D. 33 (EAB 1992) ("*Star-Kist II*"), held that, with respect to water quality-based effluent limits, the states determine whether and under what circumstances compliance schedules may be incorporated into NPDES permits. When the State authorizes compliance schedules in permits to meet water quality-based effluent limitations, EPA

may include them, though it need not do so. *Id. See also In re: Westborough and Westborough Treatment Plant Board*, 2002 EPA App. LEXIS 5 (EPA App. 2002) at n.18 (noting that, under Massachusetts law, the decision of whether to include a compliance schedule is discretionary). In this case, nothing in the relevant state standards requires EPA to include compliance schedules in the NPDES permit itself.

The nitrogen limits in the Final Permit are based solely on ensuring compliance with the Rhode Island Water Quality Standards. RIDEM has not authorized compliance schedules, or included any provisions regarding compliance schedules, within its water quality standards. *See Rhode Island Standards* (Ex. 5). RIDEM has included language regarding compliance schedules in its RIPDES permitting regulations that corresponds to EPA's permitting regulations at 40 C.F.R. §122.47. *See Regulations for the Rhode Island Pollutant Discharge Elimination System* at Rule 20.01 (stating that a permit "may, when appropriate, specify a schedule of compliance leading to compliance with the State and Federal Acts and all other applicable authority for these regulations"). However, the Rule in 20.01 makes no reference to schedules to meet water quality-based effluent limitations and RIDEM does not interpret its regulations to allow compliance schedules in permits to meet water quality-based effluent limitations. Nor has the Region ever interpreted RIDEM's regulations otherwise. Rather, RIDEM establishes schedules to meet such limits in Administrative Compliance Orders or Consent Agreements, *see RTC* at 19, as the District well knows having submitted examples of such agreements to the Board.

Massachusetts water quality standards, on the other hand, do contain discretionary language that authorizes compliance schedules in permits to meet water quality-based effluent limitations. *See Massachusetts Standards*, 314 § CMR 4.03(1)(b) ("A permit may, when appropriate, specify a schedule leading to compliance with the Massachusetts and Federal Clean

Water Acts and regulations.") (Ex. 4). During the public comment period on the Final Permit, MassDEP proposed a compliance schedule for phosphorous. *See Comment #E2, RTC* at 18. The Region considered this proposal carefully, but ultimately decided that it would not be advisable to create separate schedules for the achievement of the phosphorous and nitrogen limits, given that they implicate overlapping issues related to planning, design, and construction. *See RTC at 18* (explaining that it is desirable from both an engineering and an economic standpoint that the schedules for nitrogen and phosphorous be consistent). Significantly, MassDEP has not petitioned for review of that decision.

The District does not contest that the phosphorous and nitrogen limits involve "many overlapping issues" in its Petition. *Dist. Pet.* at 46. As the Region discussed in its Response to Comments, constructing a compliance schedule in this matter will be a complicated and ideally an interactive process that should not be undertaken before more is known about possible modes of compliance and costs. *See RTC* at 19, 90-91. The Region also recognized that "it may be appropriate to allow some period of time to operate the new plant [following current upgrades] before making a final decision on all aspects of additional treatment facilities to enable UBWPAD [the District] and its consultants to determine the most cost-effective technologies for achieving the new limits." *RTC* at 32.

Nonetheless, the District asserts that the Region abused its discretion by not providing a compliance schedule in the permit "when it has the clear authority to do so." *Dist. Pet. at 45.* This is tantamount to arguing that the Region has no discretion whatsoever. Given the extent of technically complicated and overlapping issues with regard to treatment for phosphorus and nitrogen against the backdrop of the District not yet having finalized its current upgrades, the Region's exercise of its discretion to issue a compliance schedule in a separate administrative

order was highly reasonable. As the Region indicated in the Fact Sheet, it plans to work cooperatively with the District and other stakeholders in designing a schedule that ensures compliance with the permit limits as soon as possible, but that is reasonable in light of the necessary treatment upgrades. *See Fact Sheet* at 7 (Ex. 1). The Region also intends to work with both MassDEP and RIDEM to ensure that the schedule required of the District and of other facilities that discharge to the Bay are equitable. *See RTC* at 58.

The District's petition argues that, because the compliance schedule is not included in the permit itself, and because it may not be possible to meet the nitrogen and phosphorous limits immediately, it will be at risk of enforcement action when the permit goes into effect. *See Dist. Pet. at 46-47.* This argument was not raised in comments and, therefore, is not preserved for review by the Board. In any event, the Region believes any such exposure is minimal. The Region's common practice is to issue an administrative order containing a compliance schedule as soon as possible after permit issuance (or, in the case of an appealed permit, once the challenged limits take effect). As the District knows from the negotiated resolution of the appeal of its prior permit, the Region often negotiates a compliance schedule as part of a comprehensive settlement of a permit appeal.

Because the District has not demonstrated clear error or abuse of discretion by the Region, review of this issue should be denied.

E. The Permit's Metals Limits Are Adequately Explained and Rational in Light of the Record.

1. The Copper Limit is Reasonable and Required by Applicable Water Quality Standards.

The District argues that the Region did not consider the dilution at the Massachusetts-Rhode Island border in establishing the total copper limits for the District's discharge. *Dist. Pet.*

at 54-55. The Board should uphold the total copper effluent limits in the Permit, as the Region appropriately evaluated dilution at the state line.

In order to explain to the Board how the Region considered dilution at the Massachusetts-Rhode Island border in its evaluation of the copper limits, it is necessary to set forth the process by which the Region developed the limits. The Region established the copper effluent limits in the draft permit in accordance with the Massachusetts water quality standards since the District's discharge is located in Massachusetts. Although MassDEP had developed site-specific criteria for copper at the time of issuance of the draft permit, the Region had not yet approved these criteria. Accordingly, the Region used Massachusetts' generally applicable water quality criteria for copper in setting the draft copper effluent limits. Specifically, the Region established a monthly average limit of 7.2 ug/l and a daily maximum limit of 10.2 ug/l based on the Massachusetts chronic criterion of 6.5 ug/l and acute criterion of 9.3 ug/l for total recoverable copper, as well as a dilution factor of 1.1 at the point of discharge.[27] *See Fact Sheet* at 16 (Ex. 1); *Massachusetts Standards* at 314 CMR Section 405(5)(e) (Ex. 4). However, the Region stated that it would use MassDEP's newly adopted site-specific criteria for copper in the final permit if the Region approved the criteria prior to issuance of the final permit. *See Fact Sheet* at Attachment B (Ex. 1). The Region subsequently approved MassDEP's site-specific criteria.

In its comments on the draft permit, the District stated that it supported the use of MassDEP's site-specific criteria for copper. *See Comment #F39, RTC* at 72; *Dist. Pet.* at 54-55. However, RIDEM commented that it objected to the establishment of permit limits using the site-specific criteria because it would cause the copper concentrations at the state line to exceed

[27] The dilution factor of 1.1 at the point of discharge is based on the District's design flow of 56 million gallons per day ("MGD"), or 86.7 cubic feet per second ("cfs"), and the seven day, ten year low flow ("7Q10") conditions at the point of discharge of 4.4 MGD, or 6.8 cfs. *See Fact Sheet* at Attachment B (Ex.1).

Rhode Island's water quality criteria for copper. *See RIDEM's Comments* at 2-3 (Ex. 36). RIDEM further commented that even use of the Massachusetts generally applicable criteria for copper in the Permit would cause violations of Rhode Island water quality standards. *See Id.* In evaluating these comments and determining whether to employ the site-specific criteria, the Region concluded that use of these criteria would not ensure compliance with Rhode Island water quality standards. Even when the Region considered the 1.18 dilution factor at the Massachusetts-Rhode Island border[28] and the approximate 20% reduction in copper loading that occurs as a result of attenuation between the District's discharge and the state line, the copper concentrations that would result at the state line under limits based on the site-specific criteria would still exceed Rhode Island water quality standards.[29] As the Region must condition the Permit to ensure compliance with Rhode Island's water quality standards, it could not employ MassDEP's site-specific water quality criteria in setting the copper limits for the District's discharge. *See* CWA § 401(a)(2), 40 C.F.R. § 122.44(d)(4). *See also* 40 C.F.R. § 122.4(d) (prohibiting issuance of an NPDES permit "[w]hen the imposition of conditions cannot ensure compliance with applicable water quality requirements of all affected States.") The District did not challenge in its petition the Region's failure to use the Massachusetts site-specific criteria for copper in setting the total copper effluent limits.

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[28] The dilution factor of 1.18 at the Massachusetts-Rhode Island border is based on the District's design flow of 86.7 cfs and the 7Q10 flow conditions at the state line of 102 cfs under the following formula: (102 – 86.7)/86.7 = .18 : 1 dilution factor = 1.18. *See RIDEM Comments* at 2 (Ex. 36).

[29] MassDEP's site-specific water quality criteria for copper include a chronic criterion for dissolved copper of 18 ug/l and an acute criterion of 25.7 ug/l. Thus, using these criteria and a 1.1 dilution factor at the point of discharge would result in a monthly average limit of 19.9 ug/l and a daily average limit of 28.3 ug/l. *See Comment #D1, RTC* at 14. When accounting for dilution at the state line with a dilution factor of 1.18, as set forth *supra* in note 26, and 20% attenuation, the resulting copper concentrations at the state line would be 13.5 ug/l under the monthly average limit and 19.2 ug/l under the daily maximum limit, which greatly exceed, respectively, Rhode Island's chronic criterion of 5.2 ug/l and acute criterion of 7.3 ug/l.

The Region did consider dilution at the Massachusetts-Rhode Island border, as well as attenuation, in determining whether the copper limits would ensure compliance with Rhode Island water quality standards at the state line. Based on the 1.18 dilution factor at the Massachusetts-Rhode Island border and the approximate 20% attenuation that occurs between the District's discharge and the state line, the monthly average limit of 7.2 ug/l and daily maximum limit of 10.2 ug/l will ensure compliance with Rhode Island's chronic criterion of 5.2 ug/l and acute criterion of 7.2 ug/l for total recoverable copper.[30] *See RIDEM Comments* at 2-3 (Ex. 36); *Rhode Island Standards* at Appendix B (Ex. 5).

Accordingly, the Region's approach to setting the total copper effluent limits was reasonable and necessary to prevent excursions above applicable state water quality standards. In establishing the limits, the Region first considered dilution at the point of discharge. This is appropriate as, in the first instance, the limits are established to meet Massachusetts water quality standards. In evaluating whether the copper limits would ensure compliance with Rhode Island water quality standards at the state line, the Region did consider dilution at the Massachusetts-Rhode Island border, as well as attenuation. Based on the 1.18 dilution factor at the Massachusetts-Rhode Island border and the approximate 20% attenuation that occurs between the District's discharge and the state line, the monthly average limit of 7.2 ug/l and daily maximum limit of 10.2 ug/l will ensure compliance with Rhode Island's chronic criterion of 5.2 ug/l and acute criterion of 7.2 ug/l for total recoverable copper.[31] *See RIDEM Comments* at 2-3

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[30] Copper Concentration at RI Border under Monthly Average Limit:
(chronic criterion)/(dilution factor) = (7.2 ug/l)/(1.18) = 6.1 ug/l – 20% attenuation ≈ 4.9 ug/l
Copper Concentration at RI Border under Daily Maximum Limit:
(acute criterion)/(dilution factor) = (10.2 ug/l)/(1.18) = 8.6 ug/l – 20% attenuation ≈ 6.9 ug/l

[31] Copper Concentration at RI Border under Monthly Average Limit:
(chronic criterion)/(dilution factor) = (7.2 ug/l)/(1.18) = 6.1 ug/l – 20% attenuation ≈ 4.9 ug/l
Copper Concentration at RI Border under Daily Maximum Limit:

(Ex. 36); *Rhode Island Standards* at Appendix B (Ex. 5). Since the District has not demonstrated clear error or an abuse of discretion by the Region, the Board should deny review.

2. The Cadmium Limit is Reasonable and Required by Applicable Water Quality Standards.

The District argues that the Region should not have imposed a cadmium effluent limit that is below levels that existing technology can detect. *See Dist. Pet.* at 55. This specific argument did not appear in the comments on the draft permit. Accordingly, it was not preserved for Board review. While New England Plating questioned in its comments whether it made sense to regulate "non-detect levels such as is the case for cadmium," no commenter posed the specific argument that the cadmium effluent limit is inappropriate because the Region imposed it in advance of technology that can detect an exceedance of the limit. *See New England Plating Comments* (AR 27).

If the Board reaches this argument, however, it should uphold the total cadmium effluent limit in the Permit. The Region derived the total cadmium monthly average limit of 0.2 ug/l from the applicable Massachusetts chronic water quality criteria value for protection of aquatic life. The Region does not dispute that this limit is below the current analytical detection level of 0.5 ug/l for cadmium. However, Section 301(b)(1)(C) of the CWA and EPA's implementing regulations require the Region to establish effluent limitations necessary to attain state water quality standards whenever a discharge is found to cause, have the reasonable potential to cause, or contribute to an exceedance of a numeric or narrative state water quality criterion.[32] The

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(acute criterion)/(dilution factor) = (10.2 ug/l)/(1.18) = 8.6 ug/l – 20% attenuation ≈ 6.9 ug/l

[32] The Board has held that Section 301(b)(1)(C) "requires unequivocal compliance with applicable [water quality standards], and does not make any exceptions for [the] cost or technological feasibility" for achieving the effluent limitations. *See City of Moscow*, 10 E.A.D. at 168, quoting *In re City of Fayetteville, Ark.*, 2 E.A.D. 594, 600-601 (CJO 1988). *See also U.S. Steel Corp. v. Train*, 556 F.2d at 838 (finding "states are free to force technology" and "if

Region does not have the authority to impose less protective limits, except in the narrow circumstances where a variance is justified or the water quality standards are amended, neither of which is applicable in this case. *See* CWA §§ 301-303. Accordingly, given that the Massachusetts chronic criterion for total recoverable cadmium is 0.2 ug/l, the Region based the monthly average limit for total cadmium in the Permit on this chronic criterion and a dilution factor of 1.1 at the point of discharge, as discussed *supra* in Section E.1, resulting in a limit of 0.2 ug/l.

When an effluent limitation required by Section 301 of the CWA is less than the current level of analytical detectability, the Region typically establishes a separate compliance level in the Permit based on the current level of detectability, which provides the permittee with a "firm and fair measure" of what is required for compliance with the permit. *J&L Specialty Products Corp.*, 5 E.A.D. at 73. In this case, the Minimum Level ("ML") value for cadmium is 0.5 ug/l. *See Permit* at Part I.A.1, 8, n.12. (Ex. 3). The Permit specifies that the District shall report any effluent value for cadmium that is below the ML as zero on its Discharge Monitoring Reports. *Id.* The Region will consider this reported value as compliance with the Permit limitations. *See J&L Specialty Products Corp.*, 5 E.A.D. at 72. Given that the Region included a 0.2 ug/l effluent limit on total cadmium in the Permit to prevent excursions above state water quality standards, while also incorporating a compliance level equal to detection levels for total cadmium, the Region did not abuse its discretion in establishing the total cadmium effluent limit in the Permit.

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the states wish to achieve better water quality, they may [do so], even at the cost of economic and social dislocations").

3. The Lead Monitoring Requirements are Reasonable.

The District objects to the lead monitoring requirements in the Permit since the draft permit did not include such monitoring requirements and the District did not have the opportunity to comment on the requirements. *See Dist. Pet.* at 56. Additionally, the District notes that the data collected show that its effluent lead discharges have been "below levels of concern." *Id.* The Region did not err in including lead monitoring requirements in the Permit.

As a procedural matter, the Region was justified in including lead monitoring requirements in the Permit without reopening the comment period under 40 C.F.R. § 124.14(b). The Region established the lead monitoring requirements in the Permit based on RIDEM's comment that the District's effluent lead levels might have a reasonable potential to cause or contribute to violations of Rhode Island's water quality standards. *See RIDEM Comments at* 2-3. (Ex. 36). RIDEM commented that, based on its experience, typical effluent lead levels from WWTF discharges in Rhode Island indicate that the District's lead discharges could have the reasonable potential to cause or contribute to violations of water quality standards. *Id.* While the Region determined that this information was not sufficient to warrant an effluent limit for lead in the Permit, it concluded that the information did necessitate a monitoring requirement. *See RTC* at 14-15.

The regulations governing the NPDES permitting process, set forth in 40 C.F.R. Part 124, do not call for a new comment period every time the permit issuer adds a new permit condition in response to comments on the draft permit. *See In re Indeck-Elwood, LLC*, PSD Appeal No. 03-04, slip. op. at 29 (EAB Sept. 27, 2006); *see also In re District of Columbia Water and Sewer Authority* ("*WASA*"), NPDES Appeals Nos. 05-02, 07-10, 07-11, 07-12, slip. op. at 61(EAB March 19, 2008), quoting *NRDC* v. *U.S. EPA*, 279 F.3d 1180, 1186 (9th Cir. 2002) (finding "a

final permit need not be identical to the corresponding draft permit and, indeed '[t]hat would be antithetical to the whole concept of notice and comment'"). As the Board has noted, "the [permitting] regulations contemplate the possibility that permit terms will be added or revised in response to comments received during the public comment period." *Id.; In re Amoco Oil Co.*, 4 E.A.D. 954, 980 (EAB 1993). *See also Dominion Energy Brayton Point,* 12 E.A.D. at 695 (finding "[permitting] regulations expressly authorize the Region to compile new materials in an effort to respond to comments submitted on the [d]raft [p]ermit"). In order for the permitting process not to extend indefinitely, the Region must have the authority to issue a final permit that differs in some aspects from the draft permit. *See NRDC v. U.S. EPA*, 863 F.2d 1420, 1429 (9th Cir. 1988) (holding agency must have authority to promulgate final rule that differs in some particulars from proposed rule because "otherwise the process might never end").

However, a final permit that differs from a draft permit that is not subject to public notice and comment must be a logical outgrowth of the permitting process. *See WASA*, slip op. at 61; *see also In re Old Dominion Elec. Co.*, 3 E.A.D. 779, 797 (Adm'r 1992) (reopening comment period not necessary under § 124.14(b) because, among other reasons, "[t]he revised permit by all accounts is a logical outgrowth of the notice and comment process...."). Additionally, according to 40 C.F.R. § 124.14(b), "[i]f any data[,] information[,] or arguments submitted during the public comment period...appear to raise substantial new questions concerning a permit, the Regional Administrator...may [r]eopen or extend the comment period." The Board has recognized that "[t]he critical elements of this regulatory provision are that new questions must be 'substantial' and that the Regional Administrator 'may' take action." *Dominion Energy Brayton Point,* 12 E.A.D. at 695, quoting *NE Hub*, 7 E.A.D. at 585. Based on the plain language of this regulation, the Board has long acknowledged that the decision to reopen the public

comment period is largely discretionary. *Id.*; *Amoco Oil*, 4 E.A.D. at 980. Many considerations may inform the Region's exercise of this discretion, including whether permit conditions have been significantly changed as a result of substantial new questions, whether the new information was developed in response to comments received during the permit proceeding, whether the record adequately explains the Agency's reasoning so that a dissatisfied party can fairly develop a permit appeal, and the significance of adding delay to the particular permit proceeding. *See, e.g., In re Chelalis Generating Station*, PSD Appeal No. 01-06, slip. op. at 33, 35-36 (EAB Aug. 20, 2001); *In re Metcalf Energy Center*, PSD Appeal Nos. 01-07 & 01-08, slip op. at 27-30 (EAB Aug. 10, 2001); *NE Hub*, 7 E.A.D. at 587, n. 14; *Old Dominion Elec. Co.*, 3 E.A.D. at 797-798; *In re Thermalkem, Inc., Rock Hill, South Carolina*, 3 E.A.D. 355, 357-358 (Adm'r 1992).

The Region acted reasonably in including the lead monitoring requirements in the Permit. The lead monitoring requirements were a logical outgrowth of the notice and comment process and did not raise substantial new questions warranting a reopening of the public comment period under 40 C.F.R. § 124.14(b). The addition of the lead monitoring requirements in the Permit constituted a change that flowed directly from consideration of RIDEM's comments stating that lead limits should be imposed on the District's effluent lead discharges. Furthermore, the District already monitors lead on a quarterly basis through its WET testing. Thus, the establishment of lead monitoring requirements in the Permit is not a significant change based on a substantial new question. The Permit only imposes eight additional monitoring requirements per year, comprising a modest additional burden to the District. It is very unlikely that additional comments from the District would have altered the Region's decision to include the lead monitoring requirements in the Permit. Moreover, pursuant to 40 C.F.R. § 124.17(a)(1), the

Region clearly explained in its Response to Comments why it included lead monitoring requirements in the Permit which did not appear in the draft permit. *See RTC* at 14. This explanation ensured that the lead monitoring requirements were properly noted in the record of the proceeding and that the District had an opportunity to adequately prepare its petition for review with regard to this provision. *See Indeck-Elwood*, slip op. at 30; *City of Marlborough, Mass. Easterly Wastewater Treatment Facility*, 12 E.A.D. at 244-245; *Amoco Oil*, 4 E.A.D. at 980. The Region did not err or abuse its discretion by including lead monitoring requirements without reopening the public comment period.

With regard to the District's claim that effluent lead discharges are "below levels of concern," (*Dist. Pet.* at 56), in establishing the lead monitoring requirements, the Region evaluated the existing effluent lead data from the District's WET tests. While the effluent lead data from the District's 2005 and 2006 WET tests indicate that lead levels were below detection levels, the District utilized very high detection levels, ranging from 5 to 10 ug/l, which are well above the levels that approved test methods can achieve, as well as above the Massachusetts and Rhode Island ambient chronic criteria values of 1.8 ug/l and 1.3 ug/l, respectively, for lead. *Massachusetts Standards* at 314 CMR Section 405(5)(e) (Ex. 4); *Rhode Island Standards* at Appendix B (Ex. 5). Based on these data, the Region currently cannot effectively evaluate the District's reasonable potential to cause or contribute to an excursion of state water quality standards. As a result, the Region set a monthly lead monitoring requirement, with a quantification level of 0.5 ug/l,[33] which is below the Massachusetts and Rhode Island ambient chronic criteria values for lead and, therefore, will allow the Region to determine if the District's effluent lead levels have the

[33] The quantification level of 0.5 ug/l for lead is based on the Inductively Coupled Plasma Mass Spectrometry test method, which is an approved EPA test method. *See* 40 C.F.R. Part 136. The District is not challenging the Region's quantification level for lead.

reasonable potential to cause or contribute to a violation of water quality standards.[34] *See Permit* at Part I.A.1, n. 12 (Ex. 3); *RTC* at 14-15 (Ex. 2).

The Region's decision to impose a lead monitoring requirement was consistent with the CWA, which affords the Region broad discretion to include monitoring requirements in NPDES permits. *See Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. at 671 (finding that CWA § 308(a) establishes broad discretion for the Region to impose color monitoring requirements where no color limit existed in the permit); *City of Port St. Joe*, 7 E.A.D. at 306-307 (holding that CWA § 308(a) confers broad authority on the Region to impose monitoring requirements); *In re Liquid Air Puerto Rico Corp.*, 5 E.A.D. 247, 261-262, n. 24 (EAB 1994). Section 308(a) of the CWA states,

> Whenever required to carry out the objective of this chapter, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard...; (2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition, or effluent standard...; or (4) carrying out section[]...1342...of this title [CWA §402], (A) the Administrator shall require the owner or operator of any point source to (i) establish and maintain such records, (ii) make such reports..., (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe); and (v) provide such other information as [the Administrator] may reasonably require. CWA § 308(a).

The Board has held that an obvious purpose behind CWA §308(a) is to enable EPA to require dischargers to gather data so that EPA can make informed regulatory decisions. *City of Port St. Joe*, 7 E.A.D. at 310; *In re Simpson Paper Co. and Louisiana-Pacific Corp.*, 3 E.A.D. 541, 548-549 (CJO 1991) (finding that CWA § 308(a) is an information gathering tool). Accordingly, the Board has stated that "for a petitioner to raise a material issue of fact as to

[34] If the Region determines, based on samples taken pursuant to the lead monitoring requirements in the Permit, that the District's effluent lead levels have the reasonable potential to cause or contribute to violations of water quality standards, the Region can take steps to modify the permit to include an effluent limit for lead.

whether an information gathering requirement in a permit is unreasonable and therefore exceeds the Agency's authority under Section 308(a), a petitioner must cite evidence sufficient to support a finding that there is no basis in fact for the Agency to require information gathering in the first place." *City of Port St. Joe*, 7 E.A.D. at 310. The District has failed to make this demonstration.

In addition, the Board has recognized the broad monitoring authority conveyed to the Region by CWA § 402(a)(2) and 40 C.F.R. § 122.44(d). *City of Port St. Joe*, 7 E.A.D. at 307; *Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. at 671-672. Section 402(a)(2) of the CWA provides that the conditions of an NPDES permit may include "conditions on data and information collection, reporting, and such other requirements as [the Administrator] deems appropriate." *See City of Port St. Joe*, 7 E.A.D. at 307. The regulatory provision 40 C.F.R. § 122.44(d) is similarly broad in scope, requiring NPDES permits to include any requirements "necessary to [a]chieve water quality standards." *See Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. at 671-672. Where the monitoring requirements in NPDES permits relate to maintaining state water quality standards, as is the case here, the Board has determined that nothing in the CWA or its implementing regulations constrains the Region's authority to include such monitoring provisions. *Id.* Furthermore, 40 C.F.R. § 122.48(b) contains monitoring requirements for NPDES permits, stating that all permits must specify required monitoring, including the type, intervals, and frequency sufficient to yield data that are representative of the monitored activity. *See Gov't of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D at 324; 40 C.F.R. § 122.44(i) (referencing the § 122.48 requirements).

The Region's exercise of its authority to impose lead monitoring requirements was a reasonable response to RIDEM's comment that the District's lead levels could have the reasonable potential to cause or contribute to violations of water quality standards and the

Region's inability to conduct a reasonable potential analysis with the available effluent lead data since the lead detection levels for the District's WET tests are higher than the ambient criteria values. Because the District has not demonstrated clear error or abuse of discretion by the Region in establishing the lead monitoring requirements in the Permit, review of this issue should be denied.

4. The Nickel Monitoring Requirements are Reasonable.

The District similarly objects to the nickel monitoring requirements since the draft permit did not include such monitoring requirements. *See Dist. Pet.* at 56. Additionally, the District notes that the data collected shows that its effluent nickel discharges have been "below levels of concern." *See Id.* Here, too, the Region did not err in including nickel monitoring requirements in the Permit.

The Region included the nickel monitoring requirements in the Permit in response to RIDEM's comments requesting that the Region include a monitoring requirement for nickel in the Permit to ensure that the effluent nickel data from the District's WET testing is reported on the District's DMRs, which will make the data readily available for review by the public. *See RIDEM Comments at* 2-3 (Ex. 36). After evaluating these comments, the Region included a quarterly monitoring requirement for effluent nickel so that the District will report nickel results from its WET tests through its DMRs. In this way, the data will be more readily available to RIDEM and interested members of the public. *See RTC* at 14-15; *see also* 40 C.F.R. § 122.41(l)(4). The new requirement does not impose any additional monitoring on the District, but simply requires it to report the data already collected as part of WET testing through its DMRs.

As with the lead monitoring requirements, discussed *supra* in Section E.3, the addition of the nickel monitoring requirements in the Permit was a logical outgrowth of the permitting process and did not raise substantial new questions warranting a reopening of the public comment period under 40 C.F.R. § 124.14(b). *See also* 40 C.F.R. § 122.63. The addition of the nickel monitoring requirements was a change that flowed directly from RIDEM's comments on the draft permit. The District is already monitoring nickel on a quarterly basis in its WET tests. The Region is not requiring the District to conduct additional monitoring of its effluent nickel levels, but merely to report the results through its DMRs. *See RTC* at 15 (Ex. 2). It is highly unlikely that additional comments from the District would have altered the Region's decision to include nickel monitoring requirements in the Permit. Furthermore, in the Response to Comments, the Region sufficiently set forth its basis for including nickel monitoring requirements. *Id.* at 14-15. The Region did not err or abuse its discretion by including nickel monitoring requirements in the Permit without reopening the public comment period.

As discussed *supra* in Section E.3, the Region has broad authority to establish monitoring and reporting requirements in NPDES permits under CWA §§ 308(a) and 402(a)(2), as well as 40 C.F.R. §§ 122.44(d) and 122.48. *See also In re NPDES Permit for Wastewater Treatment Facility of Union Township*, NPDES Appeal Nos. 00-26 & 00-28, 18 (EAB, Jan. 23, 2001) (holding that "it is clear from the language of CWA §§ 308 and 402(a)(2) and 40 C.F.R. § 122.48 that the Administrator has broad discretion to establish the reporting requirements in NPDES permits"). While the available data indicate that the District's effluent nickel levels do not currently have the reasonable potential to cause or contribute to a violation of water quality

standards,[35] the nickel monitoring requirements will make effluent nickel data readily available through the District's DMRs to allow all interested parties to track the WET test results for effluent nickel discharges. *See* 40 C.F.R. § 122.41(l)(4). Review should be denied.

5. The Aluminum Monitoring Requirements are Reasonable, and the Board Need Not Reach the Necessity for a Total Aluminum Effluent Limit.

Both the District and Trout Unlimited have challenged the Region's actions with respect to aluminum in the Permit. The District objects to the aluminum monitoring requirements in the Permit since the draft permit did not include such monitoring requirements and the District did not have the opportunity to comment on the requirements. *See Dist. Pet.* at 55. The District also claims that the Region has not established that the instream values of aluminum are sufficiently close to the criterion to warrant this monitoring requirement. *See Id.* at 55-56. Conversely, Trout Unlimited argues that the Region should have set an effluent limit for total aluminum since data indicate that the levels of aluminum currently discharged by the District are detrimental to fish populations in the Blackstone River. *See TU Pet.* at 2. The Region did not err in including aluminum monitoring requirements in the Permit. Moreover, the Board need not reach the issue of whether the Region should have set an effluent limit for aluminum in the Permit because, as explained below, the Region plans to issue a draft permit modification to establish an aluminum effluent limit.

As a procedural matter, the Region was justified in including aluminum monitoring requirements in the Permit without reopening the comment period under 40 C.F.R. § 124.14(b). The Region included the provisions in response to Trout Unlimited's and RIDEM's comments

[35] The effluent nickel data from the District's 2005 and 2006 WET tests, which ranged from 5-20 ug/l, demonstrate that the nickel levels in the District's discharge are well below ambient criteria values. *See RTC* at 14 (Ex. 2). Additionally, as the District indicates in its petition, effluent nickel levels were below ambient criteria values in 1999 when the Permit was renewed, which caused the Region to remove the nickel effluent limitations from the previous permit. *See Fact Sheet for Expired Permit* (December 1998) at 4 (AR 76).

regarding their respective concerns about "aluminum toxicity" and the reasonable potential of the District's effluent aluminum levels to cause or contribute to water quality violations. *See RTC* at 4 and 14. *See also RIDEM Comments* at 2-3 (Ex. 36). As with the lead and nickel monitoring requirements, discussed *supra*, the addition of the aluminum monitoring requirements in the Permit was a logical outgrowth of the permitting process and did not raise substantial new questions warranting a reopening of the public comment period under 40 C.F.R. § 124.14(b).

In establishing the monthly aluminum monitoring requirements, the Region evaluated the existing effluent aluminum data from the District's WET tests. The effluent aluminum data from the District's 2005 and 2006 WET tests indicate that the levels of aluminum in the District's discharge have ranged from 70 to 240 ug/l. The ambient chronic criterion value for aluminum in Massachusetts and Rhode Island is 87 ug/l. After re-evaluating this data in light of Trout Unlimited's Petition, the Region has concluded that the data clearly supports not only the need for monitoring, but also demonstrates a reasonable potential to cause or contribute to an excursion above applicable state standards. The District attempts to minimize the significance of the data by presenting an average of its monthly aluminum discharge results over an eight year period, which computes to 63 ug/l. *See Dist. Pet.* at 56. This is inappropriate, particularly since there are data points in the District's WET test results that substantially exceed the Massachusetts and Rhode Island water quality criteria for aluminum. The Region reasonably determined that the available effluent aluminum data warranted a monitoring requirement.

The Region has broad authority to establish monitoring and reporting requirements in NPDES permits under CWA §§ 308(a) and 402(a)(2), as well as 40 C.F.R. §§ 122.44(d) and 122.48. *Supra* at Sections E.3-4. The District has not sustained its burden of showing no basis

in fact for the monitoring requirement. *See City of Port St. Joe*, 7 E.A.D. at 310. Review should be denied.

With regard to Trout Unlimited's petition arguing that the Region should have set total aluminum effluent limits (not simply monitoring requirements), the Board need not reach this issue. Upon further review of the available data and the record, the Region has decided to modify the Permit to include an effluent limitation and associated monitoring requirements for total aluminum, in order to ensure compliance with both Massachusetts and Rhode Island water quality standards. It is the Region's intention to proceed expeditiously in modifying the Permit. The Region issued its Notice of Uncontested and Severable Conditions on November 26, 2008. According to the Notice, the Permit's uncontested conditions will take effect on January 1, 2009. The Region anticipates that it will issue the proposed permit modification by the end of January 2009. The District, Trout Unlimited, and any other interested parties will have full rights to comment on the draft permit modification and ultimately to appeal any final permit modification. Thus, the Board need not reach the issue of whether the Region should have included an effluent limitation for total aluminum in the Permit at this time.

F. The Winter Fecal Coliform Limit is Necessary to Ensure Compliance with Rhode Island's Water Quality Standards.

The Region imposed a winter fecal coliform limit in the permit to meet Rhode Island's water quality standards. The District sets forth three challenges. First, it contends that the state water quality standard applying bacteria criteria year round is illogical since there are no designated bathing beaches along the receiving waters in Rhode Island. *Dist. Pet.* at 40. Next, the District contends the Region had insufficient data to determine the District's discharge had a

reasonable potential to cause or contribute to the state standard. *Id.* at 41. Finally, the District contends the Region should have afforded it the benefit of dilution at the state line. *Id.* at 42.

The Blackstone River in Rhode Island is a Class B1 water from the border with Massachusetts to the confluence with the Seekonk River. *See Rhode Island Standards* at Appendix A (Ex. 5). Designated uses in Class B1 waters include, among other things, "primary and secondary contact recreational activities." *Id.* To protect primary contact recreation in fresh waters, Rhode Island's Water Quality Standards specify that fecal coliform bacteria shall not exceed a geometric mean value of 200 MPN/100 ml and that no more than 20% of instream samples shall exceed 500 MPN/100ml. *Id.* These criteria apply year round, including during non-bathing season. *RTC* at 63, 111 (Ex. 2).

Noting there are no designated bathing beaches along the banks of the Blackstone River in Rhode Island, the District questions the need to apply to the criteria year round. *Dist. Pet.* at 40 (claiming that the "limit has been set to protect a use that does not occur in areas not designated for that use"). Through its challenge, the District invites the Region to question Rhode Island's judgment as to the designated uses of its waters and the level of protection necessary to protect those uses. As the Region explained in its Response to Comments, "Through their water quality standards, states determine the level of protection needed for receiving waters." *RTC* at 65. Where EPA determines that is a reasonable potential that a discharge will cause or contribute to a violation of the standards that have been established by a state, EPA must then set an effluent limit necessary to ensure the standards are met. *See* 40 C.F.R. § 122.44(d)(1)(i). Here, Rhode Island's Standards make no provision for seasonal bacteria criteria. Thus, the water quality criteria for fecal coliform apply year round and RIDEM

implements this requirement by establishing year round bacteria limits in RIPDES permits for facilities that discharge to surface waters in that state. *RTC* at 63.

The District next contends that the "age and limited size" of the data set considered by the Region are not "real evidence" connecting the District's discharge to any impairments in Rhode Island. *See Dist. Pet.* at 41, 43. The water quality sampling documented in the record includes four samples collected during dry weather between November 2005 and February 2006, a period during which the upstream Massachusetts POTWs were not disinfecting. *Fact Sheet* at 8. All samples exceeded RI standards. *Id.* The Region also considered monthly samples collecting during April 2005 and October 2005, a period during which the upstream POTWs are disinfecting; the samples indicated the criteria were generally met during this period. *Id.* While the District criticizes the quantity and age of the data, it does not dispute the results or offer any other data the Region overlooked. The available data, together with the fact that the District is the dominant point source on the river, substantiates the Region's conclusion that the District's discharge has the reasonable potential to cause or contribute to a violation of Rhode Island's standards.

The District also contends that the Region did not adequately evaluate the fate and transport of fecal coliform bacteria by factoring both die off and dilution into calculation of the effluent limitation. *Dist. Pet.* at 41-42. In response to a comment submitted by the District, the Region did adjust the limit to account for die off. *See RTC* at 64. The Region, however, declined to adjust the limit to account for dilution, explaining that available data indicated that elevated background concentrations in the River would eliminate the benefit of dilution from higher flows. *See RTC* at 63. The Region's decision to consider die off but not dilution was not "selective," (*Dist. Pet.* at 43), but fully explained and grounded in evaluation of available water

quality data. The Region cited data conducted during three fall storm events (September 1992, November 1992, and October 1993). For all three storm events, event mean fecal coliform concentrations exceeded a geometric mean of 200 cfu/100 ml at all river stations from Northbridge to the state line in Blackstone, Massachusetts, with the exception of one station where the criterion was exceeded for two of the three storm events. *RTC* at 63-64. During the September and October sampling events, the Massachusetts POTWs would have been disinfecting, so the results indicating significant wet weather sources of bacteria. *Id.* at 64. Data collected during the November storm, which was sampled during the period of November 2 -5 of 1992, when the Massachusetts POTWs would not have been disinfecting, showed a mean fecal coliform concentration of 764 colonies/100 ml at the state line. *Id.* Again, although the District challenges the size and age of the data set, *Dist. Pet.* at 41, it does not contest what the data show.

The District also challenges the fairness of the Region's determination, arguing that the Region "puts the entire burden of coliform compliance on the District," without taking steps to control other sources (*Dist. Pet.* at 42) or to consider significant contributions resulting from stormwater runoff. *Id.* at 41. In its cursory allegation, the District fails to explain how the Region has held the District responsible for anything other than the effluent flow attributable to its own discharge. By not including dilution in the calculation of the effluent limitation, the Region is simply ensuring that the District's discharge does not cause or contribute to an exceedance of applicable criteria at the state line. Assuming the District meets its winter fecal coliform limit and there continue to be excursions above Rhode Island's criteria at the state line, these excursions clearly will not be the responsibility of the District. With regard to its reference to "significant contributions from stormwater runoff," to the extent the District is referring to

stormwater discharges from point sources, the Region has been working to address the impacts of such discharges through issuance of stormwater permits to communities throughout the Blackstone River watershed. *RTC* at 12-13. To the extent the District seeks to assert that the Region must await a TMDL or similar study prior to imposition of the winter fecal coliform limit, an approved TMDL is not a precondition to the limit. *See* 40 C.F.R. § 122.44(d)(1)(vii)(B).[36]

G. The Schedule for WET Testing and Analytical Protocol for Wet Weather Fecal Testing are Reasonable.[37]

1. The Schedule for WET Testing is Reasonable and the Permit Includes a Provision to Allow for Occasional Deviations from the Schedule.

The District raises concerns that the required schedule for WET testing (during the second weeks of January, April, July and October) may be impossible to meet on occasion due to vacations, extreme weather conditions such as blizzards, or other unforeseen events. *Dist. Pet.* at 51. The District's request that language be incorporated into the permit to reflect such scenarios is unnecessary as the Permit already includes a provision allowing for occasional deviations from the routine sampling program. *See Permit* at 5 ("Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented in correspondence appended to the applicable discharge monitoring report.") The Region does

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[36] The record indicates that RIDEM is proceeding with a TMDL for coliform bacteria on the Blackstone River. *See RTC* at 63 (Ex. 2). As the Region noted in its Response to Comments, if the approved TMDL indicates changes are appropriate to the limit, the Region can pursue a modification. *Id.* at 64.

[37] In addition to seeking the Board's review of monitoring issues related to WET and fecal coliform, the District mentions one other monitoring issue in its petition – specifically, monitoring and reporting related to total residual chlorine (TRC). While the District does not seek the Board's review on this issue, the Region responds here to clarify the record. The Permit requires two types of monitoring and reporting related to TRC – grab samples for compliance, supplemented by reporting from a continuous monitor. *See Permit* at I.A.1 (Ex. 3). In its petition, the District states that it and the Region share "doubts about the reliability of TRC continuous monitors." *Dist. Pet.* at 54. As is detailed in the record, the Region does not have doubts about TRC monitors, but simply does not have "sufficient experience with TRC analyzers to required continuous monitoring to be used or compliance purposes at this time." *RTC* at 70 (Ex. 2).

anticipate that a facility of the District's size and staffing would make arrangements for required monitoring in the face of foreseeable events within its control, such as vacations. On the other hand, the Region recognizes that it may not always be possible to make contingency plans for events not within its control, such as blizzards. Accordingly, as the Permit already includes language accommodating the District's concern, review should be denied.[38]

2. The Monitoring Protocol for Fecal Coliform During High Flow Events is Reasonable in Light of the Fluctuating Nature and Extremely High Flow of These Events.

The District next challenges the protocol for fecal coliform monitoring during high flow events as unduly excessive. The Permit requires that a grab sample be taken during the first hour of the discharge and every three hours thereafter for the duration of the discharge. *Permit* at I.A.1 and n.5 (Ex. 3). Because the only currently EPA-approved methods for fecal coliform testing involve incubating and counting the bacteria, the District seeks that the Permit provide that only one sample be analyzed using approved methods and that all other samples be analyzed using the *Colilert* method, which is not currently approved by EPA for fecal coliform monitoring. *Dist. Pet.* at 51-52.

In its Response to Comments the Region explained that having only one compliance sample (i.e., the one sample analyzed using EPA approved methods for fecal coliform) was insufficient in light of the nature of the District's high flow discharge. *See RTC* at 62 (Ex. 2). The District's upgrades will increase capacity to handle wet weather flows, including providing primary treatment to peak flows from the Worcester combined sewer system. *See Fact Sheet* at

[38] The District also requests that the Region indicate it is open to making minor change to the permit related to monitoring issues and that the Region indicate the process for obtaining such changes. *See Dist. Pet.* at 51. While this broad request obviously does not substantiate a basis for the Board's review, the Region notes that the agency's regulations have provisions for making modifications to permits and invites the District to discuss this issue further with Regional staff.

5 (Ex. 1). The volume of flow that will be discharged during these events is high and not all flows will receive advanced treatment. Advanced treatment will have capacity to handle an hourly peak flow up to 120 mgd, while primary treatment will have an hourly peak flow capacity up to 160 mgd. *Id.* Not only will these high volumes of flow move very quickly through the plant, the flows and chlorine demand will vary of the course of a wet weather event, making it particularly difficult to maintain adequate disinfection. As the Region explained in its Response to Comments:

> Maintaining adequate chlorine dosing to achieve bacteria limits, and then ensuring adequate dosing of dechlorination chemicals to ensure that toxicity based TRC limits are not exceeded is a difficult task during dry flow conditions due to changing flow[ ] rates and chemical constituents, and is made even more difficult during high flow events.

RTC at 62. While not directly confronting the Region's rationale for the frequency of the fecal coliform testing, the District makes the aside that EPA does not require such frequent monitoring of public drinking water systems under the Total Coliform Rule. *See Dist. Pet.* at 51. The comparison is inapt. The purpose of the monitoring imposed on the District's wet weather outfall is to determine fecal bacteria concentrations over the course of sudden, rapid and variable high flow events. As drinking water systems are not designed to treat such high flow events, it is not the intent of the routine monitoring under the Total Coliform Rule to evaluate such events.[39]

The Region appreciates that the *Colilert* method is less time-consuming than the currently approved methods for fecal coliform analysis. The Colilert method is not, however, an

[39] Under the Total Coliform Rule, public water systems conduct routine monitoring of total coliforms as an indicator of the possible presence of harmful pathogens in the distribution system of a public water supply. The required number of routine samples is proportional to population, with larger systems required to collect several hundred samples per month. 40 C.F.R. § 141.21(a)(2).

approved method for fecal coliform analysis.[40] EPA permitting regulations require that monitoring be performed according to approved methods. *See* 40 C.F.R. § 122.44(i)(1)(iv). Furthermore, since the upgrades to handle these high flow events have only been recently undertaken, the Region does not yet have the benefit of a robust set of monitoring data to justify less frequent monitoring. Should the District's monitoring and analysis of high flow discharges shows consistent ability to meet fecal coliform criteria, it may be appropriate for the Region review this information and consider a modification of the requirements related to monitoring frequency.

The fecal coliform monitoring requirements are reasonable and tailored to the high and variable flows anticipated to be discharged during high flow events. Review should be denied.

H. The Ammonia Limit is Appropriately Expressed in both Mass and Concentration in Accordance with EPA's Regulations.

In its comments on the Draft Permit, the District posed a simple question: "Ammonia nitrogen standards are listed in pounds per day and in milligrams per liter. Which limit prevails?" *See RTC* at 70 (Ex. 2). The Region provided this straightforward response: "Both limits are required to be met." *Id.* The Region's response also comports with 40 C.F.R. § 122.45(f)(2). That rule requires that, where a permit limits a pollutant with more than one unit of measurement, the permittee must comply with both. The District now seeks to inappropriately expand its inquiry, arguing to this Board that the Region has failed to adequately explain why both a mass and a concentration limit have been imposed. *Dist. Pet.* at 53. In light of the District's clear failure to preserve this issue, the Board should deny review.

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[40] Although EPA has approved use of *Colilert* for *E. coli* analysis, *See* 57 Fed. Reg. 14220, 14225 (March 26, 2007), it has not approved the method for fecal coliform.

In any event, it is puzzling that the District seeks review of the ammonia limits. Not only are the limits identical to those in its prior permit, the ammonia limits were specifically negotiated as part of the settlement of the District's appeal of the prior permit. As part of that settlement, the Region agreed to issue a proposed modification that included, among other things, the precise limitations on ammonia that the District now contests. (As is reflected in the Statement of Basis accompanying the modification, the District requested adjustments to the limits to account for revisions in the most recent update of the national ammonia criteria document. *See Statement of Basis Supporting 2001 Permit Modification* at 4 (Ex. 24). In both the expired permit (as modified in 2001) and the Permit that is the subject of this appeal, the average monthly limitations on ammonia are as follows:

December to April	12 mg/l and 5,600 lbs/day;
May	5 mg/l and 2,330 lbs/day;
June to October	2 mg/l and 934 lbs/day; and
November 15, 2008	10 mg/l and 4,670 lbs/day.

Compare 2001 Permit Modification at 4 (Ex. 26) *with Final Permit* at I.A.1 (Ex. 3). The anti-backsliding provisions set forth at Section 402(o) of the CWA and at 40 CFR §122.44(l) prohibit establishment of any less stringent limitations in the District's new permit unless specific exceptions are met, none of which the District has demonstrated is applicable here.

Furthermore, the record supports the ammonia limits, as well as the expression of the limits in both mass and concentration. In the Fact Sheet supporting the current permit issuance, the Region explained that the May and June to October limits were based on a wasteload allocation to meet minimum dissolved oxygen criteria, and that the November and December to April limits were based on a national recommended ammonia criteria document, *December 1999 Update of Ambient Water Quality Criteria for Ammonia, December 1999 (EPA 822-R-99-014,*

December 1999). Fact Sheet at 11 (Ex. 1). Expression of the ammonia limitations in terms of concentration is appropriate as both the dissolved oxygen criteria in Massachusetts Standards and the national recommended ammonia criteria are expressed in terms of concentration. *See Massachusetts Standards at 314 C.M.R. 4.05(b)(1)(Ex. 4); December 1999 Update of Ambient Water Quality Criteria for Ammonia (AR 95). See also* 40 CFR 122.45(f)(ii) (authorizing permit writer to express limitations in units of measurement that correspond to applicable standards or limitations). The Region also explained the basis for including mass limitations. In the Statement of Basis supporting the 2001 permit modification, the Region explained that the permit modification included a change in the proposed flow limit from a monthly average to a rolling annual average. *Statement of Basis Supporting 2001 Permit Modification* at 3 (Ex. 24). Not yet having experience monitoring compliance with the rolling annual average, the Region expressed concern that a mass limitation for ammonia was necessary (in addition to concentration) in the event the District exceeded the flow limit in any particular month. *Id.* at 3.[41]

The District explicitly agreed to the ammonia limits in settlement of its appeal of the prior permit. The District failed to raise any concerns with the limits during the public comment period in this proceeding. The District has failed to provide any facts indicating that one of the exceptions to the general prohibition against anti-backsliding is applicable. The Board should deny review on this issue.

[41] In the discussion of the ammonia limits in the Fact Sheet supporting the new Permit, the Region explicitly referred back to the *Statement of Basis Supporting the 2001 Permit Modification* for additional detail regarding the derivation of the limits. *See Fact Sheet* at 11 (Ex. 2).

I. The Region's Decision to Include Satellite Systems as Co-Permittees in this Permit was Consistent with the CWA and Regulations and Warranted to Address Unacceptably High Inflow/Infiltration.

Infiltration and Inflow ("I/I") to the District's sewer system is excessive. According to the District's own permit application, more than 15 million gallons per day of groundwater and stormwater make their way from the communities which send their effluent to the District for treatment. *RTC* at 87 (Ex. 2). Not only does this waste the extra chemicals, tankage and energy required to treat this unnecessary flow, but excessive I/I can also cause other problems, such as sanitary sewer overflows. Recognizing that more aggressive action was needed to abate excessive I/I, and disappointed with the progress made under the previous permit (which only requested the District to facilitate the satellites' voluntarily efforts on this issue), the Region decided that the time had come to regulate satellite communities directly as co-permittees. *See RTC* at 87. Based on the information provided by the District in its permit application, EPA included the City of Worcester, the Towns of Millbury, Auburn, Holden, West Boylston and Rutland, and the Cherry Valley Sewer District, as co-permittees. *RTC* at 88; *Draft Permit* at 1 (Ex. 1).

The District and four of the co-permittees (Worcester, Holden, Millbury, and Cherry Valley Sewer District)[42] all challenge the Region's authority to regulate the co-permittees in the same permit as the District. Petitioners argue that EPA is not authorized to include the satellite municipal collection systems as co-permittees, even though they discharge waste to the District's treatment plant, because they were not signatories to the permit application filed by the District. Petitioners' argument is without merit. EPA's authority to regulate Publicly Owned Treatment

[42] Of the four co-permittees that petitioned for review, only the Town of Holden and the City of Worcester participated in the public comment process. The Petitions of Millbury and Cherry Valley Sewer District, accordingly, should be dismissed. As their petitions mirror arguments raised by other co-permittees, however, the Region has no objection to Millbury's and Cherry Valley Sewer District's participation as *amicus curiae*.

Works ("POTWs") does not derive from the consent of the regulated systems. Rather, that authority derives from the CWA. Section 402(a)(1) of the CWA authorizes EPA to "issue a permit for the discharge of any pollutant, or combination of pollutants" if the requirements of the CWA and its implementing regulations are met. Publicly Owned Treatment Works ("POTWs") must meet performance-based requirements based on available wastewater treatment technology. *CWA § 301(b)(1)(B)*. They must also ensure that all discharges comply with the relevant water quality standards per Section 301(b)(1)(C) of the CWA. A "treatment works" is defined in Section 212(2)(A) of the Act as including "any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature . . . including . . . intercepting sewers, outfall sewers, sewage collection systems . . ." and EPA's regulations provide a similar definition at 40 C.F.R. §122.2 and §403.1. As noted in the Response to Comments, both the District (the legal entity owning and operating the wastewater treatment plant) and the satellite systems (the legal entities owning and operating the sewage collection systems) are squarely within the definition of "POTW" for permitting purposes. *RTC* at 84. Petitioners point to no requirement of the statute or regulations requiring EPA to address each of these entities through a separate permitting action. EPA properly exercised its authority to include all these entities in a single permit so as "to ensure proper operation and compliance of the entire treatment works, not a portion of it." *RTC* at 85.

Petitioners base their assertion that all co-permittees must sign a permit application in part on 40 C.F.R. §122.22(a), which describes who is authorized to sign a permit application on behalf of, among other entities, a municipality, State, Federal, or other public agency. However, that section does not purport to enumerate those parties who *must* sign such an application, only those who *may* do so on behalf of various entities, and therefore provides no support for

petitioners' assertion that a permit application must be signed by all co-permittees in order for them to be bound under the Final Permit. As noted in EPA's Response to Comment, permit application requirements are designed to facilitate the permitting process and to aid the permitting authority by ensuring submittal of relevant information, not to serve as an authorization for EPA to fulfill its statutory mandate. *See RTC at 86.*

Co-permittees were given adequate notice of their inclusion in the permit, and were or should have been aware of the obligations it imposed on them. EPA provided each co-permittee with a copy of the Fact Sheet and Draft Permit, and invited them to attend the public hearing and to submit oral and/or written comments on the Draft Permit. *See RTC at 87.* As noted above, some, but not all, chose to do so. Furthermore, in the Statement of Basis for the modification of the expired permit, the Region advised that if it was not satisfied with the progress of cooperative efforts among the District and its member communities to reduce excessive I/I, it would consider adding the member communities as co-permittees directly regulated under the Permit. *Statement of Basis Supporting 2001 Permit Modification* at Section III.5 (Ex. 24). Due to the lack of progress on I/I reduction, that time has come.

Although the claim is not precisely articulated, Petitioners also assert that the District is made responsible, under the Permit, for operation and maintenance obligations over which it has no control, and that this allocation of responsibility is not authorized by the District's enabling legislation. *Dist Pet. at 62.* However, the Board need not reach a decision concerning the proper interpretation of the District's enabling legislation, because ***nowhere in the Final Permit is the District made responsible for the operation or maintenance of the co-permittees' sewer systems.*** During the comment process, although EPA concluded that the Permit was sufficiently unambiguous as it stood, it agreed to modify the language so as to make the separation of

responsibilities between the District and the co-permittees even more clear. *RTC at 87.* The Final Permit notes explicitly that co-permittees ***"are responsible for implementation of the operation and maintenance . . . related to their respective system."*** *Permit* at 1 (emphasis added) (Ex. 3). The language of the permit could not reasonably be interpreted as requiring the contrary, especially when read in the context of EPA's consistent assertions on the record that the District and each co-permittee are responsible only for the portions of the system under their control.

Petitioners misconstrue the Region's reference to the District's enabling legislation in its Response to Comments. The Region cited the legislation for the sole proposition that the District appeared to have authority to control ***the types and volumes of flows*** that are discharged to its plant. *RTC* at 87. The Region has never argued, nor does the Permit anywhere require, that the District ***operate and maintain*** the sewer systems owned by the satellite communities. That none of the petitioners contests the District's authority to control the volume of flow it receives supports the Region's view on this point.[43] The Region fully respects that the District and the satellite systems are separate legal entities. They also all each own and operate separate portions of a POTW that is impacted by excessive inflow and infiltration. In light of the District's repeated assertions that it does not have legal authority to mandate necessary operation and maintenance or reporting obligations, the Region has made the satellite systems individually responsible for these activities under the permit.

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[43] As detailed in the Response to Comments, only one provision of the Permit requires the District to exercise control over flows from the satellite communities. The specific provision requires the District to ensure that volumes of flow the District accepts from the satellites are not so high as to cause violations of the District's effluent limitation or cause unauthorized bypasses at the treatment plant. *RTC* at 87 (Ex. 2). *See also Permit* at Part I.E.3 (Ex. 3). None of the petitioners contests this specific language.

The District next objects that the Permit requires "reporting activities associated with wastewater collection systems over which the District has no control." *Dist. Pet. at 61*. The District does not point to any specific language prompting this concern. Moreover, the Final Permit makes it clear, and EPA emphasized in its response to comment, that each co-permittee "is responsible for the implementation of the operation and maintenance and reporting requirements of Parts D and E related to their respective system." *Permit* at 1 (Ex. 3). All requirements for satellite systems are set forth in the Final Permit in Part I.D. ("Unauthorized Discharges") and Part I.E. ("Operation and Maintenance of the Sewer System"). Part D states that discharges through sanitary sewer overflows are not authorized and requires that such overflows be reported to EPA and MassDEP. *Id.* Part E of the Final Permit requires annual reporting of all actions taken to minimize I/I. EPA addressed the District's concerns about allocation of reporting responsibility in its Response to Comment:

> Through this permit, EPA has made each municipality responsible for implementation of the requirements of Parts D and E applicable to the portion of the collection system and/or treatment plan that it owns or operates. For instance, each municipality would be responsible to report to EPA any SSO that occurred from its collection system. Each municipality would be separately responsible for developing and implementing a plan to control I/I and reporting on the progress of its respective plan.

RTC at 87. The language in the Final Permit states on page one that "co-permittees are responsible for reporting overflows from sewer systems *under their jurisdiction*" and that all co-permittees are responsible for "reporting requirements of Parts D and E *related to their respective system.*" *Permit at 1* (emphasis added). Thus, neither of these sections imposes a reporting obligation on the District with respect to the sewer systems under the jurisdiction of one of the co-permittees.

The Region sincerely hopes that all parties will work cooperatively to ensure that no violations of permit conditions occur, rendering future enforcement actions unnecessary. However, even should such actions become unavoidable, the District's concerns about being held responsible for the violations of co-permittees are unfounded. *See Dist. Pet.* at 62. As detailed above, the permit divides both reporting requirements and operation and maintenance obligations clearly and properly between the District and co-permittees. The named respondent in any enforcement proceeding would be the entity that failed to meet its obligation under the Permit.

Finally, petitioners allege that the Region's selection of co-permittees was arbitrary because EPA chose not to include several smaller municipalities that discharge to the UBWPAD facility as co-permittees. *Dist. Pet. at 64.* Notwithstanding Petitioners' allegations to the contrary, this issue was thoroughly addressed in the Region's Response to Comments. As stated in that document, the Region derived its list of co-permittees from information provided by the District in its re-application in response to Question A4 on Form 2A. *RTC at 88.* That question asked the District to provide the name of each municipality and area served by its facility. It was entirely reasonable for the Region to rely upon the accuracy of this information, as certified by the Engineer-Director of the District, in selecting the co-permittees. The District is in the best position to report on the municipalities and areas that it serves, especially given that the list can change over time. When the Region learned that the information it had received from the District was incomplete via the District's own comments, it did not act arbitrarily. To the contrary, it evaluated the relative flow of those satellite systems overlooked. Given the relatively small size of their contributions of flow, the Region chose not to include them as co-permittees at this time, but may do so in the future. *RTC at 88.*

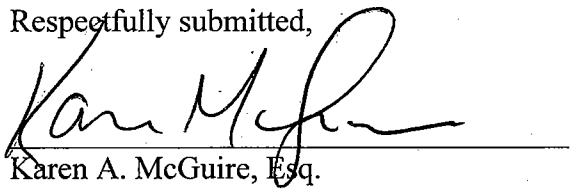
J. The Schedule for Submittal of Inflow/Infiltration Plans is Reasonable.

The District also asserts that the Region abused its discretion in designating a six month time frame under the Permit for the completion of an Infiltration/Inflow Control Plan. *Dist. Pet. at 57.* It believes that "substantially more time should be given for the completion of the plan . . . ." *Ibid.* The Control Plan is not an entirely new requirement – the District's previous permit required the District and its member communities to establish a working group to ensure adequate I/I monitoring, the implementation of maintenance plans and inspection programs by member communities, and the identification of I/I reduction priorities within member community collection systems. The working group was also required to pursue appropriate financial assistance programs, such as grants and loans for I/I removal. *2001 Permit Modification* at 6 (Ex. 26; AR 69). Periodic submissions from the group under the expired permit indicate the group has laid the groundwork for the requirements of this Permit. *See Inflow/Infiltration Annual Reports 2002-2006* (AR 85-90). Because the District and co-permittees should already have developed much of the basis for the required plan under the previous permit, the six-month deadline is not unreasonable. Significantly, none of the co-permittees who have filed petitions raise concerns about the timing of the plan. Accordingly, the Board should deny review on this issue.

III. CONCLUSION

For the foregoing reasons, all Petitions for Review should be denied.

Respectfully submitted,



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Dated: December 17, 2008